

MICROFINANCE ACTIVITIES AND THEIR LONG-RUN IMPACT ON ECONOMIC GROWTH IN NIGERIA: EVIDENCE FROM ARDL ANALYSIS (1993-2023)

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Abstract

Microfinance has been globally recognized as a catalyst for economic growth, especially in developing economies such as Nigeria. Despite various efforts to improve access to finance, many low-income individuals and small enterprises remain excluded from the formal financial system. This study examines the effect of microfinance activities—savings, lending, and investment—on Nigeria's economic growth between 1993 and 2023, using secondary data from the Central Bank of Nigeria. The study employed the Autoregressive Distributed Lag (ARDL) model for the data analysis. The findings show that microfinance savings significantly boost GDP in the long run, while lending and investment exhibit statistically insignificant effects. Inflation and exchange rates negatively affect growth, while government expenditure has a significant positive influence. The study recommends strengthening savings mobilization, improving credit mechanisms, and implementing macroeconomic stabilization policies.

Keywords: Microfinance activities, economic growth evidence ARDL analysis

1.0 Introduction

Microfinance banking plays a critical contribution to stimulating economic growth by improving the socio-economic status of low-income, self-employed individuals such as traders, farmers, hairdressers, barbers, and artisans in Nigeria and globally (Arinzeh, 2022). By providing access to financial services, microfinance creates a robust financial system tailored to meet the needs of the impoverished in an effective and efficient manner (Fowowe et al., 2022). Establishing a strong financial system is crucial for economic advancement, particularly in developing nations such as Nigeria (Sun & Chang, 2020). Even with worldwide initiatives aimed at promoting economic growth and decreasing poverty, a major issue persists: numerous people do not have access to formal financial services for loans and savings, which hinders productivity and economic progress (Morduch, 2023). Microfinance institutions (MFIs) have become an essential resource for bridging this gap by offering financial services to neglected communities (Chukwujindum & Kalu, 2023).

Numerous studies have examined how microfinance influences economic growth in Nigeria. Ezeanyejí et al. (2020), for example, assessed the effect of microfinance bank lending on economic growth using the ARDL bounds test, and found that microfinance bank loans do not significantly contribute to GDP growth. Ochonogor (2020) used error correction model and OLS to see how microfinance institutions affect economic development in Nigeria. The study discovered a positive relationship between microfinance loans and human development, suggesting that MFIs promote economic growth and social capital formation.

Furthermore, Onyeiwue et al. (2020) investigated how financing for SMEs impacted Nigeria's economic growth through an analysis of timeseries data from 1999 to 2018. Their analysis, based on Ordinary Least Squares estimation, revealed that lending rates and gross capital formation reduce the average SME contribution to GDP (ASGDP) by 7% and 5%, respectively, while electricity distribution increases ASGDP by 4.6%. Surprisingly, credit to SMEs did not have expected significant effect on growth.

The reviewed studies emphasize the crucial function of microfinance in economic progress, concentrating on poverty reduction, financial inclusion, and GDP expansion. As an illustration, Odeyale and Ibrahim (2024) discovered favorable connections between microfinance metrics, including loan distributions and the quantity of microfinance organizations, and the growth of Nigeria's GDP. Nevertheless, Ananwude & Lateef (2024) uncovered no notable impacts of microfinance bank operations on the Human Development Index (HDI) of Nigeria. In the same vein, Chukwujindum & Kalu (2023) noted that although microfinance loans had a beneficial effect on GDP, microfinance savings exhibited a detrimental impact, suggesting diverse results from various microfinance operations. Ali (2023) also observed that microfinance significantly influenced economic growth in rural Yemen, where there was a lack of formal financial services.

However, other studies highlight difficulties in the execution of microfinance. Otegunrin et al. (2022) discovered that microfinance banks had a sustainable yet restricted immediate impact on Nigeria's economic growth, with microfinance inadequately tackling poverty alleviation or joblessness in the short term. Babalola et al. (2023) highlighted operational inefficiencies and elevated loan defaults as major obstacles to microfinance sustainability in Nigeria, recommending capacity-building and regulatory changes. Furthermore, Oteng-Abayie et al. (2022) noted that microfinance diminished spatial inequality in Ghana, although differences in access to microfinance persisted among districts.

Despite several global and national efforts to stimulate economic growth and reduce poverty, a large segment of the population in developing countries, including Nigeria, continues to lack access to formal financial services such as credit, savings, and investment mechanisms. This exclusion remains a significant barrier to increased productivity, job creation, and inclusive economic development (Morduch, 2023; Sun & Chang, 2020). Microfinance institutions (MFIs) have emerged as key instruments for addressing this challenge by extending financial services to underserved and low-income populations (Chukwujindum & Kalu, 2023). However, the effectiveness of microfinance in promoting sustainable economic growth remains contested in the literature.

Empirical studies reveal conflicting evidence regarding the contribution of microfinance to Nigeria's economic development. For instance, while Ali (2023), Ochonogor (2020) and

Odeyale and Ibrahim (2024) found positive impacts, Ananwude and Lateef (2024), Ezeanyejí et al. (2020) and Onyeiwu et al. (2020) reported no impact. Moreover, although Chukwujindum and Kalu (2023) found a negative effect of micro-savings on GDP highlighting varied outcomes across microfinance components. In addition to mixed empirical findings, operational inefficiencies, high loan default rates, and short-term limitations in addressing poverty and unemployment have also been identified as major challenges facing the microfinance sector in Nigeria (Babalola et al., 2023; Otekunrin et al., 2022). While microfinance has reduced spatial inequality in other countries such as Ghana, access disparities still persist in Nigeria (Oteng-Abayie et al., 2022).

