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REMITTANCES, EXCHANGE-RATE VOLATILITY AND HOUSEHOLD CONSUMPTION RESILIENCE IN NIGERIA: EVIDENCE FROM AN ARDL ERROR-CORRECTION MODEL

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Abstract

This paper examines whether migrant remittances strengthen household consumption resilience when exchange-rate conditions are unstable in Nigeria. Annual data for 1990–2024 are assembled from the Central Bank of Nigeria's national accounts and official World Development Indicators derived from International Monetary Fund balance-of-payments and exchange-rate statistics and United Nations population estimates. Household consumption resilience is operationalised as the preservation and recovery of real household final consumption expenditure per capita. Remittances are deflated to 2015 US dollars and expressed per capita. Exchange-rate volatility is the three-year rolling standard deviation of annual log changes in the official naira–US dollar rate. Augmented Dickey–Fuller and KPSS tests show a mixture of I(0) and I(1) variables and no I(2) series. An ARDL(1,1,2,1) model is selected by the Akaike information criterion from error-correction-admissible lag structures. The bounds statistic is 5.688, above the 1% upper critical value, supporting cointegration. In the long run, the remittance elasticity is positive (0.048) but statistically insignificant at 5%, while real income has a strong positive elasticity of 0.791. Exchange-rate volatility has no stable long-run level coefficient. In the short run, remittance growth has a positive coefficient of 0.0716 at the 10% level, whereas the cumulative volatility effect is −0.0056 (p=0.0018). The error-correction term is negative and highly significant (−1.111), indicating rapid adjustment with overshooting. Alternative remittance intensity, volatility, inflation and sample specifications preserve the central result: remittances provide limited short-run support, but exchange instability can erode consumption resilience. Policies that lower remittance costs, deepen formal channels and stabilise inflation and foreign-exchange conditions are therefore complementary rather than substitutes.

Keywords: *remittances; exchange-rate volatility; household consumption; resilience; ARDL; error-correction model.*

1. INTRODUCTION

Household consumption is the largest component of aggregate demand and a direct indicator of material welfare. Its resilience, understood as the capacity to preserve essential expenditure during shocks and recover after disruption, is especially important in economies where formal unemployment insurance, credit access, and social protection remain limited. Nigerian households have faced repeated macroeconomic disturbances, including oil-price cycles, recessions, inflation surges, currency devaluations, the COVID-19 shock, and the foreign-exchange reforms of 2023–2024. These episodes can weaken real purchasing power even when nominal incomes rise.

International remittances may provide a private insurance mechanism. Migrants frequently transfer funds to relatives for food, housing, education, health care, and emergency needs. Because the sender's income is earned outside the recipient economy, transfers may be less correlated with domestic shocks than local labour income. The new economics of labour migration, therefore, treats migration as a household risk-diversification strategy rather than only an individual wage decision (Stark & Bloom, 1985; Lucas & Stark, 1985). Empirical evidence indicates that remittances can reduce poverty, relax liquidity constraints, and moderate consumption instability (Adams & Page, 2005; Combes & Ebeke, 2011).

The exchange rate conditions the insurance value of remittances. A depreciation raises the local-currency value of a fixed dollar transfer, potentially increasing recipient resources. At the same time, depreciation can intensify imported inflation, increase transport and production costs, weaken real wages, and generate uncertainty that encourages precautionary saving. Volatility adds a separate channel: unpredictable currency movements complicate household budgeting, alter the timing of transfers, and raise the cost of consumption goods with direct or indirect import content. A positive valuation effect may therefore coexist with negative purchasing power and uncertainty effects.

Nigeria provides a relevant setting because recorded remittances expanded substantially over the study period while the official exchange rate experienced multiple regime shifts. In 2024, recorded personal remittances were approximately US$22.13 billion, the official annual exchange rate averaged ₦1,478.97 per US dollar, and consumer-price inflation reached 33.24%. The official CBN expenditure account simultaneously reports a substantial fall in real household final consumption per capita. These movements make it necessary to distinguish long-run equilibrium relationships from short-run shock adjustment.

Existing Nigerian studies have examined remittances and growth, remittances and household expenditure, or exchange rates and consumption separately. Studies of the real

exchange rate and consumption relationship also report nonlinearity and asymmetric adjustment (Babangida et al., 2021; Uche et al., 2023). A unified annual model that links real remittances, volatility, income, and real consumption resilience through 2024 remains useful.

This study asks three questions. First, do real remittances contribute to household consumption in both the short and long term? Second, does official exchange-rate volatility weaken consumption resilience? Third, how quickly does consumption return to equilibrium after a disturbance? The paper answers these questions with an autoregressive distributed lag bound test and error-correction framework. The approach is appropriate for a small annual sample and variables integrated of order zero or one, provided no series is I(2) (Pesaran et al., 2001).

