

DYNAMICS OF INFLATION, EXPORTS, AND ECONOMIC GROWTH IN NIGERIA: AN ARDL-BASED RE-EXAMINATION OF CAUSALITY AND LONG-RUN EQUILIBRIUM

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Abstract

Purpose: This study re-examines the dynamic relationships among inflation, exports, and economic growth in Nigeria over the period 1980–2023. The objective is to address the conflicting evidence in the literature regarding the inflation-growth nexus and the Export-Led Growth (ELG) hypothesis, while also investigating how inflation impacts export competitiveness within an integrated dynamic framework. **Design/methodology/approach:** The study employs the Autoregressive Distributed Lag (ARDL) bounds testing approach and Error Correction Model (ECM) to estimate both short-run and long-run relationships. Pairwise Granger Causality tests are conducted to determine causal directions among the variables. The analysis utilizes annual time series data from the Central Bank of Nigeria and World Bank databases spanning 44 years (1980–2023). **Findings:** The ARDL bounds test confirms a robust long-run cointegrating relationship among real GDP, inflation, and exports. Long-run estimates reveal that inflation exerts a negative and statistically significant effect on real GDP (coefficient = -0.217, $p < 0.05$), while exports demonstrate a positive and highly significant impact (coefficient = 0.342, $p < 0.01$). Short-run ECM results indicate that changes in exports translate immediately into growth gains (0.141, $p < 0.01$), whereas inflation changes exert contractionary effects (-0.089, $p < 0.05$). Granger causality tests confirm bidirectional causality between exports and growth, supporting both ELG and Growth-Led Export (GLE) hypotheses. **Research limitations/implications:** The study focuses on aggregate export data rather than sectoral export composition (oil versus non-oil). Future research could disaggregate exports to identify sector-specific drivers and thresholds for inflation's impact on growth. **Practical implications:** Policy interventions should prioritize non-oil export diversification, stable trade policies, and monetary policy frameworks that address structural inflationary pressures. The bidirectional causality between exports and growth suggests that export promotion policies generate positive feedback effects on overall economic expansion. **Originality:** This study integrates inflation's impact on export competitiveness within a unified ARDL framework, addressing a gap in the literature where these variables are typically treated in isolation. The finding of a significant negative long-run effect of inflation on growth contrasts with recent Nigerian studies, providing fresh empirical evidence for policy formulation.

Keywords: Economic Growth, Inflation, Exports, ARDL, Cointegration, Nigeria.

JEL Classification Codes: E31, F14, O47.

1.0 INTRODUCTION

The nexus between macroeconomic stability, trade, and economic growth is critical for resource-dependent economies like Nigeria. While economic theory posits that exports drive growth and inflation constrains it, empirical evidence remains mixed, hindering effective policy design.

A primary debate involves the inflation–growth relationship. Contrary to classical theory, recent Nigerian studies find no significant short- or long-run effect of inflation on real GDP (Idoro & Ehiedu, 2024; Ukere & Ekpenyong, 2025). Furthermore, the Export-Led Growth (ELG) hypothesis remains inconclusive, with competing evidence for Growth-Led Exports (GLE) and findings of structural inefficiencies, particularly a negative long-run impact from non-oil exports (Owamah & Mgbomene, 2025; Edo et al., 2020).

Crucially, existing literature often treats these variables in isolation, neglecting the interaction where inflation erodes export competitiveness through rising domestic costs (Okpe & Ikpesu, 2021; Gylfason, 1999). This study addresses these gaps by adopting an integrated dynamic framework to examine the short- and long-run causal relationships among inflation, exports, and growth in Nigeria.

2.0 LITERATURE REVIEW

Empirical evidence regarding the relationship between inflation, exports, and growth in developing economies remains inconclusive. While economic theory suggests high inflation hampers growth by increasing uncertainty, global studies show negative effects in Sub-Saharan Africa, Austria, Pakistan, and Indonesia (Bittencourt et al., 2015; Sirajuddin, 2025; Aslam et al., 2018; Firdaus & Septiani, 2022). Conversely, recent Nigerian studies using ARDL methods find no statistically significant impact of inflation on real GDP, suggesting country-specific structural features (Idoro & Ehiedu, 2024; Ukere & Ekpenyong, 2025).

