



Impact of Inflation and Exchange Rate Volatility on MSME Growth and Survival in Nigeria

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Abstract

Micro, small, and medium-sized enterprises (MSMEs) are central to Nigeria's employment creation and economic diversification, yet their growth and survival remain constrained by macroeconomic instability. This paper investigates the effects of inflation, interest rates, exchange rate volatility and other associated variables on MSME growth between 1991 and 2024 using the Autoregressive Distributed Lagged (ARDL) approach. The results show that inflation has significant lagged effects: the previous year's inflation reduces MSME growth (-0.463 ; $p = 0.003$), while later lags turning positive, suggesting delayed adjustments. Interest rate dynamics are mixed, with a positive first lag (0.783 ; $p = 0.046$) but a negative second lag (-0.630 ; $p = 0.027$). Exchange rate volatility exerts the strongest impact, with contemporaneous depreciation initially boosting competitiveness (0.515 ; $p = 0.005$), but prolonged depreciation reducing growth (-0.661 ; $p = 0.003$). Credit to MSMEs yields delayed benefits, with the second lag positive (0.238 ; $p = 0.008$). Government support is negative in the short run (-0.503 ; $p = 0.012$) but becomes positive in later lags, indicating that consistent application matters. The model demonstrates strong explanatory power ($R^2 = 0.981$; adjusted $R^2 = 0.889$), while the error correction term (-1.49 ; $p < 0.01$) confirms rapid adjustment to equilibrium. Overall, the findings confirm that macroeconomic instability undermines MSME resilience, while credit and sustained government interventions have positive long-run effects. The paper recommends, amongst others, stabilizing inflation and exchange rates, and incentivizing local input substitution to ensure MSMEs thrive as engines of inclusive growth in Nigeria.

Keywords: MSMEs, Inflation, Exchange Rate, ARDL Model, Credit Access

Jell Code: L26, E31, F31, C32, O16

1.0 Introduction

Micro, Small, and Medium Enterprises (MSMEs) play a crucial role in Nigeria's economic growth by generating employment, fostering innovation, and alleviating poverty. However, these enterprises face significant challenges that threaten their growth and survival, particularly in the face of macroeconomic instability. Over recent decades, Nigeria has experienced persistent inflation and exchange rate volatility, both of which have created a difficult environment for MSMEs (Sikiru & Salisu, 2025). Inflation raises the cost of goods and services and erodes consumers' purchasing power, while exchange rate fluctuations increase the cost of imported raw materials and equipment that many MSMEs depend on (Sanyal & Ehlen, 2025; Olusola et al., 2022). These economic conditions disrupt business planning, reduce profitability, and increase uncertainty for MSME operators.

Despite their importance, many MSMEs struggle to remain viable due to insufficient access to credit, high input costs, and the inability to hedge against exchange rate risks. Data from the Central Bank of Nigeria (CBN) between 1991 and 2024 further reveals a complex pattern: while credit to MSMEs fluctuated widely, peaking at ₦123.93 billion in 2019, MSME growth did not consistently respond to credit expansion. For instance, even during years of high credit availability such as 2019, MSME growth dropped to a historic low of -23.3% , underscoring that credit alone is insufficient without a stable macroeconomic environment. Conversely, periods of improved growth, such as in 2023 (48.7%), were also marked by more favorable

credit conditions (₦94.46 billion), suggesting that credit may support MSME expansion when paired with sound macroeconomic and institutional policies.

This dynamic is visually illustrated in Figure 1, which plots MSME growth alongside credit allocation over time. The graph highlights the lack of a direct or linear relationship between credit and growth and emphasizes the role of inflation, exchange rate volatility, and institutional support in mediating this relationship.

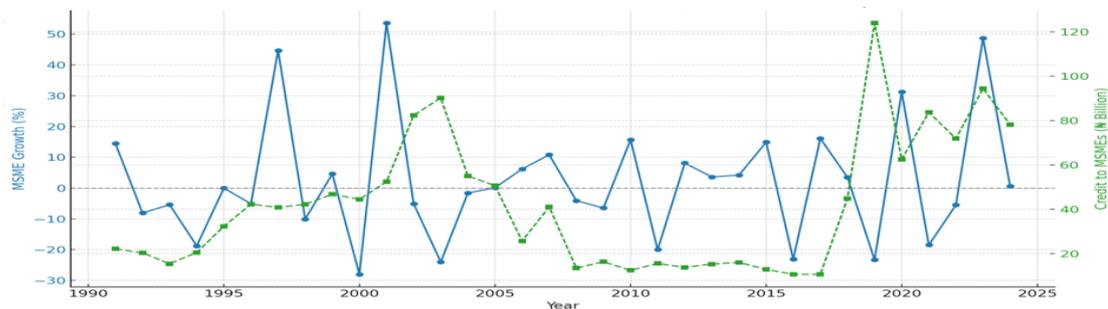


Figure 1: MSME Growth and Credit to MSMEs in Nigeria (1991–2024)

Source: CBN Statistical Bulletin and Annual Reports, 1991–2024

This trend emphasizes the need to examine how macroeconomic factors, particularly inflation and exchange rate volatility, interact with credit access to influence MSME outcomes. While existing studies have examined the effects of inflation or exchange rate fluctuations on small business growth, they often do so in isolation, without considering the combined or interactive effects of these variables. Additionally, most prior research tends to emphasize growth metrics such as output or contribution to GDP, with relatively little focus on the survival and long-term sustainability of MSMEs in volatile economic environments.

Furthermore, much of the available literature emphasizes the manufacturing sector or uses broad SME classifications, overlooking the sectoral diversity and specific vulnerabilities of MSMEs operating in Nigeria's trade, services, and agricultural sectors. Another critical gap is the limited reflection of recent macroeconomic shifts, including fuel subsidy removal, exchange rate unification, and post-2023 inflationary surges, that have reshaped the operational landscape for MSMEs in Nigeria. These gaps highlight the need for a more comprehensive and context-sensitive analysis.