Another critical gap in the literature is the lack of disaggregated analysis of microfinance components. Most existing studies treat microfinance as a homogenous construct without distinguishing the specific contributions of micro-savings, micro-lending, and micro-investments to economic growth. These limits understanding of how different microfinance services individually affect macroeconomic indicators such as GDP. Furthermore, limited attention has been given to examining both short-term and long-term effects of these services, especially within the Nigerian context (Ali, 2023). Given these issues, there is a pressing need for research that investigates the differentiated impacts of microfinance components on economic development in Nigeria. By exploring how micro-savings, micro-lending, and micro-investments influence economic growth, this study aims to fill existing knowledge gaps and provide evidence-based insights to guide policy formulation and enhance the effectiveness of microfinance interventions.

Research Hypotheses

H₁: Microfinance saving does not significantly affect economic growth in Nigeria.

H₂: Microfinance lending does not significantly affect economic growth in Nigeria.

H₃: Microfinance investment does not significantly affect economic growth in Nigeria.

H₄: Exchange rate does not significantly affect economic growth in Nigeria.

H₅: Inflation rate does not significantly affect economic growth in Nigeria.

H₆: Government expenditure does not significantly affect economic growth in Nigeria.

2.0 Literature Review

Originally formulated by Gurley and Shaw (1960), the Financial Intermediation Theory emphasizes the critical function of financial intermediaries, such as commercial banks and microfinance institutions (MFIs), in channeling funds from savers to borrowers, particularly in the context of market imperfections (Konstantakopoulou, 2023). The theory posits that intermediaries mitigate key financial transaction frictions such as information asymmetry, high transaction costs, and moral hazard, thereby enabling more efficient and widespread economic activity (Mandy, 2023; Ketokivi & Mahoney, 2020).

Within this theoretical context, microfinance savings, microfinance lending, and microfinance investments represent core financial intermediation activities. MFIs mobilize savings from economically active low-income individuals, often located in rural or semi-urban areas, and reallocate these funds in the form of loans and productive investments to micro and small enterprises excluded from traditional financial systems (Ratnawati, 2020; Ochonogor, 2020).

This efficient allocation of financial resources supports business formation, expansion, and income generation, which in turn drive macroeconomic outcomes such as employment, poverty reduction, and GDP growth (Bongomin et al., 2021).

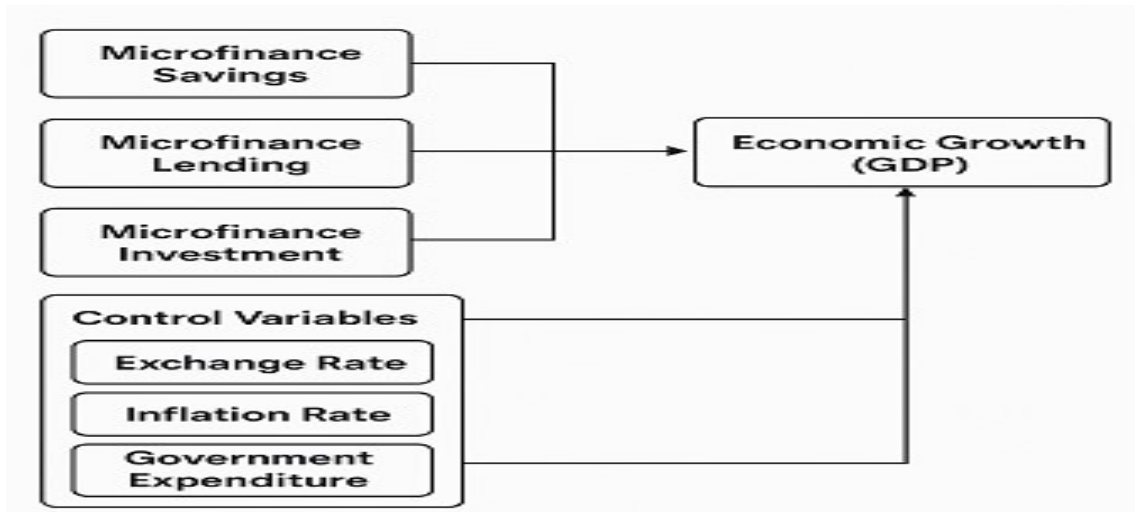
Thus, this theory provides a strong foundation for analyzing how microfinance variables, savings, lending, and investments, affect economic growth in Nigeria. It also justifies the inclusion of government expenditure in the analysis, as public spending can either complement or crowd out private financial intermediation efforts by influencing the flow and availability of financial resources.

Endogenous Growth Theory

The Endogenous Growth Theory, developed by Romer (1986) and Lucas (1988), argues that long-term economic growth is primarily influenced by internal, rather than external, factors, such as innovation, human capital accumulation, and institutional quality (Ehrlich & Pei, 2020). The theory highlights that sustained growth results from policies and activities that enhance knowledge diffusion, financial development, and investment in productivity-enhancing sectors (Epicoco, 2020). In alignment with this theory, microfinance institutions in Nigeria contribute to endogenous growth by facilitating micro-lending, micro-savings, and micro-investment activities that empower entrepreneurs and microenterprises. These financial services enable low-income individuals to create and expand income-generating ventures, thereby enhancing their productivity and long-term economic contribution (Ananwude & Lateef, 2024; Ezeanyejji et al., 2020; John & Lawal, 2019).

