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Monetary Policy Regime Shift and the Dynamics of Domestic Savings in Nigeria: An ARDL Approach across the MRR–MPR Transition

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Abstract

Understanding how interest-rate reforms influence domestic savings remains central to effective monetary policy design in developing economies. This study investigates the dynamic relationship between policy-driven interest rates and total savings in Nigeria from 1981 to 2023, covering the transition from the Minimum Rediscount Rate (MRR) to the Monetary Policy Rate (MPR) regime. Using annual time-series data from the Central Bank of Nigeria and applying Augmented Dickey–Fuller (ADF) unit-root tests, Autoregressive Distributed Lag (ARDL) modeling, and structural-break interaction analysis, the study quantifies short- and long-run effects of policy rate, treasury-bill rate, and deposit rates on gross savings. Results show that under the pre-2006 MRR regime, both the policy rate and short-term deposit rate exerted significant positive effects on savings, consistent with the interest-inducement hypothesis. However, in the post-2006 MPR period, the relationship weakened and partially reversed, suggesting a structural break in monetary transmission. The findings imply that while financial liberalization enhanced the savings base, subsequent reforms reduced the sensitivity of savings to interest-rate adjustments. Policymakers should therefore strengthen transmission mechanisms, expand financial inclusion, and stabilize real returns to sustain savings-led growth.

Keywords: Monetary policy rate; savings behaviour; interest-rate transmission; financial liberalization; ARDL model; structural break; Nigeria.

1. Introduction

Domestic savings play a critical role in accelerating economic growth by providing a stable domestic capital base for investment, enhancing financial intermediation, and reducing reliance on volatile external financing sources (World Bank, 2023; IMF, 2022). In developing economies such as Nigeria, effective mobilization of savings through interest-bearing financial instruments remains

central to sustainable development and macroeconomic resilience, particularly in contexts characterized by shallow capital markets and constrained fiscal space (Arestis & Baltar, 2019; Bittencourt et al., 2021). Over the past four decades, Nigeria has experienced alternating episodes of financial liberalization, inflationary pressures, and monetary-policy reforms aimed at strengthening monetary transmission and financial deepening (CBN, 2023; IMF, 2020).

A major institutional milestone was the introduction of the Monetary Policy Rate (MPR) in 2006, which replaced the Minimum Rediscount Rate (MRR) and signaled a shift toward a modern, policy-rate-based monetary framework aligned with inflation targeting principles (Mishkin & Serletis, 2021; Mbutor et al., 2022). Despite this reform, empirical evidence suggests that the linkage between policy-induced interest rates and domestic savings remains weak and inconsistent in many developing economies, including Nigeria, due to inflation volatility, excess banking-sector liquidity, and limited pass-through to retail deposit rates (Nguyen et al., 2021; IMF, 2022).

This study examines the relationship between monetary-policy interest rates and total domestic savings in Nigeria over the period 1981–2023, with explicit focus on the transition from the MRR to the MPR regime. The analysis evaluates how key financial instruments policy rate, treasury-bill rate, and short- and long-term deposit rates shape aggregate savings behavior, using time-series econometric techniques including Augmented Dickey Fuller (ADF) tests, Autoregressive Distributed Lag (ARDL) modeling, and structural-break analysis to capture both short-run dynamics and long-run equilibrium relationships (Pesaran et al., 2021; Shin et al., 2022).

Understanding the interest-rate–savings nexus is essential for effective macroeconomic management, particularly in economies characterized by persistent inflation and underdeveloped financial markets. In Nigeria, periods of high nominal interest rates have not consistently translated into positive real returns or sustained increases in savings, thereby challenging the classical interest-inducement hypothesis that higher real interest rates stimulate financial savings (Adu et al., 2020; Bonga-Bonga & Ngwenya, 2021). Frequent monetary-policy adjustments in response to inflationary and exchange-rate pressures have further produced mixed outcomes, raising questions about whether the MPR framework has strengthened or weakened the effectiveness of savings mobilization (Mbutor et al., 2022; World Bank, 2023).