The paper contributes through measurement, data transparency, and interpretation. It constructs real per capita remittances from official current-dollar flows, US consumer prices, and population; calculates a reproducible annual volatility index; uses the official CBN real household-consumption account where the World Bank's Nigeria consumption field is unavailable; preserves provisional-data flags; reports heteroskedasticity-and-autocorrelation-consistent inference; and tests alternative definitions. Importantly, the study does not equate national per-capita consumption with the experience of every household. The macro series captures aggregate resilience and cannot identify distributional or household-level causal effects.

2. NIGERIAN CONTEXT AND STYLIZED FACTS

2.1 Remittances and household welfare

Recorded remittances include personal transfers and compensation-related flows reported in the balance of payments. They do not capture every transfer carried through informal channels, goods, cash couriers, or reciprocal family arrangements. Nevertheless, the official series is the most consistent annual macroeconomic measure available for the complete study period. To reduce scale effects, this article deflates remittances by the US consumer price index to 2015 dollars and divides them by Nigeria's population (Houessou, M., et al. 2025).

Real remittances per capita rose from less than one 2015 US dollar in 1990 to above US$100 during parts of the 2000s and 2010s, before moderating to about US$71.85 in 2024. The very low early observations partly reflect the development of formal reporting and transfer channels. The log transformation limits the influence of scale changes, while the robustness analysis uses remittances as a percentage of GDP.

2.2 Exchange-rate instability and consumption

Nigeria's exchange-rate history contains administratively managed periods, interbank-market reforms, multiple windows, and sharp adjustment episodes. The annual official rate moved from ₦8.04 per US dollar in 1990 to ₦1,478.97 in 2024. An official annual rate does not fully describe parallel-market conditions, but it provides a documented and consistently sourced series across the sample.

Volatility is distinct from depreciation. A currency can depreciate steadily with limited volatility or experience irregular jumps with high volatility. The main measure uses the standard deviation of the most recent three annual log changes. It is therefore a low-frequency macroeconomic uncertainty indicator rather than a high-frequency GARCH estimate. It rises sharply around the late-1990s/early-2000s adjustments and again during 2023–2024.

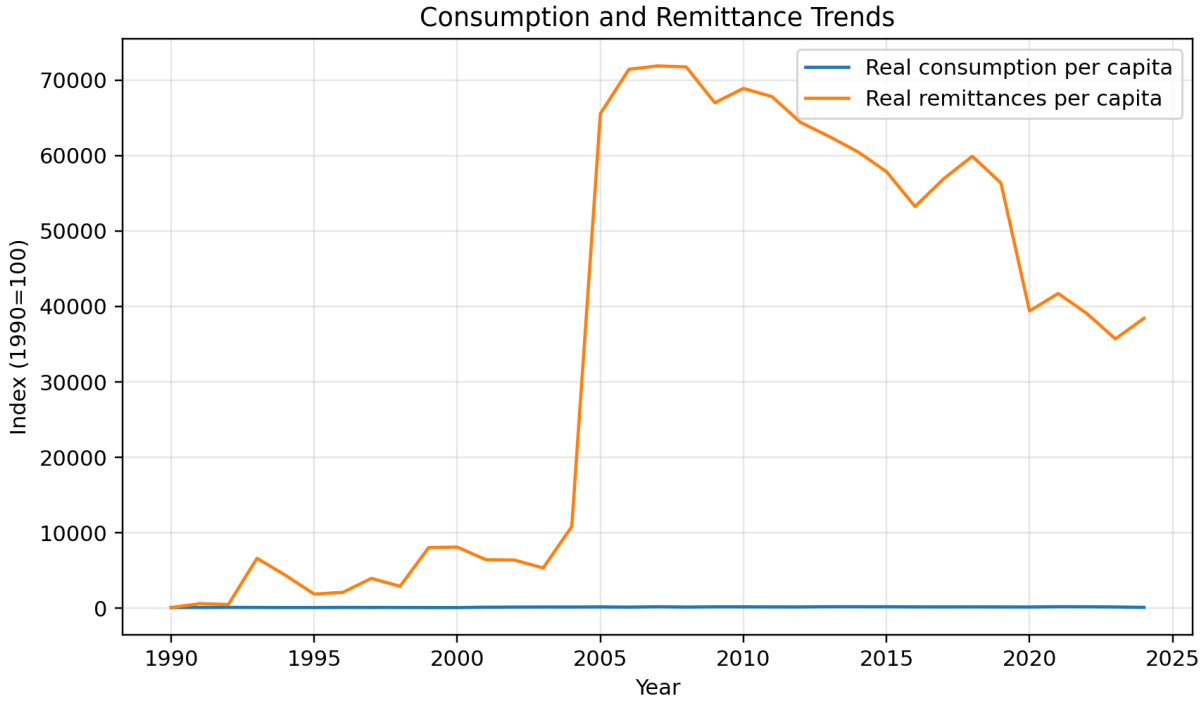

Figure 1. Indexed real household consumption per capita and real remittances per capita.

