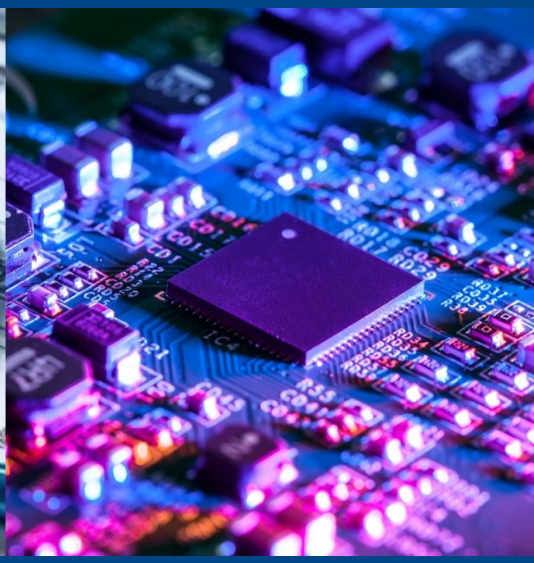
ISSN: 2582-7219





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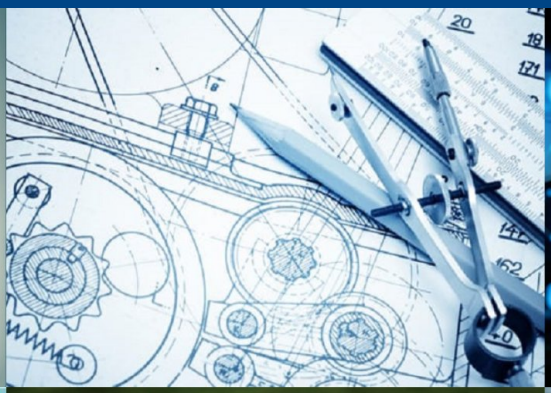

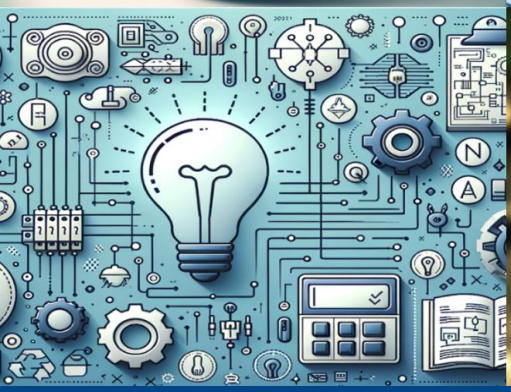

Impact Factor: 8.206 **Volume 9, Issue 4, April 2026**

© 2026 IJMRSET | Volume 9, Issue 4, April 2026| DOI:10.15680/IJMRSET.2026.0904076

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 8.206| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Impact of Interest Rate Changes on Indian Equity Returns: A Time-Series Study

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ABSTRACT: Interest rates are a central tool of monetary policy, which has a fundamental effect on the decisions of investment, profitability of the corporations and the stock market. The Reserve Bank of India (RBI) in India employs some of the most important rate parameters like repo rate, reverse repo rate, call money rate, and government securities (G-Sec) yield to control the running of the economy and financial stability. This paper will analyze the effects of these interest rate movements on Indian equity returns, as measured by the Nifty 50 index, based on twelve months of time-series data (2013 -2025). Using a strict econometric model that comprises of Augmented Dickey-Fuller (ADF) stationarity tests, Ordinary Least Squares (OLS) multiple regression, GARCH(1,1) volatility modeling, and a set of diagnostic and stability tests, the research result indicates that the interest rates variables have moderate yet statistically significant effects on equity returns (R 2 = 0.132, F = With individual instruments, the reverse repo rate provides a significant positive effect (= 0.607, p = 0.002), and the call money rate provides a significant negative effect (= -211, p = 0.009). In this model, repo rate, and 10-year G-Sec yield have no statistical significance as predictors. Diagnostic tests confirm that the model is stable with no multicollinearity, but heteroscedasticity is found. The research results add to the knowledge about monetary policy transmission in the emerging equity markets and have practical implications to investors, corporate managers, and policymakers.

KEYWORDS: Interest rates, equity returns, monetary policy, Nifty 50, time-series analysis, GARCH, emerging markets, India

I. INTRODUCTION

The monetary policy and equity market performance can be considered one of the most thoroughly studied issues in financial economics. The central bank policy tool, interest rates determines the cost of capital, corporate investment, and risk appetite of investors that all affect the dynamics of the stock market. In emerging markets such as India, where financial markets are typified by fast structural change, growing globalization and a heterogenous investor base, the question of the transmission of interest rate changes to equity returns is especially significant.