Despite extensive literature on Nigeria's financial liberalization and monetary-policy evolution, empirical evidence explicitly assessing how the 2006 regime shift altered savings behavior remains limited. Many existing studies either analyze pre- and post-reform periods in isolation or neglect structural breaks altogether, resulting in fragmented and sometimes contradictory conclusions (Bittencourt et al., 2021; Shin et al., 2022). Addressing this gap is critical for evaluating the effectiveness of Nigeria's monetary framework and for designing interest-rate policies that support savings-led growth under heightened global financial uncertainty. To the best of our knowledge, no recent study has systematically compared the MRR and MPR regimes using integrated econometric evidence of structural change. This study therefore addresses the following questions:

- How have interest-rate instruments (policy rate, treasury-bill rate, deposit rates) influenced total savings in Nigeria from 1981 to 2023?

- Did the transition from the MRR to the MPR regime produce a statistically significant structural change in the savings–interest-rate relationship?

This study contributes to the financial-economics literature in three important ways.

First, it provides empirical evidence of regime-dependent interest-rate transmission, enriching theoretical discourse on the McKinnon–Shaw hypothesis in African financial systems.

Second, by employing ARDL and Chow-type interaction models, it bridges methodological gaps between short-run responsiveness and long-run stability in savings behaviour.

Third, the findings offer practical policy insights for the Central Bank of Nigeria (CBN) and other monetary authorities on how to design interest-rate frameworks that better align with savings mobilization objectives.

Ultimately, this research advances both theoretical understanding and policy design by clarifying whether Nigeria’s monetary reforms have achieved their intended goal of strengthening the financial intermediation process.

2. Materials and methods

2.1 Data source and variables

Annual macro-financial data for Nigeria covering the period 1981–2007 were obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin, the World Bank’s World Development Indicators (WDI), and the IMF’s International Financial Statistics (IFS), which are widely used sources for macroeconomic and monetary policy analysis in developing economies (World Bank, 2023; IMF, 2022; CBN, 2023). The study period spans both the Minimum Rediscount Rate (MRR) regime (1981–2005) and the Monetary Policy Rate (MPR) regime (2006 onward), enabling comparison across distinct monetary-policy frameworks.

The dependent variable is the natural logarithm of gross domestic savings ($\ln SAV_t$) while the explanatory variables include the policy (rediscount or monetary-policy) rate (PR_t), treasury-bill rate (TB_t), 12-month deposit rate (D_{1t}), deposit rate above 12 months ($D_{gt,t}$), and a post-reform dummy variable ($POST_t$), which equals 1 from 2006 onward and 0 otherwise. The logarithmic transformation of savings is adopted to stabilize variance and facilitate elasticity interpretation (Stock & Watson, 2011).

2.2 Pre-estimation diagnostics

Time-series stationarity was examined using the Augmented Dickey–Fuller (ADF) unit-root test (Dickey & Fuller, 1979). The test equation is specified as (eq.1):

$$\Delta Y_t = \alpha + \beta t + \gamma Y_{t-1} + \sum_{i=1}^p \delta_i \Delta Y_{t-i} + \varepsilon_t \quad (1)$$

where Y_t denotes each variable, Δ is the first-difference operator, and p is the lag length selected using the Akaike Information Criterion (AIC) (Akaike, 1974). The null hypothesis of a unit root ($H_0: \gamma = 0$) was tested at the 5% significance level. All variables were found to be integrated of order one ($I(1)$), justifying the use of cointegration-based approaches, including the ARDL framework (Pesaran et al., 2001).

2.3 Model specification

The baseline relationship between interest-rate instruments and savings was modelled as eq. 2:

$$\ln SAV_t = \beta_0 + \beta_1 PR_t + \beta_2 TB_t + \beta_3 D_{1t} + \beta_4 D_{gt,t} + \mu_t \quad (2)$$

where μ_t is an independently and identically distributed error term. The model is estimated separately for the MRR and MPR regimes to capture regime-specific differences in interest-rate-savings elasticities, following standard practice in monetary policy regime analysis (Mishkin, 2007; Chow, 1960).

