An investigation into exchange rate pass-through to inflation in Nigeria

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Abstract

This study examines the relationship between exchange rate pass-through (ERPT) and inflation in Nigeria from 1985 to 2023, a period marked by persistent inflationary pressures and exchange rate volatility. Using secondary data from the Central Bank of Nigeria and World Development Indicators, the study applies unit root and cointegration tests, followed by an Autoregressive Distributed Lag (ARDL) model to capture both short- and long-run dynamics. Results reveal that exchange rate depreciation exerts a positive and statistically significant effect on the consumer price index, confirming strong ERPT in Nigeria. The findings highlight that inflationary pressures are not only demand-driven but also heavily influenced by external shocks transmitted through the exchange rate channel. Policy implications suggest that exchange rate stability and disciplined monetary management are critical to moderating inflation, while structural reforms to boost domestic production and reduce import dependence are essential for long-term resilience. Coordinated monetary and fiscal policies, alongside transparent fuel pricing, will strengthen institutional credibility and enhance macroeconomic stability.

Keywords: Autoregressive Distributed Lag, Exchange Rate Pass Through, Inflation.

1. Introduction

The connection between inflation and changes in exchange rates is a major concern globally, especially in light of growing economic integration and globalization. According to Forbes et al. (2019), market structures, the legitimacy of monetary policy, and the level of economic openness all influence the extent to which exchange rate fluctuations are passed through to domestic prices, and this varies significantly across countries. A deeper understanding of how to measure exchange rate pass-through (ERPT) is not only crucial for forecasting inflation but also serves as a foundation for more effective monetary policy. Exchange rate movements and inflation are two of the most closely watched indicators of macroeconomic performance, particularly in developing countries where both variables are highly volatile and interdependent. In Nigeria, fluctuations in the exchange rate have historically exerted strong and often unpredictable effects on domestic price levels. The transmission of exchange rate changes to inflation referred to as ERPT reflects the degree to which a depreciation or appreciation of the domestic currency is transmitted into consumer prices. Understanding this relationship is vital for effective monetary policy formulation, inflation control, and exchange rate management. The relationship between inflation and exchange rate pass through remains a central issue in macroeconomic analysis, particularly in the context of increasing globalization and economic

interdependence. Exchange Rate Pass Through has significant implications for inflation targeting, monetary policy credibility, and economic stability.

In advanced economies, Exchange Rate Pass Through tends to be relatively low due to robust monetary institutions and transparent policy regimes. However, recent shifts in global supply chains and the rising share of imported goods have heightened the sensitivity of domestic prices to exchange rate movements, even in these contexts (IMF, 2022). In contrast, developing economies like Nigeria face more pronounced challenges. Exchange rate misalignments have been linked to inflationary pressures, reduced competitiveness, and broader macroeconomic distortions (Njoku & Nwaimo, 2019). Moreover, the choice of exchange rate regime plays a critical role in shaping the transmission mechanism of exchange rate shocks to domestic prices. Despite a growing body of literature, the extent and nature of Exchange Rate Pass Through in Nigeria remain underexplored, particularly over long time horizons and across different policy regimes. Existing studies often overlook structural factors such as financial market development, import dependence, and institutional credibility, which may condition the ERPT process (Adeyemi, 2024). Furthermore, the evolving macroeconomic landscape in Nigeria from periods of fixed exchange rate regimes to more flexible arrangements necessitates a reexamination of the ERPT-inflation nexus.

