

Foreign Exchange Intervention and INR/USD Exchange Rate Dynamics: Evidence from India (2013-2023)

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Abstract

Purpose - This study examines the effectiveness of the Reserve Bank of India's (RBI) foreign exchange market intervention in influencing the dynamics of the INR/USD exchange rate, focusing on exchange-rate returns and volatility.

Methodology - The analysis uses monthly data from February 2013 to November 2023 and employs a vector autoregression (VAR) framework complemented by impulse response analysis to capture the short-run transmission of intervention shocks.

Findings - Results indicate that RBI intervention does not have a significant effect on monthly exchange rate returns, suggesting that periodic interventions are insufficient to influence the rupee's direction in a deep, liquid market. In contrast, interventions significantly reduce exchange rate volatility, highlighting their stabilising role. Impulse response analysis indicates that intervention shocks cause an immediate but short-lived appreciation of the rupee and a pronounced short run reduction in exchange rate volatility. Together, these findings suggest that RBI interventions primarily function as market-stabilisation tools aimed at containing volatility rather than targeting specific exchange-rate levels.

Research implications - These findings align with the RBI's stated objective of managing volatility in a managed float regime and are consistent with existing evidence on central bank interventions in emerging markets.

Practical implications - The results support the RBI's managed float framework, indicating that foreign exchange interventions are most effective at containing volatility and maintaining orderly markets.

Keywords: Foreign exchange intervention, INR/USD exchange rate, Exchange-rate volatility, Reserve Bank of India, Vector autoregression; Impulse response analysis.

1. Introduction

Exchange rate stability is a key pillar of macroeconomic and financial stability in open economies. Exchange rate movements affect trade competitiveness, capital flows, inflation, and investor confidence, making them a major concern for policymakers. While gradual and predictable adjustments can support exports, persistent volatility or sudden misalignments create uncertainty, disrupt trade, raise import-driven inflation, and weaken growth, especially in emerging markets (Fratzcher et al., 2016; Krušković, 2022; Niyonsaba, 2023).

Most central banks do not aim to permanently fix exchange rates. Instead, they focus on limiting excessive fluctuations and ensuring orderly market

conditions through monetary policy measures and foreign exchange interventions (Basu & Varoudakis, 2013; Tsen, 2014). Evidence from developing economies shows that interventions are generally more successful in smoothing short-term volatility than in determining the long-run exchange rate level (Fratzcher et al., 2016; Chaudhari & Trivedi, 2022; Kayode et al., 2021). Their effectiveness depends on central bank credibility, reserve adequacy, transparency, and global financial conditions (Krušković, 2022).

India follows a managed floating exchange rate regime, where the rupee is largely market-determined, but the Reserve Bank of India intervenes periodically to curb disorderly movements and excessive volatility. Since

liberalisation, the INR/USD exchange rate has become more sensitive to global capital flows, risk appetite shifts, and external shocks. Episodes of sharp depreciation and heightened volatility have raised concerns about imported inflation and financial stability (*Chaudhari & Trivedi, 2022; Vinotha & R, 2025*).

To address these pressures, the RBI uses tools such as spot market intervention, foreign exchange reserve management, sterilisation, and liquidity operations (*Agénor et al., 2020; Rishad et al., 2022*). These measures aim to smooth disruptive movements rather than target a fixed exchange rate. However, findings remain mixed: some studies highlight volatility-reducing effects during stress periods, while others argue that impacts are temporary and depend on supportive market conditions and consistent signalling (*Basu & Varoudakis, 2013; Fratzscher et al., 2016*).

Despite its importance, evidence on RBI intervention remains limited and inconclusive, with many studies relying on indirect proxies like reserve changes that may not fully capture intervention intent or timing. Against this backdrop, the present study evaluates the effectiveness of RBI actions in managing INR/USD movements by jointly examining exchange rate dynamics and intervention behaviour. It contributes to the broader debate on the role of central bank intervention in emerging market economies under managed floating regimes.