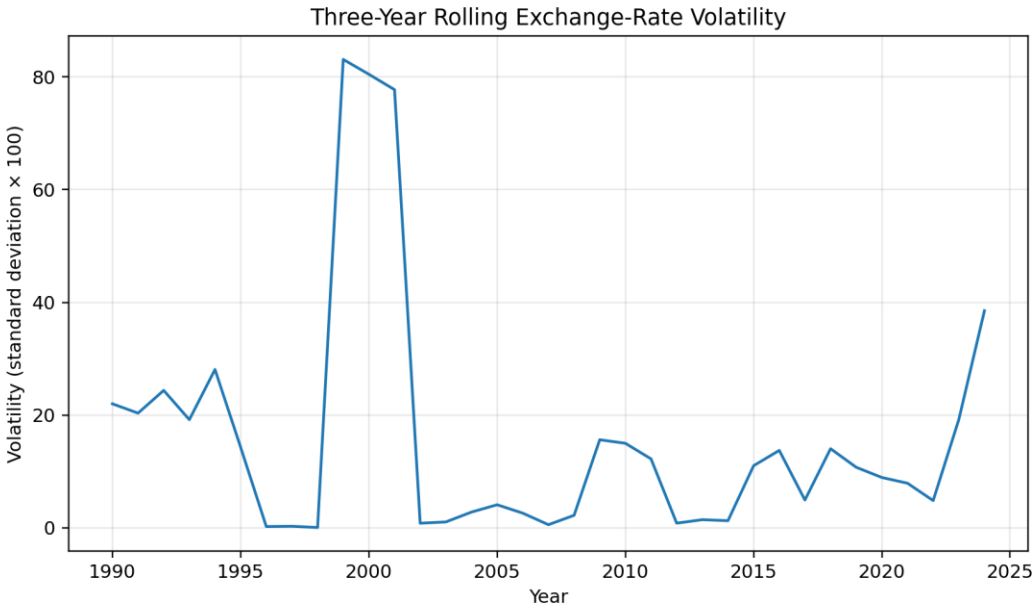

Figure 2. Three-year rolling volatility of the official naira–US dollar exchange rate.

2.3 Operational meaning of consumption resilience

The outcome is real household final consumption expenditure at 2010 constant purchasers' prices divided by population. A descriptive resilience index normalises the series to 2015=100. Higher values indicate that aggregate real consumption per person is preserved relative to the benchmark; declines indicate erosion. In the econometric model, resilience is represented by the level, short-run change and error-correcting recovery of log real consumption per capita.

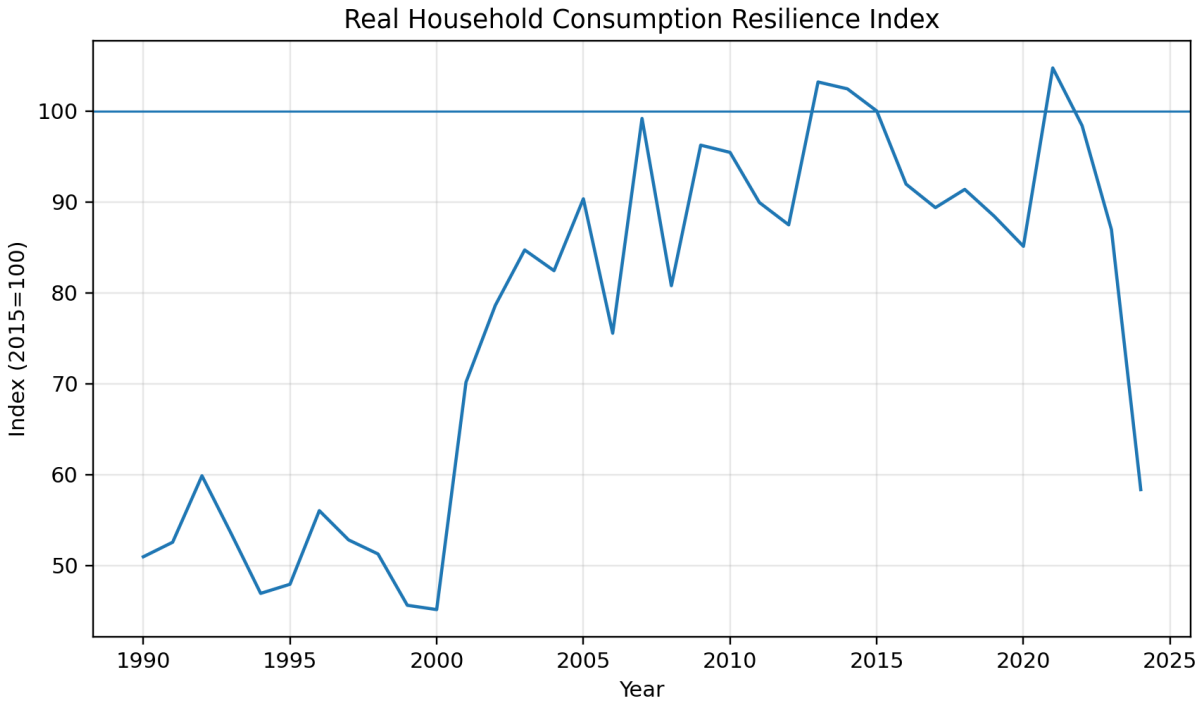

Figure 3. Real household consumption resilience index, 2015=100.