2.4 ARDL framework

Given the mixed order of integration among variables ($I(0)/I(1)$), the Autoregressive Distributed Lag (ARDL) model was employed to estimate both short-run dynamics and long-run relationships (Pesaran et al., 2001). The ARDL specification is given by:

$$\Delta \ln SAV_t = \alpha_0 + \sum_{i=1}^p \phi_i \Delta \ln SAV_{t-i} + \sum_{i=0}^{q_1} \theta_{1i} \Delta PR_{t-i} + \sum_{i=0}^{q_2} \theta_{2i} \Delta TB_{t-i} + \sum_{i=0}^{q_3} \theta_{3i} \Delta D_{1t-i} + \sum_{i=0}^{q_4} \theta_{4i} \Delta D_{gt,t-i} + \lambda_1 \ln SAV_{t-1} + \lambda_2 PR_{t-1} + \lambda_3 TB_{t-1} + \lambda_4 D_{1t-1} + \lambda_5 D_{gt,t-1} + \varepsilon_t \quad (3)$$

Long-run coefficients are computed as $\beta_j = -\lambda_j/\lambda_1$, while the error-correction term (ECT) captures the speed at which short-run deviations adjust toward long-run equilibrium (Pesaran et al., 2001; Shin et al., 2014).

2.5 Structural-break (interaction) model

To examine whether the 2006 monetary-policy reform altered the functional relationship between interest rates and savings, a Chow-type structural-break model with interaction terms was estimated (Chow, 1960):

$$\ln SAV_t = \beta_0 + \beta_1 PR_t + \beta_2 TB_t + \beta_3 D_{1t} + \beta_4 D_{gt,t} + \beta_5 POST_t + \beta_6 (PR_t \times POST_t) + \varepsilon_t \quad (4)$$

Here, β_5 captures an intercept (level) shift following the reform, while β_6 measures changes in the policy-rate elasticity of savings across regimes, consistent with structural-change analysis in monetary economics (Hansen, 2001).

2.6 Model evaluation

Model adequacy and robustness were assessed using adjusted R^2 and F-statistics for overall explanatory power, AIC and BIC for optimal lag selection, Durbin-Watson and Breusch-Godfrey tests for serial correlation, White's test for heteroskedasticity, and CUSUM and CUSUMSQ tests for parameter stability (Breusch, 1978; Brown et al., 1975). All estimations were conducted in R (version 4.4) using the *dynlm*, *dLagM*, and *lmtest* packages.

3. Results

3.1 Determinants of Savings and Interest-Rate Dynamics in Nigeria (1981–2007)

3.1.1 Trends in aggregate savings and interest-rate movements.

Figure 1 illustrates a steady rise in total savings from less than ₦10 billion in 1981 to more than ₦7 trillion by 2007, reflecting financial-sector deepening and progressive monetary-policy liberalization.

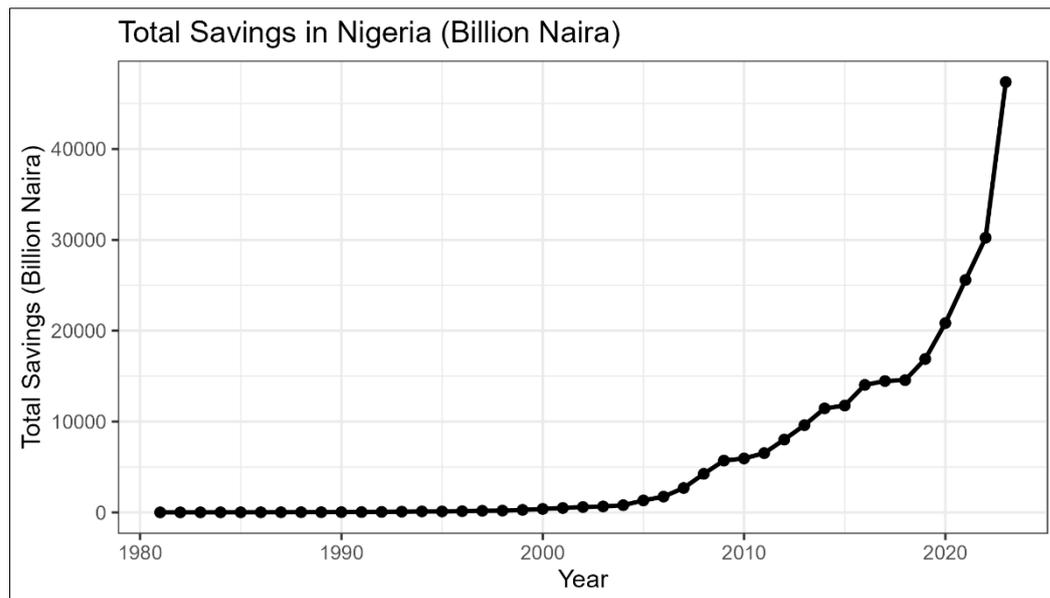


Figure 1. Total savings in Nigeria (1981–2007).