Additionally, the theory supports the inclusion of inflation rate and exchange rate as key macroeconomic variables. High inflation may erode the real value of savings and returns on investment, thereby discouraging productive financial behavior. Similarly, exchange rate volatility can influence import costs, competitiveness, and overall investment incentives. These external shocks, although outside the direct domain of MFIs, can significantly modulate the effectiveness of internally driven growth mechanisms that the theory emphasizes. Empirical studies reinforce the relevance of this theoretical framework. For instance, Amaegberi and Krokeyi (2023) and Godfrey (2022) found that microfinance loans and deposits have a significant and positive effect on Nigeria's economic growth. Ogiemudia et al. (2022) further demonstrated that MFIs play an important role in increasing productive investment, savings, and asset accumulation, internal levers consistent with the tenets of endogenous growth theory.

2.2 Conceptual Framework



Source: Author

Empirical Review

Ochonogor (2020) studied how microfinance institutions (MFIs) help improve Nigeria's economic development. Using statistical methods, the study found a long-term link between microfinance lending and the Human Development Index (HDI), showing that MFIs have a positive impact on people's well-being and the economy. The study suggested that more effort should be made to inform the public about the benefits of microfinance loans. It also recommended that the Central Bank of Nigeria (CBN) should involve MFIs in managing special funds like the SME Credit Guarantee Schemes, to make it easier for people to access low-interest loans and continue improving living standards in the country.

Ezeanyejji et al. (2020) studied how microfinance relates to poverty reduction and economic growth in Nigeria between 1992 and 2018. The study found that microfinance activities did not make a big difference in reducing poverty or improving the economy. In fact, microfinance loans had a negative effect on job creation because many small businesses could not earn enough to stay afloat, causing them to keep borrowing without real progress. The researchers said this was mostly due to Nigeria's tough business environment. They suggested that microfinance institutions should focus more on supporting productive businesses, and that the government should help expand microfinance services in rural and semi-urban areas to boost savings and create more jobs.

Barguellil and Bettayeb (2020) studied how microfinance affected economic development in Tunisia using data from the Enda Tamweel microfinance institution from 1995 to 2017. They used a statistical method called Vector Autoregressive (VAR) and found that microfinance helped reduce both poverty and income inequality. The study also showed that microfinance supports economic development more through its focus on helping people socially, while financial performance mainly helps the microfinance institution stay strong and stable over time.

Zeb et al. (2021) examined the role of microfinance institutions (MFIs) in fostering economic development, with a focus on outreach, growth, and the key challenges faced by microfinance banks (MFBs) and MFIs in Muzaffarabad, Pakistan. Utilizing data from microfinance

institutions and banks, along with qualitative insights from interviews and focus group discussions, the study evaluated lending operations, poverty headcount figures, service delivery, and the potential for expanding microfinance in the region. The findings revealed that the sector experiences financial instability, largely due to reliance on conventional funding sources, and is constrained by various internal and external barriers to growth.

Adnan and Kumar (2021) investigated the contribution of microfinance to economic development, with a particular focus on India. They examined how microfinance institutions (MFIs) deliver financial services, including loans, savings, and insurance, to low- and moderate-income individuals and small enterprises. These services, notably low-interest microloans, are crucial for enabling small business owners to escape poverty. MFIs support both economic and social progress by enhancing the financial stability, predictability, and security of disadvantaged populations. Such access allows individuals to better plan for their futures, improving their quality of life through education, healthcare, and increased autonomy. The study also pointed out that the high capital costs associated with microfinance contribute to elevated interest rates. Furthermore, MFIs often rely on commercial bank funding at prevailing market rates, which can increase lending costs.

Otekunrin et al. (2022) examined the impact of microfinance banks on Nigeria's economic development using data from 1996 to 2019. The study employed Vector Autoregressive (VAR) modeling to assess how microfinance banks' total loans and advances, investments, and deposits influenced per capita income. Results from the Johansen cointegration test confirmed a long-term relationship between microfinance banks and Nigeria's economic development. However, the VAR analysis indicated that, in the short term, microfinance bank activities had a positive but statistically insignificant effect. The study concluded that microfinance banks have not yet made a significant short-term impact on poverty alleviation, unemployment reduction, or improvements in living standards.

Chukwujindum and Kalu (2023) investigated the impact of microfinance on Nigeria's economic development using the Autoregressive Distributed Lag (ARDL) model. They analyzed secondary data from 2000 to 2020 sourced from the World Development Indicators and the Central Bank of Nigeria's statistical bulletin, employing E-views 10 for hypothesis testing. Their results showed a significant relationship between microfinance savings (MFSAVs) and GDP, with a decrease in microfinance savings negatively affecting GDP (coefficient = -0.0685, $p = 0.0447$). In contrast, an increase in microfinance loans positively influenced GDP (coefficient = 0.0448, $p = 0.0229$). However, the study found no significant effect of microfinance investments on GDP (coefficient = 0.008, $p = 0.705$).

