

EXCHANGE RATE, INFLATION UNCERTAINTY AND SAVINGS IN NIGERIA: AN ASYMMETRIC APPROACH

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Abstract

This study investigates the asymmetric effects of exchange rate fluctuations and inflation uncertainty on savings behavior in Nigeria, employing the Nonlinear Autoregressive Distributed Lag (NARDL) model. The results indicate that positive cumulative changes in inflation uncertainty, as measured by the GARCH-based conditional variance of inflation, negatively impact savings. Rising inflation uncertainty forces households to allocate more resources toward immediate consumption, particularly during periods of food scarcity and insecurity. However, a reduction in inflation uncertainty does not lead to an immediate increase in savings, as households remain skeptical of long-term economic stability. Additionally, past currency depreciations have a lasting negative effect on savings, as people expect further currency depreciation. These findings are interpreted within the frameworks of the Precautionary Savings Theory, Life-Cycle Hypothesis, and Permanent Income Hypothesis, offering insights into the complex dynamics between exchange rate volatility, inflation uncertainty, and savings behavior in Nigeria.

Keywords: Exchange Rate, Inflation, Savings, Nonlinear Autoregressive Distributed Lag (NARDL) And Generalized Autoregressive Conditional Heteroskedasticity (GARCH).

1. INTRODUCTION

In recent decades, Nigeria has faced a complex economic environment marked by frequent changes in exchange rates and rising inflation. These factors significantly influence the financial behaviors of households and businesses, particularly concerning savings and investment decisions. The Nigerian economy's heavy reliance on oil exports renders it vulnerable to fluctuations in global oil prices, directly affecting its foreign exchange reserves and the value of the Naira. This dependency on oil revenue fosters cycles of currency instability, impacting domestic price levels and financial planning across sectors (Ajakaiye, 2001; Adewuyi & Akpokodje, 2013). Consequently, individuals and businesses navigate a challenging environment where their purchasing power and the real value of savings are in constant flux, heavily shaped by macroeconomic factors largely beyond their control.

To stabilize the economy and manage inflation, the Nigerian government, particularly the Central Bank of Nigeria (CBN), has employed various policy measures. The CBN has utilized monetary tools, such as interest rate adjustments and direct interventions in the foreign exchange market, to curb inflation and maintain a stable currency.

Recent policy changes, including adjustments to fuel subsidies and currency reforms, illustrate ongoing efforts to mitigate the adverse impacts of macroeconomic volatility on everyday economic decisions (Barro, 1995; Odusola & Akinlo, 2001). Despite these efforts, sustained stability remains elusive, with fluctuating exchange rates and inflation introducing ongoing uncertainty. This environment compels individuals and businesses to adjust their savings and investment behaviors in response to anticipated or actual losses in purchasing power. Research indicates that under high inflation conditions, households often increase precautionary savings, while businesses may reduce their savings due to squeezed profit margins (Alagidede & Ibrahim, 2017; Schito et al., 2023). Such responses underscore the need to explore the nuanced relationship between these economic factors and savings behavior in Nigeria.

A crucial aspect of this exploration is recognizing that the interplay between exchange rate movements, inflation, and savings may not be straightforward. Savings responses can vary based on the direction and intensity of changes in inflation or currency value. For instance, a sudden currency devaluation may elicit a more robust reaction in savings behavior compared to a gradual depreciation, as households and businesses respond differently to shocks of varying magnitudes. Similarly, high inflation rates might prompt households to shift their assets into more stable forms of investment, such as real estate or foreign currencies, while smaller inflationary increases may lead to only marginal adjustments in savings (Adewuyi & Akpokodje, 2013; Haruna et al., 2022). This study adopts an asymmetric approach to account for these varied responses, thereby providing a more comprehensive view of how savings behaviors adapt to economic changes.

This approach is particularly relevant given Nigeria's ongoing challenges with inflation and exchange rate volatility. Unlike symmetric models, which assume that positive and negative economic changes have identical effects, an asymmetric framework allows for an examination of how responses to currency appreciation differ from those in the case of currency depreciation, and how high inflation rates impact savings differently from moderate inflation (Tiamiyu, 2022). By acknowledging that economic agents may respond differently to rising versus falling exchange rates, or to high versus low inflation, this study offers insights into the specific ways macroeconomic factors shape financial decisions in Nigeria. This perspective is crucial for policymakers aiming to design targeted interventions that can better support economic stability and individual financial security amid frequent economic disruptions.

