EFFECT OF MICROFINANCE BANKS ON THE ECONOMIC GROWTH OF NIGERIA: AN EMPIRICAL INVESTIGATION

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Abstract
This study investigates the effect of microfinance banks on economic growth of Nigeria from 1992-2019 using annual time series data. The study adopts Autoregressive Distributed Lag (ARDL) model, and Granger causality test as methods of analysis. This study's empirical findings reveal that microfinance banks loans and deposits have long-run positive and significant effects on economic growth in Nigeria unlike microfinance banks investment which does not exert significant effect on economic growth in Nigeria in the long-run. However, in the short-run, microfinance loans, investments, and deposits have no significant effects on economic growth of Nigeria. Furthermore, this study confirms unidirectional causalities running from economic growth to microfinance loans, and government expenditure. Likewise, a unidirectional causality is established to flow from inflation rate to economic growth in Nigeria. This study also found bi-directional causalities between microfinance deposit and economic growth; and between microfinance investment and economic growth. It can therefore be concluded that microfinance banks have positive effect on the economic growth of Nigeria. This points to the need for the Government of Nigeria to empower microfinance banks through funding and capacity building to facilitate increased microfinance banks activities in the economy. The

Government of Nigeria should also create enabling environment and programmes in the economy capable of stimulating growth that will further enhance the performance of the microfinance sub-sector in Nigeria.

Keywords: Microfinance Banks, Microfinance Investments, Microfinance Loans, Microfinance Deposits, Economic Growth.

Introduction
Government over the years have established different programmes and policies targeted at alleviating poverty, developing small and medium enterprises and serving as veritable source of funding to economically active poor with the ultimate desire to raise the economic capacity of the country. A case in point in Nigeria is the microfinance policy. According to Central Bank of Nigeria [CBN] and Nigeria Deposit Insurance Corporation [NDIC] (2011), microfinance is a policy tool which facilitates access to financial and social services by the economically active poor, low income population and vulnerable groups. The policy has been adopted by the Nigeria's government as one of the effective policies for achieving economic growth in the country. Thus, microfinance finance was formally launched in Nigeria on 15th December, 2005 via its microfinance policy, regulatory and supervisory framework.

In Nigeria, the microfinance initiative is an off shoot of the Peoples banks and community banking schemes of the late 80's and early 90's respectively. Generally, microfinance has evolved as an economic development approach intended to benefit low-income people. Specifically, microfinance banks (MFBs) provide savings facilities, credit facilities, payment system to individuals, business firms. MFBs combine a social mission (provision of financial services to the low-income population) with a financial objective that drives the institution to achieve self-sufficiency. Thus, MFBs are attracting private sources of capital, including deposits and commercial loans for on-lending and private investors (CBN & NDIC, 2011).

MFBs in promoting economic growth in Nigeria is embattled with problems such as repayment problems, inadequate finance, high operating cost, inadequate experienced credit staff, and problem of illiteracy(Ayodele & Arogundade, 2014; Ezeudu & Emori, 2017). Problems of macroeconomic instabilities like high inflation, exchange volatility, also constitute another crops of problems that tend to militate against the contribution of microfinance banks to economic growth of Nigeria. Considering the problems and others, will the sub-sector be able to fulfil its roles in enhancing growth in Nigeria? Thus, an attempt is made in this study to empirically investigate the effect of microfinance banks on the economic growth of Nigeria between 1992 to 2018 within the autoregressive model. This study also aims at ascertaining the direction of causality between microfinance banks and economic growth in Nigeria in the period under investigation.

Literature Review

Microfinance is the provision of a wide range of financial services such as savings, loans, payment services, money transfers, and insurance to poor and low-income persons, households and their microenterprises (CBN & NDIC, 2011). The term also encompasses the provision of financial and non-financial services as well as the management of small amounts of money through a range of products and a system of intermediary functions that are targeted at low income clients (Anane, 2012). According to Ojo (2009) cited in Babarinde, et al. (2019), microfinance is an economic development approach that involves providing financial and non-financial services through institutions to low-income clients, such as micro, small and medium-scale enterprises where the market fails to provide appropriate services. Abdulmajeed, et al. (2019) define microfinance banking as the business of carrying out microfinance services without collateral security.

