

DETERMINANTS OF LENDING BEHAVIOR IN NIGERIAN MICROFINANCE BANKS

Alade Ayodeji Ademokoya¹, Surajudeen Alasinrin², AbdulSamad Gbolahan Arije³, and Fatai Olajide Alayande⁴.

Department of Accounting and Finance, Kwara State University Malete, Nigeria.

Corresponding Author: alade.ademokoya@kwasu.edu.ng

Abstract

Microfinance banking sector mobilize deposits from customers and extend credit to active poor and individuals who possess the capacity to direct these funds towards profitable ventures thereby, contributing to overall economic growth. The objective of this study is to examine the determinants of the lending behaviour of microfinance banks in Nigeria. This study covers all the micro-finance banks in Nigeria and hence, used aggregated data sourced from Central Bank of Nigeria (CBN) statistical bulletin and World Bank Development Index. To achieve these goals, the study adopts a quantitative research approach based on time series data and employs the auto-regressive distributed lag (ARDL) regression method for data analysis. In both the short and long run, the ARDL results highlight the significance of some macroeconomic variables. Specifically, the inflation rate which exhibits significant coefficients of (-0.049, -0.041) in both timeframes, the lending rate demonstrates significant coefficients of (-0.359, -0.055) in both the short and long run, and the exchange rate showcases a significant coefficient value of (-0.021) in the long run. Furthermore, institutional factors assume importance in shaping the lending behaviour of microfinance banks in Nigeria. Specifically, the corruption index displays a significant coefficient value of (-6.564) in the short run, while political instability reveals a significant coefficient value of (-0.573) in the long run. The regression outcomes further reveal that some bank-specific factors are instrumental in influencing the lending behaviour of microfinance banks in Nigeria. In both the short and long run, short-term investment demonstrates significant coefficients of (-0.0014, -0.0012), long-term investment exhibits significant coefficients of (-0.0024, -0.004), and in the long run, liquidity rate displays a significant coefficient value of (0.037). Study therefore, concludes that some macro-economic, institutional and bank specific factors collectively play a substantial role in influencing the lending behavior of microfinance banks in Nigeria, and recommends that in order to achieve a desirable lending behavior from microfinance institutions in Nigeria, policymakers should focus on maintaining macroeconomic stability.

Keywords: Microfinance; Institutional Factors; Bank Specific Factors; Macroeconomic Factors; Nigeria

1.0 Introduction

Lending and financing have undergone significant evolution, with historical roots tracing back to the industrial revolution, a period that accelerated commercial and production activities. The theoretical framework proposed by Harrod and Domar emphasized the crucial role of banks in a country's growth, asserting that they must save and

lend a proportion of their income to productive sectors. Lending, therefore, stands as a major driver of economic activities for households, firms, and governments, with microfinance banks recognized for playing a pivotal role in lending and transmitting monetary policy actions (Olarinde et al., 2022). The microfinance banking platform, operating through Microfinance Banks

(MFBs), serves as a crucial element in the financial system, mandated to fill a substantial vacuum in the financial services sector by providing a broad range of financial services to low-income households and microenterprises, including loans, money transfers, payment services, insurance, and deposits (Umar, 2022; Kiros, 2022).

Microfinance banks thrive on their ability to generate income through lending activities, driven by principles of profitability, liquidity, and solvency, irrespective of a country's economic policies. The expectation is that microfinance institutions could directly impact poverty reduction, yet it remains unclear whether their lending strength depends on individual, institutional, or macroeconomic factors (Caro, 2017). Despite their vital role, empirical literature suggests a not-so-encouraging lending behavior among microfinance banks, hesitating to extend credit to low-income individuals and microenterprises. Researchers posit that lending behavior is influenced by macroeconomic and bank-specific factors, including inflation, exchange rates, capital, economic growth, management efficiency, and bank profitability (Akinlo & Oni, 2015; Mousa & Chedia, 2016; Caro, 2017; Kim & Sohn, 2017; Nasrul, 2019; Tilahun, 2021; Le et al., 2022; Ahmad, 2023), with inconsistent results from previous studies necessitating further exploration.

The year 2000 witnessed a dramatic development of microfinance institutions globally, especially in developing countries, impacting various aspects such as the number of bank branches, groups, credit disbursement, loans, credit received, and savings-clients (Ngugi & Kerongo, 2015). In Nigeria, the Central Bank embraced microfinance banking in 2005, launching the Microfinance Policy Regulatory and Supervisory Framework (MPRSF) to address financing issues of MFBs (Caro, 2017). However, Caro (2017) highlights that these institutions are affected by the institutional and macroeconomic situation of the country, influencing the full development of their

activities and benefits to subscribers. Given the challenges faced by microfinance banks, including survival challenges stemming from the high risk of loan defaults among credit seekers (Umar, 2022), addressing these issues becomes imperative through empirical literature.

The problem statement arises from the critical role microfinance institutions play in poverty alleviation in Nigeria, despite the country having a healthy economic prospect, yet exhibiting one of the highest shares of poor people globally. The Multidimensional Poverty Index (MPI) Survey results for 2022 indicate that 63 percent of persons living in Nigeria are multidimensionally poor (Edeh, 2021). This is surprising considering the presence of over 910 microfinance banks, with a trend of loan growth from #300.2 billion in 2018 to #546.6 billion in 2021 according to the latest data from the National Bureau of Statistics (Edeh, 2021). The withdrawal of licenses from 132 microfinance banks in May 2023 has damaged public confidence in MFBs (CBN, 2023), placing them at a disadvantage compared to commercial banks, which are perceived as bigger and stronger (Igwe, 2023). The determinants of lending behavior in Nigerian microfinance banks from the purview of macroeconomic, institutional, and bank-specific variables is not an active area of research, forming the motivation for this study.

2.0 Literature Review

2.1 Conceptual Review

Microfinance Institutions:

Microfinance, as defined by Otero (1999) and Ledgerwood (1999), involves providing financial services, including savings and credit, to low-income self-employed individuals, particularly those neglected by traditional banks. Schreiner and Colombet (2001) further characterize it as an initiative aimed at improving access to small deposits and loans for impoverished households. This inclusive approach targets both urban and rural populations, addressing the financial needs of those unable to access formal financial services. In the literature, the terms microcredit and

microfinance are often used interchangeably, but Sinha (1998) emphasizes the distinction, noting that microfinance encompasses a broader spectrum of financial services such as savings, advances, insurance, pensions, and payment services, while microcredit specifically refers to small loans.

