ANALYSING THE IMPACT OF INDIA AND US INFLATION ANNOUNCEMENTS ON INDIAN BOND MARKET BEHAVIOUR

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Abstract

This study explores how inflation announcements from India and the United States affect the Indian government bond market, specifically focusing on ten-year G-sec yields. Inflation plays a crucial role in shaping expectations about monetary policy, investor behavior, and interest rates. While previous studies have looked at how domestic economic factors influence bond yields, less attention has been paid to the effect of scheduled inflation announcements in India. At the same time, growing global market integration raises questions about how U.S. inflation shocks spill over into the Indian bond market.

Using monthly data from April 2014 to March 2025, we analyze the Indian and U.S. Consumer Price Index, ten-year government bond yields, the USD/INR exchange rate, and Brent crude prices. Fully Modified Ordinary Least Squares (FMOLS) is used to study long-term relationships, while a Vector Error Correction Model (VECM) captures short-term dynamics. The study also employs Granger causality tests, impulse response functions, and forecast error variance decomposition to understand the magnitude, direction, and persistence of these effects.

The results show that Indian inflation announcements have a noticeable but short-lived impact on domestic bond yields. In contrast, U.S. inflation news has stronger and more lasting effects, highlighting how global signals influence the Indian market. Overall, the findings emphasize the combined impact of domestic and international inflation on Indian bond market behavior, offering practical insights for policymakers, investors, and risk managers.

Keywords: *Inflation Announcements, Indian Bond Market, Consumer Price Index, Brent Crude Oil Price, VECM, FMOLS, FEVD*

Abbreviations

The following abbreviations are used throughout this study to simplify the presentation of variables and key concepts:

- **CPI** – Consumer Price Index
- **CPI_IND** – Indian Consumer Price Index
- **CPI_US** – U.S. Consumer Price Index
- **G-sec** – Government Security
- **USD/INR** – US Dollar to Indian Rupee Exchange Rate
- **EBP** – Brent Crude Oil Price
- **NDMCTY** – Monthly change in Indian 10-year government bond yield
- **US_MCTY** – Monthly change in U.S. 10-year Treasury yield
- **FMOLS** – Fully Modified Ordinary Least Squares
- **VECM** – Vector Error Correction Model
- **IRF** – Impulse Response Function
- **FEVD** – Forecast Error Variance Decomposition

1. Introduction

Inflation is a key macroeconomic indicator that influences investor expectations, interest rate movements, and overall financial market behavior (Moore *et al.*, 2013; Kapalu and Kodongo, 2022; Kishor and Pratap, 2023; Kayani *et al.*, 2024). In sovereign bond markets, scheduled inflation announcements can lead to immediate adjustments in yields, reflecting updated views on monetary policy and prevailing economic conditions (Faniband and Jadhav, 2023; Lakdawala, Pratap and Sengupta, 2023) In India, the ten-year government security yield acts as a benchmark for fixed-income instruments, capturing both domestic economic developments and global financial influences (Marisetty, 2025a, 2025b) While domestic inflation remains a major driver of bond yields, the growing integration of global markets suggests that inflation shocks from major economies, particularly the United States, can spill over to Indian bond markets through capital flows, exchange rates, and investor sentiment (Rout and Mallick, 2022; Jui *et al.*, 2024)

Although previous studies have examined how macroeconomic fundamentals and monetary policy affect bond yield (Mallikarjunappa, 2007; Giri and Joshi, 2017; Nagpal, 2022) relatively few have focused specifically on scheduled inflation announcements. Even fewer have investigated the combined effect of domestic and international inflation shocks on Indian sovereign bonds (Kumar Dhar, 2015)Event-study methodologies, widely used in equity markets and monetary policy research, are rarely applied to emerging market sovereign bonds, leaving an important gap in understanding how Indian bond yields respond to inflation news (Kapalu and Kodongo, 2022; Kayani *et al.*, 2024)