Ultimately, this study seeks to address several pressing questions: How do changes in exchange rates and inflation uncertainty affect savings behavior among Nigerian households and firms? Do these effects vary significantly in intensity depending on the magnitude of currency or price changes? What policy strategies could mitigate any negative effects? By answering these questions, this research contributes to a nuanced understanding of the drivers behind savings behavior in Nigeria, offering empirical evidence that could inform more effective policy design.

Stable savings rates are essential for Nigeria's long-term economic growth, providing a foundation for investment, reducing reliance on foreign capital, and promoting financial security within the domestic economy (Aizenman & Lee, 2007).

The interplay between exchange rate volatility, inflation, and savings behavior in Nigeria presents a significant economic challenge, particularly given the country's history of economic fluctuations and external shocks. Unpredictable movements in exchange rates, often exacerbated by inflationary pressures, lead to heightened uncertainty regarding future savings and price stability. Despite extensive research on the individual effects of exchange rate and inflation volatility, the combined impact on savings remains underexplored, particularly in the Nigerian context. For instance, periods of heightened inflation in Nigeria, such as those observed in recent years, have increased uncertainty about future policy responses, impacting consumer and business saving decisions. Furthermore, Nigeria's reliance on imports for essential raw materials makes it particularly sensitive to exchange rate changes, affecting production costs, domestic prices, and savings behaviors. This sensitivity highlights the necessity of understanding the threshold at which inflation and exchange rate fluctuations significantly influence savings behavior. Current literature lacks clarity on this combined threshold effect, as previous studies have primarily focused on the broader macroeconomic outcomes of inflation and exchange rates, such as stock market performance and economic growth, while neglecting their direct influence on domestic savings.

With persistent inflationary pressures and recent depreciations in Nigeria's exchange rate, this study aims to address the literature gap by examining the asymmetric relationship between exchange rate volatility, inflation uncertainty, and savings. By comprehensively analyzing these dynamics, the research aims to provide insights into the complex relationships among Nigeria's exchange rates, inflation trends, and savings behavior, ultimately offering data-driven recommendations for economic stability and financial inclusion. Through this investigation, the study aspires to illuminate the intricate interconnections between exchange rates, inflation, and savings. By focusing on the asymmetric effects of economic fluctuations, it seeks to deepen our understanding of financial decision-making processes in developing economies. Additionally, insights from this research are expected to extend beyond Nigeria, potentially benefiting other developing countries facing similar economic conditions. By recognizing the varying effects of economic changes on savings, this study lays the groundwork for future research and policymaking aimed at fostering greater financial resilience and macroeconomic stability.

2. THEORETICAL REVIEW

Understanding the connections between currency rates, inflation, and savings is essential to comprehending Nigeria's economic stability, since both exchange rate swings and ongoing inflation have an effect on saving habits.

Exchange rate fluctuations impact inflationary pressures and modify real returns on savings, which in turn impacts how much money households and businesses save. In order to investigate the various impacts of inflation fluctuations and currency rate appreciation and depreciation, this study employs an asymmetric method, acknowledging that reactions may vary.

The research takes into account a number of pertinent economic theories, such as Miles Kimball's Precautionary Savings Theory, which contends that people should save more money in uncertain times in order to guard against future shocks to the economy. Households in Nigeria may boost savings in reaction to concerns such as currency depreciation or increased expenses because of the country's unstable inflation and exchange rates. Responses might be uneven, too, since some people may prioritize present consumption out of concern for future depreciation. This illustrates how inflation and currency rate volatility can have conflicting effects on savings.

According to Franco Modigliani and Richard Brumberg's Life-Cycle Hypothesis (LCH), people balance their income and spending by planning their savings and consumption over the course of their lifetimes. This equilibrium is upset in Nigeria, though, by recurrent inflationary pressures and currency rate swings, which compel families to devote a larger portion of their income to present consumption in order to protect themselves from future price rises. This adjustment shows how inflation and currency rate volatility might affect people's capacity to save for the future and challenges the LCH assumption of steady consumption.

Also, John Muth developed the rational expectations theory, which holds that people modify their spending and saves in response to their expectations for the state of the economy in the future. People may minimize their local currency savings in Nigeria, where inflation and exchange rate fluctuations are unpredictable, in anticipation of currency depreciation and the loss of purchasing power. This behavior is consistent with reasonable predictions as people modify their saving and spending choices in response to predicted economic uncertainty.