Over the past four decades, Nigeria has witnessed sustained episodes of inflationary pressures and recurrent exchange rate adjustments. Since the introduction of the Structural Adjustment Programme (SAP) in 1986, which replaced the fixed exchange rate regime with a market-determined system, the naira has experienced chronic depreciation. The shift was intended to improve external competitiveness and correct balance-of-payments disequilibrium. However, this policy change also exposed the economy to external price shocks and heightened imported inflation, given Nigeria's structural dependence on foreign goods and intermediate inputs. For instance, the naira depreciated from about ₦0.89 per US dollar in 1985 to ₦7.39 in 1990, and by 2023, it exceeded ₦750 per US dollar in the official market. During this same period, inflation trended upward, surging from single digits in the early 1980s to as high as 72.8% in 1995, and remained above 20% for much of the post-2015 period. These concurrent movements highlight a persistent and significant exchange rate inflation nexus. Theoretically, a depreciation of the naira should raise the cost of imported goods and production inputs, thereby transmitting higher prices across the economy. In contrast, appreciation should dampen inflationary pressures, although such episodes are rare in Nigeria's economic history.
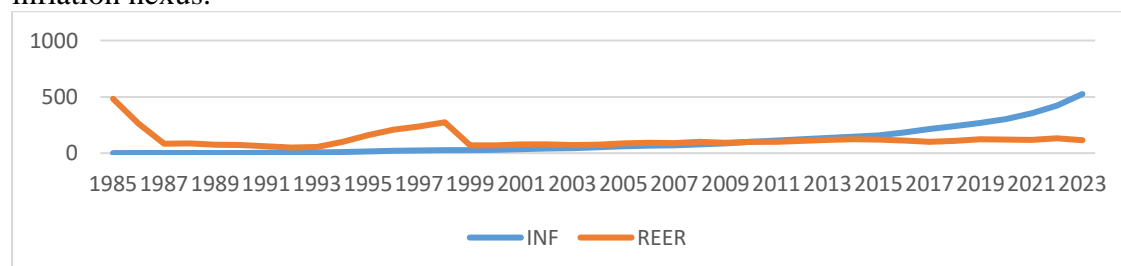

Figure Error! No text of specified style in document..***1 Inflation and Real effective exchange rate REER (1985-2023)***

Fig. 1.1 illustrates how everyday life in Nigeria have been shaped by the naira's fluctuations over time. Each time currency depreciation has translated into rising market prices, gradually and steadily squeezing households and businesses. As shown in the graph, when the trend is increasing, there is a steady rise in prices, underscoring the direct link between exchange rate movements and inflation. When the trend is decreasing, however, prices ease slightly, though the relief is often short-lived. The graph indicates a decline in certain periods, and there was a sharp drop following episodes of temporary currency stability. The data reveal a sharp rise during other periods, with the late 1980s and mid-1990s standing out as moments when the naira depreciated sharply, driving inflation up significantly. More recent years demonstrate the same stubborn pattern repeating consistently. This evidence implies that when the naira weakens, the cost of living progressively rises, reminding us that exchange rate movements are not just abstract numbers but realities felt across the economy.

The ERPT mechanism operates primarily through two channels. The first is the import price channel, where a weaker currency directly increases the cost of imported goods and services. The second is the cost-push channel, where higher input costs raise production expenses, which firms pass on to consumers in the form of higher prices. In a highly import-dependent economy like Nigeria where imported raw materials, fuel, and consumer goods dominate the consumption basket this mechanism is particularly potent Abdullahi (2025). Thus, understanding the extent and speed of pass-through is essential for anticipating inflationary responses to currency movements. In advanced economies, the pass-through tends to be low due to credible monetary frameworks, flexible production structures, and stable inflation expectations (Forbes et al. 2019; Gopinath, 2020). However, in developing economies such as Nigeria, the pass-through is often high because of weak policy credibility, high import dependency, and limited financial market depth (López-Villavicencio & Mignon, 2017). This difference underscores the importance of context-specific analysis that accounts for both structural and institutional realities. In Nigeria's case, monetary policy efforts to stabilize prices have been undermined by recurrent exchange rate shocks. The Central Bank of Nigeria (CBN) has alternated between various exchange rate regimes from managed floats to multiple exchange windows aimed at curbing volatility and stabilizing inflation. Despite these interventions, inflation has remained persistently high, averaging over 15% between 2010 and 2023. This persistence suggests that exchange rate fluctuations continue to exert a strong influence on inflation, either directly through import prices or indirectly through expectations and cost pressures.