Micro finance institutions are institutions that have emerged to apply sound economic principles in the provision of financial services to low income earners and small-scale enterprises (Ezeudu, 2010). Microfinance services are provided by three types of institutions, namely, formal institutions, such as microfinance banks, rural banks and deposit money banks; semi-formal institutions, such as non-government organizations and cooperatives; and, informal sources such as Rotating Savings and Credit Associations (ROSCA), daily savings collectors, money lenders and shopkeepers (CBN & NDIC,2011). Microfinance banks are companies licensed to carry on the business of providing micro-finance services such as savings, loans, domestic fund transfers and other financial services that economically active poor, micro-enterprises and small and medium enterprises need to conduct or expand their businesses as defined by the regulatory guidelines (CBN, 2013).

MFBs are important in that they provide financial services to the active poor, for their entrepreneurial activities; ensures savings mobilization, create employment opportunities, enhance participation of the poor in the socio-economic development and resource allocation, promotes of saving culture, extends credit to customers. Furthermore, microfinance enables poor people to expand their businesses, increase their revenues (Ezeudu, 2010; CBN & NDIC, 2011; Ibrahim, 2013). The guidelines for MFBs provides for three categories of MFBs, which are unit, state, and national MFBs, which are to serve a local government area, state and the nation at large respectively. Each of them are to actualize the aim of microfinance banking, most importantly, to achieve sustainable economy growth via poverty alleviation through provision of financial services to the economically active poor.

Economic growth often measured as gross domestic product, or gross national product, either in nominal or real terms, simply refers to a persistent increase in the productive capacity of country which lead to increase in goods and services. Theoretically, microfinance banks are to involve in savings mobilization, employment creation, investments and provide non-financial services targeted at the economically active poor, thereby stimulating economic growth of the country. The extent to which this postulate has empirical reality has been examined by researchers. Thus, this study reviews some empirical evidence in extant literature on the nexus between microfinance banks and economic growth which for instance, based on desk research approach, Okwoli, et al.

(2013) examined MFBs and rural development in Nigeria. The study indicates that MFBs have positive impact on rural transformation and development in Nigeria. In another study on the place of microfinance in the Nigeria economy, Eigbiremolen and Anaduaka (2014) applied Ordinary Least Square (OLS) and Granger causality techniques and established that microfinance loans and advances have significant positive impact on the Nigeria economy with a unidirectional causality running from economic growth to microfinance operations. Furthermore, Ayodele and Arogundade (2014) investigated the impact of microfinance on economic growth in Nigeria using OLS. The results of the study, show among others, that except for deposit liability which has negative impact, asset base and loan and advances have positive impact on economic growth in Nigeria. Sultan and Masih (2016) in a study on the relationship between microfinance andeconomic growth in Bangladesh using Autoregressive distributed lag (ARDL) model, the study confirms that microfinance has significant impact on domestic growthin Bangladesh, with a bi-directional relationship between microfinance and growth in the country. Furthermore, Apere (2016) applied Error correction model (ECM) technique in the analysis of the impact of MFBs on economic growth in Nigeria. The study shows that MFBs loans and domestic investment have positive and significant effect on the growth of Nigeria's economy. Furthermore, Murad and Idewele (2017) employed ECM technique to evaluate the impact of microfinance institutions on economic growth of Nigeria and found an evidence that microfinance loans have significant positive impact on economic growth in Nigeria in the short run but the reverse being the case in the long run. Further evidence from the study indicates that microfinance investment has a significant impact on economic performance in Nigeria in the long run. In a related study which focused on the OLS analysis of the holistic activities of microfinance banks in Nigeria, conducted by Ezeudu and Emori (2017), the study shows that MFBs' total assets, and microfinance loans and advances have positive impact on economic growth in Nigeria. However, according to the study, microfinance banks' deposits impacted negatively on economic growth in Nigeria. In another investigation on the relationship between financial inclusion and economic growth in Nigeria with a particular reference to the microfinance option, carried out by Otiwu, et al. (2018). From the OLS regression, the authors reiterate that MFBs' loans and advances significantly contribute to economic growth unlike microfinance deposits which exert negative effect on economic growth of the country. Furthermore, based on ARDL model, Ezeanyeji, et al. (2020) examined the nexus between microfinancing, poverty alleviation andNigeria's economic growth. The study concludes that MFBs' loan and advances do not significantly affect economic growth in Nigeria.