Lastly, Milton Friedman's Permanent Income Hypothesis (PIH) proposes that people base their decisions about saving and spending on their anticipated lifetime income. Real income is disrupted in Nigeria by inflation and currency rate volatility, which makes people prioritize now spending over future savings in order to reduce inflationary losses. This departure from the PIH undermines the consumption-smoothing behavior the theory presupposes by highlighting the impact of economic volatility, especially inflation, on saving habits.

In conclusion, different economic theories have an impact on Nigeria's asymmetric exchange rate, inflation, and savings effects. Theories like the Life-Cycle Hypothesis and the Precautionary Savings Theory aid in explaining these dynamics, even if inflation and exchange rate swings have different effects on saving behavior.

The Hypotheses of Rational Expectations and Permanent Income also shed light on how families modify their spending and savings in reaction to unstable economic conditions. All things considered, these ideas show how inflation and exchange rate volatility drastically modify saving habits, casting doubt on the notions of steady consumption and saving patterns.

3. EMPIRICAL REVIEW

This empirical study summarizes earlier research on savings, inflation, and currency rates. It draws attention to the ways that inflation and changes in exchange rates affect saving habits. Nonetheless, Chipote (2013) examines the major factors influencing family savings in South Africa, concentrating on the years 1990–2011. Using quarterly data, the study examines how the age dependence ratio, household income, inflation, and real interest rates affect savings. The study uses Johansen co-integration with an Error Correction Mechanism (ECM) to investigate short- and long-term dynamics, and it uses the Augmented Dickey-Fuller and Phillips-Perron tests to evaluate stationarity. According to the study, household income has a negative impact on long-term savings, although inflation and interest rates have a favorable impact. Savings, however, were shown to be unaffected by the age dependence ratio. Other current data and the addition of other factors, according to the study's detractors, might strengthen the findings' robustness and dependability.

Similarly, examining Nigeria's reaction to the 2008 financial crisis, Ajakaiye and Fakiyesi (2009) highlight the impact of savings, currency rates, and inflation. The analysis observes that the loss of foreign reserves and declining oil prices undermined the currency rate and increased inflationary pressures. As a result, the Nigerian government responded by cutting cash reserve requirements and the monetary policy rate in an effort to boost liquidity and stabilize the economy. The study concluded that, mostly as a result of ongoing inflationary pressures, the measures had little effect on family savings despite these efforts. To support long-term growth, the results point to a move toward bolstering non-oil industries like infrastructure and agriculture.

Additionally, Akinbobola (2012) offers insightful information about Nigerian savings, exchange rates, and inflation. This research focuses on how exchange rates and the money supply affect savings and how they regulate inflation. According to the report, managing exchange rates effectively and maintaining stable monetary circumstances are essential for reducing inflationary pressures. Long-term inflation reduces savings' buying power, making it more difficult for people to build wealth. The study implies that savings rates might be boosted by controlling inflation and managing exchange rate swings, particularly if policies address supply chain disruptions that fuel inflation volatility.

Furthermore, using data from 1986 to 2015, Emmanuel (2017) investigates how exchange rate deregulation has affected Nigeria's human capital development. The study uses an Error Correction Model (ECM) for analysis and the Augmented Dickey-Fuller and Phillips-Perron tests for stationarity.

The results show that by placing more financial demand on spending on health and education, exchange rate depreciation has an indirect impact on the development of human capital. Savings required for public investment may be reduced as a result. In order to combat the negative consequences of inflation and currency rate volatility, which might lower saving capacity, the study emphasizes the necessity of increased government funding for these areas.

Similarly, Global integration's implications on exchange rate pass-through (ERPT), inflation, and savings in developing countries was examined by Aron et al. (2014). The paper contrasts single-equation and systems models, classifies ERPT measurement approaches, and highlights typical flaws that lead to inaccurate estimations. According to the study, one important way that changes in exchange rates affect inflation and savings is through pass-through. Exchange rates can be used by ERPT to transfer inflationary effects, which destabilizes saving behavior because of price volatility. Because methodological variations among research weaken the consistency of their findings, policymakers are encouraged to exercise caution when utilizing ERPT metrics.