The equity markets of India dominated by the benchmark indices like BSE Sensex and NSE Nifty 50 have developed significantly in the last twenty years, involving the domestic retail investor, institutional investors, and foreign portfolio investors (FPIs). The monetary policy of the Reserve Bank of India (RBI) is implemented by the changes in the key rates, primarily, the followings: repo rate and reverse repo rate, with the given goals of inflation control, stimulating the development of the economy, and ensuring financial stability. Such policy measures create anticipations of future economic situations which impact on equity values through various channels of transmission: the discount rate channel, the credit channel and the portfolio substitution effect.

Theoretically, the escalation in interest rates should lower stock prices because it will raise discount rates in the Discounted Cash Flow (DCF) model and fixed-income assets. Nevertheless, the empirical evidence of emerging markets usually implicates mixed or counterintuitive outcomes, and it serves as the indicator of the complexity of the transmission mechanisms in economies where structural inefficiencies, regulatory limitations, and powerful behavioral aspects are prominent.The proposed study will set out to test in an empirical fashion the impact of four important interest rate variables, namely the repo rate, reverse repo rate, call money rate and the 10-year G-Sec yield on the monthly returns of Nifty 50 between the year 2013 and 2025. In using a panoptic time-series econometric model, the research can offer new and detailed information regarding the character, trend and permanence of the interest rate-equity return association in India.

© 2026 IJMRSET | Volume 9, Issue 4, April 2026| DOI:10.15680/IJMRSET.2026.0904076

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 8.206| ESTD Year: 2018|

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II. REVIEW OF LITERATURE

Empirical publications in interest rate-stock market relations cover both developed and emerging economies and utilize a wide variety of econometric designs. The current research is contextualized by a selective review of the relevant studies.

Bisiriyu, Ismail, and Ramachandran (2025) investigated the impact of policy uncertainty on the performance of the Indian stock market, with the results showing a significant rise in the volatility of the market and lack of investor confidence with the increase in uncertainty. Their focus on open policy frameworks can be related to the central bank signaling literature. Karmakar (2025) proved that the changes in the Federal Reserve rate caused by US Federal Reserve are spilled over to the Indian banking stocks and emphasized global interest rate dynamics in the process of forming domestic equities market.

A research by Singh and Vishal (2025) examined both the interest rates and stock market performance in India, and it was observed that the instruments had significant but instrument-specific impact on the current study. Adopting an efficient markets framework, Mohanty and Banerjee (2024) have investigated the connection between the monetary policy and the long-term interest rates and chose to conclude that the transmission is incomplete and market-specific. Chatterjee and Bose (2024) evaluated how the stock market behaves to the announcements made by the RBI policy, recording asymmetric behavior based on the nature and the extent of changes to the rates.

The volatility spillovers between interest rates and equity markets in India were reported by Iyer and Nair (2024) with the GARCH-class models being suitable to identify the time-varying volatility. Keswani, Puri, and Jha (2024) used the cointegration analysis of the macroeconomic variables and stock prices where they discovered long-run equilibrium relations. In a study of NIFTY 50 dynamics and macroeconomic variables, using a VAR model, Khan and Joy (2023) discovered that in certain situations, there was bidirectional causality.

Mehta and Pandey (2023) investigated the relationship between monetary policy and stock market response in India, which supports a signaling hypothesis that a change in the value of an interest rate is treated as a signal of credibility, as opposed to an actual change in costs. Jadhav and Faniband (2023) observed that the reaction of interest sensitive industries like banking and real estate to changes in the interest rates is much more sensitive in nature as compared to other industries, and hence the value of disaggregated analysis.

On the methodological front, Jabeen et al. (2022) combined macroeconomic with news sentiment variables using machine learning, which revealed that sentiment is one of the factors that contribute much to predictive power of conventional models. Tomar and Kesharwani (2022) recorded the negative proportions of the monetary policy impact on the Indian stock market sectors, and Bansal and Kaur (2022) validated the sensitivity of the stock market sectors to interest rate changes. Collectively, the literature demonstrates that the interest rate equity return seemed to be real but subtle in India, which inspired the instrument level analysis conducted in the current study.

III. THEORETICAL FRAMEWORK

The study is grounded in three interrelated theoretical frameworks that together explain the channels through which interest rate changes affect equity returns.