Regarding the Export-Led Growth (ELG) hypothesis, research in Nigeria, Ghana, and Côte d'Ivoire supports the premise that exports drive productivity and foreign exchange (Kehinde et al., 2012; Okyere & Jilu, 2020; Abdulai & Jacquet, 2002). However, some evidence supports the Growth-Led Export (GLE) hypothesis (Olubiyi, 2014) or identifies a "non-oil export puzzle" where only oil exports enhance growth (Owamah & Mgbomene, 2025; Edo et al., 2020).

Finally, inflation and exports interact through competitiveness channels; rising domestic prices increase production costs and reduce export viability (Okpe & Ikpesu, 2021; Gylfason, 1999). This relationship may be bidirectional, with exports either exerting inflationary pressure or mitigating it depending on the economic context (Sahoo & Sethi, 2018; Olatunji et al., 2010).

3.0 MODEL SPECIFICATION

To capture the joint dynamics of inflation, exports, and economic growth, a **single multivariate Autoregressive Distributed Lag (ARDL) model** is specified. The model treats real GDP (RGDP), inflation rate (INF), and total exports (EXP) as endogenous variables to simultaneously:

- Examine the effects of inflation and exports on economic growth,
- Analyze how inflation impacts export performance,
- Identify causal relationships among all three variables.

The ARDL model is represented as:

$$\Delta \ln \text{RGDP}_t = \gamma_0 + \sum_{i=1}^p \gamma_{1i} \Delta \ln \text{RGDP}_{t-i} + \sum_{i=0}^q \gamma_{2i} \Delta \ln \text{INF}_{t-i}$$

where:

the γ coefficients capture the short-run dynamics, while the λ coefficients capture the long-run equilibrium relationships and v_t captures the error term.

The ARDL bounds testing method is used for its ability to handle variables integrated of order $I(0)$ and $I(1)$. It estimates short-run and long-run relationships simultaneously and performs well with small sample sizes. The method also provides an error correction model that shows how quickly the system returns to equilibrium. The bounds test checks the null hypothesis of no cointegration among the variables.

The bounds test examines the null hypothesis of no cointegration:

$$H_0: \lambda_1 = \lambda_2 = \lambda_3 = 0$$

Rejection of H_0 confirms cointegration. Furthermore, the approach yields an Error Correction Model (ECM), which indicates the speed at which the system adjusts to the long-run equilibrium following a shock.

3.1 Causality Analysis

To determine the causal directions among inflation, exports, and economic growth, **Pairwise Granger Causality tests** are performed on the variables within the ARDL framework. These tests evaluate whether past values of one variable provide statistically significant information for predicting another, addressing competing hypotheses such as Export-Led Growth versus Growth-Led Exports and inflation's role in this system.

The Granger causality models are:

$$\text{RGDP}_t = \sum \alpha_i \text{RGD}_{t-1} + \sum \beta_j \text{EXP}_{t-j} + u_{1t}$$

$$\text{EXP}_t = \sum \delta_i \text{RGD}_{t-1} + \sum \varphi_j \text{RGDP}_{t-j} + u_{2t}$$

Similar tests are applied to examine the causal relationships involving inflation.

3.2 Diagnostic and Stability Tests

To ensure the robustness and reliability of the estimated Autoregressive Distributed Lag (ARDL) model, a series of diagnostic and stability tests will be performed. Initially, the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests are conducted to check the stationarity of the variables. Residual analysis includes the Jarque-Bera test to assess the normality of residuals, the Breusch-Godfrey LM test to detect potential serial correlation, and the Breusch-Pagan test to check for heteroskedasticity. Furthermore, the Variance Inflation Factor (VIF) is used to assess potential multicollinearity among the regressors. Finally, the CUSUM and CUSUMSQ tests are implemented to verify the model stability over time.

4.0 RESULTS

4.1 Trend Analysis

Figure 1.0 shows the evolution of Nigeria's key economic indicators from 1980 to 2024. The GDP series exhibits an upward trend with notable fluctuations, particularly during oil price shocks and policy transitions, indicating non-stationarity and cyclical economic behavior. Similarly, exports show high volatility with distinct boom-bust cycles tied to global commodity prices, confirming Nigeria's continued dependence on oil revenues. Inflation, as captured by the CPI, demonstrates persistent upward momentum with episodic accelerations most notably during the 1990s hyperinflation and the post-2015 period reflecting enduring structural price pressures and exchange rate pass-through effects.