This study seeks to fill these gaps by investigating how inflation and exchange rate volatility influence the growth and survival of MSMEs in Nigeria. It aims to analyze their effects on operational costs and profitability, understand the coping strategies adopted by businesses, and provide recommendations that could enhance MSME resilience. Understanding these dynamics is essential for the formulation of sound economic policies that support MSME development. The insights gained will not only contribute to academic research but also assist policymakers, entrepreneurs, and business support organizations in navigating the macroeconomic challenges faced by MSMEs. This study focuses on MSMEs across various sectors in Nigeria and considers recent economic trends to reflect the current realities faced by these businesses.

The remainder of this paper is organized as follows: Section 2 reviews the theoretical framework and relevant empirical literature underpinning the study. Section 3 describes the data sources, variables, and econometric methodology employed. Section 4 presents and interprets the empirical results, while Section 5 discusses the findings, draws conclusions, offers policy recommendations, and suggests directions for future research.

2.0 Literature Review

2.1 Conceptual Review

In Nigeria, MSMEs are defined by SMEDAN as firms employing fewer than 200 workers with asset values not exceeding ₦500 million (Ebitu, Basil, & Ufot, 2016). They are widely recognized as engines of employment generation and innovation, yet their growth and survival rates are undermined by persistent macroeconomic instability. Conceptually, MSME growth may be reflected in expanded sales, output, and employment, while survival denotes the ability to remain operational over time despite economic shocks.

2.2 Theoretical Review

Micro, Small, and Medium Enterprises (MSMEs) often exhibit heightened susceptibility to macroeconomic instability owing to their limited financial capacity, dependence on external inputs, and restricted access to institutional support. To understand how inflation and exchange rate volatility affect the growth and survival of MSMEs in Nigeria, this study draws on several pertinent economic theories. These theories provide the conceptual foundation for analyzing the direction and magnitude of the relationship between macroeconomic variables and MSME growth.

2.2.1 Monetary Theory of Inflation

Proposed by Milton Friedman (Monetarist School), this theory posits that inflation is fundamentally a monetary phenomenon, resulting from excessive growth in the money supply relative to output. High inflation erodes the real value of money, increases input prices, and reduces consumer purchasing power (Friedman, 1970). For MSMEs, these effects lead to rising production costs, shrinking profit margins, and reduced demand, all of which threaten their ability to survive and grow. This theory underpins the assumption that inflation negatively impacts MSME growth by increasing operational costs and reducing disposable income among consumers.

2.2.2 Purchasing Power Parity (PPP) Theory

Proposed by Gustav Cassel (1918), the PPP theory suggests that exchange rates adjust to equalize the purchasing power of different currencies. When inflation is higher in one country than in another, its currency tends to depreciate, causing exchange rate volatility (Officer, 1976; Wane, Resende, and Xie, 2025). In Nigeria, such volatility significantly affects MSMEs that rely on imported raw materials, equipment, or services, leading to increased costs and pricing instability. PPP supports the argument that exchange rate volatility, driven by inflation differentials, negatively influences MSME sustainability by raising the cost of foreign inputs and increasing uncertainty in pricing and planning.

2.2.3 Uncertainty and Investment Theory

Proposed by Bernanke (1983) and Dixit and Pindyck (1994), this theory argues that economic uncertainty, particularly from inflation and exchange rate fluctuations, discourages investment by increasing risk and reducing expected returns. For MSMEs with limited capital and risk buffers, this uncertainty can delay investment decisions, hinder expansion, or force operational downsizing. This theory explains how inflation and exchange rate volatility create a climate of uncertainty, which reduces MSMEs' willingness and ability to invest or expand operations (Udoh & Egwaikhide, 2010).

2.2.4 Institutional Theory

This theory focuses on the role of institutions, government policies, and support systems in shaping business environments. This theory emphasizes how institutional frameworks, including credit availability and government support programs, influence business outcomes (Barbar, 2025). In the Nigerian context, institutions like the Central Bank, SMEDAN, and the Bank of Industry play a crucial role in cushioning MSMEs against macroeconomic shocks. Institutional theory supports the inclusion of credit to MSMEs and government support as moderating variables that can reduce the adverse effects of inflation and exchange rate volatility on MSME growth.

These theories jointly establish a framework for examining how macroeconomic instability; specifically, inflation and exchange rate volatility, impacts the growth and survival of MSMEs. While the Monetary Theory of Inflation and PPP help explain the direct impact of macroeconomic conditions, the Uncertainty and Investment Theory accounts for behavioral responses by firms, and Institutional Theory underscores the significance of structural support structures in alleviating these effects.

2.3 Empirical Literature

Numerous empirical studies have explored the influence of macroeconomic instability, particularly inflation and exchange rate volatility, on the growth and sustainability of Micro, Small, and Medium Enterprises (MSMEs).

Chiani (2022) investigated the impact of inflation on SME growth in Tehran, Iran, using responses from 384 participants and regression analysis via SPSS. The findings revealed that rising inflation undermines MSME development by eroding purchasing power and increasing labor costs, thereby reducing profitability. Although based in Iran, this study is relevant for Nigeria as both countries grapple with inflation-driven constraints on small businesses. In the Nigerian context, Obiukwu and Adurogoye (2024) examined how inflation, interest rates, and exchange rate fluctuations affected SME growth between 2013 and 2024. Using linear regression and Pearson correlation, their study found that exchange rate volatility had a strong impact on SME output ($R^2 = 0.689$), primarily through its effect on input costs and purchasing power. Inflation was also negatively correlated with SME growth ($r = -0.142$), indicating that rising consumer prices weaken operational sustainability. The authors called for a balanced macroeconomic policy that prioritizes MSME resilience. Similarly, Olabisi and Akeju (2024) employed the ARDL model and GARCH(1,1) to evaluate the effects of inflation and exchange rate volatility on Nigeria's economic growth from 1985 to 2022. Their results showed that both inflation and exchange rate volatility adversely affected economic growth. Although the study's focus was on aggregate growth, the findings hold implications for MSMEs, which are more vulnerable to these macroeconomic shocks due to limited capital buffers.