Additionally, Alagidede and Ibrahim (2017) examine Ghana's currency rate volatility with an emphasis on how it affects savings, consumption, and economic development. According to the study, misalignments take time to rectify and result in temporary economic disruptions, but exchange rate shocks have a tendency to return to the mean. The majority of shocks are self-driven, with production, money supply, and government spending contributing less. While modest exchange rate volatility may encourage innovation and enhance resource allocation, excessive volatility has a detrimental effect on growth, according to the study. The results suggest that exchange rate volatility can have a substantial impact on savings patterns and inflation expectations, making long-term financial planning more difficult.

Last but not least, Aizenman and Lee (2007) contrast the mercantilist and cautious reasons for emerging nations' foreign reserve building. The study concludes that, especially in nations with liberal capital account regimes, precautionary motives—which originate from the necessity of self-insurance against liquidity shocks—dominate. The welfare costs of liquidity shocks are reduced when international reserves are managed optimally. Inflation and exchange rate volatility are connected to this reserve accumulation, and they can affect how much money people save nationally. The impact of global reserve accumulation on inflation and local investment, which may potentially influence saving decisions, is not well covered in the research, though.

In summary, the empirical research examined demonstrates the intricate connection between Nigerian savings, inflation, and exchange rates. The findings are conflicting, with some studies indicating that inflation has a positive impact on savings while others contend that ongoing inflation and exchange rate volatility reduce savings capacity. Nevertheless, both inflation and exchange rate volatility are recognized as important factors impacting savings behavior.

In order to promote savings, the studied literature also highlights the necessity of sound monetary policy and efficient exchange rate management.

4. THEORETICAL FRAMEWORK

According to Miles Kimball's Precautionary Savings Theory, families tend to increase their savings to guard against future financial shocks, especially during economic uncertainty, such as rising inflation or exchange rate volatility. This behavior is motivated by the desire to build a financial cushion in response to potential risks. Similarly, O'Toole, McQuinn, and Economides (2021) examined European households and found that precautionary savings tend to rise with perceived economic hazards, such as economic restrictions or instability. Their study also highlights how macroprudential measures, assessed through econometric models, may help stabilize the financial system and mitigate the need for precautionary savings.

$$SA_t = \alpha + \beta ER_t + \gamma GARCH_VARINF_t + \mu_t \dots \dots \dots (1)$$

SA_t represents the savings rate at time t , ER_t captures the exchange rate at time, $INFR_t$ is the prevailing INFLATION rate at time t , α , β , γ , are parameters to be estimated and U_t is the error term.

5. MODEL SPECIFICATION

In keeping with the theoretical framework previously explained through the use of Autoregressive Distributed Lag (ARDL) methodologies, this study investigates how exchange rate (ER) and inflation uncertainty, measured as conditional variance ($GARCH_VARINF$), affect Nigerians' savings behaviour. Where SA represents savings, ER represents exchange rate, $GARCH_VARINF$ represents inflation uncertainty, t represents the period, and U_t is the stochastic error term, the model employs a Nonlinear Autoregressive Distributed Lag (NARDL) bounds test to explore the asymmetric impacts of these variables.

To incorporate inflation uncertainty, this study uses a Generalized Autoregressive Conditional Heteroskedasticity ($GARCH$) framework, specifically a $GARCH(1,1)$ model, to model the conditional variance of inflation. The $GARCH(1,1)$ specification is given as:

$$h_t = \omega + \alpha \epsilon_{t-1}^2 + \beta h_{t-1} \dots \dots \dots (2)$$

where h_t is the conditional variance (inflation uncertainty), ϵ_{t-1}^2 is the lagged squared residual (shock term), h_{t-1} is the lagged conditional variance (persistence term), and ω , α , β are parameters estimated under the constraints $\omega > 0$, $\alpha \geq 0$, $\beta \geq 0$. The derived conditional variance is included in the NARDL model as a proxy for inflation uncertainty.

Logarithmic transformations of the variables ($\ln(SA)$, $\ln(ER)$, $\ln(GARCH_VARINF)$) are used to ensure stationarity and enhance interpretability.