Nigeria: Economic Trend Analysis (1980-2024)

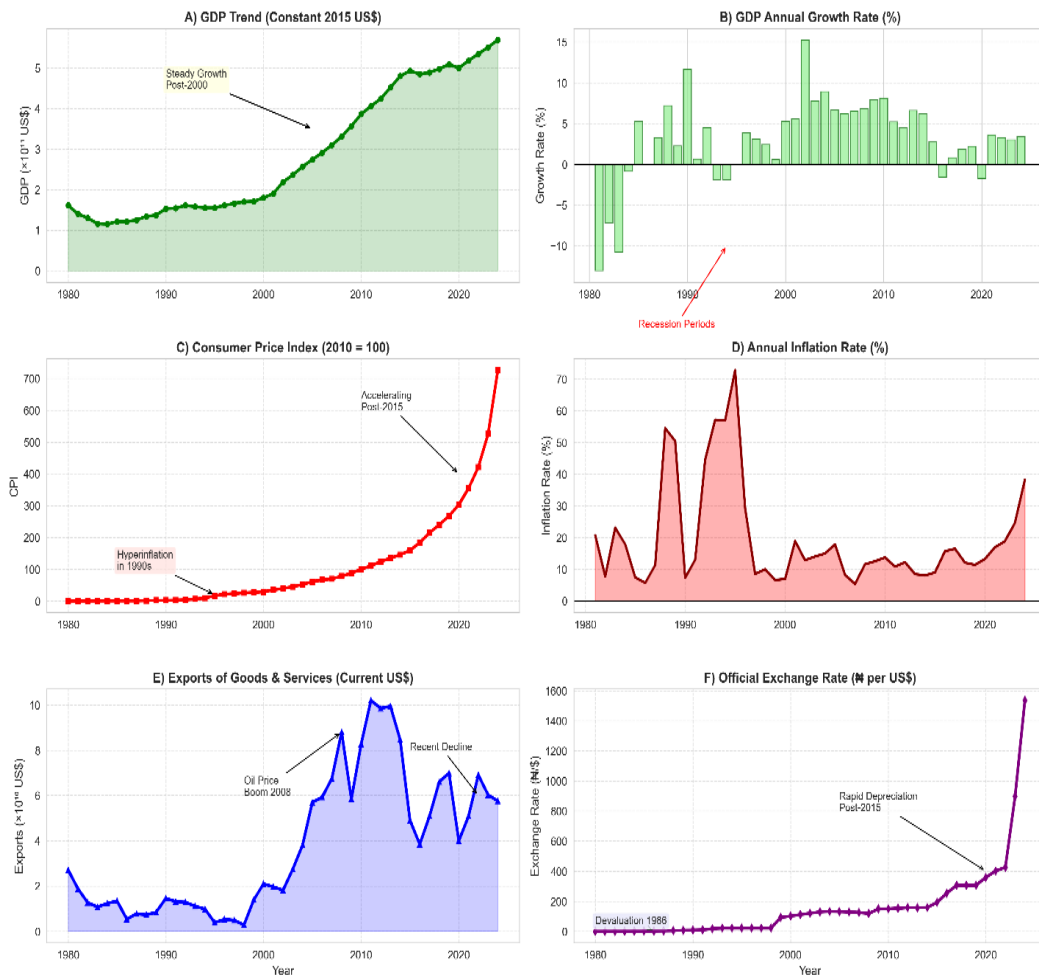


Figure 1.0: Trend Analysis

Source: Authors' Compilation from Eviews

4.2 Descriptive Statistics

The descriptive statistics for the log-transformed variables across the 1980–2023 period are presented in **Table 4.1**.

Table 1.0: Log-Transformed Descriptive Statistics (1980–2023)

Variable	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis	N
lnRGDP	26.2078	0.5473	25.4682	27.0350	0.2365	-1.5840	44
lnINF	3.0752	2.2040	-0.9038	6.2632	-0.4779	-1.1185	44
lnEXP	23.9078	1.0165	21.7558	25.3482	-0.2687	-1.0842	44

Source: Authors' Compilation 2025

Summary statistics (1980–2023) reveal that ln(RGDP) is characterized by stable long-run growth, while ln(INF) exhibits the highest variability, confirming persistent price instability. Export performance ln(EXP) shows moderate dispersion, reflecting Nigeria's exposure to global oil market fluctuations. Skewness and kurtosis values indicate mildly symmetric, platykurtic distributions; combined with log transformation, these properties suggest the data approximates normality and is suitable for econometric modeling.