Babalola et al. (2023) provide a comprehensive review of the impact and sustainability of microfinance in Nigeria, focusing on its role in promoting economic empowerment. Through a detailed analysis of existing literature, the study explores the historical development, socio-economic effects, and the contribution of microfinance institutions to poverty reduction and entrepreneurial growth in Nigeria. While microfinance has significantly improved financial inclusion and supported entrepreneurship, it continues to face challenges such as high loan default rates and operational inefficiencies.

Ali (2023) studied how microfinance affects economic growth in Yemen from 1990 to 2022. Using data on microfinance loans and GDP from the World Bank, the study used SPSS to check the relationship between microfinance and growth. The results showed a positive and

important link, meaning microfinance helps boost economic development in Yemen. The effect was stronger in rural areas, where formal banks are less common, making microfinance a key way for small businesses and entrepreneurs to get money.

Odeyale and Ibrahim (2024) examined the influence of microfinance interventions on Nigeria’s economic development, with a focus on overall economic growth. Employing quantitative analysis and a literature review, the study assessed microfinance indicators such as loan disbursements and the number of microfinance institutions, and their relationship with real GDP growth. Using Fully Modified Ordinary Least Squares (FMOLS) estimation covering the period from 2003 to 2022, the findings revealed significant positive associations between microfinance activity and GDP growth. Specifically, both microfinance loan disbursements and the per capita number of microfinance institutions showed statistically significant and positive impacts on economic development.

Ananwude and Lateef (2024) examined the impact of microfinance bank operations on Nigeria’s economic development from 1986 to 2022. Using secondary data from the Central Bank of Nigeria and the World Bank, the study analyzed how microfinance credit, deposits, and investments influenced the Human Development Index (HDI). The Ordinary Least Squares (OLS) technique was employed for estimation, and the results indicated that none of the microfinance activities had a statistically significant effect on the HDI.

Table 1:
Summary Table of Literature Review

Author(s) & Year	Country	Variables	Method	Key Findings
Ochonogor (2020)	Nigeria	Microfinance lending, Human Development Index (HDI)	Statistical analysis	Long-term positive link between microfinance lending and HDI; MFIs improve well-being and economy. Recommended greater public awareness and CBN involvement in SME Credit Guarantee Schemes.
Ezeanyejiji et al. (2020)	Nigeria	Microfinance activities, poverty, economic growth, job creation	Empirical analysis	Microfinance had little impact on poverty reduction or economic growth; negative effect on job creation due to tough business environment. Suggested focus on productive businesses and rural expansion.
Barguelligil & Bettayeb (2020)	Tunisia	Microfinance, poverty, income inequality	Vector Autoregressive (VAR)	Microfinance reduced poverty and income inequality; promoted economic development mainly through social impact, with financial performance supporting institutional stability.
Zeb et al. (2021)	Pakistan	Microfinance outreach, growth, challenges	Mixed methods (quantitative & qualitative)	Sector suffers financial instability from conventional funding dependence; growth constrained by internal and external barriers.
Adnan & Kumar (2021)	India	Microfinance services (loans, savings,	Descriptive analysis	MFIs enable poverty escape via low-interest loans; improve social and economic welfare. High

		insurance), capital costs, interest rates		capital costs increase interest rates; reliance on commercial banks raises lending costs.
Otekunrin et al. (2022)	Nigeria	Microfinance banks' loans, advances, investments, deposits, per capita income	Vector Autoregressive (VAR), Johansen cointegration	Long-term relationship confirmed between microfinance banks and economic development; short-term positive but insignificant effects on poverty alleviation and living standards.
Chukwujindum & Kalu (2023)	Nigeria	Microfinance savings, loans, investments, GDP	Autoregressive Distributed Lag (ARDL)	Significant positive effect of microfinance loans on GDP; negative effect from declining savings; investments had no significant impact.
Babalola et al. (2023)	Nigeria	Microfinance, economic empowerment, poverty reduction, entrepreneurship	Literature review	Microfinance enhanced financial inclusion and entrepreneurship but faces challenges like high default rates and operational inefficiencies.
Ali (2023)	Yemen	Microfinance loans, GDP	Correlation analysis using SPSS	Positive significant relationship between microfinance and economic growth, especially strong in rural areas lacking formal banking.
Odeyale & Ibrahim (2024)	Nigeria	Microfinance loan disbursements, number of MFIs, real GDP growth	Fully Modified OLS (FMOLS)	Positive and significant effect of microfinance loan disbursements and number of MFIs on GDP growth.
Ananwude & Lateef (2024)	Nigeria	Microfinance credit, deposits, investments, Human Development Index (HDI)	Ordinary Least Squares (OLS)	No statistically significant effect of microfinance activities on HDI.

Source: Authors compilation, 2024.

3.0 Methodology

This study adopted ex-post facto research design, which is appropriate for examining events or data that have already occurred prior to the study. As such, the researcher had no control over or influence on the variables involved. Secondary data were utilized, sourced from the 2024 CBN Statistical Bulletin, covering the period from 1993 to 2023. The data were analyzed using the Autoregressive Distributed Lag (ARDL) model. ARDL model is less sensitive to endogeneity issues and capture potential lagged effects in the data. The ARDL model is well-suited for this study as it accommodates variables with different orders of integration (I(0) and I(1)) and provides a robust framework for exploring both short-run adjustments and long-run equilibria.