Begum and Goyal (2023) assessed the relationship between inflation and MSME growth in India using trend analysis, correlation, and multiple regression. The correlation between inflation and MSME growth was weakly negative (-0.08), yet regression results showed that inflation significantly reduces economic output. While contextually different, this study provides a comparative benchmark and reinforces the need for inflation control to support MSME survival. Onakoya, Oladejo, and Adedapo (2024) focused on Nigeria and analyzed secondary data from 2001 to 2022. Using OLS and Error Correction Models, they found that inflation had a negative effect on SME funding, while interest rates had a positive impact. Exchange rate fluctuations showed no statistically significant effect on funding. The authors advocated for targeted monetary policies that prioritize low-interest funding channels for MSMEs. In contrast, Ebinum and Ehiedu (2025) examined the relationship between inflation

and SME growth in Nigeria using multiple inflation indicators; CPI, PPI, CIR, and WPI—within an ARDL framework. Surprisingly, the study found no significant impact of inflation on SME growth in both the short and long run. This suggests that inflation alone may not be a sufficient explanatory variable for MSME growth unless assessed alongside other structural and institutional factors.

Obiekwe and Edokobi (2025) provided a micro-level perspective by analyzing data from 450 MSME operators in Southeast Nigeria. Their OLS regression results indicated that GDP growth had a strong positive effect on MSME growth, while inflation, exchange rate depreciation, and high-interest rates had significant negative effects. Notably, government debt and inconsistent monetary policy further worsened business survival rates, highlighting the importance of macroeconomic stability for long-term sustainability.

Finally, Oyedepo, Rasaki, and Addo (2023) applied an ARDL approach to assess exchange rate fluctuations and their impact on Nigeria's manufacturing sector, which includes many MSMEs. Their findings confirmed that exchange rate volatility and import dependence negatively affected output, while capacity utilization improved growth. The authors recommended policies that stabilize exchange rates and promote domestic sourcing of raw materials.

While reviewed literature have explored the effects of inflation and exchange rate volatility on SME growth in Nigeria, most assess these variables independently. This limits understanding of their combined influence, especially under concurrent economic shocks. Further, prior research largely focuses on MSME growth, with limited attention to survival, particularly how prolonged inflation and exchange rate instability affect business continuity. Studies also tend to generalize across sectors, often prioritizing manufacturing, thereby overlooking the varied impacts on trade, services, and agriculture.

Notably, recent macroeconomic reforms in Nigeria; such as exchange rate unification and fuel subsidy removal, have intensified inflationary pressures and currency volatility. However, their implications for MSMEs remain underexplored. This study addresses these gaps by examining the joint impact of inflation and exchange rate volatility on MSME growth and survival in Nigeria, with emphasis on recent policy shifts and sectoral variation.

3.0 Methodology

3.1 Research Design

This study employs a quantitative research design utilizing time series econometric techniques to examine the impact of macroeconomic instability; specifically, inflation, interest rates, and exchange rate volatility, on the growth and survival of MSMEs in Nigeria. It also analyses how credit to MSMEs and government support influence or moderate these effects.

The empirical focus encompasses the years 1991 to 2024, facilitating an assessment of long-term structural trends, policy impacts, and recent economic shocks (e.g., exchange rate unification and subsidy removal). The study highlights the responses of MSMEs to macroeconomic fluctuations and institutional support within a volatile economic environment.

3.2 Data Sources and Variables

The study utilizes annual time series data sourced from reputable national and international sources such as the Central Bank of Nigeria (CBN) and the World Bank.

Table 1: Description of Variables, Proxies, Data Sources, and Expected Effects

Variable	Proxy / Source	Expected Effect	Type
MSME Growth	MSME Percentage contribution to GDP (CBN)	—	Dependent Variable
Inflation	Consumer price index annual % (CBN/World Bank)	Negative (-)	Independent Variable
Interest Rate	Monetary policy rate (World Bank)	Negative (-)	Independent Variable
Exchange Rate	NGN/USD annual average (World Bank)	Negative (-)	Independent Variable
Credit to MSMEs	Reports on sectoral credit (CBN)	Positive (+)	Independent Variable
Government Support	Credit to private sector (CBN)	Positive (+)	Independent Variable

The dependent variable (MSME growth) is proxied by MSME contribution to GDP, as reported by the NBS. The independent variables represent both macroeconomic instability (inflation, interest rate, exchange rate) and support mechanisms (credit access and government support).

3.3 Model Specification

The functional relationship is specified as follows:

$$MSMEG_t = f(INF_t, IR_t, EXCR_t, CREDIT_t, GOVSUP_t) \quad (1)$$

The econometrics form of the Equation is:

$$MSMEG_t = \beta_0 + \beta_1 INF_t + \beta_2 IR_t + \beta_3 EXCR_t + \beta_4 CREDIT_t + \beta_5 GOVSUP_t + \varepsilon_t \quad (2)$$

Where:

- $MSMEG_t$: MSME contribution to GDP at time t
- INF_t : Inflation rate at time t
- IR_t : Interest rate (CBN policy rate) at time t
- $EXCR_t$: Exchange rate (NGN/USD) at time t
- $CREDIT_t$: Credit to MSMEs at time t
- $GOVSUP_t$: Government support (credit to private sector as % of GDP) at time t
- ε_t : Error term

To ensure linearity, normalize scale differences, and stabilize variance across observations, all continuous variables; MSME growth, inflation, interest rate, exchange rate, credit, and government support, were transformed using their natural logarithms. This also allows for coefficient interpretation in terms of elasticities, providing a more intuitive understanding of the percentage change impact of each independent variable on MSME growth.

The equation will now turn to:

$$LMSMEG_t = \beta_0 + \beta_1 LINF_t + \beta_2 LIR_t + \beta_3 LEXCR_t + \beta_4 LCREDIT_t + \beta_5 LGOVSUP_t + \varepsilon_t \quad (3)$$

3.4 Estimation Strategy

The study uses the Autoregressive Distributed Lag (ARDL) bounds testing approach due to its suitability for small sample sizes and datasets with variables integrated at levels I(0) and I(1), but not I(2).