The objective of this study, therefore, focuses on investigating the relationship between inflation and exchange rate pass-through in Nigeria. This objective seeks to determine whether exchange rate changes exert immediate effects on inflation or whether these effects manifest gradually over time. The distinction between short-run and long-run dynamics is crucial because it informs the design and timing of policy interventions. For instance, if pass-through occurs predominantly in the short run, policymakers must respond swiftly to exchange rate shocks with targeted interventions. Conversely, if the effects are more pronounced in the long run, structural reforms become essential to mitigate inflationary pressures and enhance economic resilience.

2. Literature Review
2.1 Theoretical Literature

According to the Keynesian theory of inflation, which was put forth by John Maynard Keynes (1883–1946) and his adherents, demand-pull inflation is caused by an increase in aggregate demand. This kind of inflation happens when the economy's total demand for goods and services exceeds its whole supply. Aggregate demand includes investment, consumption, and government spending. Idris (2017) asserts that lowering each element of aggregate demand through policy implementation is an efficient way to combat inflation. This typically involves measures such as raising interest rates, increasing taxes, and cutting government spending. According to the Keynesian view, inflation is not much of a concern when an economy is operating below full capacity. For example, during a recession, when factories are idle and people are unemployed, increasing government spending or lowering interest rates can help boost demand without causing prices to rise.

Cost push inflation theory explains how rising costs of production such as wages, raw materials, and energy lead to an increase in the overall price level. This form of inflation occurs when businesses, facing higher production costs, pass those costs onto consumers in the form of higher prices. Unlike demand-pull inflation, which is driven by increased consumer spending, cost-push inflation is rooted in the supply side of the economy. A classic example of cost-push inflation is when the price of crude oil rises sharply. Since oil is a key input in transportation, manufacturing, and energy production, its increase raises the cost of goods and services across multiple sectors. When firms adjust their prices upward to maintain profit margins, consumers end up paying more even though demand hasn't changed. This type of inflation can be especially harmful because it slows economic growth and reduces consumers'

purchasing power at the same time (Blanchard & Johnson, 2017).

2.2 Empirical Review

Rodriguez et al. (2024) explored ERPT dynamics in Peru using the TVP-VAR-SV model from 1995Q2 to 2022Q4. The study concluded that short-term ERPT exceeds long-term ERPT, driven by a high degree of dollarization in import and producer prices compared to consumer prices. Adeyemi (2024) explored the effects of exchange rate regimes on inflation in Nigeria using ARDL and quarterly data from 1981 to 1986. The results revealed a statistically significant negative coefficient for the output gap under a fixed exchange rate regime. Flaccadoro (2024) analyzed ERPT in small, open, commodity-exporting economies, particularly Canada. The study found that while traditional models suggest a negative pass-through, a conditional approach indicates a positive relationship between exchange rate appreciation and consumer prices, particularly during commodity shocks.

Ikue (2024) analyzed asymmetric ERPT using ARDL and NARDL models between 2010 and 2024. The findings revealed a more substantial inflationary impact from exchange rate depreciation compared to appreciation, especially concerning food inflation. Ijirshar et al. (2022) test the J.curve and Marshall Lerner conditions using ARDL and NARDL approaches on data from 1986 to 2021. The real effective exchange rate (REER) depreciation negatively affects trade balance and exports in the short run but improves trade balance in the long run verifying Marshall–Lerner conditions. Abubakar et al. (2021) This study aims to examine the relationship between exchange rate fluctuations and inflation in Nigeria. The study utilized quarterly data from the Central Bank of Nigeria (CBN) and the National Bureau of Statistics (NBS) spanning from 1990 to 2020. The study employed a nonlinear