Model Specification

The link between the variables is now postulated as:

$$GDP = \beta_0 + \beta_1 MFSAV + \beta_2 MFL + \beta_3 MFINV + \beta_4 EXC + \beta_5 INF + \beta_6 GEX + \mu \quad (1)$$

Where; Δ GDP = Change in Gross Domestic Product, MFSAV = Microfinance Savings, MFL = Microfinance Lending, MFINV = Microfinance Investment, EXC = Exchange Rate, INF = Inflation Rate, GEX = Government Expenditure, β_0 = Constant, $\beta_1 - \beta_3$ = Estimation parameters, μ = Stochastic error term.

The model was adjusted so as to correspond with the study's objectives, concentrating on the direct effects of microfinance savings, loans, and investments on Nigeria's economic growth. Incorporating Microfinance Savings (MFSAV), the model considers the significance of savings generated by microfinance institutions, essential for economic stability (Musa et al., 2023). The integration of Microfinance Lending (MFL) and Microfinance Investments (MFINV) represents the key operations of these entities that impact expansion (Chukwujindum & Kalu, 2023). Inflation (INF), Exchange Rate (EXR) and Government Expenditure (GEX) serves as control variables for the study. This enhanced model provides a more focused examination of microfinance's contribution to Nigeria's economic growth.

Gross Domestic Product (GDP) is widely recognized as a comprehensive indicator of economic activity and is commonly used as a proxy for economic growth in empirical research. The choice of GDP is appropriate for this study because it provides a quantifiable and standardized benchmark for assessing economic performance over time. Moreover, GDP is frequently used in development finance literature as a dependent variable when analyzing the macroeconomic impacts of financial intermediation and policy interventions (Ezeanyejí et al., 2020; Godfrey, 2022).

Microfinance savings (MFSAV) captures the capacity of MFIs to mobilize savings, which contributes to capital formation and macroeconomic stability (Musa et al., 2023). microfinance lending (MFL) and microfinance investment (MFINV) represent core functions of MFIs that influence enterprise development and income generation, which are crucial for GDP growth (Chukwujindum & Kalu, 2023). In addition, exchange rate (EXC), inflation rate (INF), and government expenditure (GEX) are included as control variables, given their significant macroeconomic influence on growth trajectories in developing economies like Nigeria. Together, MFSAV, MFL, and MFINV provide a holistic view of microfinance operations, aligning with the financial intermediation theory and endogenous growth theory which underpinned the study.

4.0 Data Presentation and Interpretation of Result

Table 2:
Result of Summary Statistics

	GDP	MFSAV	MFL	MFINV	EXR	INF	GEX
Mean	62813.18	8290.936	46.49968	11.63806	170.2283	17.95140	4407.640
Max.	229912.9	47375.98	288.9400	34.44000	476.1334	72.83550	19808.44
Min.	1244.799	85.02790	2.450000	0.610000	21.88443	5.388008	160.8932
StdDev.	64835.39	10938.23	65.08217	9.956988	125.4358	15.81391	4745.401
Obs	31	31	31	31	31	31	31

Source: Authors compilation, 2024.

Table 2 presents the result of summary statistics for each variable over the selected time period. The summary statistics provide an initial overview of the central tendencies and dispersions of the variables used in the study. The average Gross Domestic Product (GDP) over the observed period is ₦62,813.18 million, with a standard deviation of ₦64,835.39 million. This large dispersion suggests significant variability in economic output across the years. The minimum and maximum GDP values, ₦1,244.80 million and ₦229,912.90 million respectively, further reflect this wide range, indicating periods of low and high economic performance within the sample period.

Microfinance indicators also show notable fluctuations. Microfinance Savings (MFSAV) has a mean of ₦8,290.94 million and a high standard deviation of ₦10,938.23 million, ranging from ₦85.03 million to ₦47,375.98 million. These wide spread reveals considerable growth and differences in savings mobilized by microfinance institutions overtime. Similarly, Microfinance Lending (MFL) has an average of ₦46.50 billion with a standard deviation of ₦65.08 billion, spanning from a minimum of ₦2.45 billion to a maximum of ₦288.94 billion. Microfinance Investment (MFINV), though lower in scale, also exhibits variation with a mean of ₦11.64 billion and a standard deviation of ₦9.96 billion.

The Exchange Rate (EXR) demonstrates high volatility, averaging ₦170.23 to the US dollar, but with a standard deviation of ₦125.44. The exchange rate ranged from ₦21.88 to ₦476.13, underscoring the extent of naira depreciation over the years. Inflation Rate (INF) also varied significantly, with an average of 17.95% and a maximum of 72.84%, reflecting episodes of macroeconomic instability. Government Expenditure (GEX) averages ₦4,407.64 million, with a minimum of ₦160.89 million and a maximum of ₦19,808.44 million, suggesting changing fiscal priorities or expansions over time.

Pre-estimation Tests

The unit root test, based on the Kwiatkowski Phillips-Schmidt-Shin (KPSS) procedure, was carried out to assess the stationarity of each variable, thereby reducing the risk of obtaining spurious regression results that can occur when working with non-stationary timeseries data. In addition, the ARDL Bounds Co-integration Test was employed to evaluate the presence of a long-run equilibrium relationship among the variables included in the model.