2. Review of Literature

The effectiveness of central bank intervention in foreign exchange markets remains a widely debated issue in international finance. Early theoretical work by *Baillie and Humpage (1992)* and *Vitale (1999)* questioned whether sterilised intervention can influence exchange rates without shifts in monetary fundamentals. They argued that in efficient markets, intervention effects are temporary unless expectations about future monetary policy change. Later empirical studies, however, suggest that intervention can affect exchange rate dynamics through signalling, portfolio balance, and market microstructure channels.

Evidence from advanced economies is mixed. *Dominguez (1993)* finds that publicly announced Federal Reserve interventions reduced volatility,

while secret actions increased uncertainty. Payne and *Vitale (2001)*, using Swiss high-frequency data, show that interventions can have immediate and persistent effects, especially when coordinated. In contrast, *Frenkel et al. (2003)* report that Bank of Japan interventions raised short-term volatility, highlighting the role of transparency and credibility.

Event-study research also supports short-run effectiveness. *Fatum and Hutchison (2003)* show that Bank of Japan and Federal Reserve interventions influenced exchange rates in the short term. *Fatum (2008)* finds Canadian intervention affects exchange rate direction, though volatility effects are limited. *Fatum (2009)* further notes that Japanese intervention effectiveness depends on market expectations, timing, and credibility.

Market microstructure studies provide additional explanations. *Menkhoff (2010)* and *Vitale (1999)* argue that intervention conveys information, shaping expectations and trading behaviour. *Dominguez (2006)* finds coordinated G3 interventions increase intraday volatility but have weaker long-run effects.

Evidence from emerging economies is generally more supportive. *Ramaswamy and Samiei (2000)* and *Guimarães and Karacadag (2004)* show that intervention can influence exchange rates in the short run, though long-run effects remain weak. *Filardo et al. (2022)* and *Bui (2024)* find intervention is particularly effective in correcting short-term misalignments and reducing volatility during financial stress, with foreign currency sales often more effective than purchases.

Under inflation-targeting and managed float regimes, *Holub (2004)* and *Kruskovic (2022)* argue that intervention can complement monetary policy by absorbing shocks and limiting inflationary pressures, though frequent intervention may involve sterilisation costs and credibility risks.

India's managed float framework gives RBI a distinctive role. *Pattanaik and Sahoo (2001)* show RBI intervention reduces volatility with little impact on the exchange rate level. *Behera et al. (2006)* confirm that net purchases dampen INR/USD volatility without altering long-run trends. *Shah et al. (2009)* provide similar evidence for South Asia.

Nonlinear approaches highlight conditional intervention. Ghosh and *Kundu (2019)* find RBI intervenes mainly when deviations exceed a tolerance band, successfully restoring stability while allowing greater flexibility during appreciation phases. *Chaudhari and Trivedi (2022)* further confirm that intervention reduces volatility more than it influences exchange rate levels.

Despite extensive research, gaps remain regarding whether intervention affects exchange rate levels in the short run, the limitations of low-frequency Indian data, and the lack of long post-crisis joint analysis of levels and volatility. Overall, the literature suggests RBI intervention primarily serves as a volatility management tool rather than a mechanism for long-term exchange rate targeting. Building on these insights, the present study re-examines RBI's effectiveness using updated data and an appropriate econometric framework.

3. Research Methodology

This chapter evaluates how effectively the Reserve Bank of India manages the INR/USD exchange rate and its volatility using a time-series econometric approach. The methodology includes measuring exchange rate volatility, testing variable stationarity, and estimating a Vector Autoregression (VAR) model.

Impulse response functions are used to trace the dynamic impact of RBI intervention on exchange rate movements. This framework captures short-run interactions and feedback effects, offering a policy-relevant assessment of RBI's stabilising role.

3.1 Data Preparation

This section describes the construction of the dataset used to examine the relationship between foreign exchange intervention by the Reserve Bank of India and movements in the INR/USD exchange rate. The study employs monthly time-series data from February 2013 to November 2023, drawn from official RBI sources. RBI intervention is measured as net purchases or net sales of US dollars, capturing the central bank's actions to influence short-term exchange rate movements and volatility. To distinguish between exchange rate movements and volatility, the nominal INR/USD exchange rate is transformed into returns, calculated as the first

difference of the exchange rate, while volatility is proxied using squared returns. This provides a simple realised volatility measure that effectively captures short-run fluctuations in monthly data.