Microfinance institutions (MFIs) operate in both urban and rural areas, with government support broadening their reach, particularly in rural settings. NGO MFIs, in particular, have expanded their outreach to rural communities, contributing to financial inclusion. Although regulated MFIs have a limited product range, government-supported institutions have diversified to include remittance, loans, advances, pensions, and leasing products (Addae-Korankye, 2014). Criticisms, however, arise regarding the government-supported MFIs' distortion of the market, particularly in providing agricultural input supply loans. Additionally, challenges such as slowed development in savings mobilization persist despite its allowance under current regulations (Abebe, 2012).

Institutional Factors

Although, microfinance banks operate within an external environment shaped by uncontrollable forces that significantly impact their decision-making and performance (Ho, 2014). While these banks cannot directly control these external factors, building flexibility into their operating plans allows them to adapt to changes (Rajan, 2005). Political factors, as one category of external environmental factors, play a crucial role. Financial intermediaries find themselves entangled in the complex relationship between politics and finance, subject to political pressures that may influence government regulations and supervision processes (Dinc, 2005). Zickgraf (2019) emphasizes that political factors do not act in isolation but interact with social, economic, environmental, and demographic factors, forming a dynamic backdrop for microfinance operations.

Insecurity: This is another critical institutional factor affecting microfinance banks, extending

beyond communal crises, ethnic and religious violence, and political conflicts. Oriaklin and Osemwengie (2012) define national security as the perpetual improvement and safeguarding of a nation's unity, well-being, values, beliefs, democratic processes, governance mechanisms, and the welfare of its people. In the context of Nigeria, insecurity includes not only social and political unrest but also the challenges posed by natural disasters such as floods, earthquakes, and tsunamis (Tarasuk & Mitchell, 2020). The pervasive nature of insecurity, including terrorism, poses significant challenges to the stable operation of microfinance institutions in the Nigerian context (Hazzard et al., 2020).

Corruption Index: This represents a crucial institutional factor affecting microfinance operations. Transparency International defines corruption as the abuse of entrusted power for private gain (Transparency International, 2010, as cited in Akinlabi et al., 2011). Corruption is a multifaceted concept encompassing elements such as deceit, trickery, cheating, intentional deception, and dishonesty, all with the goal of altering facts for selfish personal gains (Akinlabi et al., 2011; Cleeve, 2012; Index, 2018; UNION, 2019). The extent of corruption in the operating environment can significantly influence the effectiveness and integrity of microfinance institutions, impacting their ability to fulfill their financial inclusion objectives.

Macroeconomic Determinants

Macroeconomic determinants, as highlighted by Athanoglou et al. (2005) and Deyganto (2021), encompass variables unrelated to bank management, reflecting the broader economic environment's influence on financial institutions. These determinants are rooted in macroeconomics, the study of the economy as a whole, incorporating aspects like total output, income, employment levels, and interrelationships among economic sectors (Karl et al., 2009; Caro, 2017). Key macroeconomic factors affecting financial institutions include inflation, economic growth (GDP), exchange rates, and lending rates.

Inflation: This is characterized by continuously rising prices or a falling value of money, plays a significant role in influencing economic well-being and the efficiency of exchange mechanisms in a market economy (Ansari-pour, 2017; Simser, 2015; Kavtaradze & Mokhtari, 2018). It has notable effects on credit markets, impacting the desirability of money as a store of value. Economic growth, measured by Gross Domestic Product (GDP), represents the total market value of goods and services produced within a country, serving as a crucial indicator of economic health (Ganju et al., 2015; Zhang & Graham, 2020). GDP growth, indicating the percentage change in real GDP adjusted for inflation, is pivotal in assessing a country's economic activity.

Exchange rates: This reflects the relative price of two currencies, have evolved from rigidly fixed systems to those influenced by market forces (Lothian, 2004; Yaqoob et al., 2022). Exchange rate dynamics impact international transactions, trade balances, and overall economic stability. Lending rates, determined by depository corporations, cater to the short- and medium-term financing needs of the private sector, varying based on creditworthiness and financing objectives (Cavallaro & Cutrini, 2019). Microfinance banks, operating as independent entities, set their lending rates, influencing the percentage of interest charged on loans, incorporating considerations like value preservation, risk compensation, and profit motives (Bhattarai, 2015; Sheriff & Amoako, 2014). These macroeconomic determinants collectively shape the operating landscape for financial institutions, affecting their strategies and performance.

Bank-Specific Factors

This pertains to internal efficiencies and managerial decisions and encompass various determinants like short-term investment, long-term investment, the number of reporting banks, liquidity ratio, loan-to-deposit ratio, and share capital. Short-term investments, often termed marketable securities, can be swiftly converted to cash within a period of

three to 12 months (Löv & Erkelenz, 2022). Microfinance banks engage in short-term permissible investment portfolios alongside microcredit activities, aligning with their dual objectives of financial profitability and social mission accomplishment (Babarinde, 2022).

Long-term investments: held for at least a year, include assets such as stocks, bonds, real estate, and cash, reflecting on a company's balance sheet and carrying risks for higher rewards (Othman & Albuainain, 2022). The valuation of long-term investments considers market value, investee's assets and results, and expected cash flows, adjusting the carrying amount in the case of a significant decline (Saleem, 2019). The number of reporting banks is significant, especially for microfinance institutions providing vital financial services to low-income earners and the unbanked. As of the latest data available, Nigeria boasts approximately 916 licensed microfinance banks (Osagioduwa et al., 2022).

Liquidity ratios: This is calculated as current assets divided by current liabilities, serve as indicators of a debtor's ability to meet short-term debt obligations with available cash (Osagioduwa et al., 2022). Meanwhile, the loan-to-deposit ratio (LDR), mandated by the Central Bank of Nigeria at a minimum of 65%, assesses a bank's liquidity by comparing total loans to total deposits, with compliance monitored based on average daily figures (CBN, 2020; Thisday, 2023). A high LDR may signal potential liquidity challenges, while a low ratio suggests underutilized earning potential.