3. REVIEW OF LITERATURE AND THEORETICAL FRAMEWORK

3.1 Consumption Smoothing and Remittance Insurance

The permanent-income and life-cycle traditions differentiate between transitory income changes and permanent resources (Friedman, 1957; Modigliani & Brumberg, 1954). If households can borrow, save, or receive transfers, then consumption should respond less than one-for-one to transitory income shocks. In low-income contexts, borrowing constraints and incomplete insurance blunt this smoothing response. Remittances can help fill part of that gap by moving resources across countries and family members.

The altruistic model predicts larger transfers when the recipient household experiences adversity. Contractual and exchange models instead link transfers to services, inheritance, investment, or repayment of migration costs. Under the new economics of labor migration, households finance migration to diversify risks associated with agriculture, labor markets, credit, and public protection (Lucas & Stark, 1985; Stark & Bloom, 1985). These motives imply that remittances may be countercyclical relative to recipient-country income, although sender-country shocks and globally synchronized downturns can reduce transfers.

Microeconomic evidence shows that exchange-rate shocks affecting migrants' earnings can change household investment and spending (Yang, 2008). Cross-country work finds

that remittances reduce consumption instability and dampen the effects of exchange-rate, financial, and agricultural shocks (Combes & Ebeke, 2011). The stabilizing effect may be stronger where formal financial systems are less developed, because transfers substitute for credit and insurance.

3.2 Exchange-rate volatility channels

The local-currency valuation channel predicts that depreciation raises the naira value of dollar remittances. This effect can support consumption when recipients obtain foreign currency at a favorable rate. A competing pass-through channel operates through domestic prices: depreciation increases the cost of imported final goods, fuel, intermediate inputs, and transport. If domestic prices respond quickly, the real value of the transfer may not rise.

Volatility also affects expectations. Uncertain prices and incomes can increase precautionary saving, delay purchases, and shorten planning horizons. Import-dependent producers may reduce output or raise prices, transmitting currency risk to household budgets. At the macro level, volatility can therefore reduce consumption growth even when the long-run exchange-rate level is not independently significant.

For African and Nigerian data, recent nonlinear studies document asymmetric consumption responses to large and small exchange-rate movements (Babangida et al., 2021; Uche et al., 2023). These findings motivate a volatility measure and sensitivity test based on absolute annual depreciation.

3.3 Empirical evidence and research gap

The broader remittance literature reports positive effects on poverty reduction, consumption, and investment, but results vary with transfer motives, financial development, and recipient characteristics (Adams & Page, 2005; Giuliano & Ruiz-Arranz, 2009). Chami et al. (2005) caution that remittances are compensatory private transfers rather than equivalent to profit-seeking capital flows. This distinction matters because transfers may rise after adverse shocks without creating a permanent productivity increase.

Combes and Ebeke (2011) provide the closest macroeconomic foundation for the present study. Their multi-country analysis finds that remittances lower household consumption instability and moderate the effect of exchange-rate instability. More recent work applies ARDL methods to remittances and household expenditure but sometimes finds no significant long-run relationship, reinforcing the need for country-specific evidence and careful measurement.

The Nigerian literature has not settled whether the positive purchasing-power effect of foreign transfers dominates the negative effects of currency instability and inflation. This article addresses the gap by estimating both mechanisms in one small-sample ARDL–ECM through 2024 and by separating long-run equilibrium from short-run volatility transmission.

3.4 Hypotheses

· H1: Real remittances per capita have a positive long-run relationship with real household consumption per capita.

· H2: Increases in exchange-rate volatility reduce household consumption growth in the short run.

· H3: Real GDP per capita has a positive long-run relationship with real household consumption per capita.

· H4: The lagged equilibrium error is negative and significant, indicating restoration of consumption aftershocks.

4. METHODOLOGY

4.1. Research Design, Data Sources and Variable Construction

It is an ex post facto study with quantitative research design that relies on secondary data collected from Department of National Bureau of Statistics (NBS) at annual interval for the period 1990 to 2024 as obtained from the Nigeria Fiscal Yearbook. The study uses 35 annual observations and real household final consumption expenditure is collected from the Central Bank of Nigeria's 2024 Statistical Bulletin, whose underlying source is the National Bureau of Statistics. The World Development Indicators provide the sources for personal remittances, official exchange rates, real GDP per capita, inflation, US consumer prices, and population data. The World Development Indicators provide the sources for personal remittances, official exchange rates, real GDP per capita, inflation, US consumer prices, and population data. The data is sourced from the World Development Indicators. The remittance and exchange-rate series draw on IMF balance-of-payments and International Financial Statistics sources; population is based on United Nations and official demographic estimates.