3.1 Discounted Cash Flow Model

Under the DCF model, the intrinsic value of a stock is the present value of expected future cash flows, discounted at the required rate of return. When interest rates rise, the discount rate increases, reducing the present value of future earnings and depressing stock prices. Conversely, rate cuts lower the discount rate, increasing valuations. This channel is theoretically clean but empirically complicated by forward-looking investor behavior and the simultaneous effects of rate changes on corporate earnings.

3.2 Arbitrage Pricing Theory

Ross's (1976) Arbitrage Pricing Theory (APT) posits that asset returns are driven by multiple systematic risk factors, of which interest rates are a prominent candidate. Unlike the single-factor CAPM, APT accommodates the heterogeneous

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sensitivity of different securities and sectors to interest rate movements, consistent with the instrument-specific findings documented in this study.

3.3 Efficient Market Hypothesis

Fama's (1970) Efficient Market Hypothesis (EMH) implies that publicly available information including interest rate announcements is rapidly incorporated into stock prices. Under semi-strong efficiency, the market reaction occurs at the time of announcement rather than with a lag. The RBI's forward guidance and inflation-targeting framework in recent years have increased the predictability of rate decisions, potentially reducing the surprise component that drives market reactions.

IV. RESEARCH METHODOLOGY

4.1 Data and Variables

The study employs monthly secondary data over the period January 2013 to December 2025, yielding 159 observations. The dependent variable is the monthly return on the Nifty 50 index, computed as the log difference of closing index values. The independent variables are: (i) the repo rate, (ii) the reverse repo rate, (iii) the call money rate (overnight interbank lending rate) and (iv) the 10-year government securities (G-Sec) yield. All interest rate variables are expressed as monthly changes (first differences of levels). Data were sourced from the Reserve Bank of India's database and Bloomberg.

4.2 Analytical Framework

The analytical framework proceeds in sequential stages. First, descriptive statistics characterize the distribution and volatility of each variable. Second, the Augmented Dickey-Fuller (ADF) test assesses stationarity; non-stationary series are differenced to achieve stationarity before inclusion in the regression model. Third, a multiple regression model (OLS) is estimated:

$$\text{Nifty Returns} = \beta_0 + \beta_1(\text{Repo Rate}) + \beta_2(\text{Reverse Repo Rate}) + \beta_3(\text{Call Money Rate}) + \beta_4(\text{G-Sec Yield}) + \varepsilon$$

Fourth, a suite of diagnostic tests validates regression assumptions: The Durbin-Watson statistic tests for autocorrelation; the Breusch-Pagan-Godfrey test examines heteroscedasticity; Variance Inflation Factors (VIF) detect multicollinearity; and the Ramsey RESET test assesses functional form misspecification. Fifth, a GARCH(1,1) model captures time-varying conditional volatility in equity returns. Sixth, CUSUM and CUSUM of Squares tests evaluate the structural stability of the regression coefficients over the sample period. All computations are performed using EViews and Python (statsmodels library).

V. DATA ANALYSIS AND RESULTS

5.1 Descriptive Statistics

Table 1 presents descriptive statistics for all variables. Nifty 50 returns average 1.07% per month with a standard deviation of 4.53%, indicating moderate but meaningful equity market volatility. The negative skewness (−0.69) and excess kurtosis (4.46) confirm that return distributions have fat tails and are prone to occasional severe negative shocks a characteristic feature of emerging market equity indices.

Table 1: Descriptive Statistics of Study Variables

Variable	Mean	Median	Std. Dev.	Min	Max	Skewness	Kurtosis
Nifty Returns	0.0107	0.0107	0.0453	−0.2325	0.1468	−0.69	4.46
Repo Rate	−0.0020	0.0000	0.0272	−0.1456	0.1136	−0.07	9.93
Reverse Repo Rate	−0.0043	0.0000	0.0234	−0.1837	0.0435	−3.74	24.02
10-Yr G-Sec Yield	−0.0012	−0.0015	0.0277	−0.1162	0.1055	−0.08	2.63

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Variable	Mean	Median	Std. Dev.	Min	Max	Skewness	Kurtosis
Call Money Rate	−0.0014	−0.0006	0.0485	−0.1895	0.2281	0.72	4.81

5.2 Stationarity Tests

The ADF test was applied to all five variables. Under the null hypothesis of a unit root (non-stationarity), the p-values for the repo rate, reverse repo rate, call money rate, and 10-year G-Sec yield were all below 0.05, leading to rejection of the null hypothesis. All interest rate variables are therefore stationary at levels, meaning no differencing transformation was required. Nifty 50 returns, as a first-difference series by construction, are also stationary. This result ensures that subsequent regression analysis is free from the risk of spurious correlations arising from non-stationarity.