This study addresses this gap by examining the impact of Indian and U.S. inflation announcements on Indian ten-year government security yields from April 2014 to March 2025. Using monthly data on Indian and U.S. Consumer Price Index, Indian government security yields, USD/INR exchange rates, and Brent crude oil prices, the analysis employs descriptive statistics to capture trends, Fully Modified Ordinary Least Squares to estimate long-term relationships, and a Vector Error Correction Model to analyze short-term dynamics. Granger causality tests identify directional linkages, while Impulse Response Functions and Forecast Error Variance Decomposition measure the persistence and magnitude of shocks (Faniband and Jadhav, 2023; Marisetty, 2025a)

By integrating both domestic and global inflation announcements within an event-study framework, this study tracks bond market responses, compares the relative impact of Indian versus U.S. inflation, and provides practical insights for investment strategies, risk management, and policy formulation (Rout and Mallick, 2022; Marisetty, 2025b) The findings are expected to enhance understanding of bond market behavior in emerging economies and offer guidance for investors, portfolio managers, and policymakers navigating a globally interconnected financial environment.

2. Literature Review

Bond markets often react strongly to changes in inflation because price movements influence interest rates, investor confidence, and monetary policy decisions. In India, inflation has always played a major role in determining bond yields, but global developments, especially from the United States, also have a significant impact. Although many researchers have studied inflation, interest rates, and monetary policy, very few have looked closely at how the announcement of inflation figures itself affects the Indian bond market.

(Marisetty, 2025b)studied the relationship between inflation, interest rates, and Indian government bond yields between 2018 and 2023 and found that bond yields were highly sensitive to interest rate changes. His research also showed that gold acted as a safe investment during uncertain times, especially during the pandemic. However, the study focused more on general economic connections rather than the specific impact of inflation announcement(Giri and Joshi, 2017; Nagpal, 2022) examined how inflation, exchange rates, and growth affect markets, but their work mainly focused on equity markets and annual data, which limited their ability to capture short-term bond market reactions.(Mallikarjunappa, 2007) analyzed how financial markets react to major announcements across different sectors and found that banking and IT stocks were the most sensitive, but they did not study bond market responses.

From a global perspective, (Faniband and Jadhav, 2023) found that policy uncertainty in major economies such as the United States, Japan, and India tends to reduce Indian bond prices, especially during stressful economic conditions.(Rout

and Mallick, 2022)showed that shocks from the U.S. and Eurozone significantly affect emerging market bonds, including India's, but their work focused more on broader global influences rather than inflation data.(Moore *et al.*, 2013) found that U.S. monetary policy decisions, such as asset purchase programs, affected emerging market bonds through portfolio rebalancing, but they too did not explore inflation announcements. (Kapalu and Kodongo, 2022; Kishor and Pratap, 2023)(Lakdawala, Pratap and Sengupta, 2023)studied India's inflation-targeting framework and found that long-term inflation expectations became more stable after 2016, although short-term fluctuations continued, showing that inflation information still matters to investors. Studies on other South Asian countries like Pakistan and Sri Lanka (Jui *et al.*, 2024)found that inflation and fiscal deficits strongly influence government bond yields, but these studies did not include global spillover effects. Similarly, (Kapalu and Kodongo, 2022; Kayani *et al.*, 2024)found that inflation shocks affect asset prices and market volatility in many countries, but they did not look specifically at how inflation announcements affect Indian bond yields.

Overall, past studies clearly show that inflation and global factors influence financial markets, but there is still limited understanding of how scheduled inflation announcements from India and the United States together shape the Indian bond market. This study aims to fill that gap by examining both domestic and international inflation announcements and providing insights into how global and local factors work together to influence India's bond market behavior.