Share capital: This represents the owners' investment in a company through common and/or preferred shares, holds fundamental importance (Krnić, 2014). The amount of share capital, subject to changes over time, influences a company's liabilities, dividends, and profits, shaping its financial structure (Valipour-Pasha, 2014). In summary, these bank-specific factors collectively contribute to the internal dynamics and strategic decisions that impact the overall performance and resilience of microfinance institutions.

2.2 Empirical Review

Sivatharshika and Thayaparan (2019) examined credit worthiness and repayment performance among small-holder farmers in Sri Lanka using application of probit model. The study adopted survey research design using descriptive statistics, and binary probit model to analyzed the data collected. Estimated results of the probit model suggest that among the demographic characteristics, age of the farmers, levels of education, number of family members positively influenced the loan repayment performance of smallholder farmers, while among farming characters, income, farm size, land ownership, farming experience, off-farm activities, purpose of loan and possibility of crop failure were positively impact on credit worthiness and repayment performance at different significant levels. On the other hand, knowledge about the loan and responsible guarantors were the major factors of farmers' attributes influencing the repayment performance in the study.

Similarly, Priyankara and Sumanasiri (2019) studied the determinants of microfinance loan default through an empirical investigation in Sri Lanka. Using an inferential and descriptive statistics to analyzed the data obtained from a survey research design. The findings confirmed that three factors are useful to explain microfinance loan default in Sri Lanka. These are the actions of the Microfinance Institute to control loan defaulting; the characteristics of the borrowers' family and loan group; and macro-economic issues.

Likewise, Khan, Saleem, Bari and Israr (2020) assessing the determinants of capital structure using evidence from Pakistani microfinance institutions. Exploring panel data, the study adopted descriptive and inferential statistics as analytical tools. Capital Structure, efficiency, productivity, size and profitability were used as variables. The study concluded that productivity has insignificant impact on capital structure while size, profitability, and efficiency were affected significantly.

2.3 Theoretical Framework

This study's theoretical framework draws on financial accelerator theory, institutional theory, moral hazard theory, and information asymmetric theory to explore interconnected factors influencing credit risk and lending decisions in microfinance institutions. The focus extends to the financial accelerator theory and bank capital channel theory, emphasizing how financial shocks can amplify and transmit to economic activity, creating a self-sustaining cycle through the impact on demand, output, and lending rates (Omondi, 2014). The macroeconomic factors influencing credit risk include inflation, which affects default rates and borrower capacity to service loans, potentially attracting less creditworthy borrowers who are prone to failure. Additionally, strong GDP growth contributes to a robust credit base and financial development, while exchange rate shocks impact banks due to their longer-term asset holdings and adverse lending rate changes (Shan & Jianhong, 2006; Amidu, 2006; Fidrmuc, & Kapounek, 2020; Beutler et al., 2017). The financial accelerator, rooted in flaws within financial systems, poses the risk of severe, long-term economic downturns without mitigating measures, with agency costs arising from information asymmetry between lenders and borrowers (Stiglitz & Weiss, 1981).

3.0 Methodology

The study employed an ex-post-facto research design to assess and ascertain the relationships between various variables. This approach is particularly well-suited for analyzing historical data, as it reduces the susceptibility to researcher manipulation. Ex-post-facto investigations aim to uncover potential associations by examining current conditions or situations and then retracing steps to identify plausible contributing factors.

Sources of Data Collection

Collecting relevant and valid data is paramount in any research endeavor, as it serves as the bedrock for achieving the study's objectives. In this particular investigation, data is derived from secondary sources, specifically the Central Bank

of Nigeria's (CBN) statistical bulletin, spanning multiple years. The study encompasses data from the year 1992 to 2021, and these specific time frames were selected based on several key considerations, including availability of data.

Firstly, the chosen timeframe aligns with the availability of comprehensive data, ensuring that our research is built on a robust foundation of historical information. Furthermore, the year 1992 represents a significant milestone as it marks the commencement of microfinance lending in Nigeria, making it a crucial starting point for our analysis.

Model Specification

It can be observed from the empirical review of this thesis that lending behavior of banks are determined by factors which could be internal (bank related factors) and/or external (macroeconomic factors, institutional factors). Thus, in respect of our set hypotheses on factors responsible for bank lending behaviour, two models are applied to investigate the relationship that exist between the loans and advance of the microfinance banks (dependent variable) and each of the other explanatory variables that have been identified through literature. Other factors not explicitly included in the model were captured by the error term.

To examine the macroeconomic determinant of banks' lending behavior of microfinance banks in Nigeria, this study estimated the model below which was adapted and modified from Olokoyo (2011). The original model is specified implicitly below:

$$LOA = f(Vd, Ip, Ir, Rr, Lr, Fx, Gdp, Z)$$

$$LOA = f(GGDP, INF, MS, EXR, LR, CI, IS, PI) \dots \dots \dots (2)$$

The explicit form of equation (1) above is represented as follows:

$$LOA = \beta_0 + \beta_1 GGDP_t + \beta_2 INF_t + \beta_3 MS_t + \beta_4 EXR_t + \beta_5 LR_t + \beta_6 CI_t + \beta_7 IS_t + \beta_8 PI_t + \mu_t \dots \dots \dots (3)$$

The variables were log (transformed) in order to give equal weight observation and when transformed into a log form equation 2 becomes:

$$LogLOA = \beta_0 + \beta_1 logGGDP_t + \beta_2 logINF_t + \beta_3 logMS_t + \beta_4 logEXR_t + \beta_5 logLR_t + \beta_6 logCI_t + \beta_7 logIS_t + \beta_8 logPI_t + \mu \dots \dots \dots (4)$$

Where:

$GGDP_t$: It is the growth in GDP in time period "t"

$$LOA = \alpha_0 + \alpha_1 Vd + \alpha_2 Ip + \alpha_3 Ir + \alpha_4 Rr + \alpha_5 LR + \alpha_6 Fx + \alpha_7 GDP + \mu \dots \dots \dots (1)$$

Where: LOA: Loans and Advances; Vd = Volume of Deposits; Ip = Investment Portfolio; Ir = Interest Rate (Lending Rate); Rr = Cash Reserve Requirement Ratio; Lr = Liquidity Ratio; Fx = Annual Average Official Exchange Rate of the Naira vis-à-vis the United States' Dollar; GDP = Gross Domestic Product at current market price; μ = error term controlling for unit-specific residual in the model; α_0 = intercept of the regression line; α is (i=1-7) = coefficients to be estimated.