Autoregressive Distributed Lag (ARDL) model to capture the appreciation and depreciation of exchange rate dynamics between exchange rates and inflation. Their findings indicate that exchange rate depreciation significantly raises consumer prices, thereby validating the cost-push inflation theory. Olu et al. (2024) employed both ARDL and VECM techniques to assess how external shocks interact with domestic exchange rate dynamics in driving inflation. They found that ERPT is not constant over time but intensifies during volatile macroeconomic episodes such as the 2014 oil price crash and the COVID-19 pandemic. Their results emphasized the suitability of ARDL in capturing the cointegrating relationships and dynamic adjustments between inflation, exchange rates, and external shocks in Nigeria. Oluwatobi et al. (2021) investigated ERPT in Nigeria as an oil-dependent economy using ARDL for both short- and long-run dynamics, supplemented by the Toda–Yamamoto causality test. Their results confirmed that exchange rate depreciation exerts a significant positive effect on inflation in both horizons, whereas appreciation had weaker effects, implying asymmetry. The use of ARDL provided robust insights into the long-run cointegration between exchange rates and consumer prices.

Oyadeyi et al. (2024) explores the effects of exchange rate pass-through on producer prices, consumer prices, export prices, import prices and the Taylor rule from 2000 to 2023. They employed threshold autoregressive technique (TAR) model and the smooth threshold regression (STR). The finding shows that a threshold of 5 percent is the optimum benchmark if demand and supply are not to be weakened. This result implies that an average exchange rate depreciation not higher than 5 percent within a quarter is reasonable if the Nigerian economy is to remain competitive both domestically and globally. Tiamiyu (2022) examined ERPT using both symmetric and asymmetric ARDL models for Nigeria (2000–2021). The findings revealed that inflation dynamics are both autoregressive and adaptive, with short-run ERPT estimates being higher due to exchange rate asymmetries. Abubakar et al. (2021) This study aims to examine the relationship between exchange rate fluctuations and inflation in Nigeria. The study utilized quarterly data from the Central Bank of Nigeria (CBN) and the National Bureau of Statistics (NBS) spanning from 1990 to 2020. The study employed a nonlinear Autoregressive Distributed Lag (ARDL) model to capture the appreciation and depreciation of exchange rate dynamics between exchange rates and inflation. Their findings indicate that exchange rate depreciation significantly raises consumer prices, thereby validating the cost-push inflation theory.

3. Methodology
3.1 Theoretical Framework
This study employed the cost-push inflation theory which serve as a guiding principle. Cost-push inflation theory asserts that exchange rates adjust to equalize the price levels of goods across countries. Exchange Rate Pass-Through (ERPT) refers to the extent to which exchange rate changes influence domestic prices. Under cost push inflation, a depreciation in the domestic currency should raise import prices, increasing the cost of imported goods. If firms pass these costs to consumers, domestic inflation rises. Conversely, an appreciation lowers import prices, exerting deflationary pressure (Ighoroje & Orife, 2022). However, in economies with stable inflation or strong monetary frameworks, ERPT tends to be muted, leading to deviations from strict cost inflation outcomes (Adeyemi, 2024). This theoretical framework combines cost push

inflation theory and ERPT concepts to provide a structural basis for explaining inflation in Nigeria. It acknowledges both the international price transmission via exchange rates and domestic factors like interest rate, growth, and fuel prices that interact to influence inflation.

This theory can be expressed as an equation thus:

$$\Delta P_t = \alpha + \beta \Delta E_t + \gamma \Delta C_{t-1} + e_t \; -------------(1)$$

Where: ΔP_t = change in domestic price level, ΔE_t = change in the real effective exchange rate, ΔC_{t-1} = change in other cost factors, β = pass-through coefficient, α = constant term and e_t = error term.

3.2 Data and Sources

This study used secondary data obtained from World Development Indicators (WDI, 2023) and Central Bank Statistical bulletin (CBN, 2023) from 1985 to 2023. The variables include; Inflation which was measure by consumer price index, and exchange rate pass through (ERPT) measured by real effective exchange rate (REER). Money supply measured by Broad Money Supply, Interest Rate measured by Deposit Interest rate. Total Import measured by Import of goods and services Primary Income. Economic Growth (GDP) measured by Real Gross Domestic Product current and Petrol Pump Price (PPP) measured by fuel pump price per litre.

3.3 Model Specification

The objective of the models is to examine the relationship between inflation and exchange rate pass-through in Nigeria using the Autoregressive distributed lag (ARDL) model. To achieve this objectives, the study formulated a linear regression model and employed estimation techniques for the analysis.