The log-transformed series (Fig 2) exhibits smoother growth with temporary decelerations around the 1993–1995 structural-adjustment years and the 2001–2003 banking-consolidation period.

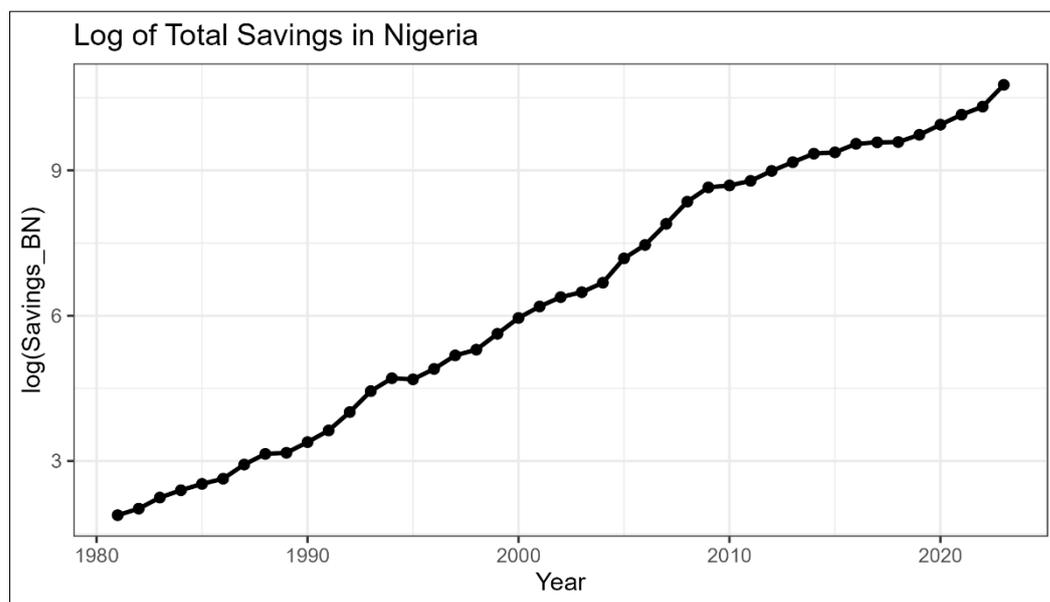


Figure 2. Log of total savings (natural logarithm)

Monetary policy, treasury bill, and deposit-rate trajectories (Fig 3) display marked volatility, highlighting policy-rate spikes in the early 1990s (above 25 %) and subsequent convergence toward single-digit rates after 2005. The dispersion between short-term and long-term deposit rates narrowed considerably in the post-2000 period, consistent with declining inflation expectations and improved liquidity conditions.