Nigeria's household-consumption value was blank in the downloaded WDI indicator, so the official CBN expenditure account is used rather than interpolating missing observations. This substitution is disclosed because data provenance is central to reproducibility.

Table 1. Variable definitions and expected signs

Symbol	Variable	Measurement	Expected effect
ln C	Log real household consumption per capita	CBN real HFCE $\times 10^9$ / population	Expected dependent variable
ln R	Log real remittances per capita	Current US$ remittances deflated by US CPI to 2015 dollars / population	Positive
VOL	Three-year official exchange-rate volatility	SD of annual log changes in NGN/US$, ×100	Negative
ln Y	Log real GDP per capita	Constant 2015 US dollars	Positive
INF	Consumer-price inflation	Annual percent change	Negative; robustness control

Note. VOL is an annual macro-volatility proxy. The model does not use parallel-market or daily exchange-rate data.

4.2 Transformations

$$R_{rt} = Remit_t \div (USCPI_t / USCPI_{2015})$$

$$R_pc,_t = R_{rt} \div Population_t$$

$$VOL_t = SD[100\Delta ln(EXR_t), 100\Delta ln(EXR_{t-1}), 100\Delta ln(EXR_{t-2})]$$

The real remittance series maintains the international purchasing power of dollar transfers. Consumption and income are in real terms. The model uses natural logarithms for consumption, remittances and income, so their coefficients can be interpreted as elasticities. VOL remains in percentage points; its coefficient is therefore a semi-elasticity.

4.3 ARDL model and lag selection

$$C_t = \alpha_0 + \Sigma_{i=1}^{p} \alpha_i C_{t-i} + \Sigma_{j=0}^{q} \beta_j R_{t-j} + \Sigma_{k=0}^{r} \gamma_k VOL_{t-k} + \Sigma_{l=0}^{s} \delta_l Y_{t-l} + \varepsilon_t$$

The dependent variable C is log real consumption per capita; R is log real remittances per capita; VOL is the exchange-rate volatility index; and Y is log real GDP per capita. To preserve error-correction equivalence, the lag search considers p=1–2 and q=1–2 for each regressor. Among 16 admissible combinations, ARDL(1,1,2,1) has the lowest AIC (−40.903). The maximum lag of two is parsimonious for annual data and the small sample.

4.4 Bounds test and error-correction representation

$$\Delta C_t = \kappa + \lambda C_{t-1} + \theta_1 R_{t-1} + \theta_2 VOL_{t-1} + \theta_3 Y_{t-1} + \Sigma\ short\text{-}run\ differences + u_t$$

The joint null is $\lambda=\theta_1=\theta_2=\theta_3=0$, implying no long-run relationship. The computed F-statistic is compared with bounds for purely I(0) and purely I(1) regressors. When it exceeds the upper bound, cointegration is supported. Long-run parameters are calculated as $-\theta_j/\lambda$. The error-correction coefficient λ should be negative and significant.

4.5 Inference and diagnostics

Because the Jarque–Bera test detects non-normal residuals, coefficient tables use Newey–West HAC standard errors with one annual lag, while the bounds test retains its standard distribution. Serial correlation, heteroskedasticity, ARCH effects, functional form and parameter stability are evaluated with Breusch–Godfrey, Breusch–Pagan, ARCH LM, Ramsey RESET and CUSUM tests.

5. RESULTS

Table 2. Descriptive statistics

Variable	Mean	Std. dev.	Minimum	Maximum	N
Log real consumption per capita	12.044	0.284	11.548	12.389	35
Log real remittances per capita	3.374	1.723	-1.677	4.901	35
Exchange-rate volatility (%)	16.114	22.037	0.031	83.114	35
Log real GDP per capita	7.558	0.226	7.237	7.858	35
Inflation (%)	18.706	15.869	5.386	72.836	35

Exchange-rate volatility is the most dispersed regressor, with a mean of 16.11 and a maximum of 83.11. The log remittance series also shows substantial variation because formal recorded inflows rose sharply from the low base of the early 1990s. Real consumption per capita reached its sample maximum before weakening in the later period.

5.2 Unit-root testing

ARDL bounds testing permits a mixture of I(0) and I(1) regressors but is invalid when any variable is I(2). The augmented Dickey–Fuller test treats a unit root as the null, while KPSS treats stationarity as the null. Using both reduces reliance on one test's low power in a 35-observation sample.

Table 3. Unit-root tests

Variable	ADF level	p	KPSS level	ADF difference	P	Order
Log real consumption per capita	-1.748	0.407	0.591	-5.546	0.000	I(1)
Log real remittances per capita	-2.750	0.066	0.805	-6.824	0.000	I(1)
Exchange-rate volatility	-2.288	0.176	0.175	-5.582	0.000	I(1)
Log real GDP per capita	-0.980	0.761	0.667	-3.221	0.019	I(1)
Inflation	-3.889	0.002	0.250	-5.802	0.000	I(0)

Note. KPSS p-values may be bounded by published critical-value tables. No variable is classified as I(2).