Therefore, the functional form of this model is specified as follows:

$$CPI = F(ERPT, GDPC, DIR, BMS, IMPY2, PPP) \quad (2)$$

Thus, equation 2 is specified into econometric form as shown below:

$$CPI_t = \beta_0 + \beta_1 ERPT_t + \beta_2 GDPC_t + \beta_3 DIR_t + \beta_4 BMS_t + \beta_5 IMPY2_t + \beta_6 PPP_t + e\varepsilon_t \; (3) ---------(1)$$

Taking the natural log of equation 3.3 yields;

$$LoCPI_t = \beta_0 + \beta_1 LogERPT_t + \beta_2 LogGDPC_t + \beta_3 LogDIR_t + \beta_4 LogBMS_t + \beta_5 LogIMPY2_t + \beta_6 LogPPP_t + \varepsilon_t$$

$$(4)$$

Where: CPI stand for Consumer price index, ERPT meaning Exchange rate pass through, INTR stand for Interest rate, IMPY stand for Import Value, GDP stands for Economic Growth, BMS stands for Broad money supply and PPP stand for Petrol pump price, ε_t is the Error Term and β are the parameters of the model.

3.4 Estimation Procedures

An Autoregressive distributed lag (ARDL) model was used to investigate inflation and exchange rate pass-through in Nigeria. Pesaran & Shin (1999) and Pesaran, Shin, and Smith (2001) developed the ARDL model. It examines potential connections between two or more variables. Given its superiority over other long-term analytical tools, the Autoregressive Distributed Lag (ARDL) model's firstness, dependability, and statistical features make it justifiable for employment (Harris & Sollis, 2003; Ramazan, 2021). The ARDL approach to cointegration is estimated using the following Unrestricted Error Correction Model (UECM) equations:

$$\Delta \ln CPI_t = \beta_0 + \beta_1 LnCPI_{t-1} + \beta_2 LnERPT_{t-1} + \beta_3 LnGDPC_{t-1} + \beta_4 LnDIR_{t-1} + \beta_5 LnBMS_{t-1} + \beta_6 LnIMPY2_{t-1} +$$

$$\beta_7 LnPPP_{t-1} + \sum_{i=0}^{p} \beta_8 \Delta CPI_{t-1} + \sum_{i=0}^{p} \beta_9 \Delta ERPT_{t-1} + \sum_{i=0}^{p} \beta_{10} \Delta GDPC_{t-1} + \sum_{i=0}^{p} \beta_{11} \Delta DIR_{t-1} + \sum_{i=0}^{p} \beta_{12} \Delta BMS_{t-1}$$

$$+ \sum_{i=0}^{p} \beta_{13} \Delta IMPY2_{t-1} + \sum_{i=0}^{p} \beta_{14} \Delta PPP_{t-1} + ECM + \mu_t \qquad (5)$$

4. Result and Discussion
4.1 Preliminary Results

As a first step in the estimation, the series were tested for unit root using Augmented Dickey-Fuller (ADF) and the Philips-Perron (PP) techniques and the results are in Table 1. Results from both the ADF and PP tests shows that there is a mixed of I(0) and I(1) order of integration of the variables

Table 1; Unit Root Test

Variables	ADF test			PP test		
	t-statistics	p.value	Remark	t-statistics	p.value	Remark
LCPI	-2.945842	0.0100	I(1)	-2.943427	0.0435	I(1)
LERPT	-2.941145	0.0026	I(0)	-2.941145	0.0026	I(0)
LGDPC	-2.945842	0.0432	I(1)	-2.943427	0.0007	I(1)
LBMS	-2.943427	0.0086	(1)	-2.943427	0.0104	I(1)
LDIR	-3.536601	0.0064	I(0)	-3.533083	0.0324	I(0)
IMPY2	-3.580622	0.0263	I(1)	-2.943427	0.0095	I(1)
LPPP	-2.943427	0.0025	I(1)	-2.943427	0.0050	I(0)

Note *, ** and *** indicate 1%, 5% and 10% level of significant levels.