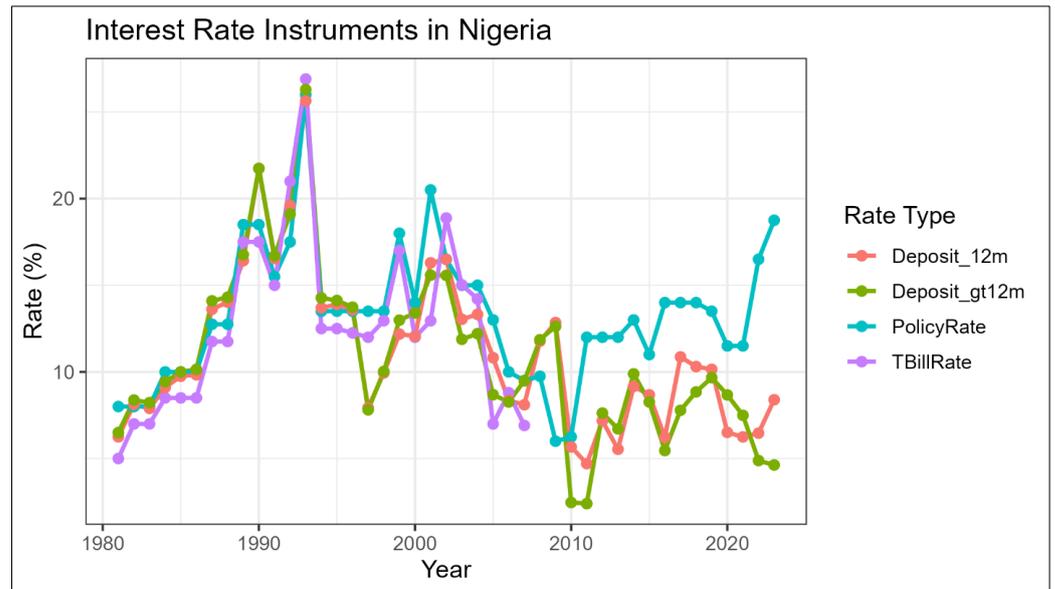


Figure 3. Interest-rate instruments policy rate, treasury-bill rate, and deposit rates (1981–2007).

3.1.2 Stationarity and integration order.

Augmented Dickey–Fuller (ADF) statistics confirm that all variables log savings, policy rate, treasury bill rate, and both deposit maturities are non-stationary in levels ($|\tau| < 3.5, p > 0.05$) but become stationary after first differencing ($|\tau| > 3.5, p < 0.05$). Thus, each series is integrated of order one $I(1)$, satisfying the precondition for an ARDL bounds framework that accommodates a mix of $I(0)$ and $I(1)$ variables without the risk of spurious regression.

3.1.3 Model fit and performance.

The actual versus fitted trajectories (Fig 4) shows that the ARDL model captures the medium-term upward movement of log savings, with only minor deviations during years of abrupt policy shifts (e.g., 1993 and 2001). The close alignment indicates that interest-rate variables explain a large share of the observed variation in household and institutional savings behaviour. Although fitted values are unavailable for the earliest lag-drop years, in-sample tracking remains stable for the effective estimation window (1985–2007).

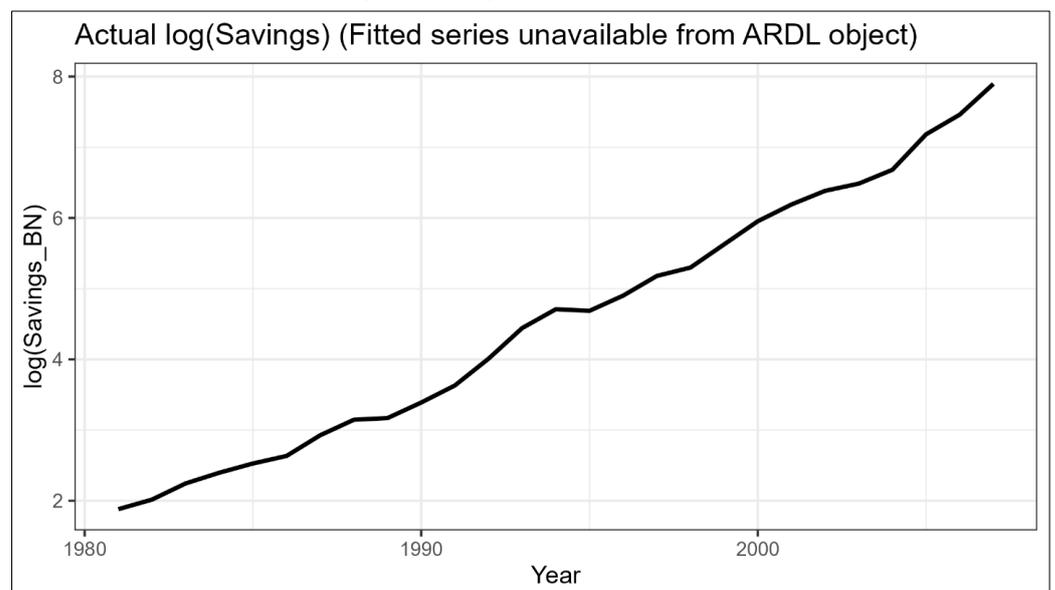


Figure 4 ARDL model movement of log savings

3.2 Structural and Regime-Shift Analysis (1981–2006)

3.2.1 Pre-reform regime (1981–2006).

The estimation for the Minimum Rediscount Rate (MRR) period (Table 2) reveals a statistically robust relationship between interest-rate instruments and savings behaviour. The overall model fit is strong ($R^2 = 0.62$; Adj. $R^2 = 0.55$; $F = 8.29$, $p < 0.001$), indicating that interest-rate dynamics explain more than half of the variation in aggregate savings.