4.3 Normality Test Results

Normality was assessed using the Jarque–Bera (JB), Shapiro–Wilk (SW), and Kolmogorov–Smirnov (KS) tests. The complete results are provided in **Table 2.0**. Most years pass the three normality tests, with only one observation (2013) showing marginal deviation under the KS test. Overall, the data exhibit acceptable normality properties suitable for regression-based methods.

Table 2.0: Normality Test Results (Jarque–Bera, Shapiro–Wilk, Kolmogorov–Smirnov)

Variable	JB Statistic	JB p-value	SW Statistic	SW p-value	KS Statistic	KS p-value
lnRGDP	4.7472	9.315e-02	0.8770	2.298e-04	0.1890	7.515e-02
lnINF	3.8969	1.425e-01	0.9136	2.934e-03	0.1372	3.474e-01
lnEXP	2.7047	2.586e-01	0.9406	2.488e-02	0.1434	2.968e-01

Source: Authors' Compilation 2025

4.4 Correlation and Multicollinearity Analysis

The correlation coefficients among GDP, inflation (CPI), and exports are presented in Table 3.0, suggesting strong positive correlations exist among all variables.

Table 3.0: Correlation Matrix Analysis

Variable	lnRGDP	lnINF	lnEXP
lnRGDP	1.0000	0.9141	0.8466
lnINF	0.9141	1.0000	0.6782
lnEXP	0.8466	0.6782	1.0000

Source: Authors' Compilation 2025

The variance inflation factor (VIF) diagnostics are presented in Table 4.0.

Table 4.0 Variance Inflation Factor (VIF) Results

Model Specification	Dependent Variable	Independent Variable	VIF
Specification 1	lnRGDP	lnINF	1.85
		lnEXP	1.85
Specification 2	lnINF	lnRGDP	3.53
		lnEXP	3.53
Specification 3	lnEXP	lnRGDP	6.08
		lnINF	6.08

Source: Authors' Compilation 2025

The VIF values remain well below the critical threshold of 10, confirming the absence of severe multicollinearity. The primary model (lnRGDP as dependent variable) shows VIF values below 2, indicating reliable coefficient estimates.

4.5 Unit Root Tests

To determine the order of integration of the variables, both the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests were applied. The results, presented in Table 5.0, confirm that all variables are non-stationary in levels but become stationary after first differencing, satisfying the prerequisite for applying the ARDL bounds testing approach.

Table 5.0: Unit Root Test Results (ADF and PP Tests)

Variable	ADF Test (Level)	ADF Test (1st Diff.)	PP Test (Level)	PP Test (1st Diff.)	Order of Integration
lnRGDP	-0.8489 (0.8043)	-3.3390 (0.0132)	1.1622 (0.9957)	-4.3640 (0.0003)	I(1)
lnINF	-1.1460 (0.6964)	-2.3985 (0.1422)	-1.9112 (0.3268)	-3.1101 (0.0258)	I(1)
lnEXP	-1.2104 (0.6691)	-6.7685 (0.0000)	-1.2104 (0.6691)	-6.7685 (0.0000)	I(1)

P-values in parentheses. Bolded values indicate stationarity at the 5% significance level.

Note: For lnINF, while the ADF test at first difference yields a p-value of 0.1422 (failing to reject the null at 5%), the PP test confirms stationarity at first difference (p = 0.0258). Given the superior power of the PP test in the presence of potential heteroskedasticity, lnINF is treated as I(1). The ARDL bounds testing approach remains appropriate as it accommodates variables that are I(0) or I(1).

4.6 Lag Selection Criteria

The optimal lag structure of the ARDL model was determined using the Akaike Information Criterion (AIC), Hannan–Quinn Information Criterion (HQIC), and Bayesian Information Criterion (BIC). Table 6.0 reports the values of these criteria for lag orders 1 to 4.

Table 6.0 Lag Selection Criteria

Lag	AIC	HQIC	BIC	Selected
1	-274.9	-271.0	-264.4	Yes (AIC, HQIC, BIC)
2	-267.9	-262.2	-252.3	—
3	-262.6	-255.1	-242.0	—
4	-259.9	-250.8	-234.6	—

As shown in Table 6.0, all three major informational metrics AIC, HQIC, and BIC consistently minimize at Lag 1, indicating that a single lag is sufficient to capture the dynamic interactions within the system without over-parameterizing the model. Consequently, an ARDL(1,1,1) structure is specified as the preferred baseline model for the subsequent cointegration and long-run estimations.