It can be inferred from the review of empirical studies that while most studies tend to affirm the positive impact of microfinance on economic growth, some studies still concluded otherwise. The use of OLS is common among the methods employed in the past studies reviewed. Measures of microfinance employed by different researchers also give different results. For instance, Okwoli, et al. (2013), and Sultan and Masih (2016) found a positive relationship between microfinance and economic growth. However, Ezeanyeji, et al. (2020) concluded that microfinance and economic growth are inversely related. With these conflicting results, it seems the debate is not yet conclusive on the nexus between microfinance banks and economic growth. This current study is handy in contributing to

the perceived debate on microfinance-growth nexus most especially in a developing country like Nigeria.

Methodology
The study is based on ex-post facto research design. The study employed secondary data on an annualized basis obtained from CBN (2019)'s statistical bulletin covering a period from 1992 to 2019. The relevant data are microfinance loans and advances, microfinance investment (short and long term investment), microfinance deposit, inflation rate and gross domestic product. The population and the sample size of the study are the Microfinance banks in Nigeria.

To examine the effect of microfinance banks on economic growth in Nigeria, the study adopts the Autoregressive Distributed Lag (ARDL) model and pairwise Granger causality techniques. Before the ARDL model estimation, descriptive statistical test was applied to the variables in its raw form. Thereafter, the augmented Dickey-Fuller (ADF) unit root test was applied to the annual time series. The test was performed at level and first difference. Once a variable becomes stationary at a stage of the test, it is needless carrying further test of unit root at a higher level than that at which stationarity was attained. Furthermore, via the F-Bounds approach, cointegration test was conducted to ascertain if there is cointegration among the I(1) and I(0) variables or not. After ascertaining the evidence of cointegration among the variables, then both short-run and long-run ARDL models of the relationship between microfinance bank and economic growth were estimated in addition to the various diagnostic tests conducted on the models.

In this study, economic growth is expressed as a function of microfinance bank loans, microfinance bank investments, microfinance bank deposits, while inflation rate and government expenditure constitute control variables.
The ARDL model of the relationship between microfinance bank and economic growth is specified in equation (1):

$$\Delta GDP_t = \beta_0 + \sum_{i=1}^{n} \beta_{1i} \Delta LogGDP_{t-1} + \sum_{i=0}^{n} \beta_{2i} \Delta LogMFL_{t-i} + \sum_{i=0}^{n} \beta_{3i} \Delta LogMFIV_{t-i}$$
$$+ \sum_{i=0}^{n} \beta_{4i} \Delta LogMFD_{t-1} + \sum_{i=0}^{n} \beta_{5i} \Delta LogINFR_{t-1}$$
$$+ \sum_{i=0}^{n} \beta_{6i} \Delta LogGEX_{t-1} + \sigma_1 LogGDP_{t-1} + \sigma_2 LogMFL_{t-1}$$
$$+ \sigma_3 LogMFIV_{t-1} + \sigma_4 LogMFD_{t-1} + \sigma_5 LogINFR_{t-1}$$
$$+ \sigma_6 LogGEX_{t-1} + ECT + U_{1t} \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots (1)$$

Where: GDP_t= domestic product in years t; $GDP(-1)_t$= first year lag of gross domestic product; MFL_{t-i}= microfinance loans in years t; $MFIV_{t-j}$= microfinance investments in years t; MFD_{t-k}= microfinance deposit liabilities; $INFR_{t-k}$= inflation rate in years t; GEX_{t-l}=Total government expenditure; U_{1t}= stochastic error terms in years t; t= time

series in years from 1992-2018; Δ denotes first difference operator, β_0 = the drift component; μ_t = the error term,

β_1 - β_6 = the parameters of the short-run dynamics of the model, σ_1 - σ_6 corresponds to parameters of the long-run relationship; ECT=Error correction term.