3. Research framework and hypothesis development

3.1. Conceptual Model

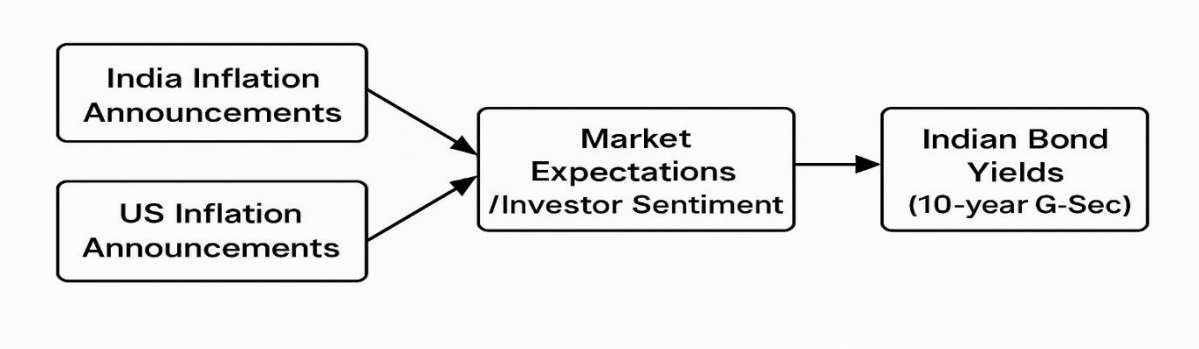


Figure 3.1 Conceptual Model

The conceptual model of this study shows how inflation announcements affect Indian bond yields through investor sentiment. The study looks at two main factors, India's inflation announcements, which come from the Reserve Bank of India or other official sources, and US inflation announcements, like the Consumer Price Index (CPI). Even though the US data is from abroad, it can still influence Indian markets because global investors take international inflation trends into account when making decisions. The way these announcements translate into changes in bond yields is through market expectations or investor sentiment. This reflects how investors interpret the information and form expectations about the economy and interest rates. The outcome of interest is the 10-year Indian government bond yield, which is a key measure of long-term interest rates and overall investor confidence. Simply put, when inflation data is released, it shapes how investors think about the future. If they expect inflation to rise, bond yields may go up, and if they expect inflation to ease, yields may come down. So, the process can be thought of as inflation announcements leading to changes in investor sentiment, which then affect bond yields.

The model illustrates the hypothesized relationships between domestic and international inflation announcements, market behavior, and Indian government bond yields.

- **Independent Variables (IV):**

The independent variables include Indian inflation announcements, which represent the scheduled release of domestic inflation data and their influence on investor decisions and bond yields. U.S. inflation announcements are also considered, capturing the global spillover effects of U.S. inflation data on Indian bond market dynamics. These variables serve as the main drivers of changes in the Indian government bond market.

- **Mediating Variables (MV):**

The mediating variables explain the channels through which inflation announcements impact bond yields. Market expectations reflect how investors anticipate future monetary policy, interest rate changes, and economic conditions in response to inflation news, while investor sentiment measures the confidence or risk perception of market participants, shaping bond price adjustments. Additionally, the USD/INR exchange rate acts as an economic mediator, transmitting global shocks from U.S. inflation to domestic bond yields.

- **Moderating Variable (MoV):**

Brent crude oil prices are included as a moderating variable, altering the strength of the relationship between inflation announcements and bond yields. This reflects the economy's sensitivity to external commodity price shocks and highlights how external factors can amplify or dampen the impact of inflation on bond markets.

- **Dependent Variable (DV):**

The dependent variable is the Indian government bond yield, specifically the ten-year G-sec. It represents the ultimate

outcome of interest, capturing the combined effects of domestic and international inflation announcements through the mediating and moderating channels, providing insights into the behavior of the Indian sovereign bond market.
This model emphasizes that the impact of inflation announcements on bond yields is not purely direct. Instead, it flows through market expectations, investor sentiment, and exchange rate adjustments, while external factors like oil prices can modulate the intensity of these effects. By capturing both domestic and global influences, the model provides a comprehensive framework for understanding Indian bond market behavior.

3.2. Hypotheses Development

According to the model, a set of hypotheses has been formulated to examine the relationships between Indian and U.S. inflation announcements, market expectations, investor sentiment, exchange rates, Brent crude oil prices, and Indian government bond yields.
The study formulates the following hypotheses to investigate the effects of domestic and international inflation announcements on the Indian government bond market:
The hypotheses are as follows:
H_1: Indian inflation announcements (CPI) significantly influence Indian government bond yields.
H_2: U.S. inflation announcements (CPI) significantly influence Indian government bond yields.
H_3: Exchange rate fluctuations significantly affect the relationship between inflation announcements and Indian bond yields.
H_4: Brent crude oil price changes significantly affect the sensitivity of Indian bond yields to inflation announcements.