The NARDL model captures short- and long-term asymmetric effects through positive and negative partial sum decompositions, specified as follows:

$$\Delta \ln(SA_t) = \alpha + \sum_{i=1}^p \phi_{1i} \Delta \ln(ER^+_{t-i}) + \sum_{i=1}^r \phi_{2i} \Delta \ln(ER^-_{t-i}) + \sum_{i=1}^k \phi_{3i} \Delta \ln(GARCH_VARINF^+_{t-i}) + \sum_{i=1}^f \phi_{4i} \Delta \ln(GARCH_VARINF^-_{t-i}) + \lambda ECT_{t-1} + \epsilon_t \dots \dots \dots (3)$$

where Δ is the first-difference operator, ER^+ and ER^- are positive and negative decompositions of the exchange rate, and $GARCH_VARINF^+$ and $GARCH_VARINF^-$ are positive and negative decompositions of inflation uncertainty. The term ECT_{t-1} represents the error correction term, capturing the speed of adjustment to the long-run equilibrium, and λ is its coefficient. Cointegration is tested using the bounds test, where the null hypothesis ($H_0: \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = 0$) of no cointegration is tested against the alternative. If the F-statistic exceeds the upper critical bound, cointegration is established, indicating a long-term equilibrium relationship among savings, exchange rate, and inflation uncertainty. The NARDL approach, developed by Shin and Greenwood-Nimmo (2014), is particularly advantageous for detecting asymmetric influences in both short- and long-term interactions. It also accommodates variables that are stationary at $I(0)$, $I(1)$, or a mix of both, making it robust for small sample sizes, as noted by Romilly et al. (2001) and Zakari and Umar (2020). This framework is particularly relevant for Nigeria, where high exchange rate volatility and persistent inflation uncertainty significantly impact saving behavior. By incorporating inflation uncertainty through the GARCH model and using the NARDL framework to analyze asymmetries, the study provides a nuanced understanding of the dynamics between savings, exchange rate, and inflation uncertainty in the Nigerian context.

Table 1: Measurement of Variables and Sources of Data

S/N	Variables	Measurement	Sources of Data
1	Savings (LSA)	This is calculated as the percentage of income set aside over a given period, reflecting the portion of income that remains unspent.	The data was sourced from Central Bank of Nigeria statistical bulletin.
2	Exchange Rate (ER)	It is measured in domestic currency units per foreign currency unit (e.g., NGN/USD).	The data is obtained from central Bank of Nigeria statistical bulletin
3	Inflation Uncertainty (GARCH_VARINF)	Inflation uncertainty can be measured using the GARCH(1,1) model , where the conditional variance (h_t) from the model captures time-varying volatility in inflation data.	The data was sourced from Central Bank of Nigeria statistical bulletin.

6. DESCRIPTIVE STATISTICS

A thorough descriptive analysis is provided in this part, which covers variance indicators and central tendency measures (mean and median) to provide a basic knowledge of the characteristics of the data prior to time series analysis. Mean values for Exchange Rate (ER), Inflation Uncertainty (GARCH_VARINF), and Savings (LSA) are 1.0086, 97.3256, and 2.0200, respectively, in Table 2. The median values roughly match, indicating a likely normal distribution, which is a crucial sign of trustworthy data behavior for predictive modeling. Reflecting underlying economic instability, inflation is particularly the most volatile, with the largest standard deviation (12.9499). The skewness and kurtosis metrics offer additional information on tail thickness and distribution symmetry, which is crucial for computing the Jarque-Bera test to confirm normalcy. Akinlo (2012) states that the platykurtic character of LSA predicts a flatter distribution, but the positively skewed distributions of ER, GARCH_VARINF, and LSA show a trend for higher values. This gives a more nuanced picture of probable outliers and data dispersion. These descriptive statistics are essential for determining the stability and dependability of data, which serves as the foundation for reliable time series analysis.

Table 2: Descriptive Statistics

Variables	ER	GARCH_VARINF	LSA
Mean	1.008558	97.32558	2.020000
Median	0.990000	97.00000	1.900000
Maximum	1.600000	135.0000	2.770000
Minimum	0.790000	78.00000	1.190000
Std. Dev.	0.147198	12.94994	0.446228
Skewness	2.230225	0.697572	0.115616
Kurtosis	9.752402	3.174945	1.811096
Jarque-Bera	117.3372	3.542186	2.628306
Probability	0.000000	0.170147	0.268702
Sum	43.36800	4185.000	86.86000
Sum	43.36800	4185.000	587.6025
Sum Sq. Dev.	0.910023	7043.442	315.7969
Observations	43	43	43

Source: Author's computation, 2024.

Note the sample period ranges from 1981- 2023.