Theoretically, MFL, MFIV, MFD and GEX are expected to be positively negatively signed with GDP while INFR is expected to be negative if the rate is higher than the tolerable level but could be positive if the rate is within tolerable bound capable of stimulating economic activities.

Furthermore, the study also examined the direction of causality between microfinance banks and economic growth in Nigeria. The pairwise Granger causality test equations are stated thus:

$$LogGDP_t = \sum_{t=1}^{n} LogMFL_{t-i} + \sum_{t=1}^{n} LogMFIV_{t-j} + \sum_{t=1}^{n} LogMFD_{t-k} + U_{1t} \quad (2)$$

$$LogMFL_t = \sum_{t=1}^{n} LogGDP_{t-i} + \sum_{t=1}^{n} LogMFIV_{t-j} + \sum_{t=1}^{n} LogMFD_{t-k} + U_{2t} \quad (3)$$

$$LogMFIV_t = \sum_{t=1}^{n} LogGDP_{t-i} + \sum_{t=1}^{n} LogMFL_{t-j} + \sum_{t=1}^{n} LogMFD_{t-k} + U_{3t} \quad (4)$$

$$LogMFD_t = \sum_{t=1}^{n} LogGDP_{t-i} + \sum_{t=1}^{n} LogMFL_{t-j} + \sum_{t=1}^{n} LogMFIV_{t-k} + U_{4t} \quad (5)$$

Where U_{1t}, U_{2t}, U_{3t} and U_{4t} are assumed to be uncorrelated.

Results and Discussion
Summary Statistics
In order to get insight into the descriptive features of the data, the summary statistics are estimated and presented in Table 1.

Table 1: Summary Statistics

	GDP	MFL	MFIV	MFD	INFR	GEX
Mean	42453.86	59266.54	7987.678	63187.76	18.83487	2832.343
Median	25466.23	19650.20	3153.145	37617.70	12.38637	1880.050
Maximum	144210.5	262630.0	34904.87	260810.5	72.83550	9714.840
Minimum	909.8000	135.8000	118.4000	639.6000	5.388008	92.80000
Std. Dev.	43839.57	78683.42	9852.385	72379.21	17.34308	2609.297
Skewness	0.855454	1.282051	1.275334	1.159155	1.972397	0.878511
Kurtosis	2.469564	3.302591	3.623554	3.399625	5.689001	2.961194
Jarque-Bera	3.743333	7.777214	8.043847	6.456635	26.59080	3.603403
Probability	0.153867	0.020474	0.017918	0.039624	0.000002	0.165018

Source: *Authors' computation using Eviews 10, (2020).*

Table 1 describes the statistical properties of the variables of study. It can be seen from the statistics that inflation rate(INFR) and government expenditure(GEX) are not widely dispersed from their average values since the standard deviation (S.D.) of the series are less than their mean values. However, microfinance bank loans (MFL), microfinance bank investment (MFIV), microfinance bank deposit (MFD) and gross domestic product(GDP),

have greater dispersion from their averages. The nominal GDP over the period of study ranges between ₦909.80billion and ₦144210.5b while INFR ranges between 5.38% and 72.83%. The minimum microfinance bank loans (MFL), microfinance investment (MFIV) and microfinance deposits(MFD) over the period of study was ₦135.80b, ₦118.40b, and ₦639.60b respectively; and the maximum values for the trio are ₦262630.0b, ₦ 34904.87b, and ₦260810.5b respectively. The minimum and maximum GEX was ₦92.80b and ₦9714.84b.