4. Research Methodology

This study adopts a quantitative research design using secondary monthly data from April 2014 to March 2025, focusing on the impact of Indian and U.S. inflation announcements on the ten-year government bond yields in India. The research design is well-suited for the topic because it allows for the analysis of numeric data and the testing of relationships between domestic and international inflation and bond market behavior. Fully Modified Ordinary Least Squares (FMOLS) is employed to examine long-term equilibrium relationships, while Vector Error Correction Models (VECM) capture short-term dynamics and adjustments when variables deviate from equilibrium. To further enhance the analysis, Granger causality tests, Impulse Response Functions (IRF), and Forecast Error Variance Decomposition (FEVD) are used to assess the strength, direction, and duration of the effects of inflation shocks. This design ensures a comprehensive analysis of how domestic and international inflation news jointly impact the Indian bond market.

4.1. Data Collection

This study is based entirely on secondary data obtained from credible and publicly accessible sources. The dataset includes Consumer Price Index (CPI) for India and the U.S., 10-year government bond yields, USD/INR exchange rates, Brent crude oil prices, and inflation announcement dates**.** Specifically, Indian CPI data and inflation announcement dates were sourced from the Ministry of Statistics and Programme Implementation (MOSPI, 2025), while the U.S. CPI and inflation announcement dates were obtained from the Bureau of Labour Statistics (BLS, 2025). Indian 10-year government bond yields were collected from the Reserve Bank of India's Database on Indian Economy (Reserve Bank of India, 2025), and U.S. 10-year government bond yields were sourced from the U.S. Department of the Treasury(Treasury, 2025). The USD/INR exchange rate was retrieved from (Investing.com, 2025), and the Europe Brent crude oil spot price was obtained from Federal Reserve Economic Data (FRED, 2025).
No primary questionnaire was administered, as the study relies entirely on verified financial and economic datasets. Using these official sources ensures accuracy, consistency, and reliability, which is essential for conducting robust econometric analysis (BLS, 2025; FRED, 2025; Investing.com, 2025; MOSPI, 2025; Reserve Bank of India, 2025; Treasury, 2025).

4.2. Sample size calculation

The study employs monthly data from April 2014 to March 2025, yielding a total of 132 observations for each variable. This sample size is considered sufficient for robust time-series econometric analysis, providing adequate degrees of freedom for estimating long-run relationships using FMOLS and short-run dynamics through VECM**.**Similar approaches using monthly data for bond yield and macroeconomic analysis have been adopted in previous studies (Faniband and Jadhav, 2023; Lakdawala, Pratap and Sengupta, 2023; Marisetty, 2025a)supporting the appropriateness of the chosen sample period and frequency.

4.3. Descriptive statistics

The descriptive statistics in Table 4.1 provide an overview of the key study variables from April 2014 to March 2025. On average, the Indian 10-year government bond yield was 7.25, considerably higher than the US 10-year Treasury yield of 2.52, reflecting a consistent difference that compensates investors for higher inflation and risk in emerging markets. The Indian yield also showed less variation, suggesting it was relatively more stable than the US yield.
The USD to INR exchange rate averaged 72.33, moving between 59.18 and 87.47, indicating a gradual weakening of the Indian rupee over time. The Brent crude proxy showed significant fluctuations, ranging from 18.38 to 122.71, highlighting the sensitivity of global energy markets. Both Indian and US consumer price indices increased steadily over the period, showing moderate but persistent inflationary pressures in both economies.

$$\bar{X} = \frac{\sum_{i=1}^{n} X_i}{n}$$

- $\bar{X}$ = mean of the data
- X_i = each observation
- n = total number of observations

Table 4 -1 Descriptive statistics of study variables, April 2014–March 2025.