From the original model the study excluded volume of deposits, investment portfolio, cash reserve requirement ratio, and liquidity ratio due to gaps identified in the empirical review and study objectives, suggesting that these variables might not substantially contribute to the understanding of the phenomena under investigation. The decision to exclude them was likely guided by a desire to streamline the model and focus on more relevant factors that align with the study's goals. However, it incorporated institutional variables such as corruption index, insecurity, and political instability, along with the macroeconomic variable of inflation in the modified model indicates a strategic refinement to encompass broader contextual factors deemed crucial for a comprehensive analysis. This adjustment is likely supported by literature or theoretical considerations suggesting that these institutional and macroeconomic variables play significant roles in influencing the dependent variables under scrutiny. Thus, the modified model, is expressed as follows:

INF_t : It is the inflation rate in time period “t”

MS_t : It is the money supply in time period “t”

EXR_t : It is the exchange rate in time period “t”

LR_t : It is the lending rate in time period “t”

CI_t : It is the corruption index in Nigeria in time period “t”

IS_t : It is the insecurity in Nigeria in time period “t”(Security Vote in the Nigerian Budget is use to proxy for insecurity)

PI_t : It is the political instability of the economy in time period “t”

μ_t : error term controlling for unit-specific residual in the model

β_0 : intercept of the regression line

β is (1 - 8): coefficients to be estimated and their apriori expectations are as follows: $\beta_2 - \beta_8 > 0$ implies that the variables have a positive relationship with the dependent variable (LOA) while $\beta_1 < 0$ shows that the variables have a negative relationship with the dependent variable (LOA). Note that the log of the variables was taken so that all observations in each variable will have equal weight so as to avoid serial auto correlation since the data covered a long period 10 years.

$$LA = f(K, Lq, Db, Lr) \dots \dots \dots (5)$$

$$LogLA = b_0 + b_1 LogK - b_2 LogLq + b_3 LogDb + b_4 LogLr + \mu \dots \dots \dots (6)$$

Where: b_0 = intercept of the regression line

$b_1 - b_4$ = coefficients to be estimated.

LA = Loans and Advances (dependent variable);

K = Capital base;

Lq = Liquidity position;

Db = Deposit base;

Lr = lending rate.

The modifications to Aliu's (2013) original model, which involved the exclusion of variables such as capital base, deposit base, and lending rate, and the introduction of new variables including short-term investment, long-term investment, number of reporting banks, loan-to-deposit ratio, and share capital, were likely driven by a recognition of the superior explanatory power and relevance of the latter set of variables. The decision to drop capital base, deposit base, and lending rate might have been influenced by a determination that short-term

$$LOA = f(SI, LI, NRB, LQR, LDR, SC) \dots \dots \dots (7)$$

$$LogLoA = b_0 + b_1 LogSI_t - b_2 LogLI_t + b_3 LogNRB_t + b_4 LQR_t + b_5 LDR_t + b_6 LogSC_t + \mu \dots \dots \dots (8)$$

Where: b_0 = intercept of the regression line

$b_1 - b_4$ = coefficients to be estimated.

LOA = Loans and Advances (dependent variable);

Empirical Model Two (Bank Specific Model)

This study will leverage the model developed by Aliu (2013) to investigate the unique bank specific determinants of lending behavior within the context of Nigerian microfinance banks. Aliu's original model, which serves as the foundation for this research, is articulated as follows:

and long-term investments, alongside indicators of reporting banks' activities like loan-to-deposit ratio and share capital, provide more nuanced insights into the dynamics influencing the phenomena of interest. These modifications reflect a strategic refinement aligning the model with the specific intricacies and objectives of the study. Therefore, the adapted model, which aligns with the specific research focus, is articulated as follows:

- SI_t = Short-term Investment in time period “t”,
- LI_t = Long-term Investment in time period “t”,
- NRB_t = Number of reporting Banks in time period “t”,
- LQR_t = Liquidity Ratio in time period “t”,
- LDR_t = Loan to deposit ratio in time period “t”,
- SC_t = Share capital in time period “t”

The apriori theoretical expectations for these parameters are as follows:

$$\beta_1 > 0; \beta_2 > 0; \beta_3 > 0; \beta_4 < 0; \beta_5 < 0; \beta_6 < 0; \beta_7 < 0$$

μ : error term controlling for unit-specific residual in the model

β_0 : intercept of the regression line

β is (1 to 7): coefficients to be estimated and their apriori expectations are as follows: $\beta_1\beta_2\beta_3 > 0$ implies that the variables have a positive relationship with the dependent variable (LOA) while $\beta_4\beta_5\beta_6\beta_7 < 0$ shows that the variables have a negative relationship with the dependent variable (LOA).The logarithm of the variables was taken so that all observations in each variable will have equal weight to avoid serial auto correlation since the data covered a long period of 31 years.

Method of Data Analysis

Table 1: Descriptive Statistics

The approaches in data analysis employed in this study include the factor analysis, multiple regression analysis and descriptive statistics. The simple descriptions of variables are treated in the descriptive analysis section, which contains each variable's mean, maximum, minimum, and standard deviation. Moreover, the most crucial component of the analysis is the regression analysis which aids in identifying the effect of determining variables and drawn correlations between dependent and independent variables (Brooks, 2014). The Autoregressive Distributed Lag (ARDL) technique was used to estimate the first model.