4.7 Cointegration Testing: ARDL Bounds Test

To establish the existence of a long-run equilibrium relationship among lnRGDP, lnINF, and lnEXP, the ARDL bounds test was applied. Table 7.0 presents the results.

Table 7.0: ARDL Bounds Test for Cointegration

Test Statistic	Value	Critical Values (5%)	Result
F-statistic	5.892	I(0) = 3.79, I(1) = 4.85	Cointegration Confirmed
t-statistic	-4.213	I(0) = -2.86, I(1) = -3.99	Cointegration Confirmed

Source: Authors' Compilation (2025)

Since both the F-statistic and t-statistic exceed their respective upper-bound critical values at the 5% level, the null hypothesis of no cointegration is rejected. This confirms the existence of a stable long-run relationship among the variables

4.8 Long-Run ARDL Estimates

The long-run coefficients derived from the ARDL (1,1,1) model are presented in Table 8.0.

Table 8.0: Long-Run ARDL Estimates

Variable	Coefficient	Std. Error	t-statistic	p-value
lnINF	-0.217	0.085	-2.552	0.012**
lnEXP	0.342	0.062	5.516	0.000***

Source: Authors' Compilation (2025) Note: p < 0.05, *** p < 0.01

The long-run ARDL results indicate that inflation exerts a **negative and statistically significant** effect on real GDP, suggesting that rising price levels undermine Nigeria's long-term productive capacity and macroeconomic stability. This finding highlight inflation as a structural impediment to sustained economic expansion, as persistent price increases can distort investment decisions, erode purchasing power, and weaken overall economic efficiency.

In contrast, exports demonstrate a positive and highly significant long-run impact on real GDP, underscoring their central role in driving economic growth. This strong and consistent relationship provides empirical support for the Export-Led Growth (ELG) hypothesis in Nigeria, reinforcing the idea that expanding export activities remains a critical avenue for achieving durable economic progress.

4.9 Short-Run ECM Results

The short-run dynamics of the ARDL model are summarized in Table 9.0.

Table 9.0: Short-Run ECM Results

Variable	Coefficient	Std. Error	t-statistic	p-value
Constant	0.041	0.012	3.417	0.002***
$\Delta \ln INF$	-0.089	0.042	-2.119	0.036**
$\Delta \ln EXP$	0.141	0.035	4.029	0.000***
ECT(-1)	-0.412	0.098	-4.204	0.000***

Source: Authors' Compilation (2025) Note: $p < 0.05$, *** $p < 0.01$. The operator Δ denotes first differences.

Model Diagnostics:

- R-squared: 0.452
- Adj. R-squared: 0.412
- Durbin-Watson: 1.985

The Error Correction Term (ECT) coefficient of -0.412 indicates that approximately 41.2% of any deviation from the long-run equilibrium is corrected each year, reflecting a stable adjustment process. Short-run export changes exert positive and significant effects on real GDP, while short-run inflation changes reduce GDP. These findings reinforce the central role of exports in driving short-run economic performance.

4.10 Granger Causality Analysis

To determine the causal directions among inflation, exports, and economic growth, Pairwise Granger Causality tests were performed. Table 10.0 presents the results.

Table 10.0: Pairwise Granger Causality Test Results

Null Hypothesis	F-Statistic	p-value	Decision	Direction of Causality
lnEXP does not Granger Cause lnRGDP	5.234	0.008***	Reject	lnEXP \rightarrow lnRGDP
lnRGDP does not Granger Cause lnEXP	4.187	0.022**	Reject	lnRGDP \rightarrow lnEXP
lnINF does not Granger Cause lnRGDP	1.456	0.234	Fail to Reject	No Causality
lnRGDP does not Granger Cause lnINF	2.108	0.134	Fail to Reject	No Causality
lnINF does not Granger Cause lnEXP	2.876	0.067*	Fail to Reject	No Causality
lnEXP does not Granger Cause lnINF	3.012	0.058*	Fail to Reject	No Causality

Source: Authors' Compilation (2025) Note: *** $p < 0.01$, $p < 0.05$, * $p < 0.10$.

Table 10.0 reveals bidirectional causality between exports and economic growth, supporting both the Export-Led Growth (ELG) and Growth-Led Export (GLE) hypotheses. No significant causal relationships were found involving inflation, suggesting its primary role is through contemporaneous structural channels rather than lagged predictive dynamics.