The steps include:

- Stationarity Tests: The Augmented Dickey-Fuller (ADF) test (Dickey & Fuller, 1979) and the Phillips-Perron (PP) test (Phillips & Perron, 1988) were used to determine the order of integration for all variables.
- Lag Selection: The optimal lag length was determined using the Akaike Information Criterion (Akaike, 1974).
- Bounds Testing for Cointegration: The ARDL bounds testing approach (Pesaran, Shin, & Smith, 2001) was applied to assess the existence of a long-run equilibrium relationship among the variables.
- Short-run and Long-run Dynamics: The ARDL model was estimated, incorporating an Error Correction Term (ECT) to capture short-run adjustments toward long-run equilibrium.
- Diagnostic and Stability Tests: A series of diagnostic tests were conducted to validate the model. These included the Breusch-Godfrey LM test for serial correlation (Breusch, 1978; Godfrey, 1978), the ARCH test for heteroskedasticity (Engle, 1982), the Jarque-Bera test for normality (Jarque & Bera, 1987), the Ramsey RESET test for functional form misspecification (Ramsey, 1969), and the CUSUM and CUSUM of Squares tests for stability (Brown, Durbin, & Evans, 1975).

3.5 ARDL Model Specification

This study adopts the Autoregressive Distributed Lag (ARDL) model to estimate both the short-run and long-run relationships between macroeconomic indicators, institutional support variables, and MSME growth in Nigeria. The ARDL framework is well-suited for this analysis due to its flexibility with mixed-order integration (I(0) and I(1)) and its reliability in small samples.

General ARDL Model:

$$\Delta LMSMEG_t = \alpha_0 + \sum_{i=1}^p \beta_i \Delta LMSMEG_{t-i} + \sum_{j=1}^q \gamma_j \Delta X_{t-j} + \lambda_1 LMSMEG_{t-1} + \lambda_2 X_{t-1} + \varepsilon_t \quad (4)$$

Where:

- Δ : denotes the first difference
- $LMSMEG_t$: Natural logarithm of MSMEG growth
- X_t : Vector of independent variables (e.g., Inflation, interest rate, exchange rate)
- ε_t : White-noise error term

Long-run coefficients are derived from the level variables $LMSME_t$ and X_{t-1} , while short-run dynamics are captured through the differenced terms $\Delta LMSME_t$ and ΔX_{t-j} .

Long-Run Model:

$$LMSMEG_t = \beta_0 + \beta_1 LINF_t + \beta_2 LIR_t + \beta_3 LEXCR_t + \beta_4 LCREDIT_t + \beta_5 LGOVSUP_t + \mu_t \quad (5)$$

Where:

- β_0 = Constant term
- β_1 to β_5 = Long-run coefficients
- μ_t = Error term

The long-run model assumes a steady relationship between dependent and independent variables.

Short-Run Model:

$$\Delta LMSMEG_t = \gamma_0 + \sum_{i=1}^p \gamma_i \Delta LMSMEG_{t-i} + \sum_{j=0}^q \delta_j \Delta X_{t-j} + \lambda ECT_{t-1} + \mu_t \tag{6}$$

Where:

Δ = First-difference operator (captures short-run changes)

ECT_{t-1} = Error correction term lagged one period

λ = Speed of adjustment coefficient (expected to be negative and significant)

ε_t = White-noise error term

3.6 Justification for ARDL Method

ARDL is chosen for this analysis due to its ability to handle different integration I (0) and I(1)), robustness in small samples (34 years), estimation of short-run effects and long-run relationships, and flexibility in interpreting individual variable contributions through interaction terms (e.g., credit × exchange rate).

4.0 Results and Interpretation

4.1 Descriptive Statistics

This section presents the descriptive statistics of the variables used in the analysis, including log-transformed values of MSME growth (LMSMEG), inflation (LINF), interest rate (LIR), exchange rate (LEXCR), credit to MSMEs (LCREDIT), and government support (LGOVSUP). These statistics help in understanding the distributional properties and underlying data behavior over the study period (1991–2024).

Table 2: Descriptive Statistics

	LMSMEG	LINF	LIR	LEXCR	LCREDIT	LGOVSUP
Mean	3.778184	2.716445	2.881981	4.744822	3.483956	7.891911
Median	3.781444	2.574858	2.867615	4.883398	3.712835	8.721238
Maximum	3.996364	4.288265	3.454738	7.299098	4.819717	10.10473
Minimum	3.566994	1.684545	2.442347	2.293493	2.374906	4.323554
Std. Dev.	0.137523	0.635071	0.206348	1.16214	0.734158	1.924298
Skewness	0.119952	0.892501	0.288257	-0.34766	0.026958	-0.46406
Kurtosis	1.707433	3.25336	3.72921	2.66899	1.684879	1.718864
Jarque-Bera	2.448403	4.604771	1.224162	0.84015	2.454305	3.545524
Probability	0.293992	0.10002	0.542221	0.656998	0.293126	0.169863
Sum	128.4582	92.35914	97.98734	161.324	118.4545	268.325
Sum Sq. Dev.	0.624115	13.30942	1.405117	44.56876	17.78659	122.1964
Observations	34	34	34	34	34	34

Source: Authors' calculations using Eviews 12, 2025

The log of MSME growth (LMSMEG) has a mean of 3.78 with a relatively low standard deviation (0.14), indicating stable MSME output growth over time. Its skewness (0.12) and kurtosis (1.71) suggest a symmetric and flat distribution, confirmed by a Jarque-Bera p-value of 0.29, indicating normality. Inflation (LINF) has a mean of 2.72 (approximately 15.2% in level terms), with moderate variation (std. dev. = 0.64). It is right-skewed and slightly leptokurtic, with a marginal deviation from normality (JB p = 0.10). Interest rates (LIR) are also relatively stable and normally distributed. The exchange rate (LEXCR) has the highest standard deviation (1.16), reflecting significant volatility in Nigeria's currency regime. It is slightly negatively skewed but remains normally distributed (JB p = 0.66). Credit to MSMEs

(LCREDIT) and government support (LGOVSUP) exhibit moderate to high variation. LGOVSUP shows the highest dispersion (std. dev. = 1.92), possibly due to shifting policy priorities or macroeconomic shocks. Both variables are platykurtic and reasonably symmetric, with no evidence of non-normality. Overall, the descriptive results show that all variables are reasonably normally distributed, justifying their inclusion in the ARDL estimation. The variance across the independent variables supports the examination of both short-run and long-run effects on MSME growth.