All variables are aligned over a common sample period, and appropriate transformations, including differencing, are applied to ensure stationarity and meet the requirements of subsequent VAR estimation.

3.2 Development of Hypotheses

The Reserve Bank of India intervenes in the foreign exchange market to maintain orderly market conditions and limit excessive fluctuations in the INR/USD exchange rate. By undertaking net purchases and sales of foreign currency, the RBI aims to influence exchange rate behaviour, particularly during periods of heightened uncertainty caused by external shocks or speculative pressures.

Such interventions are expected to affect not only exchange rate movements but also the degree of volatility over time. Guided by this policy objective and supported by insights from existing empirical studies, the following hypotheses are proposed to assess the effectiveness of RBI intervention:

H1: *RBI intervention significantly influences movements (returns) in the INR/USD exchange rate.*

H2: *RBI intervention significantly influences the volatility of the INR/USD exchange rate.*

3.3 Vector Autoregressive (VAR) Approach

The Vector Autoregressive (VAR) model is used to examine the dynamic relationships among multiple time-series variables without imposing strict assumptions on causality. In this framework, each variable is explained by its own past values and the past values of other variables in the system, allowing interactions and feedback effects to be captured naturally. Owing to its flexibility and simplicity, the VAR approach is well suited for analysing exchange rate movements and assessing the short-run impact of policy interventions in a data-driven and policy-relevant manner. The estimation of the VAR model is therefore conducted through the following structured steps.

Step 1: Stationarity Testing

As the study uses time-series data, stationarity testing is conducted to avoid spurious results and ensure valid inference. Stationarity is examined using the Augmented Dickey–Fuller (ADF) unit root test, where non-stationarity is treated as the null hypothesis. Variables that are found to be non-stationary are transformed through differencing until stationarity is achieved, determining their order of integration. The ADF test is performed under alternative deterministic specifications to appropriately capture the underlying data structure and maintain consistency in subsequent model estimation.

Step 2: Lag Length Selection

After confirming stationarity, the optimal lag length is selected to ensure correct model specification. Standard information criteria such as AIC, SBC, and HQ are used to balance model fit and parsimony, and the lag order that minimizes the chosen criterion is adopted for VAR estimation.

Step 3: VAR Model Specification and Estimation

A VAR model is then estimated using RBI intervention (RBI), exchange rate returns (d_EX), and exchange rate volatility (sq_d_EX) as endogenous variables, allowing for dynamic interactions and feedback effects among them over time. Using the selected lag order, a VAR(p) model is estimated by applying the Ordinary Least Squares (OLS) method to each equation in the system.

$$RBI = f(RBI_{t-p}, d_EX_{t-p}, sq_d_EX_{t-p})$$

$$d_EX = f(RBI_{t-p}, d_EX_{t-p}, sq_d_EX_{t-p})$$

$$sq_d_EX = f(RBI_{t-p}, d_EX_{t-p}, sq_d_EX_{t-p})$$

The VAR framework captures short-run dynamics and feedback effects among RBI intervention, exchange rate movements, and volatility. Model parameters are estimated using OLS, and their significance is assessed through standard t-statistics and p-values, along with their economic relevance.

Step 4: Impulse Response Function Analysis

After estimating the VAR model, Impulse Response Functions (IRFs) are used to analyse the dynamic effects of shocks among the variables. IRFs trace the response of one variable to a one-time shock in another over a 12-period horizon, enabling an assessment of the short- to medium-term responses of exchange rate returns and volatility to RBI intervention shocks.

Step 5: Stability and Diagnostic Tests

Model adequacy is verified through stability and diagnostic tests. Stability is confirmed by ensuring that all eigenvalues lie within the unit circle, while residual diagnostics—including tests for serial correlation, normality, and heteroskedasticity—confirm that the VAR model is well specified and suitable for dynamic analysis.

4. Empirical Results

This section presents the empirical results on the effectiveness of the Reserve Bank of India in influencing the INR/USD exchange rate. Using a VAR framework, the analysis evaluates how RBI intervention affects exchange rate returns and volatility through coefficient estimates and impulse response functions, providing insights into the transmission of intervention shocks to exchange rate dynamics.