Table 3:

Kwiatkowski-Phillips-Schmidt-Shin Unit Root Test Result

Variables	t-statistics	p-value@5% significance level	Order of Integration
GDP	0.143244	0.146000	I(1)
MFSAV	0.144470	0.146000	I(1)
MFL	0.138413	0.146000	I(1)

MFINV	0.099119	0.146000	I(0)
EXR	0.128668	0.146000	I(0)
INF	0.123337	0.146000	I(1)
GEX	0.139398	0.146000	I(1)

Source: Authors compilation, 2024.

Table 3 shows the Kwiatkowski–Phillips-Schmidt-Shin unit root test result. GDP (Gross Domestic Product), MFSAV (Microfinance Savings), MFL (Microfinance Lending), INF (Inflation), and GEX (Government Expenditure) are non-stationary at level but become stationary after first differencing, hence they are integrated of order one, I(1). On the other hand, MFINV (Microfinance Investment) and EXR (Exchange Rate) have test statistics lower than the 5% critical value, indicating they are stationary at level I(0). Since the variables are a mix of I(0) and I(1) but none are I(2), it satisfies the condition for using the Autoregressive Distributed Lag (ARDL) bounds testing approach to test for cointegration and estimate both long-run and short-run dynamics in the model.

Correlation Analysis

This section presents the correlation coefficients of the relationship between Change in Gross Domestic Product (Δ GDP) and the independent variables used in this study, including Microfinance Savings (MFSAV), Microfinance Lending (MFL), Microfinance Investment (MFINV), Exchange Rate (EXC), Inflation Rate (INF), and Government Expenditure (GEX). It also examines the correlation coefficients among the independent variables to understand their interrelationships. The corresponding p-values are provided alongside the correlation coefficients (in bold) to assess the significance of each of these relationships.

Table 4:

Result of Correlation Analysis

	1	2	3	4	5	6	7
GDP	1.000000						
p-value	-----						
MFSAV	0.967896	1.000000					
p-value	0.0000	-----					
MFL	0.904124	0.965004	1.000000				
p-value	0.0000	0.0000	-----				
MFINV	0.537845	0.508782	0.489106	1.000000			
p-value	0.0018	0.0035	0.0052	-----			
EXR	0.964738	0.930254	0.876825	0.486235	1.000000		
p-value	0.0000	0.0000	0.0000	0.0055	-----		

INF	-0.197629	-0.109062	-0.072201	-0.315136	-0.267663	1.000000	
p-value	0.2866	0.5592	0.6995	0.0842	0.1455	-----	
GEX	0.979799	0.988472	0.962108	0.541841	0.953139	-0.160538	1.000000
p-value	0.0000	0.0000	0.0000	0.0016	0.0000	0.3883	-----

Source: Authors compilation, 2024.

Table 4 shows that Gross Domestic Product (GDP) has a positive coefficient correlation with Microfinance Savings (0.967896), Microfinance Lending (0.904124), Microfinance Investment (0.537845), Exchange Rate (0.964738) and Government Expenditure (0.979799) but has a negative coefficient correlation with Inflation Rate (-0.197629). The variables all have p-values lower than the conventional 5% (0.05) significance level except Inflation Rate. This means that the relationship between GDP and Inflation Rate is not statistically significant while the relationship between GDP and all other independent variables is statistically significant.

**Test of Hypotheses
ARDL Bounds Test**

The null hypothesis of the ARDL Bound Co-integration Test states that no long-run relationship exists among the variables. This is evaluated by comparing the computed F-statistic to the critical value bounds. If the F-statistic is greater than the upper bound I(1) of the critical values, the null hypothesis is rejected, indicating evidence of a long-run relationship. However, if the F-statistic is below the lower bound I(0), the null hypothesis cannot be rejected, implying the absence of a long-run relationship.

Test of Hypotheses

Table 5:

ARDL Bounds Test Result

Null Hypothesis: No long-run relationship exist		
Test Statistic	Value	k
F-statistic	20.82227	6
Significance	I(0) Bound	I(1) Bound
5%	2.45	3.61

Source: Authors compilation, 2024.

In Table 3, the F-statistic value of 20.82227 exceeds both the lower bound I(0) value of 2.45 and the upper bound I(1) value of 3.61 at the 5% significance level. Consequently, the null hypothesis is rejected,

confirming the presence of a long-run relationship among the variables, regardless of whether they are stationary at level or at first difference. Given this outcome, the next step involves estimating the ARDL cointegrating and long-run form, which includes the Error Correction Model (ECM). This approach will help determine both the short-run dynamics and the long-run equilibrium relationships within the model.

Regression Analysis

The regression analysis in this study employs the Autoregressive Distributed Lag (ARDL) method to assess the impact of the independent variables (Microfinance Savings, Microfinance Lending, Microfinance Investment, Exchange Rate, Inflation Rate, and Government Expenditure) on the dependent variable (GDP) in both the short and long run.