5.3 Cointegration

Table 4. ARDL bounds test

Statistic/level	Value	I(0) lower	I(1) upper
F-statistic	5.688		
10% bounds		2.457	3.516
5% bounds		2.877	4.010
1% bounds		3.780	5.050

Note. Upper-tail p-value=0.0035. The F-statistic exceeds the 1% upper critical value.

The bounds statistic of 5.688 exceeds the 1% I(1) critical value of 5.050. The null of no level relationship is therefore rejected. A conditional long-run equilibrium linking consumption, remittances, exchange-rate volatility and real income is supported.

6. DISCUSSION OF FINDINGS

6.1 Long-run dynamics and resilience

Table 5. Long-run coefficients

Variable	Coefficient	HAC S.E.	p-value	95% interval
Log real remittances per capita	0.0485	0.0301	0.1076	[-0.0106, 0.1076]
Exchange-rate volatility	0.0002	0.0014	0.9084	[-0.0025, 0.0028]
Log real GDP per capita	0.7913	0.2072	0.0001	[0.3853, 1.1974]

Note. Standard errors use the delta method applied to the HAC covariance matrix.

The long-run remittance elasticity is 0.0485. A 10% increase in real remittances per capita is associated with approximately a 0.48% increase in real consumption per capita, holding income and volatility constant. The p-value of 0.108 means that H1 is not supported at the conventional 5% level. The coefficient is economically positive but estimated imprecisely.

The long-run volatility coefficient is close to zero (0.00016; p=0.908). This does not imply that currency instability is harmless. It indicates that after all lagged adjustments and income effects are considered, the volatility level does not have a stable independent equilibrium coefficient in the preferred annual model.

Real GDP per capita has an elasticity of 0.791 and is strongly significant. A 1% increase in real income per person is associated with about a 0.79% increase in real household consumption per person. H3 is supported. The estimate below one is consistent with saving, taxation, distributional differences and measurement gaps between aggregate output and household disposable resources.

6.2 Short-run dynamics and resilience

Table 6. Error-correction and short-run coefficients

Term	Coefficient	HAC S.E.	p-value	Meaning
ECT(-1)	-1.1111	0.2427	0.0001	Equilibrium adjustment
Δ log remittances	0.0716	0.0406	0.0909	
Δ volatility	-0.0020	0.0014	0.1681	
Δ volatility (t−1)	-0.0036	0.0009	0.0009	
Δ log income	2.1246	0.8313	0.0173	
Cumulative Δ volatility	-0.0056	0.0018	0.0018	Joint short-run effect

The error-correction coefficient is −1.111 and highly significant. H4 is supported. The magnitude implies that more than the previous year's disequilibrium is corrected within one year. Values between −1 and −2 describe convergent adjustment with overshooting: consumption may cross the equilibrium path before settling rather than returning monotonically.

Contemporaneous remittance growth has a coefficient of 0.0716 and p=0.091. At the 10% level, a 10% increase in real remittances per capita is associated with approximately 0.72% higher consumption growth in the same year. The result is consistent with remittances financing immediate household expenditure, but it is not strong enough to support a precise long-run insurance elasticity.

The contemporaneous change in volatility is negative but individually insignificant. Its one-year lag is −0.0036 and significant. The cumulative short-run coefficient is −0.00563 (p=0.0018). Thus, a one-percentage-point increase in the volatility index is associated with roughly a 0.56% cumulative reduction in consumption growth across the current and following year. H2 is supported.

The short-run income elasticity is 2.125 and statistically significant. Annual consumption responds strongly to current income changes, while the lower long-run elasticity indicates

subsequent adjustment. This pattern is consistent with liquidity constraints and sensitivity to broad domestic economic conditions.

6.3 Diagnostic evaluation

Table 7. Residual and stability diagnostics

Test	Statistic	p-value	Conclusion
Durbin–Watson	1.406	—	No severe first-order residual correlation
Breusch–Godfrey LM	—	0.234	Do not reject no serial correlation
Breusch–Pagan	—	0.931	Do not reject homoskedasticity
ARCH LM	—	0.882	No ARCH effect
Jarque–Bera	—	0.0003	Normality rejected
Ramsey RESET	—	0.358	No functional-form rejection
CUSUM	—	0.942	Parameter stability not rejected

The main specification passes serial-correlation, heteroskedasticity, ARCH, RESET and CUSUM tests. Residual normality is rejected, largely reflecting unusually large annual movements near the end of the sample. HAC inference and robustness estimates are therefore emphasised. The CUSUM test does not reject parameter stability.