4.2 Unit Root Test

The unit root test is crucial for assessing the stationarity of a time series, as non-stationary data can lead to spurious regression outcomes (Granger & Newbold, 1974). This study employed the Augmented Dickey-Fuller (ADF) test (Dickey & Fuller, 1979) and the Phillips-Perron (PP) test (Phillips & Perron, 1988) to examine whether the variables in the model are stationary or require differencing to avoid misleading inferences. The ADF test extends the Dickey-Fuller test by including lagged difference terms to address serial correlation, assuming the time series follows an autoregressive process. On the other hand, the PP test accounts for autocorrelation and heteroscedasticity in the error terms by using a non-parametric correction, making it robust against certain violations of classical assumptions.

Table 3 summarizes the ADF and PP test results for each variable in the model. The test statistics and p-values for both tests are presented, along with the conclusion regarding the stationarity of the series.

Table 3: Unit Root Test Results with Order of Integration

Variable	ADF Test Statistic	PP Test Statistic	Order of Integration	Stationarity
LMSMEG	-4.71	-6.65	I(0)	Stationary at level
LINF	-4.44	-5.60	I(1)	Stationary after first difference
LIR	-6.09	-6.28	I(1)	Stationary after first difference
LEXCR	-4.71	-4.69	I(1)	Stationary after first difference
LCREDIT	-5.85	-5.86	I(1)	Stationary after first difference
LGOVSUP	-4.94	-5.91	I(1)	Stationary after first difference

Source: Author's calculations using Eviews 12, 2025

The results of the stationarity tests in Table 3 highlight key time series characteristics of the variables analyzed. Inflation, interest rate, exchange rate, credit to MSMEs, and government support become stationary after first differencing, indicating they are integrated of order one (I(1)). In contrast, the size of the MSME sector (LMSMEG) is stationary at level, meaning it is integrated of order zero (I(0)).

Given the presence of both I(0) and I(1) variables, the Autoregressive Distributed Lag (ARDL) approach is appropriate for further analysis. ARDL is well-suited for models that include variables with different integration orders, as long as none are integrated of order two (I(2)). It also allows for the simultaneous estimation of short-run and long-run relationships among the variables.

4.4 Cointegration Testing

The ARDL bounds testing technique, as presented by Pesaran, Shin, and Smith (2001), was utilized to ascertain the presence of a long-run relationship among the variables in the model. This test is appropriate when variables are integrated at mixed orders of I(0) and I(1), as is the case in this study. The null hypothesis of the bounds test asserts that no long-term relationship exists among the variables.

The result of the F-bounds test is presented in Table 4:

Table 4: Bounds Test

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	26.31054	10%	2.08	3
k	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

Source: Author's calculations using Eviews 12, 2025

The result of the bounds test, as presented in Table 4, shows that the computed F-statistic is 26.31. This value is substantially higher than the upper bound critical value of 4.15 at the 1% significance level. According to the decision rule, when the F-statistic exceeds the upper bound, the null hypothesis of no cointegration is rejected. Given that the F-statistic surpasses the critical values at all conventional significance levels (1%, 5%, and 10%), the test provides strong statistical evidence of a long-run relationship between MSME contribution to GDP and the explanatory variables: inflation rate, interest rate, exchange rate, credit to MSMEs, and government support to the private sector.

4.5 Model Estimation

After establishing stationarity with unit root tests and establishing a long-run relationship via the ARDL bounds test, the next step is to estimate the ARDL model. The Autoregressive Distributed Lag (ARDL) approach, developed by Pesaran, Shin, and Smith (2001), is particularly suitable for this study as it accommodates variables that are integrated of different orders; either I(0) or I(1), but excludes I(2). This flexibility makes the ARDL method ideal for analyzing the impact of inflation and exchange rate volatility on MSME growth and survival in Nigeria over the period 1991–2024.

4.5.1 Long run Estimation

Following the confirmation of a long-run equilibrium relationship through the ARDL bounds testing procedure, this section presents the estimated long-run coefficients from the ARDL model. The objective is to assess how key macroeconomic and institutional variables; inflation, interest rate, exchange rate, credit to MSMEs, and government support, influence the long-term growth and contribution of MSMEs to Nigeria’s economy.

The long-run model captures the persistent and equilibrium effects of these explanatory variables on MSME output growth, reflecting structural relationships that hold over time, beyond short-term fluctuations. The coefficients derived from this model provide important insights into the direction, magnitude, and statistical significance of each variable’s impact on MSME growth.

The results are presented in Table 5 and discussed accordingly.