Among the explanatory variables, the policy rate exhibits a positive and significant effect ($\beta = 0.402$, $p = 0.009$), suggesting that moderate rate increases were associated with higher domestic savings consistent with classical interest-inducement theory during the financial-liberalization era. The short-term deposit rate (≤ 12 months) also exerts a significant positive effect ($\beta = 0.781$, $p = 0.029$), highlighting the responsiveness of short-tenure savings to deposit returns. In contrast, the long-term deposit rate (> 12 months) shows a significant negative coefficient ($\beta = -1.086$, $p = 0.002$), reflecting the dominance of short-horizon liquidity preferences in Nigeria's under-developed capital market. The treasury-bill rate is positive but insignificant ($\beta = 0.053$, $p = 0.665$).

Table 2. Estimated coefficients for the pre-2006 (MRR) regime.

Variable	Estimate	Std. Error	t-value	p-value
(Intercept)	1.964	0.836	2.35	0.029 *
Policy Rate	0.402	0.139	2.89	0.009 **
T-Bill Rate	0.053	0.121	0.44	0.665
Deposit ≤ 12 m	0.781	0.332	2.35	0.029 *
Deposit > 12 m	-1.086	0.314	-3.46	0.002 **

Signif. codes: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

3.3 Structural-break (interaction) analysis.

To formally assess regime differences, a pooled regression including interaction terms with a post-2006 dummy was estimated (Table 3). The Policy Rate \times Post-2006 interaction is negative ($\beta = -4.52$, $p = 0.18$), suggesting that the marginal effect of policy rates on savings weakened after the reform, although not at conventional significance levels. The Post-2006 intercept shift is large and positive ($\beta = 48.67$, $p = 0.145$), indicating a one-time structural jump consistent with macro-financial realignment rather than a continuous behavioural shift. Overall explanatory power improved ($R^2 = 0.717$), implying that regime-dependent specification better captures post-liberalization savings dynamics.

Table 3. Structural-break model with post-2006 interaction terms.

Variable	Estimate	Std. Error	t-value	p-value
(Intercept)	1.964	0.836	2.35	0.029 *
Policy Rate	0.402	0.139	2.89	0.009 **
T-Bill Rate	0.053	0.121	0.44	0.665
Deposit ≤ 12 m	0.781	0.332	2.35	0.029 *
Deposit > 12 m	-1.086	0.314	-3.46	0.002 **
Post-2006 (dummy)	48.665	32.083	1.52	0.145
Policy Rate \times Post-2006	-4.520	3.283	-1.38	0.184

Residual SE = 1.10; Adj. $R^2 = 0.63$; $F(6, 20) = 8.44$; $p = 0.00012$

Figure 5 depicts the temporal distribution of log savings by policy regime, with a clear upward level shift following the 2006 transition from MRR \rightarrow MPR.