The ADF results indicate that Consumer Price Index, Broad Money Supply, Import of Goods and Services Primary Income and Petroleum Pump Price are non-stationary at level but become stationary after first differencing, implying they are integrated of order one, I(1). Exchange Rate Pass Through and Deposit Interest Rate are stationary at level, suggesting they are I(0). Gross Domestic Product Current shows mixed outcomes but is largely I(1). Overall, the ADF results reveal a mixture of I(0) and I(1) variables, with no evidence of integration at order two.

The PP test broadly supports these findings, confirming that Consumer Price Index, Gross Domestic Product Current, Import of Goods and Services Primary Income, Broad Money Supply and Petroleum Pump Price are I(1), while Exchange Rate Pass Through and Deposit Interest Rate are I(0). However, Petroleum Pump Price shows slight differences, appearing as I(1) in the ADF test but I(0) in the PP test.

The presence of both I(0) and I(1) variables justifies the application of the Autoregressive Distributed Lag (ARDL) model. ARDL is well-suited for such mixed integration orders, as it can simultaneously capture short-run dynamics and long-run relationships without requiring all variables to be integrated of the same order. In sum, the unit root test results validate the ARDL model as a robust methodological framework for analyzing an investigation into inflation and exchange rate pass-through in Nigeria.

Table 2: ARDL Bounds F Test

Test Statistic	Value	K
F-Statistics	20.65196	6
Critical Value Bounds		
Significance Level	**I(0) Bound**	**I(1) Bound**

10%	1.75	2.87
5%	2.04	3.24
2.5%	2.32	3.59
1%	2.66	4.05

Source: Author's Computation

Table 2 presents the results of the bounds test for cointegration. The computed F-statistic exceeds the upper bound critical value at the 1% significance level. Given that the test statistic is greater than the corresponding upper bound, the null hypothesis of no long-run relationship is rejected. This indicates the presence of a cointegrating relationship among the variables.

Table 3: Long-run Relationship Test

Variable	Coefficient	Std. Error	T-Statistic	Prob.
LERPT	0.798466	0.206077	3.874601	0.0015***
LGDPC	-0.719804	0.238583	-3.016995	0.0087***
LDIR	1.289025	0.289328	4.455231	0.0005***
LBMS	0.580811	0.216715	2.680066	0.0171**
IMPY2	6.70E-14	1.01E-14	6.623583	0.0000***
LPPP	0.652555	0.034582	18.86982	0.0000***

*Note: ***, ** and * imply significance at 10%, 5% and 1% levels respectively*

Table 3 reports the estimated long-run coefficients, capturing the steady-state relationships among the variables. The exchange rate pass through has a positive and highly significant effect on the consumer price index. This implies that, in the long run, a depreciation of the domestic currency results in a substantial increase in the consumer price index, underscoring a strong and persistent exchange rate pass-through effect. The high and significant effect of the long-run exchange rate pass-through estimated in this study is broadly consistent with the consensus emerging from recent Nigerian and regional evidence.

A number of studies point to depreciation as the main driver of inflationary pressures, with appreciations yielding weaker or delayed effects. For instance, evidence from both linear (Jakpa et al., 2024) and nonlinear specifications (Ikue et al., 2024; Usman & Aliyu, 2020; Akpakpo et al., 2024) highlights the uneven nature of pass-through, whereby depreciation shocks transmit rapidly and forcefully into domestic prices while appreciation episodes tend to be muted. This unevenness reinforces the present finding of a strong long-run elasticity, as Nigeria's inflation history has been dominated by frequent and sometimes sharp depreciation episodes. Another recurring theme in the literature is the role of thresholds and regimes. Usman and Aliyu (2020) demonstrate that once depreciation exceeds a certain threshold, exchange rate movements become the dominant inflationary force. The large long-run elasticity obtained in the current study may therefore reflect that much of the sample period was characterized by depreciation beyond such thresholds, particularly in the wake of the exchange rate unification policy. This interpretation is reinforced by Garba et al. (2024), who find that inflationary effects of depreciation intensified after unification.