7. UNIT ROOT TEST

Most time-series data are non-stationary at levels because of extreme values, which prevent mean reversion, as is commonly acknowledged in the literature. This calls for time-series analysis to use unit root or stationarity tests. We evaluate stationarity in this work using the Phillips-Perron (PP) test (Phillips & Perron, 1988) and the Augmented Dickey-Fuller (ADF) test (Dickey & Fuller, 1981), which incorporates intercepts and linear trends (Spiru & Qin, 2016). Reliable time series and cointegration analysis depend on the findings, which are displayed in Table 3. In order to prevent erroneous regression

findings, a unit root denotes non-stationarity and its absence denotes stationarity. The study confirmed that all variables were not integrated of order two, as the bounds test assumes variables to be $I(0)$ or $I(1)$ (Pesaran et al., 1999; Ouattara, 2004). ADF test results indicate that savings (LSA), inflation (INFR), and exchange rate (ER) are stationary at first differences ($I(1)$), as Table 3 illustrates. In order to prove non-stationarity at levels, the absolute values of these variables at level (2.8 for ER, 2.9 for INFR, 2.04 for LSA, and 0.9) were higher than the 5% essential value. Their significance at the 5% level was established after differencing. But according to the results of the PP test, the exchange rate (ER) is stationary at level ($I(0)$), while inflation (INFR) and savings (LSA) are stationary at initial disparities.

Table 3: Unit Root Test

Methods	Augmented Dickey-Fuller (ADF) Test			Philip- Perron (PP) Test		
Variables	Level	1 st difference	Status	Level	1 st difference	Status
ER	-2.810694 (1.0000)	-4.402390 (0.0011)*	$I(1)$	-3.05680 (0.0378)*	—	$I(0)$
INFR	-2.890089 (0.1761)	-5.336786 (0.0004)*	$I(1)$	-2.612994 (0.2769)	-5.336786 (0.0004)*	$I(1)$
LSA	-2.037014 (0.5642)	-5.103001 (0.0009)	$I(1)$	-1.775239 (0.6988)	-4.986759 (0.0012)	$I(1)$

Source: Author's Computation, 2024

Note: (a) “()” are probability values. (b) “*” denotes level of significant at 5%. (c) ER exchange rate (d), INFR is inflation rate (e), LSA is log of savings, (f) INR is interest rate, (g) LIMP is log of import Price (h), LM2 Money Supply.

8. DISCUSSION OF RESULTS

The results for the current positive cumulative change in inflation uncertainty, as measured by the GARCH-based conditional variance of inflation (@DCUMDP(GARCH_VARINF)), on Table 4 showed a coefficient of -0.0232 (t-statistic of -2.18, $p=0.0447$), indicating that rising inflation uncertainty negatively impacts savings. In Nigeria, where inflation is volatile, this effect is exacerbated by domestic factors such as a floating exchange rate, high import duties, insecurity in agricultural areas, fluctuating oil prices, supply chain disruptions, and certain government policies. For instance, escalating food prices compel households to spend more on immediate consumption, reducing savings. Inflation uncertainty, driven by food shortages and insecurity, has led to displaced farmers and lower agricultural output, worsening food scarcity for Nigeria's growing population.

Additionally, import barriers and high duties contribute to "imported inflation," raising costs for goods heavily demanded due to perceived quality advantages of foreign products. This asymmetrical relationship shows that inflation uncertainty forces households to reallocate income toward necessities, eroding savings further during periods of rising prices. Data from Nigeria's inflationary period (2021–2023), when rates exceeded 20%,

shows a 5–7% drop in household savings, compared to higher savings rates during moderate inflation from 2016–2018, which averaged around 12% (CBN, 2023). The Precautionary Savings Model supports this behavior, as households prioritize immediate needs to counter reduced purchasing power and income erosion (Friedman, 1977; Kimball, 1990). Empirical studies, such as Mordi et al. (2013), confirm that inflation spikes in Nigeria lead to immediate declines in family savings, consistent with global findings on inflation uncertainty's short-term effects. Furthermore, Modigliani and Brumberg's (1954) Life-Cycle Hypothesis (LCH) suggests that unpredictable inflation disrupts optimal lifetime consumption-savings allocations, driving increased current spending to hedge against future price volatility (Trahan & Krantz, 2011).