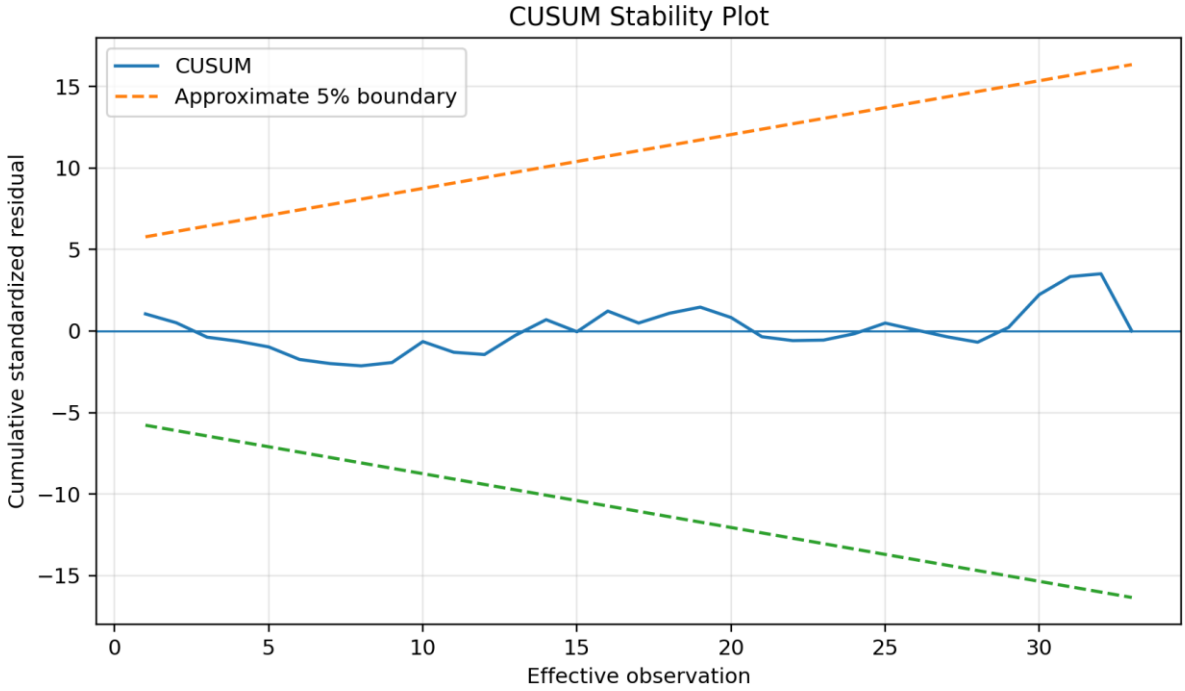

Figure 4. CUSUM plot for the preferred ARDL model.

6.4 Robustness and Sensitivity Analysis

Table 8. Robustness specifications

Specification	N	Bounds F	Upper p	ECT	ECT p	LR remittance	P	LR volatility
Main	34	5.688	0.003	-1.111	0.000	0.048	0.110	0.0002
Absolute depreciation	34	3.885	0.060	-0.912	0.001	-0.000	0.999	-0.0031
Remittances (% GDP)	34	4.892	0.013	-1.100	0.001	0.042	0.198	-0.0007
CPI-deflated consumption	34	0.951	0.925	-0.091	0.575	0.078	0.825	0.0106
Exclude 2024	33	10.067	0.000	-1.093	0.000	0.030	0.198	0.0009
Include inflation	34	5.937	0.001	-1.225	0.000	0.045	0.118	-0.0008

Note. The CPI-deflated outcome uses current-price CBN consumption divided by a reconstructed CPI and is not the preferred official constant-price account.

Replacing the rolling standard deviation with absolute annual depreciation produces a negative long-run exchange-risk coefficient of −0.00307, with p=0.051. This near-threshold result supports the interpretation that large currency adjustments are adverse even though the preferred volatility level is insignificant.

Using remittances as a percentage of GDP yields a positive long-run coefficient of 0.0417 but remains statistically insignificant. The conclusion is therefore not driven by US-price deflation or population scaling.

Excluding 2024 raises the bounds statistic to 10.067 and preserves a negative significant error-correction term. The remittance coefficient remains positive but insignificant. This check shows that the 2024 consumption decline strengthens neither the remittance result nor the long-run volatility result artificially.

Adding inflation maintains cointegration and produces a negative long-run inflation coefficient at the 10% level. The remittance coefficient remains positive and uncertain.

This supports the view that inflation and exchange-rate instability jointly influence household purchasing power.

The alternative CPI-deflated consumption outcome does not support cointegration. This is an important measurement warning: macro consumption findings depend partly on the official national-accounts methodology. The preferred result uses the directly published constant-price CBN/NBS series and clearly flags provisional observations.

6.5 Comparison with earlier studies

The positive remittance signs align with studies linking transfers to consumption smoothing, poverty reduction, and relief from liquidity constraints. The weak long-run significance is also consistent with recent ARDL evidence that remittances do not always create a stable expenditure relationship once income and dynamics are controlled.