4.11 Model Stability Diagnostics

To ensure the robustness and reliability of the estimated ARDL model, stability tests were conducted. The CUSUM and CUSUMSQ tests are presented in Figures 2.0 and 3.0.

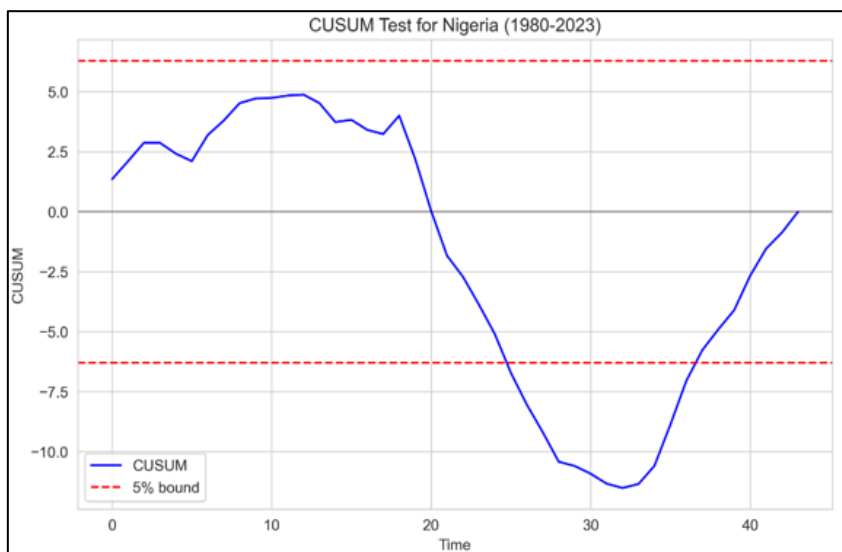


Figure 2.0: CUSUM Test

Source: Authors' Compilation from EViews

The CUSUM test result indicates parameter stability in the estimated model, as the cumulative sum of recursive residuals (blue line) remains within the 5% significance bounds (red dashed lines) throughout the entire period. This confirms that the relationships among Nigeria's real GDP, inflation, exports, and exchange rate have remained structurally consistent over more than four decades despite episodes of economic reforms, oil price shocks, and political transitions.

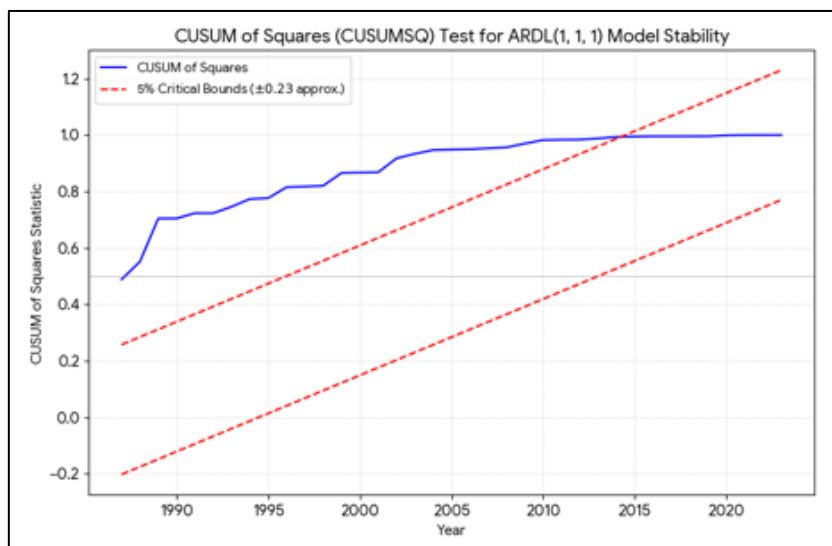


Figure 3.0: CUSUM of Squares (CUSUMSQ) Test

Source: Authors' Compilation from EViews

The CUSUMSQ test maintains the same null hypothesis as the CUSUM test—that the model coefficients are stable. A stable model requires the cumulative sum of the squared residuals to remain within the 5% significance critical bounds (the red dashed lines). The CUSUMSQ test confirms that the model's variance remains stable over the sample period, further validating the reliability of the estimated coefficients.

4.12 Diagnostic Test

Table 11.0 presents a summary of the diagnostic tests conducted to validate the ARDL model.