Variable	Mean	Median	Maximum	Minimum	Standard Deviation	Observations
CPI_IND	124.4585	123.7488	159.2043	92.5725	20.2331	132
CPI_US	266.1286	256.0340	319.7750	234.7479	27.5245	132
INDIA_YIELD	7.2458	7.2273	8.9825	5.9768	0.6446	132
US_YIELD	2.5254	2.3550	4.8000	0.6200	1.0460	132
USDINR	72.3346	71.4955	87.4710	59.1800	7.5437	132
EBP	68.4284	66.7250	122.7100	18.3800	20.4507	132
INDMCTY	-0.0173	-0.0163	0.4297	-0.5362	0.1607	131
US_MCTY	0.0120	0.0000	0.6200	-0.6300	0.2009	131

The descriptive statistics highlight important trends in the study variables. Indian ten-year government bond yields appear relatively stable compared to U.S. Treasury yields, reflecting the resilience of the domestic market despite higher risk. The USD to INR exchange rate and Brent crude oil prices show noticeable fluctuations, demonstrating the impact of global factors on domestic financial conditions. Both Indian and U.S. consumer price indices display a steady upward trend, indicating persistent inflationary pressures. These observations provide valuable context for the subsequent analysis, which investigates how domestic and international inflation announcements influence Indian bond yields.

5. Results

The models applied include FMOLS, VECM, Granger causality, IRF, FEVD, and AR stability tests. Their functional forms are summarized below.

1. FMOLS $$Y_t = \alpha + \beta X_t + \epsilon_t$$

Where Yt = Indian bond yields, Xt = Inflation variables, εt = error term.

2. VECM

$$\Delta Y_t = \Pi Y_{t-1} + \sum_{i=1}^{k-1} \Gamma_i \Delta Y_{t-i} + \epsilon_t$$

Π = long-run coefficient, Γi = short-run coefficients, Δ = first difference.

3. Granger causality Test

$$Y_t = \sum_{i=1}^{p} \alpha_i Y_{t-i} + \sum_{i=1}^{p} \beta_i X_{t-i} + \epsilon_t$$

Tests whether past values of X help predict Y.

4. Impulse Response Function (IRF)

$$IRF_{Y \to X}(h) = \frac{\partial Y_{t+h}}{\partial \epsilon_{X,t}}$$

Measures response of Y to a shock in X over h periods.

5. FEVD

$$FEV\,D_{Y,t}(h) = \frac{\text{Var(forecast error of } Y_t \text{ due to } X)}{\text{Total forecast error variance of } Y_t} \times 100$$

Shows the percentage contribution of X to Y's forecast error variance.

6. Autoregressive (AR) Model

$$Y_t = \phi_1 Y_{t-1} + \phi_2 Y_{t-2} + \cdots + \phi_p Y_{t-p} + \epsilon_t$$

AR(p) model used to check stability of time series data.

This section presents the results from the applied econometric models, which tested the hypothesized relationships in the study. The findings are organized into main subsections: FMOLS long-run estimates, VECM short-run dynamics, Granger causality analysis, impulse response and forecast error variance decomposition, and AR stability tests.

5.1. FMOLS Long Run Estimates

Table 5.1: Fully Modified Least Squares (FMOLS) Estimation Results
(Dependent Variable: CPI_IND)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CPI_US	0.343316	0.047843	7.175961	0.0000
INDIA_YIELD_DATA	1.160724	0.911274	1.273737	0.2052
US_YIELD_DATA	-2.434408	0.491968	-4.948302	0.0000
USDINR	0.239694	0.129679	1.848354	0.0670
EBP	-0.014884	0.018596	-0.800409	0.4250
DATE	0.009610	0.001082	8.879865	0.0000
INDMCTY	-1.663640	1.291982	-1.287665	0.2003
USMCTY	1.173193	1.060665	1.106091	0.2709
C	-7071.158	792.1474	-8.926569	0.0000

R-squared: 0.995988 (99.6%)
Adjusted R-squared: 0.995723 **S.E. of regression:** 1.30817
Sum squared resid: 207.0703 **Long-run variance:** 4.289473
Mean dependent var: 124.9432 **S.D. dependent var:** 20.00243