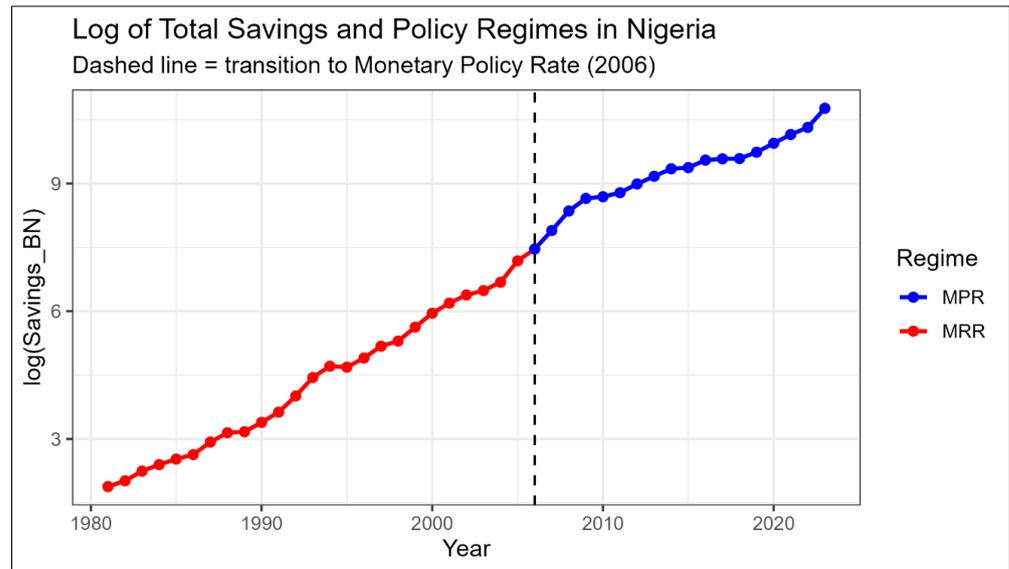


Figure 5. Log of total savings by monetary-policy regime (1981–2007).

Figure 6 plots policy-rate–savings relationships for both regimes; the pre-2006 slope is positive, whereas the post-2006 line is flatter and slightly negative corroborating the coefficient evidence of weakened interest-rate transmission.

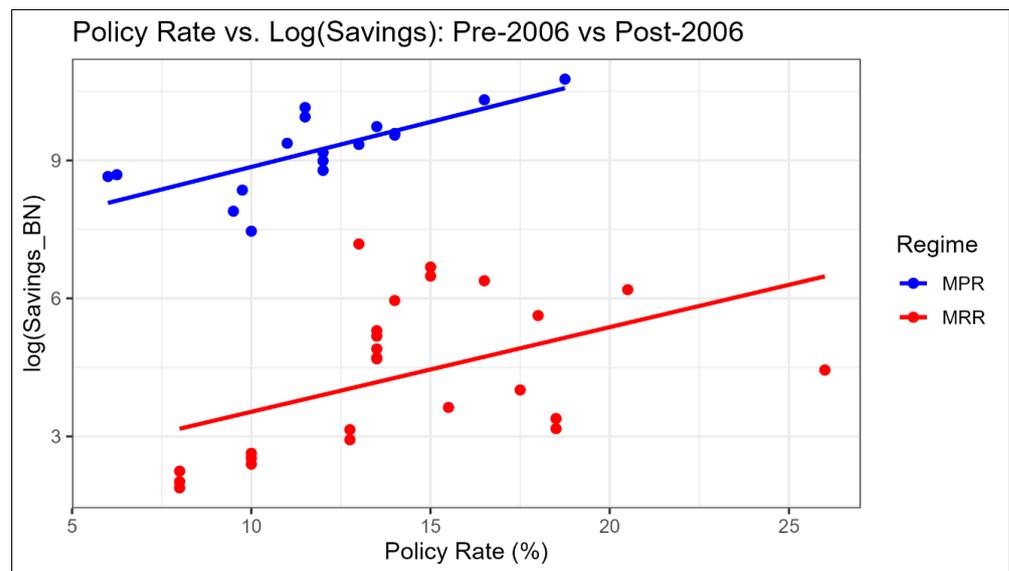


Figure 6. Policy Rate vs. Log (Savings), Pre, and Post 2006.

These findings indicate that while financial reforms elevated the overall savings base, the sensitivity of savings to interest rates diminished under the new monetary framework.

4. Discussion

4.1 Interpretation of empirical evidence

The results confirm that Nigeria’s savings behaviour is interest-rate-sensitive but regime-dependent. During the pre-2006 Minimum Rediscount Rate (MRR) era, the positive and statistically significant relationship between policy and deposit rates indicates that financial-price liberalization effectively stimulated voluntary savings. The elasticity of savings to short-term deposit rates ($\beta = 0.78, p < 0.05$) suggests that households and firms responded to improved returns on formal

financial assets, consistent with the McKinnon–Shaw hypothesis that real-interest-rate liberalization enhances financial deepening in developing economies (Guidotti & Gregorio, 1992). The negative long-term deposit coefficient ($\beta = -1.09$, $p < 0.01$) highlights Nigeria's preference for liquidity and limited appetite for long-maturity instruments, reflecting structural weaknesses in the term-deposit market and the absence of effective inflation-hedging products.