5.3 Regression Results

Table 2 presents the OLS regression results. The F-statistic of 5.862 ($p = 0.000204$) confirms that the model is jointly significant: the four interest rate variables collectively explain a statistically significant portion of Nifty 50 return variation. The R-squared of 0.132 (Adj. $R^2 = 0.110$) indicates that 13.2% of the variance in equity returns is attributable to interest rate movements. While modest in absolute terms, this is economically meaningful given the multitude of competing forces like corporate earnings surprises, geopolitical events, global risk sentiment, and foreign capital flows that simultaneously shape stock market outcomes.

Table 2: OLS Regression Results (Dependent Variable: Nifty 50 Monthly Returns)

Variable	Coefficient	Std. Error	t-Statistic	p-Value	Significance
Repo Rate	0.0369	0.177	0.209	0.835	NS
Reverse Repo Rate	0.6071	0.196	3.103	0.002	***
10-Yr G-Sec Yield	−0.0590	0.131	−0.452	0.652	NS
Call Money Rate	−0.2105	0.079	−2.647	0.009	***

Note: *** $p < 0.05$; NS = Not Significant. $R^2 = 0.132$, Adj. $R^2 = 0.110$, $F = 5.862$ ($p = 0.000204$), $n = 159$.

The reverse repo rate is the most influential predictor ($\beta = 0.607$, $p = 0.002$), exhibiting a positive and statistically significant relationship with Nifty 50 returns. This counterintuitive positive sign can be explained through the monetary policy signaling channel: an increase in the reverse repo rate may signal RBI's confidence in economic stability and its proactive stance against inflation. Markets may interpret such actions positively as evidence of macroeconomic discipline, resulting in improved investor sentiment and higher equity returns.

The call money rate has a significant negative effect on equity returns ($\beta = -0.211$, $p = 0.009$), consistent with conventional financial theory. Rising overnight interbank lending rates indicate tightening short-term liquidity, which elevates corporate borrowing costs and constrains credit availability. This liquidity compression reduces corporate profitability and dampens equity valuations. The immediate transmission of call money rate changes to equity markets compared to the slower transmission of repo rate changes reflects the sensitivity of market participants to real-time liquidity conditions.

The repo rate ($\beta = 0.037$, $p = 0.835$) and 10-year G-Sec yield ($\beta = -0.059$, $p = 0.652$) are statistically insignificant predictors of Nifty 50 returns. The repo rate's lack of significance may reflect the multi-step transmission process through the banking system before effects reach equity markets. The G-Sec yield's insignificance could arise from its sensitivity to fiscal dynamics, global bond market movements, and inflation expectations factors that partially offset or obscure its direct equity market effect.

5.4 Diagnostic Tests

The regression diagnostics broadly validate the model. The Durbin-Watson statistic of 2.204 indicates the absence of serial autocorrelation in the residuals. The Jarque-Bera test yields a p-value of 0.817, confirming normality of residuals.

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VIF values for all predictors range between 1.12 and 2.01, well below the conventional threshold of 5, confirming the absence of problematic multicollinearity. The Breusch-Pagan-Godfrey heteroscedasticity test, however, returns a significant p-value, indicating that error variances are not constant across observations. While heteroscedasticity does not bias coefficient estimates, it may reduce the efficiency of standard errors; the use of heteroscedasticity-consistent (robust) standard errors addresses this concern.

5.5 GARCH(1,1) Model

The GARCH(1,1) model was estimated to examine time-varying volatility in Nifty 50 returns. Both the ARCH term (α_1) and the GARCH term (β_1) are statistically insignificant in this model, suggesting that volatility clustering in monthly equity returns is not strongly pronounced over the full sample period. The sum $\alpha_1 + \beta_1$ is relatively low, indicating weak persistence of volatility shocks. This finding is consistent with the relatively long sampling interval (monthly), which may aggregate and smooth short-run volatility dynamics that are more visible in daily or weekly data.

5.6 Stability Tests

CUSUM and CUSUM of Squares tests were applied to assess the structural stability of the regression over the sample period. The test statistics remained within the 5% significance bands throughout, confirming that the estimated coefficients are structurally stable and that no major parameter instability attributable to economic crises or monetary policy regime shifts is detected within the sample.