Furthermore, the descriptive statistics indicate that all the series are positively skewed. Only two of the series (GDP and GEX) have their kurtosis of above 3, implying the leptokurtic nature of the series. Others variables are platykurtic in nature. The p-values of the Jargue-Bera(JB) statistics of the series indicate that except INFR which is not normally distributed, all other variables (GDP, MFD, MFL, MFIV and GEX) pass the normality test at different levels of significance.

Augmented Dickey-Fuller (ADF) Unit Root Test

Stationarity test is key in time series analysis. This is necessary to avoid spurious result of regressing non-stationary over another. Hence, the ADF unit root at level and first difference and the results are reported in Table 2.

Table 2: ADF Unit Root Test's Results

	Null Hypothesis (HO): There is a unit root in each variable				
	ADF at Level		**ADF at First Difference**		**Integration Order**
Series	**Test Stat.**	**Prob**	**Test Stat.**	**Prob**	**I(*d*)**
GDP	-1.3933	0.8378	-3.7124	0.0395**	I(1)
MFL	-1.9524	0.3048	-6.6014	0.0000*	I(1)
MFIV	-0.9544	0.7545	-5.7759	0.0001*	I(1)
MFD	-0.8901	0.7751	-7.6724	0.0000*	I(1)
INFR	-5.4080	0.0002			I(0)
GEX	-2.6448	0.0995			I(0)

Source: *Authors' computation using Eviews 10, (2020).* Note: ** and * denotes rejection of HO at 5% and 1% levels of significance.

Table 2 shows that INFR and GEX are stationary in level while other variables (GDP, MFL, MFIV and MFD) attain stationarity at first difference. Since the variables are of mixed orders of integration, it is safe to apply the Autoregressive Distributed Lag (ARDL) model to the series.

VAR Lag Order Selection Criteria

Due to the sensitivity of the ARDL to lag length formation, the study determined the optimum lag for the model before its actual model estimation. The result of the VAR lag order selection criteria is presented in Table 3.

Table 3: VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-44.3109	NA	1.93e-06	3.8700	4.1604	3.95
1	83.3823	186.6286*	1.81e-09*	-3.1832	-1.1509*	-2.5
2	124.2084	40.8260	2.08e-09	-3.5544*	0.2198	-2.46

Source: *Authors' computation using Eviews 10, (2020).* Note: * indicates lag order selected by the criterion (each test at 5% level); LR: sequential modified LR test statistic; FPE: Final prediction error; AIC: Akaike information criterion; SC: Schwarz information criterion; HQ: Hannan-Quinn information criterion.

Table 3 indicates that almost all the criteria (except FPE) suggest the choice of lag 1 in the model estimation for the series. Hence, the ARDL model was estimated at lag 1 based on SIC.

ARDL Bound Test for Co-integration

In order to determine any evidence of long run relationship among the variables, the study employed the auto-regressive distributed lag(ARDL) bound test for co-integration. The result of the test is presented in Table 4.

Table 4: ARDL Bound Test for Cointegration

	F statistics value=33.1154		HO: There is no levels relationship among the series
Significance	**Lower bound**	**Upper Bound**	**Decision**
Level	**I(0)**	**I(1)**	
10%	2.331	3.417	Reject the null hypothesis of no co-integration because
5%	2.804	4.013	Cal. F-stat.>I(1) at all levels
1%	3.9	5.419	

Source: *Authors' computation using Eviews 10, (2020).*

In Table 4, the null hypothesis of no-cointegration in the Bounds test for co-integration is rejected since the calculated F-statistics (33.1154) exceeds the upper bound values at all levels of significance. This implies that there is evidence of long run relationship between microfinance banks measures and economic growth in Nigeria during the period of investigation. Otiwu, et al. (2018) also found a similar evidence in their study of the relationship between financial inclusion and economic growth in Nigeria (the microfinance option).