The literature also emphasizes the importance of policy credibility in shaping Exchange Rate Pass Through. Kemoe et al. (2024) show that pass-through in Sub-Saharan Africa is significantly stronger during depreciation episodes than during appreciations, but that improved monetary credibility can reduce its magnitude. The present study's findings are thus consistent with an environment of limited monetary

credibility and fiscal dominance, which amplifies the transmission of external shocks into domestic prices. Similarly, Opene-Terry et al. (2024) document that while short-run pass-through is incomplete, effects accumulate over time, resonating with the long-run strength reported here. Finally, although not directly concerned with inflation, Ijirshar et al. (2022) show that depreciation exerts significant effects on Nigeria's external sector, worsening the trade balance in the short run but improving it in the long run, which complements the present findings by underscoring the broad macroeconomic significance of exchange rate movements. Other variables, such as gross domestic product current, show a negative and

significant effect. Although counter-intuitive, this result suggests that sustained economic growth may reduce inflationary pressures in Nigeria over time, possibly reflecting improvements in productive capacity and supply-side responses that offset demand-driven price increases. Broad money supply, deposit interest rate, import of goods and service and petroleum pump price both exert significant positive long-run effects on the consumer price index. These findings highlight the inflationary consequences of monetary expansion and fuel price adjustments, consistent with the central role of monetary and energy shocks in driving Nigeria's price dynamics.

Table 4: Short-run Relationship Test

ECM Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LCPI(-1))	0.056807	0.081427	0.697642	0.4961
D(LCPI(-2))	-0.533812	0.055052	-9.696563	0.0000***
D(LERPT)	0.151600	0.021533	7.040346	0.0000***
D(LGDPC)	0.140838	0.070102	2.009036	0.0629**
D(LGDPC(-1))	0.243705	0.075061	3.246741	0.0054***
D(LDIR)	-0.003568	0.022292	-0.160080	0.8750
D(LDIR(-1))	-0.243283	0.026115	-9.315791	0.0000***
D(LDIR(-2))	-0.091660	0.022455	-4.081935	0.0010***
D(LBMS)	0.184582	0.049572	3.723501	0.0020***
D(LBMS(-1))	0.172642	0.052485	3.289361	0.0050***
D(LBMS(-2))	-0.093491	0.045017	-2.076798	0.0554**
D(IMPY2)	3.46E-15	1.57E-15	2.196738	0.0442**
D(IMPY2(-1))	-1.25E-14	2.18E-15	-5.736381	0.0000***
D(IMPY2(-2))	-1.33E-14	2.29E-15	-5.821947	0.0000***
CointEq(-1)*	-0.263256	0.018505	-14.22636	0.0000***

*Note: ***, ** and * imply significance at 1%, 5% and 10% levels respectively.*

The ECM results Table 4 reveal a significant and negative error correction term (-0.263), indicating that approximately 26.3% of disequilibrium is corrected each period. This confirms the existence of a stable long-run relationship and a moderate speed of adjustment. In the short run, ERPT remains positive and significant, with a 1% depreciation leading to a 0.15% increase in consumer prices. This underscores the vulnerability of

Nigeria's inflation to exchange rate shocks, consistent with findings from Choudhri & Hakura (2006) and Adeniran et al. (2014). Short-run dynamics also show that monetary expansion and interest rate changes significantly influence inflation. Notably, lagged interest rate effects are negative and significant, suggesting that tightening measures are effective in curbing inflation. Imports appear to moderate inflationary pressures, likely by

easing supply constraints. The diagnostic test results used to evaluate the reliability and robustness of the ARDL model. These post-estimation tests help verify whether the model's residuals meet the basic assumptions of normality, absence of serial correlation, and homoscedasticity. In addition, the CUSUM and CUSUMSQ tests were performed to confirm the structural stability of the model over the study period.