Table 5: Estimated Long-Run Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LMSMEG(-1)	-0.490840	0.207620	-2.364126	0.0644
LINF	-0.037698	0.051479	-0.732302	0.4969
LINF(-1)	-0.462606	0.087961	-5.259206	0.0033
LINF(-2)	0.456595	0.116779	3.909921	0.0113
LINF(-3)	0.240529	0.068313	3.521001	0.0169

LINF(-4)	-0.186232	0.084157	-2.212926	0.0778
LIR	0.607720	0.404012	1.504215	0.1929
LIR(-1)	0.782677	0.296176	2.642605	0.0458
LIR(-2)	-0.629866	0.202858	-3.104963	0.0267
LIR(-3)	0.100251	0.266381	0.376346	0.7221
LIR(-4)	0.497662	0.285773	1.741456	0.1421
LEXCR	0.515215	0.109151	4.720193	0.0052
LEXCR(-1)	-0.419519	0.114990	-3.648316	0.0148
LEXCR(-2)	0.122100	0.087900	1.389072	0.2235
LEXCR(-3)	0.265905	0.128771	2.064939	0.0938
LEXCR(-4)	-0.661128	0.119988	-5.509947	0.0027
LCREDIT	-0.107995	0.052544	-2.055344	0.0950
LCREDIT(-1)	-0.016483	0.057702	-0.285653	0.7866
LCREDIT(-2)	0.237657	0.055973	4.245938	0.0081
LGOVSUP	-0.502801	0.130098	-3.864791	0.0118
LGOVSUP(-1)	1.074752	0.294036	3.655169	0.0147
LGOVSUP(-2)	0.289325	0.379616	0.762152	0.4804
LGOVSUP(-3)	-0.878852	0.300589	-2.923762	0.0329
LGOVSUP(-4)	0.304434	0.091344	3.332839	0.0207
C	-0.435291	3.051955	-0.142627	0.8922
R-squared	0.980931			
Adjusted R-squared	0.889398			

Source: Author's calculations using Eviews 12, 2025

The model demonstrates a strong overall fit, with an R-squared of 0.981 and an adjusted R-squared of 0.889, indicating that nearly 89 percent of the variation in MSME growth over the period is explained by the independent variables. The lagged value of MSME growth (LMSMEG(-1)) is negative and moderately significant (-0.491 ; $p = 0.064$). This suggests a degree of mean reversion in MSME growth, indicating that exceptionally high growth in one period may be followed by moderation in the next.

The impact of inflation is complex and occurs predominantly with lags. While the current inflation rate (LINF) has an insignificant effect ($p = 0.497$), several lagged terms are statistically significant. LINF(-1) is strongly negative (-0.463 ; $p = 0.003$), implying that inflation from the previous year reduces MSME growth. LINF(-2) and LINF(-3) show significant positive effects, suggesting that inflationary effects may initially suppress MSME activity but later result in price and profit adjustments. LINF(-4) is again negative and marginally significant ($p = 0.078$), highlighting the volatility and delayed transmission effects of inflation on business growth. Interest rate dynamics also display delayed effects. The current interest rate is not statistically significant ($p = 0.193$), but the first lag (LIR(-1)) is positive and significant ($p = 0.046$), while the second lag (LIR(-2)) turns negative and significant ($p = 0.027$). These results suggest that short-term adjustments in interest rates may initially support MSME borrowing and activity, but sustained high rates eventually reduce growth, likely due to rising debt servicing costs and tighter credit conditions. The exchange rate variable shows strong statistical significance, with both positive and negative effects across lags. The current exchange rate (LEXCR) is positive and significant ($p = 0.005$), indicating that a higher exchange rate (suggesting naira depreciation) may initially boost domestic MSME competitiveness. However, LEXCR(-1) and LEXCR(-4) are negative and significant, implying that prolonged or extreme exchange rate depreciation undermines MSME growth, possibly due to higher import costs for raw materials and equipment.

The results reveal a delayed positive impact of credit on MSME growth. While the contemporaneous effect is negative and marginally significant (-0.108 ; $p = 0.095$), the second lag (LCREDIT(-2)) is positive and strongly significant ($p = 0.008$). This suggests that the

benefits of MSME credit support may take time to materialize, potentially due to lagged investment effects or implementation delays. The influence of government support (LGOVSUP) is also dynamic and somewhat inconsistent. The contemporaneous effect is negative and significant (-0.503; p = 0.012), possibly reflecting short-term inefficiencies or misallocation of resources. In contrast, LGOVSUP(-1) and LGOVSUP(-4) show positive and significant impacts, supporting the view that government interventions can enhance MSME growth when well implemented and sustained over time. The third lag (LGOVSUP(-3)) is negative and significant, further highlighting the uneven and time-sensitive nature of policy impact on the MSME sector. The constant term is statistically insignificant (p = 0.892), suggesting that the explanatory variables adequately capture the variation in MSME growth without a strong baseline offset.

4.5.2 Short-run Estimation

Following the estimation of long-run relationships, the short-run dynamics are analyzed using the error correction representation of the ARDL model. This approach captures the immediate effects of changes in macroeconomic and institutional variables on MSME growth, while also accounting for the speed at which deviations from the long-run equilibrium are corrected. The short-run model includes the first differences of the independent variables and the lagged error correction term (ECM), which indicates how quickly the system returns to equilibrium after a short-term shock. The results provide insights into the responsiveness of MSMEs to short-term macroeconomic fluctuations and policy shifts.

The results are presented in Table 5 and discussed accordingly.

Table 6: Estimated Short-Run Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LINF)	-0.037698	0.018323	-2.057392	0.0947
D(LINF(-1))	-0.510892	0.027710	-18.43710	0.0000
D(LINF(-2))	-0.054297	0.023615	-2.299230	0.0698
D(LINF(-3))	0.186232	0.021028	8.856452	0.0003
D(LIR)	0.607720	0.088799	6.843747	0.0010
D(LIR(-1))	0.031953	0.074963	0.426246	0.6877
D(LIR(-2))	-0.597913	0.061009	-9.800450	0.0002
D(LIR(-3))	-0.497662	0.064442	-7.722646	0.0006
D(LEXCR)	0.515215	0.029084	17.71467	0.0000
D(LEXCR(-1))	0.273124	0.039964	6.834160	0.0010
D(LEXCR(-2))	0.395223	0.030225	13.07620	0.0000
D(LEXCR(-3))	0.661128	0.043484	15.20402	0.0000
D(LCREDIT)	-0.107995	0.020085	-5.376968	0.0030
D(LCREDIT(-1))	-0.237657	0.019606	-12.12155	0.0001
D(LGOVSUP)	-0.502801	0.055294	-9.093184	0.0003
D(LGOVSUP(-1))	0.285093	0.074413	3.831232	0.0122
D(LGOVSUP(-2))	0.574418	0.093206	6.162854	0.0016
D(LGOVSUP(-3))	-0.304434	0.047267	-6.440708	0.0013
CointEq(-1)*	-1.490840	0.074064	-20.12914	0.0000
R-squared	0.990499			
Adjusted R-squared	0.974952			