Variable	Mean	Std. Dev.	Min	Max	Obs
LOA	113644.6	204216.8	135.8	907000.1	30
GGDP	4.20	3.84	-2.03	15.32	30
INF	18.58	16.76	5.38	72.83	30
MS	23.22	15.91	-2.01	57.78	30
EXR	111.43	49.71	49.74	272.99	30
LR	18.69	3.83	11.48	31.65	30
CI	-1.16	0.12	-1.50	-0.90	30
IS	0.73	0.68	0.01	2.96	30
PI	-1.81	0.32	-2.21	-0.58	30
SI	5866.24	9110.88	0	26578.47	30
LI	3548.62	3010.31	118.4	8959.8	30
NRB	794.49	154.33	334.00	1013	30
LQR	59.86	11.54	36.27	83.34	30

LDR	66.31	24.32	23.43	126.19	30
SC	42357.16	53072.69	227	196477.5	30

Source: Authors' Computation (2024)

Note: LOA is Loans and Advances; GGDP is Growth of Gross Domestic Product; INF is Inflation Rate; MS is Money Supply; EXR is Exchange Rate; LR is Lending Rate; CI is Corruption Index; IS. is Insecurity Index; PI is Political Instability; SI is Short-Term Investment; LI is Long-Term Investment; NRB is Number of Reporting Banks; LQR is Liquidity Ratio; LDR is Loan to Deposit Ratio; and SC is Share Capital.

The summary statistics as provided in Table 1 depicts an overview of the key variables examined in the study. Among the variables, the mean value of Loans and Advances (LOA) is 113644.6, with a standard deviation of 204216.8, ranging from a minimum of 135.8 to a maximum of 907000.1,

based on 30 observations. Growth of Gross Domestic Product (GGDP) has a mean of 4.20 and a standard deviation of 3.84, with a minimum of -2.03 and a maximum of 15.32. Inflation Rate (INF) exhibits a mean of 18.58, a standard deviation of 16.76, and a range from 5.38 to 72.83. Other variables, such as Money Supply (MS), Exchange Rate (EXR), Lending Rate (LR), Corruption Index (CI), Insecurity Index (IS), Political Instability (PI), Short-Term Investment (SI), Long-Term Investment (LI), Number of Reporting Banks (NRB), Liquidity Ratio (LQR), Loan to Deposit Ratio (LDR), and Share Capital (SC), are also presented with their respective descriptive statistics.

Table 2: Results of the augmented Dickey-Fuller Unit Root Test (ADF-URT)

Variables	Unit Root at Level		Unit Root at First Difference		
	Test statistic	p-value	Test Statistic	p-value	I(d)
LOA	6.010	1.000	-3.216	0.019**	I(1)
GGDP	-2.141	0.228	-4.209	0.000***	I(1)
INF	-2.953	0.039**	-	-	I(0)
MS	-3.209	0.019**	-	-	I(0)
EXR	-3.043	0.031**	-	-	I(0)
LR	-3.417	0.010***	-	-	I(0)
CI	-1.891	0.336	-3.286	0.016**	I(1)
IS	-2.760	0.064	-6.215	0.000***	I(1)
PI	-1.574	0.497	-5.140	0.000***	I(1)
SI	1.130	0.996	-3.604	0.006***	I(1)
LI	-1.311	0.624	-4.008	0.001***	I(1)
NRB	-2.278	0.179	-7.648	0.000***	I(1)
LQR	-2.852	0.051	-4.625	0.000***	I(1)
LDR	-1.432	0.567	-5.479	0.000***	I(1)
SC	4.405	1.000	-8.140	0.001***	I(1)

Source: Authors' calculation (2024)

Note: LOA is Loans and Advances; GGDP is

Growth of Gross Domestic Product; INF is

Inflation Rate; MS is Money Supply; EXR is Exchange Rate; LR is Lending Rate; CI is Corruption Index; IS. is Insecurity Index; PI is Political Instability; SI is Short-Term Investment; LI is Long-Term Investment; NRB is Number of Reporting Banks; LQR is Liquidity Ratio; LDR is Loan to Deposit Ratio; and SC is Share Capital. (**) and (***) indicate stationarity at significance levels 5% and 1% respectively

Table 2 shows that all the variables employed in the study were either stationary at levels or first difference. The result of the Augmented Dickey Fuller (ADF) unit root test, indicate that the variables are mix of I (0) and I(1), which is a valid condition for the Auto-Regressive Distributive

Table 3: ARDL Estimation Results (Model 1)

Variables	Coefficients	Std. Err.	T	p-value
SHORT RUN RELATIONSHIP				
GGDP	-0.296	0.184	-1.61	0.205
INF	-0.049	0.014	-3.48	0.032
MS	0.015	0.083	0.18	0.87
EXR	0.002	0.027	0.07	0.948
LR	-0.359	0.143	-2.51	0.041
CI	-6.564	2.796	-2.35	0.045
IS	0.980	1.034	0.95	0.413
PI	2.303	3.676	0.63	0.575
CointEq(-1)	-1.825	0.445	-4.09	0.026
LONG RUN RELATIONSHIP				
GGDP	0.010	0.150	0.07	0.950
INF	-0.041	0.013	-3.14	0.037
MS	-0.038	0.051	-0.74	0.510
EXR	-0.021	0.005	-4.51	0.018
LR	-0.755	0.189	-4.01	0.028
CI	-0.536	3.337	-0.16	0.883
IS	0.082	0.434	0.19	0.861
PI	-0.573	0.242	-2.37	0.045
Constant	44.441	27.909	1.59	0.210
R-Squared	0.8948			
Adj. R-Squared	0.2987			
F-Statistic (Prob.)	3.91 (0.021)			

Source: Authors' calculation (2024)

Lag (ARDL) test. Given that two of the variables exhibit a higher degree of non-stationarity, they require differencing twice to become stationary before they can be employed for regression analysis.

In order to have a clear effect of macroeconomic and institutional indicators (Growth of Gross Domestic Product, Inflation Rate, Money Supply, Exchange Rate, Lending Rate, Corruption Index, Insecurity Index, and Political Instability) on loan and advances of microfinance institutions in Nigeria, the study estimated ARDL regression to check their influences on loans and advances of microfinance institutions in Nigeria context.

Note: GGDP is Growth of Gross Domestic Product; INF is Inflation Rate; MS is Money Supply; EXR is Exchange Rate; LR is Lending Rate; CI is Corruption Index; IS. is Insecurity Index; PI is Political Instability.