Table 6:

ARDL Cointegrating and Long Run Form

Dependent Variable: GDP				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MFSAV)	-0.236809	0.314005	-0.754157	0.4595
D(MFL)	-37.339598	28.381629	-1.315626	0.2032
D(MFINV)	57.158481	42.508035	1.344651	0.1938
D(EXR)	-51.807922	18.874190	-2.744908	0.0125
D(INF)	-7.142416	26.357314	-0.270984	0.7892
D(GEX)	2.216425	0.834527	2.655905	0.0152
CointEq(-1)	-0.229748	0.056795	-4.045218	0.0006

$$\text{Cointeq} = \text{GDP} - (5.5726 * \text{MFSAV} - 162.5240 * \text{MFL} + 248.7875 * \text{MFINV} + 97.2722 * \text{EXR} - 31.0880 * \text{INF} + 9.6472 * \text{GEX} + 2394.1890)$$

Long Run Coefficients				
MFSAV	5.572567	1.200747	4.640918	0.0002
MFL	-162.524034	111.442796	-1.458363	0.1603
MFINV	248.787547	184.965032	1.345052	0.1937
EXR	97.272231	56.310342	1.727431	0.0995
INF	-31.088024	113.550475	-0.273782	0.7871
GEX	9.647192	3.665606	2.631814	0.0160

C	2394.189017	5149.266713	0.464957	0.6470
			R-squared = 0.999513	
			F-statistic = 4562.845	
			Prob(F-statistic) = 0.000000	
			Durbin-Watson stat = 2.605173	

Source: Authors compilation, 2024.

Interpretation of Results and Discussion of Findings

Short-Run Dynamics

Table 5 presents the short-run estimates of the ARDL model. The results reveal that Gross Domestic Product (GDP) is positively related to Microfinance Investment (MFINV) and Government Expenditure (GEX), with coefficients of 57.158 and 2.216, respectively. This implies that a one-unit increase in MFINV and GEX is associated with a 57.16 and 2.22 unit rise in GDP. Conversely, GDP exhibits a negative relationship with Microfinance Savings (MFSAV) (-0.237), Microfinance Lending (MFL) (-37.340), Exchange Rate (EXC) (-51.808), and Inflation Rate (INF) (-7.142). This suggests that a one-unit increase in any of these variables is expected to reduce GDP by the corresponding amount.

However, statistical significance is only observed for Exchange Rate and Government Expenditure, both with p-values below the 5% threshold. All other variables, including MFSAV, MFL, and MFINV, are statistically insignificant in the short run. Accordingly, the study fails to reject the null hypotheses H_{01} , H_{02} , and H_{03} , which posit that micro-savings, micro-lending, and micro-investment have no significant short-term effect on Nigeria's economic growth.

Long-Run Estimates

In the long-run estimates, GDP demonstrates positive relationships with MFSAV (5.573), MFINV (248.788), EXC (97.272), and GEX (9.647), suggesting substantial long-term gains from increased microfinance savings, investment, and government expenditure. However, MFL and INF continue to exert negative effects on GDP, with coefficients of -162.524 and -31.088, respectively. Of all the variables, only Microfinance Savings and Government Expenditure are statistically significant in the long run, with p-values below 0.05. Thus, the study rejects H_{01} , confirming that micro-savings significantly affect long-run economic growth. Meanwhile, H_{02} and H_{03} are not rejected, indicating that micro-lending and micro-investment do not exert a statistically significant long-term influence on Nigeria's GDP.

Microfinance Savings (MFSAV)

In the short run, micro-savings exert a negative and statistically insignificant influence on GDP, possibly due to inefficiencies in mobilizing small-scale savings for productive use. However, the long-run impact is positive and significant, supporting findings by Odeyale & Ibrahim (2024), who noted that microfinance indicators are positively associated with GDP. This contrasts with Chukwujindum & Kalu (2023), who found a significant short-term negative effect, suggesting structural issues in the effective deployment of mobilized savings. The positive and statistically significant long-run effect of microfinance savings on GDP aligns

strongly with the Financial Intermediation theory's assertion that mobilized savings can be efficiently intermediated into productive uses. This supports the notion that when MFIs collect savings from low-income earners, these funds serve as a pool of capital that can be reinvested in microenterprises and other productive sectors, fostering macroeconomic growth (Bongomin et al., 2021).

Microfinance Lending (MFL)

MFL exhibits a consistently negative and insignificant relationship with GDP across both time horizons. This aligns with Ananwude & Lateef (2024), who reported that microfinance credit had no significant impact on the Human Development Index (HDI). The finding may reflect issues such as poor loan targeting, misuse of credit, and high default rates, which dilute the developmental impact of micro-lending. This outcome contradicts Chukwujindum & Kalu (2023), who found a positive link between micro-lending and GDP.

However, this finding deviates from the theoretical expectation of intermediation theory that credit allocation to underserved borrowers enhances economic growth. This may reflect inefficiencies such as poor loan targeting, high default rates, or credit misapplication, issues that reduce the effectiveness of financial intermediation (Ochonogor, 2020). Thus, while MFIs are structurally positioned to bridge financial gaps, operational weaknesses can undermine their theoretical potential.

Microfinance Investment (MFINV)

MFINV shows a positive but statistically insignificant effect on GDP in both the short and long run. This is consistent with the findings of Ananwude & Lateef (2024) and Chukwujindum & Kalu (2023), who reported similarly weak macroeconomic outcomes for microfinance investments. The limited impact could be attributed to the small scale of such investments or their concentration in low-growth sectors with limited multiplier effects. However, despite the positive effect, this finding negates the intermediation theory and suggests that investments facilitated by MFIs may be too small in scale or concentrated in low-growth sectors to generate macroeconomic traction. This again emphasizes the importance of not only the existence of intermediation mechanisms but also their efficiency and direction.