4.1 Unit Root Test Results

Prior to VAR estimation, stationarity of the variables is examined to avoid spurious regression outcomes. The Augmented Dickey–Fuller (ADF) test is applied to RBI intervention, exchange rate returns, and exchange rate volatility under alternative deterministic specifications that includes none, constant, and constant with trend, to accurately capture the data-generating process.

The p-values reported in Table 4.1 indicate the order of integration of each series and provide the basis for appropriate model specification in the VAR framework.

Table 4.1: Unit Root Test Results.

Variable	Deterministic Term	ADF Statistic	p-value	Interpretation
Reserve Bank Intervention (RBI)	None	-6.30197	0.0000	Stationary
Reserve Bank Intervention (RBI)	Constant	-6.71249	0.0000	Stationary (intercept included)
Reserve Bank Intervention (RBI)	Const + Trend	-6.69896	0.0000	Stationary (trend not required)
Exchange Rate Return (d EX)	None	-9.47525	0.0000	Stationary
Exchange Rate Return (d EX)	Constant	-9.90878	0.0000	Stationary (intercept included)
Exchange Rate Return (d EX)	Const + Trend	-9.87570	0.0000	Stationary (trend not required)
Exchange Rate Volatility (sq d EX)	None	-4.52601	0.0000067	Stationary
Exchange Rate Volatility (sq d EX)	Constant	-10.44460	0.0000	Stationary (intercept included)
Exchange Rate Volatility (sq d EX)	Const + Trend	-10.57710	0.0000	Stationary (trend not required)

Source: Author's estimation.

4.2 Selected Deterministic Component

A further assessment following the ADF tests shows that RBI intervention, exchange rate returns, and exchange rate volatility do not exhibit significant deterministic trends. Although all variables are stationary under different specifications, the trend

term adds no explanatory value. Therefore, a constant-only specification is adopted for VAR estimation to ensure parsimony without imposing unnecessary trend dynamics.

As shown in Table 4.2, a constant-only specification is adopted.

Table 4.2: Deterministic Component Decisions for VAR Specification

Variable	Stationary Under	Trend Significant	Best Deterministic Specification
Reserve Bank Intervention (RBI)	None, Constant, Trend	No	Constant Only
Exchange Rate Return (d EX)	None, Constant, Trend	No	Constant Only
Exchange Rate Volatility (sq d EX)	None, Constant, Trend	No	Constant Only

Source: Author's estimation.

4.3 Lag Length Selection for VAR Model

The optimal lag length is selected using standard criteria, including the Akaike Information Criterion (AIC), the Bayesian Information Criterion (BIC), the Hannan–Quinn Criterion (HQC), and the likelihood ratio (LR) test. As shown in Table 4.3,

AIC, BIC, and HQC consistently select lag 1 as the optimal lag order. Although the LR test indicates potential improvements at higher lag lengths, the information criteria strongly favour a more parsimonious specification. Accordingly, a VAR (1) model is adopted, as it efficiently captures short-run dynamics while avoiding over-parameterisation.

Table 4.3: Lag Length Selection Criteria

Lag	Log-likelihood	p(LR)	AIC	BIC	HQC
1	-1511.66770	—	25.394462*	25.673211*	25.507663*
2	-1509.31965	0.85995	25.505327	25.993139	25.703430
3	-1505.59299	0.59003	25.593216	26.290089	25.876220
4	-1501.46630	0.50883	25.674438	26.580373	26.042343
5	-1497.66766	0.57518	25.761128	26.876124	26.213933
6	-1489.46869	0.05902	25.774478	27.098537	26.312184
7	-1482.05774	0.09595	25.800962	27.334083	26.423570
8	-1474.48478	0.08701	25.824746	27.566929	26.532255
9	-1463.15710	0.00702	25.785952	27.737196	26.578361
10	-1459.19230	0.54126	25.869872	28.030178	26.747182

Source: Author's estimation.

(*Minimum values of the information criteria are marked with an asterisk.)