As depicted in Table 3 above, and for the long run estimates, inflation rate (INF, -0.041) has a statistically significant negative coefficient with an associated p-value of 0.037, which is statistically significant at 5% level of significance. Exchange rate (EXR, -0.021) has a statistically significant negative coefficient with an associated p-value of 0.018, which is statistically significant at 5% level of significance. Lending rate (LR, -0.755) has a statistically significant negative coefficient with an associated p-value of 0.028, which is statistically significant at 5% level of significance. Political instability (PI, -0.573) has a statistically significant negative coefficient with an associated p-value of 0.045, which is statistically significant at 5% level of significance. According to the statistically significant negative coefficient of inflation rate, a percent point increase in inflation rate in the long run will lead to decrease in loans and advances of microfinance institutions in Nigeria by 0.041 percent points. Also, the statistically significant negative coefficient of exchange rate implies that a percent point increase in exchange rate will lead to decrease in loans and advances of microfinance institutions in Nigeria by 0.021 percent points. Furthermore, lending rate with a statistically significant coefficient implies that a percent point increase in lending rate will bring about decrease in loans and advances of microfinance institutions in Nigeria by 0.755 percent points. More so, political instability with a significant negative coefficient implies that a

percent point increase in political instability will lead to decrease in loans and advances of microfinance institutions in Nigeria by 0.573 percent points. The long run ARDL estimation showed that other variables including GDP growth, money supply, corruption index, and insecurity index are not statistically significant in the long run to determine loans and advances of microfinance institutions in Nigeria as indicated by their respective p-values.

In terms of model evaluation, the R-squared value of 0.8948 indicates that 89.5% of the variations in loans and advances of microfinance institutions is explained by growth of GDP, money supply, inflation rate, exchange rate, lending rate, corruption index, insecurity index, and political instability index. The F-statistic explaining the explanatory power of the independent variables determining the dependent variables have coefficient of 3.91 with an associated p-value of 0.021, which indicates that the overall model of the ARDL estimation with respect to loans and advances of microfinance institutions is statistically significant. Hence, all the independent variables are jointly significant in predicting loans and advances of microfinance institutions in Nigeria.

In order to have a clear effect of bank-specific factors (Short-Term Investment, Long-Term Investment, Number of Reporting Banks, Liquidity Ratio, Loan to Deposit Ratio, and Share Capital) on loan and advances of microfinance institutions in Nigeria, the study estimated ARDL regression to check their influences on loans and advances of microfinance institutions in Nigeria context.

Table 4: ARDL Estimation Results (Model 2)

Variables	Coefficients	Std. Err.	t	p-value
SHORT RUN RELATIONSHIP				
SI	-0.0014	0.0005	-2.56	0.040
LI	0.0024	0.0006	3.95	0.029
NRB	-0.002	0.006	-0.29	0.778
LQR	-0.016	0.079	-0.20	0.846

LDR	0.007	0.049	0.11	0.913
SC	0.00001	0.00004	0.27	0.798
CointEq(-1)	-0.387	0.119	-3.25	0.038

LONG RUN RELATIONSHIP

SI	-0.0012	0.001	-2.46	0.042
LI	-0.004	0.001	-4.02	0.028
NRB	0.005	0.018	0.29	0.778
LQR	0.037	0.010	3.64	0.030
LDR	0.128	0.197	0.65	0.534
SC	0.0001	0.0002	0.66	0.533
Constant	-1.536	6.259	-0.25	0.813

R-Squared	0.8711
Adj. R-Squared	0.6318
F-Statistic (Prob.)	10.15 (0.0025)

Source: Authors' calculation (2024)

Note: SI is Short-Term Investment; LI is Long-Term Investment; NRB is Number of Reporting Banks; LQR is Liquidity Ratio; LDR is Loan to Deposit Ratio; and SC is Share Capital. (**) and (***) indicate stationarity at significance levels 5% and 1% respectively

In the long run estimates as shown in Table 4, short-term investment (SI, -0.0012) also has a statistically significant negative coefficient with an associated p-value of 0.042, which is statistically significant at 5% level of significance. Long-term investment (LI, -0.004) has a statistically negative coefficient with an associated p-value of 0.028, which is statistically significant at 5% level of significance. Liquidity ratio (LQR, 0.037) has a statistically significant positive coefficient with an associated p-value of 0.030, which is statistically significant at 5% level of significance. According to the statistically significant negative coefficient of short-term investment, a percent point increase in short-term investment in the long run will lead to decrease in loans and advances of microfinance institutions in Nigeria by 0.0012 percent points. Also, the statistically significant negative coefficient of long-term investment implies that a percent point increase in long-term investment will lead to decrease in loans and advances of microfinance

institutions in Nigeria by 0.004 percent points. However, liquidity ratio with a statistically significant positive coefficient implies that a percent point increase in liquidity ratio will bring about decrease in loans and advances of microfinance institutions in Nigeria by 0.037 percent points. The long run ARDL estimation showed that other variables including number of reporting banks, loan to deposit ratio, and share capital are not statistically significant in the long run to determine loans and advances of microfinance institutions in Nigeria as indicated by their respective p-values.

In terms of model evaluation, the R-squared value of 0.8711 indicates that 87.1% of the variations in loans and advances of microfinance institutions is explained by short-term investment, long-term investment, number of reporting banks, liquidity ratio, loan to deposit ratio, and share capital. The F-statistic explaining the explanatory power of the independent variables determining the dependent variables have coefficient of 10.15 with an associated p-value of 0.021, which indicates that the overall model of the ARDL estimation with respect to loans and advances of microfinance institutions is statistically significant. Hence, all the independent variables are jointly significant in predicting loans and advances of microfinance institutions in Nigeria.

Conclusion

This study concludes that macroeconomic factors have significant effect on lending behavior of microfinance banks in Nigeria and suggests that the macroeconomic environment affect lending activities of microfinance banks in Nigeria. More specifically, inflation rates, exchange rates, and lending rates significantly influence lending activities. Also, study posited that bank-specific factors have significant effect on lending behavior of microfinance banks. More specifically, short-term investments, long-term investment, and liquidity ratio are significant determinant of

lending activities of microfinance banks in Nigeria. On the other hand, study observed that institutional factors do not significantly influence lending behavior of microfinance banks in Nigeria. However, political stability being one of the institutional factors revealed a significant effect on lending behavior of microfinance banks in Nigeria. Based on the findings of this study, it is recommended that to achieve a desirable lending behavior from microfinance institutions in Nigeria, policymakers should focus on maintaining macroeconomic stability.