Source: Author's calculations using Eviews 12, 2025

The short-run dynamics of MSME growth were analyzed using the error correction representation of the ARDL model. The results show a strong model fit, with an R-squared of 0.9905 and an adjusted R-squared of 0.975, indicating that over 97 percent of the short-term variation in MSME growth is explained by changes in the independent variables. The Durbin-Watson statistic of 2.26 suggests the absence of autocorrelation. The error correction term (CointEq(-1)) is negative and highly significant (-1.49; p < 0.01), confirming the presence of

a long-run relationship and indicating a fast adjustment speed. Approximately 149 percent of the previous period's disequilibrium is corrected within one year, suggesting a very rapid return to long-run equilibrium after short-term shocks.

Inflation has a significant negative effect across lags. The current and lagged values of inflation (D(LINF) and D(LINF(-1))) are both negative and statistically significant, indicating that inflationary pressures reduce MSME growth in the short run. However, D(LINF(-3)) is positive and significant ($p < 0.01$), suggesting that earlier inflation may eventually be absorbed or offset by adaptive responses or pricing adjustments. Interest rates show mixed effects. The current value (D(LIR)) is positive and significant ($p = 0.001$), implying a short-term stimulative effect, possibly due to improved liquidity or credit access. However, lags D(LIR(-2)) and D(LIR(-3)) are strongly negative, suggesting that prolonged high interest rates suppress MSME activity.

The exchange rate exhibits a consistent positive and highly significant effect across all lags. This may reflect short-term benefits from exchange rate changes, such as increased competitiveness or revenue from foreign trade, particularly for MSMEs involved in non-oil exports or dollar-linked transactions. Credit to MSMEs has a consistently negative and statistically significant short-run effect. This may indicate that credit inflows are either insufficient in volume, misallocated, or subject to delays, resulting in short-run inefficiencies before potential long-term benefits are realized. Government support displays both positive and negative effects across different lags. The current effect (D(LGOVSUP)) is significantly negative, while D(LGOVSUP(-1)) and D(LGOVSUP(-2)) are positive and significant, suggesting that the benefits of public sector credit may take time to materialize. The third lag is again negative, reflecting some inconsistency in the short-term effectiveness of government interventions.

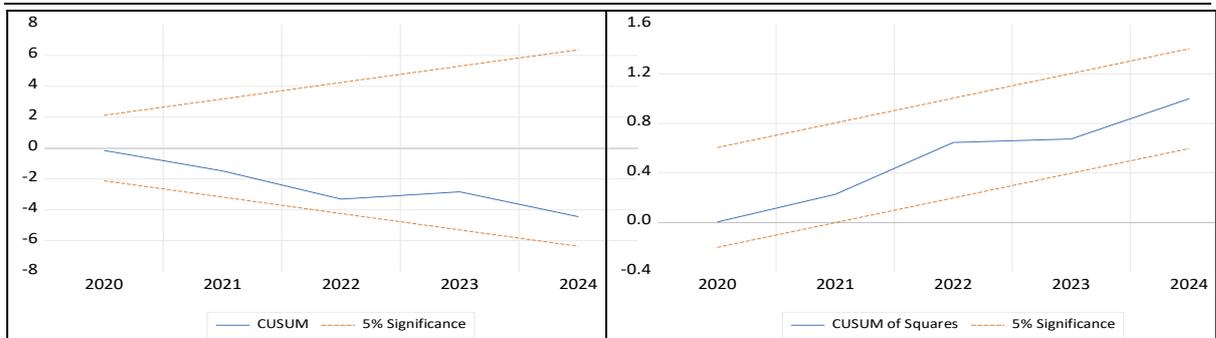
4.6 Diagnostic and Stability Tests

To verify the appropriateness and robustness of the ARDL model, several post-estimation diagnostic and stability tests were conducted. The tests encompass the Serial Correlation LM test, Heteroskedasticity test (ARCH), Normality test (Jarque-Bera), Functional form test (Ramsey RESET), and Stability tests utilizing CUSUM and CUSUM of Squares. Table 7 presents a comprehensive summary of the diagnostic test results, providing critical insights into the robustness, reliability, and validity of the model estimates employed in the study.

Table 7: Summary of Diagnostic Test Results

Test	Test Statistic	p-value	Conclusion
Breusch-Godfrey Serial Correlation LM Test	0.1865	0.8388	No Serial correlation
ARCH Heteroskedasticity Test (ARCH)	1.3592	0.2539	No heteroskedasticity
Jarque-Bera Normality Test	3.9853	0.1363	Residuals are normally distributed
Ramsey RESET Test (F-statistic)	0.182958	0.6909	Model is correctly specified
CUSUM Test	Stable	—	Parameters are stable
CUSUM of Squares Test	Stable	—	Parameters are stable

Source: Author’s computation using EViews (2025)



To ensure the reliability of the estimated ARDL model, a series of post-estimation diagnostic tests were conducted. The Breusch-Godfrey LM test confirms the absence of serial correlation ($p = 0.8388$), while the ARCH test indicates no evidence of heteroskedasticity ($p = 0.2539$). The Jarque-Bera test shows that the residuals are normally distributed ($p = 0.1363$). Additionally, the Ramsey RESET test supports that the model is correctly specified ($p = 0.6909$), implying no functional form misspecification. Stability diagnostics, including the CUSUM and CUSUM of Squares tests, reveal that the model parameters remain stable over the sample period.

These diagnostic results collectively affirm the robustness, reliability, and validity of the ARDL model used in analyzing the short- and long-run dynamics of MSME growth in response to macroeconomic variables.