4.4 Vector Autoregression (VAR) Model Results

The Vector Autoregression (VAR) model is employed to examine the effectiveness of the



Reserve Bank of India’s (RBI) foreign exchange intervention, measured by its net monthly purchases or sales of US dollars, on the behaviour of the INR/USD exchange rate. Two key dimensions are analysed: monthly exchange rate returns (d_EX) and exchange rate volatility (sq_d_EX). These measures are crucial for assessing whether RBI intervention influences exchange rate movements or contributes to stabilising market fluctuations. Based on standard information criteria (AIC, HQC, and BIC), a VAR(1) specification is selected as the most appropriate model for capturing short-run dynamics over the sample period February 2013 to November 2023.

Diagnostic tests confirm the adequacy of the estimated VAR model. The Portmanteau test indicates no residual serial correlation, while Durbin-Watson statistics remain close to the benchmark value of two, suggesting the absence of autocorrelation. The estimated results reveal that RBI intervention has no statistically significant

effect on monthly exchange rate returns. Although the coefficient is negative, its insignificance implies that intervention does not meaningfully influence short-run appreciation or depreciation of the INR. This outcome may reflect the depth of India’s foreign exchange market, limiting the impact of routine intervention on exchange rate movements.

In contrast, RBI intervention exhibits a negative and marginally significant impact on exchange rate volatility (significant at the 10% level), as reported in Table 4.4. This finding suggests that intervention contributes to reducing monthly fluctuations in the INR/USD rate, thereby enhancing market stability. The negative coefficient supports the view that RBI actions are primarily aimed at smoothing excessive volatility rather than targeting the exchange rate level. Overall, the VAR results indicate that RBI intervention is more effective as a stabilising tool than as a mechanism for influencing exchange rate returns, consistent with the objectives of a managed floating exchange rate regime.

Table 4.4: Impact of RBI on Exchange-Rate Return and Volatility

Dependent Variable	Variable (RBI effect)	Coefficient	p-value
d EX (Return)	RBI 1	-0.0000183	0.2915
sq d EX (Volatility)	RBI 1	-0.0000573	0.0893

Source: Author’s estimation.

4.5 Vector Auto Regression (VAR): Stability Condition and Residual Diagnostics

Following the estimation of the Vector Autoregression (VAR) model, a series of diagnostic tests is performed to examine model stability and residual properties. These include the residual correlation matrix and its eigenvalues, the Doornik-Hansen normality test, the Rao F-LM test for serial correlation, and the Engle LM test for ARCH effects. The results indicate that the VAR model is dynamically stable and free from major specification problems, confirming that the residuals satisfy standard statistical assumptions. Consequently, the estimated VAR framework is reliable for drawing inference on the interactions among RBI intervention, exchange-rate returns, and exchange-rate volatility, and is suitable for further

dynamic analysis such as impulse response functions.

VAR Stability Condition

Following the estimation of the VAR (1) model, the stability of the system was examined using the inverse roots of the characteristic polynomial in Gretl. A VAR model is considered dynamically stable if all inverse roots lie within the unit circle, implying that shocks to the system dissipate over time rather than leading to explosive behaviour. As shown in Figure 4.1, all inverse roots are located inside the unit circle, confirming that the VAR model satisfies the stability condition. Therefore, the estimated VAR framework is dynamically stable and provides a valid basis for further dynamic analysis, including the computation and interpretation of impulse response functions.

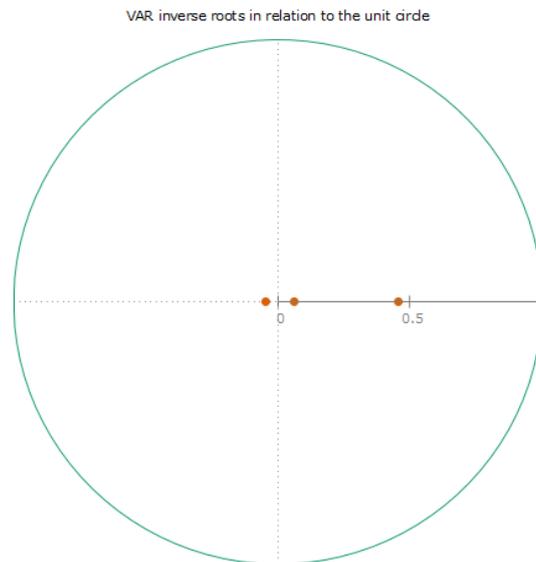


Figure 4.1: VAR Inverse Roots Stability Plot

Source: Author’s estimation.