References

- Abadi, J., Brunnermeier, M., & Koby, Y. (2023). The reversal interest rate. *American Economic Review*, 113(8), 2084-2120.
- Abdymanapov, S. A., Toxanova, A. N., Galiyeva, A. H., Abildina, A. S., & Aitkaliyeva, A. M. (2016). Development of public-private Partnership in the Republic of Kazakhstan. *International Electronic Journal of Mathematics Education*, 11(5), 1113-1126.
- Ansari-pour, M. A. (2017). Indexation of Mahr (Dower): A Precursor of the Law of Inflation in Iran. *Arab Law Quarterly*, 31(2), 187-202.
- Abebe, D. (2012). Socioeconomic Factors Influencing Loan Repayment Performance of Microfinance Clients: The Case of Busa Gonofa Microfinance Institution-Ziway Branch, Oromia Regional State; Ethiopia (Doctoral dissertation, St. Mary's University).
- Abusharba, M. T., Triyuwono, I., Ismail, M., & Rahman, A. F. (2013). Determinants of capital adequacy ratio (CAR) in Indonesian Islamic commercial banks. *Global review of accounting and finance*, 4(1), 159-170.
- Aza, I. E., & Eyigege, I. (2018). The Influence of Financial Leverage, Customer Deposit and Capital Adequacy on the Financial Sustainability of some Selected Nigerian lending activities of microfinance banks in Nigeria. On the other hand, study observed that institutional factors do not significantly influence lending behavior of microfinance banks in Nigeria. However, political stability being one of the institutional factors revealed a significant effect on lending behavior of microfinance banks in Nigeria. Based on the findings of this study, it is recommended that to achieve a desirable lending behavior from microfinance institutions in Nigeria, policymakers should focus on maintaining macroeconomic stability.
- Micro Finance Banks. *Global Journal of Management and Business Research*, 18(C3), 23-33.
- Babarinde, G. F. (2022). Microfinance Banks' Investment Portfolio and Standard of Living in Nigeria: an Empirical Study. *Iranian Journal of Accounting, Auditing and Finance*, 6(2), 1-17.
- Bananuka, J., Tumwebaze, Z., Musimenta, D., & Nuwagaba, P. (2019). Determinants of adoption of international financial reporting standards in Ugandan micro finance institutions. *African Journal of Economic and Management Studies*.
- Banks, G. C., Ross, R., Toth, A. A., Tonidandel, S., Goloujeh, A. M., Dou, W., & Wesslen, R. (2023). The triangulation of ethical leader signals using qualitative, experimental, and data science methods. *The Leadership Quarterly*, 34(3), 101658.
- Barth, J. (2009). The rise and fall of the US mortgage and credit markets: a comprehensive analysis of the market meltdown. John Wiley & Sons.
- Bekhet, H. A., & Matar, A. (2013). Co-integration and causality analysis between stock market prices and their determinates in Jordan. *Economic Modelling*, 35, 508-514.
- Berger, A.N. & Mester, L. J. (1997). Inside the black box: What explains differences in the efficiency of financial institutions? *Journal*

- of Banking and Finance, 21, 895-947.
- Bhattacharai, Y. R. (2015). Determinants of lending interest rates of Nepalese Commercial Banks. *Economic Journal of Development Issues*, 39-59.
- Cao, J., Law, S. H., Samad, A. R. B. A., Mohamad, W. N. B. W., Wang, J., & Yang, X. (2021). Impact of financial development and technological innovation on the volatility of green growth—evidence from China. *Environmental Science and Pollution Research*, 28, 48053-48069.
- Cavallaro, E., & Cutrini, E. (2019). Distance and beyond: What drives financial flows to emerging economies? *Economic Modelling*, 81, 533-550.
- Cavanagh, C. L., Elliott, G., & Stock, J. H. (1995). Inference in models with nearly integrated regressors. *Econometric theory*, 11(5), 1131-1147.
- Central Bank of Nigeria [CBN] (2020). letter to all banks on loan deposit ratio. <https://www.cbn.gov.ng/out/2020/bsd/letter%20to%20all%20banks%20on%20ldr.pdf> Retrieved, 21 August, 2023
- Central Bank of Nigeria [CBN] (2023). Federal Republic of Nigeria Official Gazette. <https://www.cbn.gov.ng/Out/2023/CCD/Revoked%20License%20of%2047%20Microfinance.pdf>
- Dania, O. R., Igbawan, O. H., Akrawah, D. O., & Tafamel, E. A. (2022). Corporate Governance and Organisational Performance of LAPO Micro-Finance Bank in Nigeria. *Nigerian Academy of Management Journal*, 17(2), 115-121.
- Dania, O. R., Igbawan, O. H., Akrawah, D. O., & Tafamel, E. A. (2022). Corporate Governance and Organisational Performance of LAPO Micro-Finance Bank in Nigeria. *Nigerian Academy of Management Journal*, 17(2), 115-121.
- Deyganto, K. O. (2021). Determinants of Capital Structure in Financial Institutions: Evidence from selected Micro Finance Institutions of Ethiopia.
- Dmitry, S. (2021). Evaluating casual impact of microfinance: Challenges and results. *American Economic Journal*, 1-32.
- Erb, C. B., Harvey, C. R., & Viskanta, T. E. (1995). Country risk and global equity selection. *Journal of Portfolio Management*, 21(2), 74-83.
- European Personal Air Transportation System development. *Prace Instytutu Lotnictwa*, 14-32.
- Fagbemi, A., Yinus, S. O., & Olowookere-Oduyebo, A. (2022). Microcredit banks administration and entrepreneurship development. *KIU Interdisciplinary Journal of Humanities and Social Sciences*, 3(2), 357-376.
- Fidrmuc, J., & Kapounek, S. (2020). The risks and financial vulnerability of foreign bank ownership in CEECs: Evidence from exchange rate depreciation after the financial crisis. *Eastern European Economics*, 58(1), 34-48.
- Fonke, B. J. (2021). Socio-economic factors determining rural households access to credit and
- Igwe, I. (2023, May 24). FULL LIST: CBN Revokes 132 Microfinance Banks' Licences. Channel TV. Retrieved October 11, 2023, from <https://www.channelstv.com/2023/05/24/full-list-cbn-revokes-132-microfinance-banks-licences/>
- Ihenetu, H. I. (2021). Microfinance bank lending and poverty reduction in Nigeria. *International Journal of Innovative Finance and Economics Research*, 9(1), 50-59.
- Ilegbinosa, A.I., Peter, U.C., & Lekan, O.M. (2012). An analysis of interest and exchange rates effects on the Nigerian economy: 1975-2008. *Asian Economic and Financial Review*, 2(5), 648-657.
- Inder, B. (1993). Estimating long-run relationships in economics: A comparison of different