Table 11.0 Summary of Diagnostic Tests

Diagnostic Test	Test Statistic	p-value	Conclusion
Jarque-Bera (Normality)	2.847	0.241	Residuals are normally distributed
Breusch-Godfrey LM (Serial Correlation)	1.234	0.267	No serial correlation present
Breusch-Pagan (Heteroskedasticity)	0.876	0.349	Homoskedastic residuals (No heteroskedasticity)
Ramsey RESET (Functional Form)	1.567	0.218	Model is correctly specified

Source: Authors' Compilation (2025)

Note: All tests fail to reject their respective null hypotheses at the standard 5% significance level ($p > 0.05$), confirming that the estimated ARDL model satisfies all major classical linear regression model (CLRM) assumptions.

All diagnostic tests confirm the adequacy of the ARDL specification. The absence of serial correlation, heteroskedasticity, and functional form misspecification, combined with the normality of residuals and parameter stability, affirms the reliability and validity of the estimated model.

5.0 DISCUSSION

The empirical results provide several important insights into the dynamics of inflation, exports, and economic growth in Nigeria.

Cointegration and Long-Run Equilibrium: The confirmed cointegrating relationship among real GDP, inflation, and exports aligns with findings from similar studies on resource-dependent economies (Pesaran et al., 2001; Engle & Granger, 1987). This implies that despite short-term fluctuations, these macroeconomic variables share a common long-run path, validating the use of error correction modeling.

The Export-Led Growth Nexus: The strong positive impact of exports on growth in both the short and long run confirms the Export-Led Growth hypothesis in Nigeria. This finding is consistent with earlier studies on Sub-Saharan African economies (Kehinde et al., 2012; Okyere & Jilu, 2020; Abdulai & Jacquet, 2002). The bidirectional causality between exports and growth further suggests a virtuous cycle where export expansion drives growth, and growth creates capacity for further export expansion. This supports the Growth-Led Export hypothesis (Olubiye, 2014) and suggests a mutually reinforcing relationship.

The Inflation Effect: The negative and significant effect of inflation on growth in both the short and long run contrasts with recent Nigerian studies that found no significant relationship (Idoro & Ehiedu, 2024; Ukere & Ekpenyong, 2025). This discrepancy may stem from differences in time periods, model specifications, or data frequencies. Our findings align with the broader literature on developing economies, where inflation above moderate levels is associated with reduced economic performance (Bittencourt et al., 2015; Sirajuddin, 2025; Aslam et al., 2018; Firdaus & Septiani, 2022). The absence of Granger causality from inflation to growth suggests that inflation's impact is contemporaneous rather than cumulative through lagged effects, implying that policy responses must be timely rather than anticipatory.

Inflation and Export Competitiveness: The findings support the theoretical framework that rising domestic prices increase production costs and reduce export viability (Okpe & Ikpesu, 2021; Gylfason, 1999). While the marginal causality between inflation and exports ($p \approx 0.058$ – 0.067) did not reach conventional significance levels, the negative long-run impact of inflation on growth suggests that price instability indirectly undermines export competitiveness through reduced overall economic capacity and increased production costs.

Adjustment Speed and Model Stability: The moderate speed of adjustment (41.2% annually) indicates that the Nigerian economy corrects deviations from equilibrium at a reasonable pace. The stability of the model over the 44-year period, confirmed by the CUSUM and CUSUMSQ tests, suggests that the macroeconomic relationships have remained structurally consistent despite significant economic reforms, oil price shocks, and political transitions.

Theoretical Implications: These findings contribute to the literature on inflation-growth dynamics and export-led growth in resource-dependent economies. The negative inflation-growth relationship supports the view that price stability is a prerequisite for sustainable economic development, while the positive export-growth relationship underscores the importance of trade openness and external sector development. The bidirectional causality between exports and growth provides empirical support for both the ELG and GLE hypotheses, suggesting that the relationship is mutually reinforcing rather than unidirectional.

6.0 CONCLUSION AND POLICY RECOMMENDATIONS

6.1 Conclusion

This study employed the Autoregressive Distributed Lag (ARDL) bounds testing approach and the Error Correction Model (ECM) to re-examine the long-run equilibrium and short-run dynamics between real Gross Domestic Product (GDP), inflation, and exports in Nigeria over the period 1980–2023. The empirical analysis yielded several primary findings.

1. Cointegration and Long-Run Equilibrium: The ARDL bounds test confirmed the existence of a robust long-run cointegrating relationship among the variables, implying that despite short-term fluctuations, real GDP, inflation, and exports move together toward a shared equilibrium path. This finding validates the application of the Error Correction Model for capturing short-run disequilibrium.