ARDL Long-Run Model Estimation

The results of the long-run model of the relationship between microfinance banks and economic growth in Nigeria are as presented in Table 5.

Table 5: ARDL Long-Run Estimates

Dependent Variable: Log GDP

Selected Model: ARDL(1, 0, 0, 0, 1, 1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Log GDP(-1)	0.8239	0.0902	9.1326	0.0000*
Log MFL	0.1365	0.0659	-2.0696	0.0532***
Log MFIV	-0.0592	0.0535	-1.1066	0.2830
Log MFD	0.2309	0.0834	2.7693	0.0126**
Log GEX	0.0715	0.0784	0.9123	0.3736
Log GEX(-1)	0.1183	0.0720	1.6430	0.1177
Log INFR	0.0702	0.0303	2.3186	0.0324**

Log INFR(-1)	0.0465	0.0298	1.5569	0.1369
Constant	-0.3450	0.3156	-1.0929	0.2888
R-Squared (R^2)	0.9849	Durbin-Watson	2.4034	
Adjusted R^2	0.9805	F-statistic	2174.945	0.0000

Source: *Authors' computation using Eviews 10, (2020).* Note: ***, ** and * denote statistically significant at 10%, 5% and 1% respectively.

Table 5 reveals that microfinance banks loans have a coefficient of 0.1365 and a p-value (0.0532) of less than 10%. This suggests that microfinance banks loans have positive significant effect on economic growth of Nigeria in the long-run, such that that one per cent increase in microfinance bank loans is associated with about 13.7% increase in economic growth in Nigeria. Furthermore, microfinance banks investment with a coefficient of -0.0592 and a p-value (0.2830) of greater than 10%, suggests that microfinance banks investment does not exert significant effect on economic growth in Nigeria in the long-run. This finding is not in line with theoretical expectation and the findings of Apere (2016), and Murad and Idewale (2017).

Moreover, microfinance banks deposit with a coefficient of 0.2309 and a p-value (0.0126) reveals that microfinance banks deposit has positive significant effect on economic growth of Nigeria in the long-run such that one per cent increase in microfinance banks deposit is related to about 1.3% increase in economic growth in Nigeria in the long-run. This finding is consistent with the findings of Eigbiremolen and Anaduaka(2014), Ayodele and Arogundade (2014), Apere (2016), and Otiwu, et al. (2018). However, Ayodele and Arogundade (2014), and Otiwu, et al. (2018) found otherwise that there is an inverse relationship between microfinance deposits and economic growth in Nigeria.

This study establishes that government expenditure does exert significant effect on Nigeria's economic growth but inflation rate (0.0702) exert positive significant effect (p-value=0.0324) on the country's economic growth in the long-run

The model's coefficient of determination (R2) of 98% implies that the variations in economic growth are jointly and simultaneously determined by its 1-year lagged value, microfinance loans, microfinance investment, microfinance deposits, government expenditure and inflation rate over the period. The model is regarded to have a good fit considering its F-stat (2174.945) and p-value (0.0000) which is statistically significant at 1%. The model has little or no serial correlation problem considering it D.W stat (2.4034) of roughly 2.

ARDL Error Correction and Short-Run Regression Model
In addition to the long-run modelling, this study also estimates the error correction and short-run regression model of the relationship between microfinance activities and economic growth of Nigeria using the ARDL approach. The results of the ARDL error correction and short-run regression model are presented in Table 6.

Table 6: ARDL Error Correction and Short-Run Regression Estimates

Dependent Variable: D(GDP)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(Log(MFL))	-0.0415	0.1360	-0.3054	0.7630
D(Log (MFIV))	-0.0647	0.0753	-0.8592	0.3999
D(Log (MFD))	0.1488	0.1576	0.9442	0.3558
D(Log (GEX))	0.1122	0.1067	1.0515	0.3049
D(Log (INFR))	0.0030	0.0445	0.0693	0.9454
ECT	-0.1760	0.0100	-17.5806	0.0000*
R-Squared (R^2)	0.7958			
Adjusted R^2	0.7787			

Source: *Authors' computation using Eviews 10, (2020).* Note: * denotes statistically significant at 1%.