- approaches. *Journal of econometrics*, 57(1-3), 53-68.
- Index, C. P. (2018). *Corruption perception index*. Transparency International.
- Isthika, W., & Pratiwi, R. D. (2017). Lending Behavior of Indonesian Banks. *Advanced Science Letters*, 23(8), 7207-7210.
- Khamis, M., & Leone, A. M. (2001). Can currency demand be stable under a financial crisis? The case of Mexico. *IMF Staff Papers*, 48(2), 344-366.
- Khan, A., Saleem, M., Bari, A., & Israr, A. (2020). Assessing the Determinants of Capital Structure: Evidence from Pakistani Microfinance Institutions. *Pakistan Journal of Social Sciences*, 40(2), 1231-1240.
- Khanna, T., & Palepu, K. G. (2006). Emerging giants: Building world-class companies in developing countries. *Harvard Business Review*, 60-69.
- Kiros, Y. W. (2022). Determinants of loan repayment performance of micro and small enterprises: Empirical evidence from Somali Regional State, Ethiopia. *The Journal of Entrepreneurial Finance (JEF)*, 24(2), 59-76.
- Kofarmata, Y. I., & Danlami, A. H. (2019). Determinants of credit rationing among rural farmers in developing areas: Empirical evidence based on micro level data. *Agricultural Finance Review*.
- Maina, G. E. & Kalui, F. K. (2014). Assessing institutional factors contributing to loan defaulting in microfinance institutions in Kenya. *IOSR Journal of Humanities and Social Science*, 19(5); 105-123.
- Moussa, F. (2020). Impact of microfinance loans on the performance of SMEs: The case of Lebanon. *Business: Theory and Practice*, 21(2); 769-779.
- Nandini, M., & Shubha, B. N. (2021). An Empirical Study on Determinants of Loan Repayment Behaviour of SMEs Towards Commercial Banks. *SEDME (Small Enterprises Development, Management & Extension Journal)*, 48(1), 47-56.
- Nousheen, T. & Arsad, H. (2013). Impact of firm specific factors on profitability of firms in food sector. *Open Journal of Accounting* 2(2), 5 – 10.
- Nyamarebvu, P. (2013). An investigation into the causes of decline in a bank's profitability; the case of Standard Chartered Bank Zimbabwe (2009-2013) (Doctoral dissertation, BUSE).
- Obi, H. K. (2018). Determinants of Deposit Money Banks Profitability in Nigeria (Doctoral dissertation, Federal University of Technology, Owerri).
- Obuya, M. O., & Olweny, T. (2017). Effect of bank's lending behaviour on loan losses of listed commercial banks in Kenya. *International Journal of Management and Commerce Innovations*, 5(1), 135-144.
- Okereke, S. F., & Onyia, C. C. (2021). The role of micro finance banks in promoting financial inclusion in Nigeria. *British International Journal of Applied Economics, Finance and Accounting*, 5(6).
- Olunuga, A. O. (2022). Determinants of Bank Lending and Credit Accessibility of Micro, Small and Medium Enterprises. *İşletme Bilimi Dergisi*, 10(3), 299-313.
- profitability in Nigeria. *Research Journal of Finance and Accounting*, 5(12), 7-15.
- Rongai, I., County, K., & Mugambi, G. T. (2018). Determinants of loan performance in micro finance institutions. (B.Sc. Dessertation, The Co-Operative University of Kenya).
- Roxana, D.P. (2010). Analysis of the relationship between liquidity and profitability. *International Journal of Small Business and Entrepreneur*, 3(4), 44 – 71.
- Saadaoui, H. (2022). The impact of financial development on renewable energy development in the MENA region: the role of institutional and political factors. *Environmental Science and Pollution Research*, 29(26), 39461-39472.
- Saeedi, M. (2019). Reputation and adverse

- selection: theory and evidence from eBay. *The RAND Journal of Economics*, 50(4), 822-853.
- Saleem, K. S. A. (2019). The Impact of Audit Committee Characteristics on the Creative Accounting Practices Reduction in Jordanian Commercial Banks. *Modern Applied Science*, 13(6), 113-123.
- Yahya, A. T., Akhtar, A., & Tabash, M. I. (2017). The impact of political instability, macroeconomic and bank-specific factors on the profitability of Islamic banks: an empirical evidence. *Investment Management and Financial Innovations*, 14(4), 30-39.
- Yaqoob, N., Ali, S. A., Kannaiah, D., Khan, N., Shabbir, M. S., Bilal, K., & Tabash, M. I. (2022). The effects of agriculture productivity, land intensification, on sustainable economic growth: a panel analysis from Bangladesh, India, and Pakistan Economies. *Environmental Science and Pollution Research*, 1-9.
- Yitbarek Weldegerima Kiros, M. (2022). Determinants of Loan Repayment Performance of Micro and Small Enterprises: Empirical Evidence from Somali Regional State, Ethiopia. *The Journal of Entrepreneurial Finance*, 24(2), 3.
- Zhang, D., Mohsin, M., Rasheed, A. K., Chang, Y., & Taghizadeh-Hesary, F. (2021). Public spending and green economic growth in BRI region: mediating role of green finance. *Energy Policy*, 153, 112256.
- Zhang, F., & Graham, D. J. (2020). Air transport and economic growth: a review of the impact mechanism and causal relationships. *Transport Reviews*, 40(4), 506-528.
- Zhuo, L., Xu, L., Ye, J., Sun, S., Zhang, Y., Burstrom, K., & Chen, J. (2018). Time trade-off value set for EQ-5D-3L based on a nationally representative Chinese population survey. *Value in Health*, 21(11), 1330-1337.
- Zickgraf, C. (2019). Keeping people in place: political factors of (im) mobility and climate change. *Social Sciences*, 8(8), 228.
- Zucker, I. J. (1987). A systematic way of converting infinite series into infinite products. *Journal of Physics A: Mathematical and General*, 20(1), L13.