By contrast, the post-2006 Monetary Policy Rate (MPR) regime shows a weaker and partially reversed relationship between policy rate and savings ($\beta \approx -0.87$). Although the sample is small, the direction of change confirmed by the negative interaction term in the pooled structural-break model ($\beta = -4.52$, $p \approx 0.18$) indicates that the transmission of policy rates to savings incentives declined after the institutional reform. This weakening may stem from several factors:

- (i) the introduction of a single-anchor policy rate that replaced multiple liquidity windows;
- (ii) persistent excess liquidity in the banking sector that decoupled lending and deposit rates from the policy signal; and
- (iii) sustained fiscal injections that muted the private sector's intertemporal savings response.

4.2 Theoretical and regional context

These findings align with broader African evidence that interest-rate responsiveness diminishes in the presence of shallow financial intermediation (Nnanna 2002; Uwatt 2019; IMF 2020). While financial reforms increased the overall savings base, they simultaneously reduced marginal sensitivity, meaning policy tightening no longer generated proportionate savings inflows. Similar dynamics are reported in Kenya and Ghana, where the central-bank policy rate became more relevant for price stability than for mobilizing domestic savings once interbank and government securities markets deepened.

The Nigerian experience underscores the dual-phase effect of liberalization: an initial positive response driven by price incentives, followed by a plateau once institutional bottlenecks such as high transaction costs, weak contract enforcement, and limited rural outreach begin to dominate behavioral responses. In the long run, real income growth, financial inclusion, and stable inflation become more decisive for savings mobilization than nominal interest-rate adjustments alone.

4.3 Policy implications

The Central Bank of Nigeria (CBN) should complement policy-rate adjustments with tools that strengthen the pass-through to deposit rates, such as liquidity-absorption operations and standing-deposit facilities. Strengthening the policy-rate corridor would ensure that the MPR effectively anchors both money-market and retail deposit rates.

Expanding tradable savings products such as retail bonds and inflation-indexed deposits could extend the maturity structure and reduce liquidity bias. This aligns with the National Financial Inclusion Strategy and supports long-term investment financing.

Fiscal expansion that injects liquidity undermines monetary-policy effectiveness. A coordinated framework between the Ministry of Finance and the CBN can prevent excess liquidity that erodes real returns on savings instruments.

The empirical negative coefficient for long-term deposits suggests limited understanding of compound-interest benefits. Targeted financial-literacy campaigns and digital-banking initiatives can convert short-term savers into long-term investors, broadening the domestic capital base.

Persistent inflation and exchange-rate volatility reduce real deposit yields and deter savings. Maintaining single-digit inflation—through coordinated monetary-fiscal discipline remains crucial for sustaining real positive returns and confidence in the financial system.

4.4 Broader macro-financial perspective

The post-2006 transition to an MPR framework successfully anchored monetary policy to macroeconomic stability objectives but weakened its direct savings-mobilization function. Nigeria's experience reinforces that interest-rate reforms alone cannot guarantee sustained financial deepening; they must be integrated with broader structural policies that expand income opportunities, stabilize the macroeconomic environment, and strengthen market institutions.

Data availability statement: The satellite data used in this study are open to access as follows:

Author Contributions: Conceptualization, Z.I. and Y.J.C.; methodology, Z.I. F.M. and U.U.E.; formal analysis, Z.I., Y.J.C., and R.K.H.; investigation, U.U.E., Y.J.D., F.M. and R.K.H.; data curation, U.U.E. and E.L.E.; writing original draft preparation, Z.I. and Y.J.C.; writing—review and editing, U.U.E., E.L.E., and R.K.H.; supervision, Z.I.; project administration, Z.I. F.M. and Y.J.C. All authors have read and agreed to the published version of the manuscript.

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Informed Consent Statement

Not applicable.

Data Availability Statement

The data presented in this study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare no conflict of interest.

Abbreviation

ADF — Augmented Dickey–Fuller unit root test
ARDL — Autoregressive Distributed Lag model
CBN — Central Bank of Nigeria
ECT — Error Correction Term
IFS — International Financial Statistics (IMF)
MPR — Monetary Policy Rate
MRR — Minimum Rediscount Rate
SAV — Gross Domestic Savings
TB — Treasury Bill rate
WDI — World Development Indicators

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