Eigenvalues of the Residual Correlation Matrix

The eigenvalues of the residual correlation matrix are all positive, confirming that the matrix is positive definite and mathematically valid. As reported in Table 4.5, these eigenvalues indicate a well-defined

residual covariance structure with no redundancy among the model disturbances. This suggests that the residual correlation matrix is properly specified, supporting the reliability of subsequent diagnostic checks and dynamic analysis within the VAR framework.

Table 4.5: Eigenvalues of the Residual Correlation Matrix	
Eigenvalue Number	Value
Eigenvalue 1	0.413804
Eigenvalue 2	0.866346
Eigenvalue 3	1.71985

Source: Author’s estimation.

Autocorrelation Test (Rao F-LM Test)

The Rao F-LM test indicates no evidence of residual autocorrelation in the VAR model (Rao F = 1.599; p = 0.1148). This confirms that the VAR (1)

specification is appropriately chosen and dynamically well specified. Consequently, the model is suitable for impulse response analysis of RBI intervention and exchange-rate dynamics.

Table 4.6: Autocorrelation Test (Rao F – LM Test)			
Lag	Rao F	Approx. Distribution	p-value
1	1.599	F(9, 292)	0.1148

Source: Author’s estimation.

ARCH Test (Engle LM Test)

The Engle LM ARCH test is used to examine the presence of conditional heteroskedasticity in the VAR residuals. As reported in Table 4.7, the test statistic at lag one (LM = 32.357; p-value = 0.6426) indicates that the null hypothesis of no ARCH effects cannot be rejected. This suggests the absence

of significant time-varying residual variance, supporting the adequacy of the VAR model’s error structure and validating its use for subsequent impulse response analysis.

Table 4.7: ARCH Test (Engle LM Test)

Lag	LM Statistic	Df	p-value
1	32.357	36	0.6426

Source: Author’s estimation.

Impulse Response Function

Impulse response functions (IRFs) are employed to trace the dynamic effects of a one-standard-error shock to RBI’s foreign exchange intervention. While VAR coefficients capture static lag relationships, IRFs illustrate the time path,

magnitude, and persistence of responses in exchange-rate returns (d_EX) and exchange-rate volatility (sq_d_EX). The responses, reported in Figures 2 and 3 and Table 4.8, are evaluated using bootstrap confidence intervals, ensuring robust inference despite potential non-normality in the residuals.

Table 4.8: Responses to a one-standard error shock in RBI Intervention

Period	d_EX	sq_d_EX
1	-0.34691	-0.26273
2	-0.11438	-0.34045
3	-0.054523	-0.14575
4	-0.024682	-0.066625
5	-0.011212	-0.030232
6	-0.0050901	-0.013727
7	-0.002311	-0.0062321
8	-0.0010492	-0.0028294
9	-0.00047635	-0.0012846
10	-0.00021627	-0.00058322
11	-9.8188e-05	-0.00026479
12	-4.4578e-05	-0.00012022

Source: Author’s estimation.

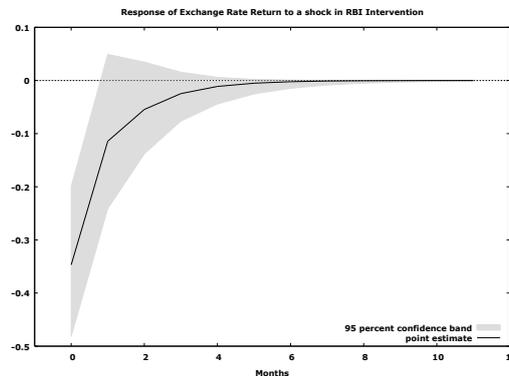
Response of Exchange-Rate Return to an Intervention Shock

The impulse response results reported in Table 4.8 and Figure 2 show an immediate and pronounced response of exchange-rate returns (d_EX) to a one-standard-error shock in RBI intervention. In the first period, d_EX declines sharply, indicating a short-run appreciation of the domestic currency. The magnitude of the response weakens rapidly in subsequent periods and converges smoothly toward zero, suggesting that the impact of intervention on exchange-rate returns is transitory. The monotonic adjustment pattern in the impulse response plot confirms that RBI intervention influences exchange-rate returns primarily in the short run, with no persistent effects over time.