Conversely, the Current Negative Cumulative Change in Inflation Uncertainty (@DCUMDN(GARCH_VARINF)) shows a coefficient of -0.0242 (t-statistic: -2.83, $p=0.0120$), indicating that even when inflation uncertainty declines—due, for instance, to improved national security and government interventions—savings habits do not increase as might be expected. This counterintuitive result reflects Nigeria's entrenched economic instability. Even in periods of reduced inflation uncertainty, many Nigerians remain cautious, doubting the permanence of these improvements and fearing a potential return to instability. This behavior is particularly pronounced among low-income households, which lack substantial financial buffers and therefore continue prioritizing immediate consumption over savings. This asymmetric impact reveals that a decline in inflation uncertainty does not necessarily encourage higher savings. The lingering perception of economic unpredictability often leads households to prioritize spending cautiously rather than saving more. This finding highlights the dual nature of inflation uncertainty: not only does it erode purchasing power during periods of volatility, but its reduction can still foster skepticism about future economic stability, further suppressing savings behavior. Kimball's (1990) Precautionary Savings Theory provides a theoretical basis for this phenomenon. The theory posits that individuals prioritize immediate consumption to meet current needs when faced with uncertain future stability, thereby reducing their savings. This aligns with empirical evidence from Mishkin (2007), who found that short-term declines in inflation uncertainty do not always encourage higher savings in emerging markets. Mishkin argued that consumers are reluctant to alter financial behaviors like increasing savings unless broader economic stability is evident.

Similarly, Dybczak et al. (2023) found that in economies with volatile inflation, short-term decreases in inflation uncertainty fail to shift priorities toward savings. Their study emphasized that stable inflation expectations are critical for encouraging long-term savings.

Likewise, Opoku (2020) observed that short-term reductions in inflation uncertainty do not significantly increase savings in developing economies with persistent structural challenges. These studies underscore the importance of addressing systemic economic instability and fostering confidence in long-term inflation management to create an environment conducive to saving. Moreover, the positive coefficient of 0.0258 for lagged

negative cumulative changes in inflation uncertainty (@DCUMDN (GARCH_VARINF (-3))) (t-statistic: 3.11, $p=0.0067$) suggests that prior reductions in inflation uncertainty may positively impact current savings habits. This finding indicates that if inflation uncertainty stabilizes over time, it can gradually restore consumer confidence and encourage saving. However, the delayed nature of this effect reflects the time required to rebuild trust in economic stability, especially in Nigeria, where frequent economic shocks and erratic government responses have undermined public confidence in long-term inflation management. This lagged response highlights an asymmetry in behavioral adjustments: while past decreases in inflation uncertainty eventually foster saving, the immediate reactions to such declines may remain muted.

This complexity underscores the necessity of sustained stability before consumers are willing to alter their saving habits, pointing to a nuanced dynamic where long-term behavioral changes are not immediately apparent following shifts in inflation uncertainty. Theoretical frameworks such as **Milton Friedman's (1957) Permanent Income Hypothesis (PIH)** provide a robust explanation for this phenomenon. According to the PIH, individuals base their savings and consumption decisions on anticipated lifetime income rather than solely on current income. When inflation uncertainty diminishes steadily, people may gradually feel more confident about their financial future and begin saving more.

This aligns with observed behaviors in Nigeria, where economic stability often takes time to translate into increased consumer confidence due to historical inconsistencies in policy responses. Empirical research corroborates this interpretation. Ghosh and Phillips (1998) found that sustained reductions in inflation uncertainty tend to encourage saving, as consumers begin to trust that economic conditions will remain stable.

This insight is particularly relevant for Nigeria, where the government's unpredictable responses to inflation have historically created uncertainty. Further, Chater et al. (2010) emphasized the importance of long-term stability in influencing saving behavior, noting that consumers typically require an extended period of reliable economic conditions before significantly altering their financial practices. However, the lagged negative cumulative change in the exchange rate (@DCUMDN (ER (-3))) shows a coefficient of -0.8370 (t-statistic: -2.71, $p = 0.0155$), indicating that past currency depreciations strongly discourage saving behavior. Nigeria's economy is highly susceptible to global oil price fluctuations due to its heavy dependence on oil exports, which directly impacts foreign exchange reserves and the value of the Naira.

This reliance on oil earnings leads to cycles of currency volatility, disrupting domestic price levels and financial planning across various sectors (Ajakaiye & Fakiyesi, 2009). In response to the Naira's significant depreciation against the dollar, the government has devalued the currency, increased import duties, and imposed other restrictions on key imported goods to curb importation. The Naira's declining value not only increases the cost of imported goods but also amplifies uncertainty about the future worth of the currency. In the face of such uncertainty, individuals may be inclined to spend rather than

save, anticipating further depreciation. This behavior is often exacerbated by political instability or expectations of upcoming economic reforms, which erode consumer confidence. People adopt a more cautious outlook due to past depreciations, expecting further declines, as illustrated by this asymmetrical relationship. The negative impact of past exchange rate movements on present savings supports the notion that negative shocks, such as inflation or currency depreciation, have a more profound effect on saving behavior than positive shocks. The Precautionary Savings Theory provides a relevant framework for understanding this behavior.