The results of the short-run and error correction model in Table 6 indicate that, microfinance loans (MFL) and microfinance investment (MFIV) are negatively signed with economic growth (GDP). However, neither of the two variables is statistically significant. In the same vein, it is shown in Table 6 that microfinance deposit (MFD), government expenditure (GEX) and inflation rate (INFR) are positively signed with economic growth but none of these variables is statistically significant. These imply that microfinance loans, deposits and investments are not short-run significant determinants of economic growth in Nigeria in the short-run. The Error Correction Term (ECT) is negatively signed (-0.1760) and statistically significant (p-value=0.0000), which implies that the model corrects any distortion to it at the rate of 17.6 per cent per annum.

Diagnostic Tests

Diagnostic tests were carried out on the ARDL models estimated. The results of the various diagnostic tests are reported in Table 7 and Figure 1.

Table 7: Post-Estimation Diagnostic Tests

Tests	F-statistic	p-statistic	Ho
Breusch-Pagan-Godfrey Heteroscedasticity	1.1357	0.3870	There is no heteroscedasticity
Ramsey RESET Test	1.3720	0.2576	There is no misspecification error
Breusch-Godfrey Serial Correlation LM	1.1641	0.2957	There is no serial correlation
Jacque-Berra Normality	6.1667	0.0458	The model is normally distributed

Source: *Author's computation using Eviews 10, (2020).*

As revealed in Table 7, the normality statistics in the form of J-B statistics (6.1667) with its p-value (0.0458) exceeding 1% level of significance confirms the normality of the model at 1 per cent level of significance. The study also tested for autocorrelation among the variables in the model via the Breusch-Godfrey serial correlation LM test, the result of the test indicate the HO is not rejected due to the fact that the p-value of the test statistic is more than the level of significance at 1%, 5% and 10% respectively; it can be concluded that there is absence of serial correlation among the variables in the model. The Breusch-Pagan-Godfrey heteroscedasticity test reveals that the absence of heteroscedasticity in the model of the study. The model misspecification error test via the Ramsey RESET test as shown in table 9 with F-stat (1.3720) and the associated p-value of 0.2576 indicate that the model is correctly specified functionally.

Furthermore, the study tested for parameter stability of the model via the CUSUM test, the result of which is presented in Figure 1.
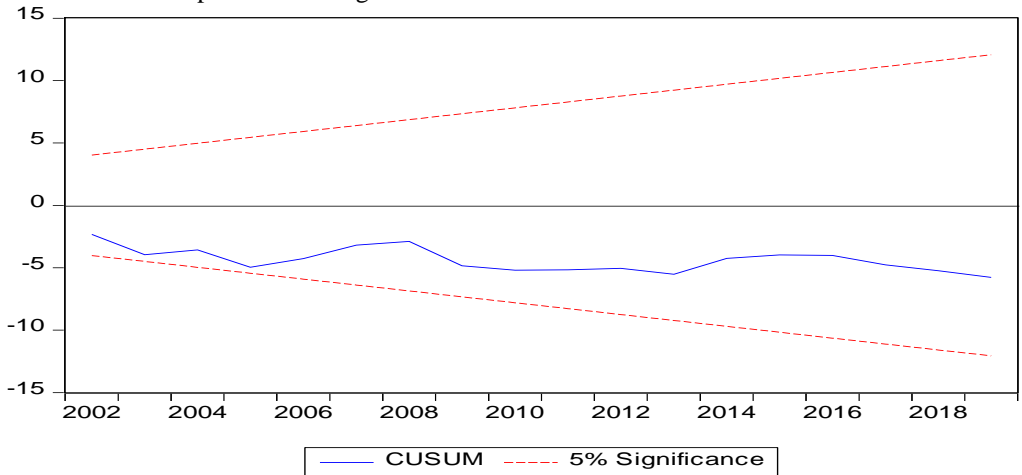
Fig. 1: *CUSUM Stability Graph*
Source: *Authors' drawing using Eviews 10, (2020).*

Figure 1 shows that the model CUSUM graph plots within 5% significance. This implies that the model is structurally stable over time and its estimates are considered reliable and efficient.