As for the finding that micro-savings have a significant impact on economic growth while micro-lending does not. This asymmetry between savings and lending impacts signals that microfinance institutions (MFIs) are stronger as deposit mobilizers than as credit intermediaries. While they succeed in attracting savings, they may lack the institutional capacity, frameworks, or regulatory support to ensure loans are channeled into productive investments that contribute to economic growth. This challenges the traditional model of intermediation, where savings should naturally flow into lending and investment.

Thus, the financial intermediation process in the microfinance space may be partial, incomplete, or distorted, thus limiting its full developmental potential. For financial intermediation to function effectively, both arms, resource mobilization and efficient allocation, must work in tandem. The findings imply that while MFIs in Nigeria have made strides in savings mobilization, there is a critical need to improve the quality, targeting, and oversight of micro-lending practices to realize the full potential of financial intermediation.

Post-estimation Tests

Post estimation tests help to verify if the regression result of this study does not violate some classical linear regression model assumptions and is thus valid to make relevant conclusions. These tests include the heteroskedasticity test (through the Breusch-Pagan-Godfrey), the autocorrelation test (through the Breusch-Godfrey LM test) and normality of residual tests (through the Jarque-Bera normality test).

Table7:

BreuschPagan-GodfreyHeteroskedasticityTest

F-statistic	1.547318	Prob.F(9,20)	0.1988
Obs*R-squared	12.31438	Prob.Chi-Square(9)	0.1962
ScaledexplainedSS	5.081704	Prob.Chi-Square(9)	0.8271

Source: Authors compilation, 2024.

The results presented in Table 4.5.1 display the outcome of the heteroskedasticity test, performed using the Breusch-Godfrey test procedure. Given that all p-values exceed the 0.05 significance level, the test statistics are not statistically significant. Therefore, the null hypothesis, which posits the presence of constant variance (i.e., no heteroskedasticity), is not rejected at the 5% significance level. This suggests that the regression models are free from heteroskedasticity, indicating that the variance of the error terms is stable across observations in all three regression models.

Table8:

Breusch-GodfreySerialCorrelationLMTTest

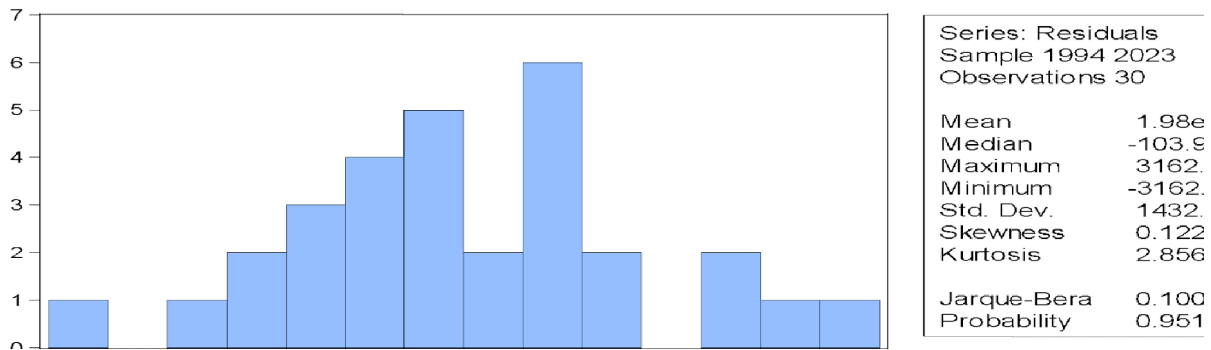
F-statistic	2.354933	Prob. F(1,19)	0.1414
Obs*R-squared	3.308275	Prob. Chi-Square(1)	0.0689

Source: Authors' compilation, 2024.

The results presented in Table 4.7 pertain to the autocorrelation test, carried out using the Breusch-Godfrey Lagrange Multiplier (LM) test procedure. Since the p-values for all models exceed the 0.05 significance level, the test statistics are not statistically significant. Consequently, the null hypothesis, which asserts the absence

of serial correlation, is not rejected at the 5% level. This indicates that the regression results are free from serial or autocorrelation issues, confirming the reliability of the model's residuals over time.

Table 9: Jarque-Bera Normality Test



The Jarque-Bera test results for all models show p-values exceeding the 0.05 significance level, indicating that the test statistics are not significant. Consequently, the null hypothesis asserting that the residuals are normally distributed cannot be rejected. This confirms that the residuals exhibit normal distribution, thereby upholding the normality assumption required in classical linear regression analysis.

5.0 Conclusion and Recommendations

This study confirms that microfinance savings play a vital role in driving long-term economic growth in Nigeria, while micro-lending and investment are not statistically significant. These findings suggest that while microfinance institutions are effective at mobilizing savings, the credit delivery system may be ineffective. This partial success in financial intermediation undermines the broader developmental role expected of microfinance. Thus, policy emphasis should shift toward improving loan targeting, monitoring, and borrower education to ensure that loans are used for productive economic activities. In addition, the Central Bank of Nigeria (CBN) and related agencies should involve MFIs in administering targeted credit schemes (e.g., SME Credit Guarantee Schemes), ensuring funds reach grassroots entrepreneurs.

Academic contributions

This study contributes to the literature by disaggregating microfinance activities (savings, lending, investment) and examining their individual effects on economic growth over three decades. In addition, it provides empirical evidence that challenges the widely held assumption that micro-lending is the most direct channel through which microfinance institutions influence economic growth.

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