VI. FINDINGS AND DISCUSSION

The empirical findings provide a number of correlating findings that add to the knowledge of transmission of monetary policy in the Indian equity markets.

First, the study establishes that the interest rate variables do produce some statistically significant effect on Nifty 50 returns, proving the hypothesis that the monetary policy has a role in the equity market performance in India. The average R-squared (13.2) is a reasonable aspect of equity returns that are multifactorial and does not reduce the economic value of the results.

Second, the findings indicate that the character and the size of interest rate effects are of a very instrument-specific nature. In this model the two are important drivers with opposite signs, i.e. the reverse repo rate and call money rate and the repo rate as well as G-Sec yield are not direct predictors. This instrument-level heterogeneity will be a new addition to the Indian literature, with numerous studies considering interest rates as a unitary variable.

Third, the conventional negative interest rateequity price relationship can be adjusted as the positive correlation between reverse repo rate and equity returns has to be explained by the use of the signaling hypothesis. The RBI Raising the cost of capital may be viewed as a way to send a credibility signal, making it more likely to believe that the central bank cares about inflation and is confident in the future economic performance.

Fourth, the negative correlation between the call money rate and equity returns is in compliance with the channel of liquidity transmission. The interbank rates used on a short-term basis directly impact on corporate credit availability creating a more immediate and direct connection to equity valuation compared to the repo rate, which circulates through longer chains of credit intermediation.

Fifth, structural stability is established over the sample period indicating that the estimated relationships are resilient to the different macroeconomic shocks such as the COVID-19 pandemic, the 2013 taper tantrum and global inflation episodes that were experienced within 2013-2025. This stability is encouraging to practically apply the model by investors and policymakers.

VII. THEORETICAL AND MANAGERIAL IMPLICATIONS

7.1 Theoretical Implications

The findings contribute to financial theory in several ways. The limited explanatory power of traditional interest rate variables (R^2 = 13.2%) underscores the shortcomings of single-factor or interest-rate-only models of equity returns in emerging markets, supporting the multi-factor APT framework. The counterintuitive positive sign of the reverse repo rate aligns with behavioral finance perspectives and market microstructure theories that emphasize signaling and

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expectation formation over mechanical cost-of-capital effects. The insignificance of the 10-year G-Sec yield challenges the substitution hypothesis, at least at the monthly frequency examined here.

7.2 Managerial and Policy Implications

For portfolio investors, the findings suggest that monitoring short-term interbank liquidity conditions captured by the call money rate provides actionable signals about near-term equity market direction. Deterioration in interbank liquidity can serve as a leading indicator of equity market weakness. For strategic asset allocators, the reverse repo rate's positive association with equity returns suggests that RBI tightening cycles need not be reflexively bearish the market's interpretation of the policy signal matters as much as the rate change itself.

For policymakers, the results highlight the importance of clear and consistent communication of monetary policy intentions. Since equity markets appear sensitive to the signaling content of RBI rate decisions, ambiguity or inconsistency in policy messaging can generate unnecessary market volatility. The RBI's adoption of inflation targeting and forward guidance since 2016 has likely improved the predictability of policy actions, reducing the equity market's surprise reaction to rate changes.

VIII. CONCLUSION

This study provides comprehensive empirical evidence on the impact of interest rate changes on Indian equity returns using a time-series framework spanning 2013–2025. The Nifty 50 index, representing India's premier equity benchmark, responds significantly to monetary policy variables collectively, though the individual effects are asymmetric and instrument-specific. The reverse repo rate positively predicts equity returns through credibility signaling, while the call money rate negatively affects returns via liquidity compression. The repo rate and 10-year G-Sec yield do not directly predict equity returns at the monthly frequency studied.

The diagnostic and stability tests confirm the robustness and structural consistency of the estimated model. The presence of heteroscedasticity addressed through robust standard errors does not invalidate the coefficient estimates or the principal conclusions. The GARCH model results suggest that volatility clustering in monthly returns is less pronounced than at higher frequencies.

The study's findings reinforce the importance of instrument-level analysis in monetary policy transmission research and highlight short-term liquidity conditions as a critical channel linking monetary policy to equity market performance in India. Future research should explore nonlinear modeling approaches (threshold regression, Markov-switching models), sector-level disaggregation, and the incorporation of global interest rate spillovers to build a more complete picture of monetary policy transmission in Indian equity markets.

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