Granger Causality Test

This study ascertained the direction of causality between microfinance banks and economic growth in Nigeria via the pairwise Granger causality test and test's results are summarized in Table 8.

Table 8: Results of Pairwise Granger Causality Test

Null Hypothesis:	F-Statistic	Decision	Type of Causality
LogMFL does not Granger Cause LogGDP	0.6956	Accept	Zero
LogGDP does not Granger Cause LogMFL	12.3673*	Reject	Unidirectional
LogMFIV does not Granger Cause LogGDP	5.7883**	Reject	Bi-directional

LogGDP does not Granger Cause LogMFIV	2.9995***	Reject	Bi-directional
LogINFR does not Granger Cause LogGDP	4.6969**	Reject	Unidirectional
LogGDP does not Granger Cause LogINFR	0.9840	Accept	Zero
LogGEX does not Granger Cause LogGDP	0.3970	Accept	Zero
LogGDP does not Granger Cause LogGEX	15.5151*	Reject	Unidirectional
LogMFD does not Granger Cause LogGDP	3.0281***	Reject	Bidirectional
LogGDP does not Granger Cause LogMFD	8.7441*	Reject	Bi-directional

Source: *Author's computation using Eviews 10, (2020).* Note: ***, ** and * denote rejection of null hypothesis of no Granger-causality between each pair of variables at 10%, 5% and 1% respectively because the p-values are less than 0.10, 0.05 and 0.01 respectively.

Table 8 reveals that there are unidirectional causalities running from economic growth to microfinance loans, and government expenditure. Likewise, a unidirectional causality is established to flowing from inflation rate to economic growth in Nigeria. This finding is similar to that Eigbiremolen and Anaduaka(2014) who show that there is a unidirectional directional causality running flows from economic growth to microfinance growth in Nigeria.

In the same vein, this study found the existence of a bi-directional causality between microfinance deposit and economic growth; and as well as mutual causality between microfinance investment and economic growth. This finding is inconsonance with the findings of Sultan and Masih (2016) who show the existence of a bidirectional causality existing between microfinance and economic growth in Bangladesh.

Conclusion and Recommendations

This study examined the effect of microfinance banks on the economic growth of Nigeria between 1992 and 2019 using annual times series obtained from the Central Bank of Nigeria (2019)'s statistical bulletin. Autoregressive Distributed Lag (ARDL) Model and pairwise Granger causality tests were employed in the analysis.

Empirical findings from this study show that microfinance banks loans and microfinance banks deposit have a long-run positive and significant effect on economic growth in Nigeria. Furthermore, microfinance banks investment does not exert significant effect on economic growth in Nigeria in the long-run. In the short-run, microfinance loans and microfinance investment have negative and non-significant effect on economic growth of Nigeria. Microfinance deposit, government expenditure and inflation rate have short-run positive and non-significant effect on economic growth of Nigeria. The Error Correction Term (ECT) (-0.1760) shows that the model corrects any distortion to it at the rate of 17.6 per cent per annum.

Furthermore, this paper confirms unidirectional causalities running from economic growth to microfinance loans, and government expenditure. Likewise, a unidirectional causality is established to flowing from inflation rate to economic growth in Nigeria. This study found the existence of a bi-directional causality between microfinance deposit and economic growth; and as well as mutual causality between microfinance investment and economic growth.

The study thus concludes that microfinance banks have long-run positive effect on the economic growth in Nigeria. There is a need for government of Nigeria to empower microfinance banks through funding and capacity building to facilitate increased microfinance banks activities in the economy. The Government of Nigeria should create enabling environment and programmes in the economy capable of stimulating growth that will further enhance the performance of the microfinance sub-sector in Nigeria.

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