The short-run volatility finding complements Combes and Ebeke's cross-country insurance result while adding a Nigeria-specific qualification: remittances may cushion some shocks, but official exchange-rate instability still lowers aggregate consumption growth. It also agrees with nonlinear African evidence that large currency movements can generate consumption responses different from small movements (Uche et al., 2023).

Babangida et al. (2021) demonstrates a nonlinear and bidirectional relationship between real exchange rates and Nigerian consumption. The current annual ARDL approach does not model regimes directly, but the robustness result for absolute depreciation and the significant lagged volatility effect are compatible with delayed and nonlinear transmission.

6.6 Summary of findings

The evidence supports a distinction between cushioning and transformation. Remittances appear capable of supporting consumption growth when inflows increase, but the long-run coefficient is too imprecise to claim that remittances permanently raise aggregate consumption resilience independently of domestic income. This is consistent with compensatory-transfer models in which migrants respond to household need rather than providing a uniform exogenous income stream.

The negative cumulative short-run volatility effect is more robust. Currency instability may raise the naira value of a transfer, yet the same instability increases prices, planning uncertainty, and production costs. Recipients without remittances and households whose consumption baskets have high import content face the adverse side more directly. Because the outcome is a national average, the positive valuation effect for recipient families may be outweighed by broader purchasing-power losses.

The strong income elasticity shows that domestic productive capacity and real income remain central. Remittances cannot substitute for stable employment, output growth, and price stability. They are private family resources, not a predictable fiscal instrument. Policies should therefore facilitate formal transfers without treating diaspora funds as a replacement for macroeconomic management.

The speed-of-adjustment coefficient is larger than one in absolute value. This may reflect Nigeria's sharp annual shocks and the coarse frequency of the data: adjustments that occur within months appear as overshooting between annual observations. It also cautions against interpreting the estimated 111% as a literal household behavioral rate. The coefficient describes aggregate model correction.

6.7 Limitations and Future Research

First, the analysis is macroeconomic. It cannot establish that an individual recipient household consumes more because it receives a transfer, nor can it capture distributional differences. Second, recorded remittances exclude some informal flows. Third, the official exchange rate understates periods in which parallel-market premiums were important.

Fourth, annual rolling volatility is transparent but coarse. Monthly or daily official and market rates would support GARCH, realised-volatility or mixed-frequency specifications. Fifth, late-sample household-consumption observations are provisional, and the alternative deflator does not cointegrate. Future revisions may change magnitudes.

Sixth, 35 observations restrict the number of controls and lags. The model excludes interest rates, unemployment, fiscal transfers and social protection to preserve degrees of freedom. Finally, the ARDL design establishes conditional time-series association, not a structural causal effect. Migration decisions, remittance inflows and domestic shocks may be jointly determined.

Future work should combine quarterly consumption, disaggregated remittance channels, parallel-market rates and household-panel surveys. Nonlinear ARDL, threshold models and local projections could test whether remittances offset small shocks but fail during large devaluations.

7. CONCLUSION

This paper investigated remittances, exchange-rate volatility, and household consumption resilience in Nigeria from 1990 to 2024. An official, reproducible dataset was constructed from CBN household-consumption accounts and WDI/IMF/UN series. The preferred ARDL(1,1,2,1) specification supports cointegration and a stable error-correction process.

Remittances have positive short- and long-run coefficients, but the long-run elasticity is not statistically precise. Exchange-rate volatility has no independent long-run level coefficient, yet its cumulative short-run effect is negative and significant. Real income is the principal long-run driver, and equilibrium correction is rapid with overshooting.

The central policy lesson is that remittance facilitation and macroeconomic stability are complements. Lower transfer costs can strengthen the resources reaching families, but volatile exchange rates and inflation can erode those gains across the economy. Sustainable consumption resilience therefore requires both efficient diaspora-transfer systems and credible domestic policies that protect real incomes.

7.2 Policy Recommendations and Implications

· Reduce formal remittance costs through transparent pricing, interoperable payment systems, and competition among banks, fintech firms, and money-transfer operators.

· Improve access to secure foreign-currency and naira settlement channels so that recipients are not forced into costly or unsafe informal markets.

· Treat exchange-rate credibility and inflation control as household-welfare policies. Stable, clearly communicated rules reduce uncertainty beyond the direct currency price.

· Expand low-cost savings, emergency credit, and microinsurance products that allow remittance recipients to smooth transfers across time.

· Support productive domestic supply, particularly food, energy, transport, and essential manufactures, to reduce the pass-through of currency shocks into household budgets.

· Publish consistent national-accounts consumption series and revisions with detailed metadata. The sensitivity to alternative deflation demonstrates the value of transparent statistical methods.

· Complement aggregate monitoring with household-panel data that identify remittance recipients, transfer channels, consumption categories, location, and income groups.

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