This theory suggests that individuals save more to protect themselves from future income uncertainty, particularly in unstable economic conditions. When currency depreciation occurs, it raises the price of imported goods, leading to inflationary pressures that erode purchasing power (Akinbobola, 2012). As a result, individuals may feel compelled to spend now rather than save, anticipating further depreciation. Research on emerging markets supports the view that currency volatility diminishes savings by increasing uncertainty. Studies across several African nations have shown that exchange rate volatility undermines public confidence, prompting consumers to adjust their spending habits in anticipation of further depreciation (Dornbusch, 2001).

Empirical research highlights the influence of exchange rate volatility and inflation on household savings. For example, Feldstein (2008) found that exchange rate volatility in Nigeria significantly alters consumption patterns, as people respond to a depreciating currency by purchasing goods immediately instead of saving. Similarly, Aron et al. (2014) observed that exchange rate depreciation often leads to a decrease in savings rates as a short-term response in countries with unstable currencies.

Table 4: Non-Linear Relationship among Exchange Rate, Inflation and Savings

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
@DCUMDP(GARCH_VARINF)	-0.023217	0.010660	-2.178029	0.0447
@DCUMDN(GARCH_VARINF)	-0.024188	0.008538	-2.833154	0.0120
@DCUMDN (GARCG_VARINF (-3))	0.025796	0.008282	3.114645	0.0067
@DCUMDN (ER (-3))	-0.836972	0.308992	-2.708718	0.0155
R-squared	0.929535	Mean dependent var 0.022895		
Adjusted R-squared	0.837049	S.D. dependent var 0.160858		
S.E. of regression	0.064934	Akaike info criterion -2.338005		
Sum squared resid	0.067462	Schwarz criterion -1.389928		
Log likelihood	66.42209	Hannan-Quinn criter. -2.000686		
F-statistic	10.05060	Durbin-Watson stat 2.083868		
Prob(F-statistic) 0.000011				

Source: Author's Computation, 2024

9. CONCLUSION

The study's findings underscore the asymmetric nature of the relationship between exchange rate volatility, inflation uncertainty, and savings in Nigeria.

The NARDL model reveals that while inflation uncertainty has an immediate negative effect on savings, reductions in uncertainty do not result in higher savings due to persistent concerns about economic instability.

Similarly, past currency depreciations continue to discourage savings behavior.

The results are consistent with theories such as the Precautionary Savings Model and the Life-Cycle Hypothesis, which suggest that both current and past economic uncertainties significantly influence household savings decisions.

These results highlight the need for more stable and predictable economic policies to encourage savings behavior in Nigeria.

10. POLICY RECOMMENDATIONS

- (i) **Stabilize Inflation and Exchange Rates:** The Nigerian government should prioritize policies aimed at stabilizing both inflation and exchange rates. Measures could include reducing reliance on oil exports, diversifying the economy, and enhancing the predictability of monetary and fiscal policies. These efforts would reduce the inflationary pressures and exchange rate volatility that negatively impact savings.
- (ii) **Support Domestic Production and Reduce Import Dependency:** To mitigate the effects of inflation and currency depreciation, Nigeria should implement policies that support local industries and reduce the reliance on imported goods. This could include investing in agricultural development, infrastructure, and manufacturing to lower food prices and reduce the impact of import duties on savings.
- (iii) **Promote Economic Confidence:** Restoring consumer confidence is crucial for encouraging saving behavior. The government should implement structural reforms, including tackling insecurity, improving governance, and reducing economic instability, to create a more stable economic environment in the long term.
- (iv) **Encourage Long-Term Saving Behavior:** The government could introduce financial products that incentivize long-term saving, such as savings bonds with attractive returns or tax incentives for savings deposits. Additionally, public awareness campaigns could help educate the public on the importance of saving for future economic uncertainty.
- (v) **Targeted Support for Low-Income Households:** Since low-income households are more vulnerable to inflation and currency fluctuations, targeted interventions such as direct cash transfers or social safety nets would help alleviate the immediate impact on consumption and encourage long-term savings behavior.

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