4.7 Discussion of Findings

The results from the ARDL model strongly align with the theoretical propositions outlined in the literature. Consistent with Friedman's Monetary Theory of Inflation, the findings confirm that inflation adversely affects MSME growth, particularly through lagged effects. The short-run results show immediate and significant negative impacts of inflation on MSME growth, affirming that rising input costs and reduced consumer purchasing power undermine business viability. The long-run dynamics suggest a delayed recovery, possibly reflecting MSMEs' adjustment through pricing or cost management strategies. The evidence also supports the Purchasing Power Parity (PPP) theory, as exchange rate volatility exhibited both immediate and persistent effects on MSME outcomes. In the short term, depreciation appears to enhance competitiveness, but over time, the rising cost of imported inputs exerts downward pressure on MSME growth. This dual effect corroborates prior studies (e.g., Obiukwu & Adurogoye, 2024; Oyedepo et al., 2023), which highlight the inflation-exchange rate nexus as a critical vulnerability for import-dependent MSMEs.

From the lens of Uncertainty and Investment Theory (Bernanke, 1983; Dixit & Pindyck, 1994), the erratic behavior of macroeconomic indicators—particularly inflation and exchange rates—amplifies risk and deters long-term planning. The significant short-run coefficients of these variables validate the view that MSMEs are highly reactive to instability, often delaying investment or scaling down operations in volatile environments. Furthermore, the results underscore the relevance of Institutional Theory. Credit to MSMEs and government support were both statistically significant in the long run, although their short-run effects were weak or negative. This suggests that institutional interventions take time to materialize and may be constrained by implementation inefficiencies. Nevertheless, the long-run positive impact confirms the importance of coordinated support from financial institutions and policy frameworks—consistent with arguments by Obiekwe & Edokobi (2025) and Onakoya et al. (2024).

These findings also extend the empirical literature. While prior studies often examined inflation and exchange rate effects in isolation, this paper provides joint evidence of their compounded impact on MSME growth in Nigeria. The integration of recent post-reform data, including periods of fuel subsidy removal and exchange rate unification, adds a novel dimension to the discourse and addresses existing gaps identified in studies like Ebinum & Ehiedu (2025) and Olabisi & Akeju (2024).

5.0 Conclusion and Recommendations

5.1 Conclusion

This study explored the effects of inflation and exchange rate volatility on MSME growth and survival in Nigeria using an ARDL approach. Findings confirm that macroeconomic instability, particularly inflation and exchange rate fluctuations, significantly undermines MSME growth, while credit and government support show positive long-run effects when consistently applied.

These results support economic theories highlighting MSMEs' vulnerability to inflationary shocks and currency volatility. The study emphasizes the need for stable macroeconomic conditions, effective credit mechanisms, and sustained institutional support to enhance MSME resilience. Future research should consider firm-level or sector-specific data to better capture differences in MSME responses across industries.

5.2 Policy Recommendations

- i. The significant negative effect of inflation (-0.463 ; $p=0.003$) and prolonged exchange rate depreciation (-0.661 ; $p=0.003$) on MSMEs highlights the need for the Central Bank of Nigeria to prioritize price stability and reduce exchange rate volatility.
- ii. Since credit to MSMEs shows delayed but positive effects (0.238 ; $p=0.008$), government should expand affordable financing by streamlining procedures and leveraging digital platforms and microfinance institutions.
- iii. Given that government support is negative in the short run (-0.503 ; $p=0.012$) but positive at later lags, agencies such as BOI and SMEDAN must ensure consistent, transparent, and sustained support programs.
- iv. As exchange rate volatility raises import costs, policies should encourage MSMEs to substitute imported inputs with local alternatives through tax incentives and capacity-building initiatives.

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Table 6: Summary of Variables Used

Year	MSMEG	CREDIT	EXCR	INF	IR	CPS
1991	54.01	22.20	9.909492	13.01	20.04	127.97
1992	49.64	20.40	17.29843	44.59	24.76	75.46
1993	46.97	15.46	22.0654	57.17	31.65	88.82
1994	38.12	20.55	21.996	57.03	20.48	143.52
1995	38.12	32.37	21.89526	72.84	20.23	204.09
1996	36.16	42.30	21.88443	29.27	19.84	254.85
1997	52.32	40.84	21.88605	8.53	17.8	311.36
1998	47.02	42.26	21.886	10.00	18.18	366.54
1999	49.16	46.82	92.3381	6.62	20.29	449.05
2000	35.41	44.54	101.6973	6.93	21.27	588.00
2001	54.4	52.43	111.2313	18.87	23.44	844.49
2002	51.65	82.37	120.5782	12.88	24.77	948.46
2003	39.25	90.18	129.2224	14.03	20.71	1,203.20
2004	38.64	54.98	132.888	15.00	19.18	1,519.24
2005	38.67	50.67	131.2743	17.86	17.95	1,991.15
2006	41.08	25.71	128.6517	8.23	16.9	2,609.29
2007	45.5	41.10	125.8081	5.39	16.94	4,820.70
2008	43.64	13.51	118.5667	11.58	15.48	7,799.40
2009	40.82	16.37	148.88	12.54	18.36	9,667.88

2010	47.24	12.55	150.2975	13.74	17.59	9,198.17
2011	37.79	15.61	153.8625	10.83	16.02	9,614.45
2012	40.84	13.86	157.5	12.22	16.79	10,440.96
2013	42.33	15.35	157.3117	8.50	16.72	11,543.65
2014	44.12	16.07	158.5526	8.05	16.55	13,179.60
2015	50.7	12.95	192.4403	9.01	16.8	13,568.54
2016	38.99	10.75	253.492	15.70	16.9	16,500.15
2017	45.28	10.75	305.7901	16.50	17.6	16,193.86
2018	46.85	44.82	306.0837	12.10	16.9	15,438.60
2019	35.93	123.93	306.921	11.40	15.4	17,436.99
2020	47.15	62.51	358.8108	13.25	13.6	19,818.38
2021	38.41	83.74	401.152	16.95	11.5	22,026.37
2022	36.3	71.89	425.9792	18.85	12.3	20,166.98
2023	53.98	94.46	645.1941	24.7	14	24,458.35
2024	54.31	78.15	1478.965	33.20	12.9	21617.52