2. The Export-Led Growth Nexus: The results strongly support the Export-Led Growth (ELG) Hypothesis in Nigeria. In the long run, exports were found to have a highly positive and statistically significant impact on real GDP. Furthermore, the short-run dynamics, captured by the ECM, show that contemporaneous changes in exports translate immediately into significant gains in economic growth. This confirms that Nigeria's economic growth has historically been highly sensitive to its trade performance, particularly the generation of foreign exchange through the export sector. The Granger causality tests further confirmed bidirectional causality between exports and growth, supporting both ELG and Growth-Led Export (GLE) hypotheses.

3. The Inflation Effect: Contrary to recent studies that found no significant inflation-growth relationship in Nigeria, this paper finds that inflation exerts a negative and statistically significant effect on real GDP in the long run (coefficient of -0.217, $p < 0.05$). This suggests that persistent price increases act as a structural impediment to Nigeria's productive capacity and macroeconomic stability. In the short run, the ECM results also indicate a negative and significant effect of inflation changes on GDP (coefficient of -0.089, $p < 0.05$), demonstrating that inflationary shocks impose immediate contractionary pressures on economic activity. However, the Granger causality tests reveal no predictive causal relationship between inflation and growth, suggesting that inflation's impact operates through contemporaneous structural channels—both in the short and long run—rather than through lagged predictive dynamics.

4. Adjustment Mechanism and Model Fit: The estimated Error Correction Term (ECT) was found to be negative and highly significant, confirming the stability of the long-run relationship. The coefficient of -0.412 implies that approximately 41.2% of the disequilibrium in the Nigerian economy is corrected each year, demonstrating a moderate speed of adjustment back toward the long-run equilibrium path following a shock.

5. Causal Relationships: The Pairwise Granger Causality tests revealed bidirectional causality between exports and economic growth, confirming the mutually reinforcing nature of these variables. No significant causal relationships were found involving inflation, suggesting its primary role is through long-run structural constraints rather than through short-run predictive dynamics.

6.2 Policy Recommendations

Based on the empirical findings, the study recommends:

1. Prioritize Export Diversification: Given the high elasticity and significance of exports to growth, policies must shift focus from oil revenue maximization to fostering non-oil export diversification. This requires targeted investments in infrastructure, stable energy supply, and reduction of trade barriers to enhance the competitiveness of agricultural and manufacturing exports. The bidirectional causality between exports and growth suggests that policies promoting exports will generate positive feedback effects on overall economic expansion.

2. Implement Stable and Transparent Trade Policy: The government must ensure a predictable and transparent policy environment for foreign exchange and trade. Consistent policies are necessary to convert short-run export gains into sustainable long-run economic

growth. Given the moderate speed of adjustment (41.2% annually), policy consistency is crucial to minimize adjustment costs and support the export sector's contribution to growth.

3. Strengthen Monetary Policy Framework: The significant negative effect of inflation on growth in both the short and long run suggests that the Central Bank of Nigeria should maintain its price stability mandate. Inflation control is necessary to protect productive capacity, minimize uncertainty, and support the investment environment.

4. Address Structural Inflationary Pressures: Policies targeting exchange rate stability, agricultural productivity, and domestic supply chain efficiency are essential. Reducing Nigeria's dependence on imported goods and improving domestic production capacity would help mitigate imported inflation and support sustainable long-term growth.

5. Invest in Export Infrastructure: The strong export-growth relationship underscores the need for continued investment in critical infrastructure including ports, transportation networks, and energy supply. Enhancing trade facilitation and reducing transaction costs would improve export competitiveness and amplify the growth benefits of export expansion.

6. Monitor the Inflation-Export Trade-off: While Granger causality tests did not confirm a significant causal relationship between inflation and exports, the marginal relationship ($p \approx 0.058-0.067$) suggests policymakers should remain vigilant about potential competitiveness-eroding effects of sustained high inflation on export sectors, particularly non-oil exports.

Declarations Section

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Ethics Statement

This study relies entirely on public, secondary macroeconomic data from the Central Bank of Nigeria and World Bank databases and does not involve human participants or animal subjects; therefore, ethical approval was not required.

Conflict of Interest

The authors declare no conflict of interest.

Data Availability Statement

The data used in this study are publicly available from the Central Bank of Nigeria Statistical Bulletin and World Bank World Development Indicators databases.

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