Response of Exchange-Rate Volatility to an Intervention Shock

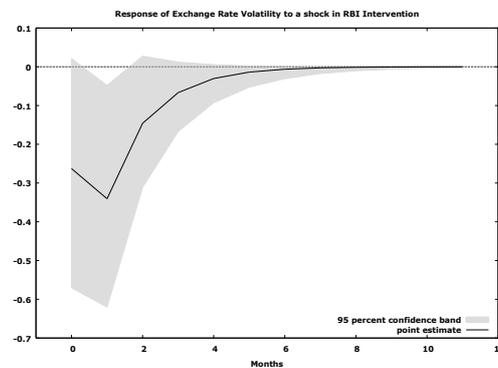
The impulse response results in Table 4.8 and Figure 3 indicate a clear short-run decline in exchange-rate volatility (sq_d_EX) following a one-standard-error shock to RBI intervention. Volatility falls sharply in the first period, with the maximum dampening effect observed in the second period, reflecting strong immediate market stabilisation.

Thereafter, the response gradually weakens and converges toward zero, as shown by the smooth adjustment path in the impulse response plot. These results suggest that RBI intervention is effective in reducing exchange-rate volatility in the short run, although the stabilising impact does not persist over time.



Graph 2

Source: Author's estimation.



Graph 3

Source: Author's estimation.

Conclusion

This study set out to re-examine the effectiveness of the Reserve Bank of India's (RBI) foreign exchange intervention in influencing the behaviour of the INR/USD exchange rate, with particular emphasis on exchange-rate returns and volatility. Using monthly data from February 2013 to November 2023 and a well-specified VAR (1) framework, the analysis provides fresh empirical evidence on the role of intervention in India's managed floating exchange-rate regime.

The empirical findings indicate that RBI intervention does not have a statistically significant impact on monthly exchange-rate returns. This suggests that routine intervention is largely ineffective in altering the direction or magnitude of exchange-rate movements in the short run. Such a result is consistent with early theoretical arguments that sterilised intervention has limited power to

influence exchange-rate levels in the absence of changes in underlying monetary fundamentals (*Baillie & Humpage, 1992; Vitale, 1999*). It also aligns with the Indian evidence presented by *Pattanaik and Sahoo (2001)* and *Behera et al. (2006)*, who argue that RBI does not pursue an explicit exchange-rate target.

In contrast, the results show that RBI intervention has a negative and marginally significant effect on exchange-rate volatility, indicating its effectiveness in smoothing excessive fluctuations in the foreign exchange market. This finding reinforces the view that intervention primarily serves a stabilisation function rather than a rate-targeting role. Similar conclusions have been reached in both international and Indian studies, including *Dominguez (1993)*, *Fatum and Hutchison (2003)* and *Ghosh and Kundu (2019)*, which emphasise the importance of intervention in reducing market disorder and

volatility, particularly during periods of stress or heightened uncertainty .

Overall, the evidence supports the interpretation that RBI's foreign exchange intervention strategy is consistent with the objectives of a managed float regime namely, maintaining orderly market conditions while allowing the exchange rate to be largely determined by market forces. By dampening volatility without systematically influencing exchange-rate returns, RBI intervention complements monetary policy without undermining long-run exchange-rate flexibility. The findings contribute to the existing literature by providing updated post-crisis evidence using a unified framework that jointly examines exchange-rate returns and volatility.

Despite its contributions, the study is not without limitations. The use of monthly data may mask high-frequency intervention effects, and future research could employ daily or intraday data to capture immediate market responses. Additionally, incorporating nonlinear or regime-switching models may further enhance understanding of conditional intervention effectiveness. Nonetheless, the present analysis offers robust support for the view that in emerging economies like India, foreign exchange intervention remains a valuable tool for volatility management rather than exchange-rate level determination.

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