Table 5. Diagnostic Test Result

| Tests	Coefficient	P-Value
Jarque-Bera Residual Normality Test	0.13807	0.9333
Serial Correlation LM Test	1.1444	0.3394
Residual Heteroskedasticity Test	3.6043	1.0000
Ramsey Reset Test	0.7369	0.6334

Note that ***, ** and * indicate level of significant at 10%, 5% and 1% respectively

Source: Author's Computation

Diagnostic tests Table 5 confirm the robustness of the ARDL model. The residuals are normally distributed (Jarque-Bera p = 0.9333), serial correlation is absent (LM p = 0.3394), and heteroskedasticity is not detected. The Ramsey RESET test indicates no model misspecification. Stability tests (CUSUM and CUSUMSQ) further validate the structural integrity of the model over the sample period.
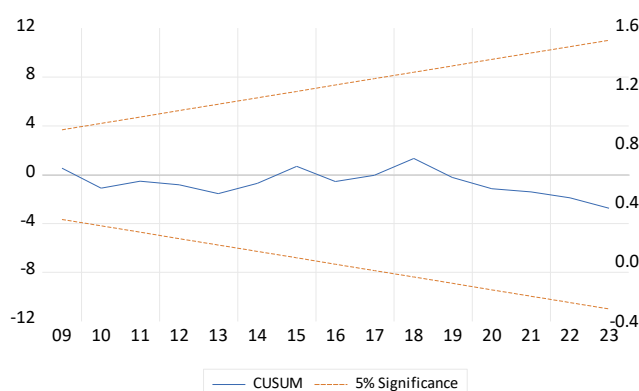
Figures 1: Plot of the CUSUM Test
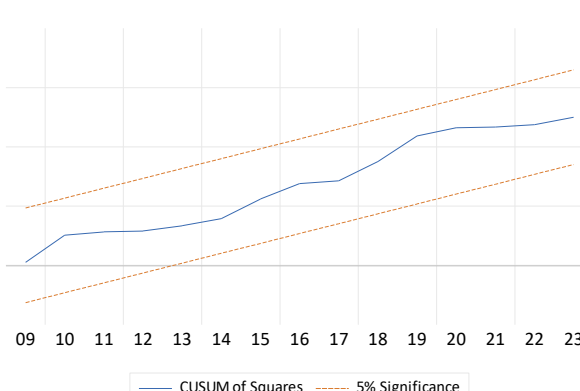
Figures 2 Plot of the CUSUM SquareTest

The diagnostic tests confirm that the ARDL model for Model One is well specified, with normally distributed, uncorrelated, and homoscedastic residuals. The structural stability indicated by the CUSUM and CUSUMSQ plots further reinforces the robustness and reliability of the model's short-run and long-run estimates.

5. Conclusion and Recommendations

This study shows that inflation in Nigeria is closely tied to exchange rate movements. In particular, currency depreciation has a strong and lasting impact on consumer prices, while appreciation has a much weaker effect, highlighting the asymmetric nature of exchange rate pass-through. Other factors such as broad money supply, petroleum pump prices, and interest rates also play significant roles in driving inflation, whereas sustained economic growth helps to ease these pressures. The error correction mechanism confirms that the economy adjusts moderately to shocks, and the diagnostic tests demonstrate that the ARDL model used is both robust and stable. Overall, the evidence points to an

inflationary environment that is highly sensitive to exchange rate fluctuations and structural weaknesses in the economy. Drawing from these findings the study also recommends that, several policy actions are necessary. The Central Bank of Nigeria should focus on stabilizing the exchange rate by adopting a unified and predictable regime, which would reduce speculation and restore confidence. Stronger monetary discipline is required to manage broad money supply growth, while transparent fuel pricing policies would help limit cost-push inflation. Interest rate adjustments should be applied carefully, as they can be effective in controlling inflation in the short run but must be balanced against growth objectives. At the same time, long-term investment in agriculture, manufacturing, and energy is critical to reduce import dependence and build resilience against external shocks. Finally, broader institutional reforms are needed to strengthen policy credibility and break the cycle of inflation and exchange rate instability.

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