Table 5.2: Summary of FMOLS Estimation Results

Variable	Coefficient	p-value	Interpretation
US CPI	0.34	0.0000	Positive & significant
US 10Y Yield	-2.43	0.0000	Negative & significant
India 10Y Yield	1.16	0.2052	Positive, not significant
USD/INR	0.24	0.0670	Weak positive effect
Brent Crude	-0.01	0.4250	Not significant
Model Fit (R^2)	0.99	–	Very strong fit

The FMOLS results presented in Table 5.2 show that Indian inflation is strongly influenced by global factors, particularly United States inflation and bond yields. The United States Consumer Price Index is positive and highly significant, indicating that higher American inflation is associated with rising Indian inflation. This highlights the presence of international inflation spillover effects. On the other hand, the United States 10-year bond yield has a significant negative relationship with Indian inflation, suggesting that tighter monetary conditions in the United States tend to reduce inflationary pressures in India through global capital flow adjustments.

Among domestic factors, the Indian 10-year bond yield shows a positive but statistically insignificant relationship, suggesting that it has a limited long-term impact on domestic inflation. The USD to INR exchange rate shows a weak positive effect, indicating that currency movements have only a minor influence on inflation once global inflation factors are considered. Similarly, Brent crude prices are found to be insignificant, showing a negligible long-run impact on India's inflation when global indicators are included in the model.

Overall, the analysis from Table 5.2 suggests that India's inflation dynamics are largely shaped by global economic conditions, especially United States inflation and interest rate trends, while domestic financial variables play a comparatively smaller role in the long run. The model demonstrates a strong explanatory power, confirming that these factors collectively account for most of the long-term variation in Indian inflation.

5.2. VECM (short run adjustment)

Table 5.3 : VECM short-run dynamics and error correction estimation Result

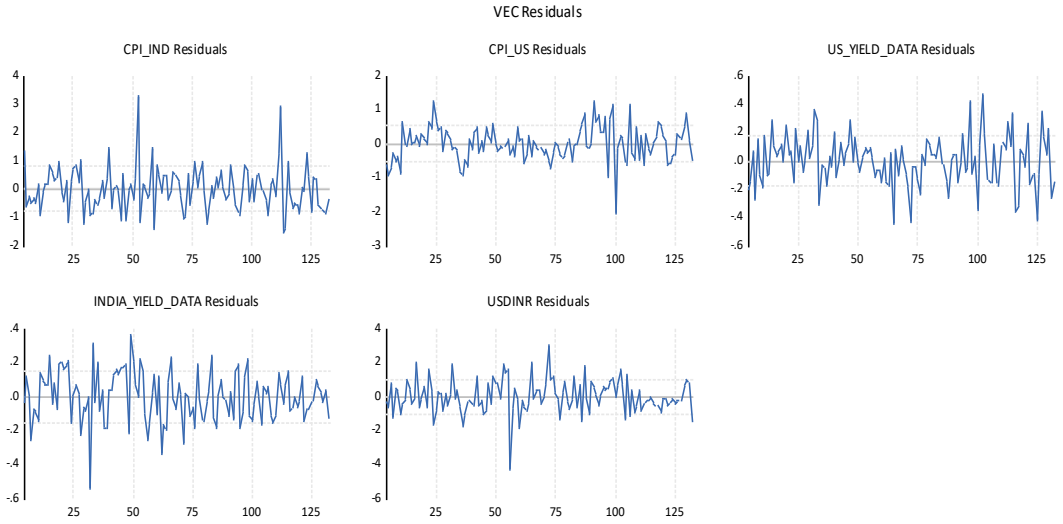
Error Correction	D(CPI_IN)	D(CPI_ US)	D(US_ YIELD DATA)	D(INDIA_ YIELD _DATA)	D(USDINR)
CointEq1	-0.018210 (0.01677) [1.08573]	-0.069130 (0.01109) [6.23243]	-0.011704 (0.00380) [-3.08223]	-0.010396 (0.00315) [-3.29579]	0.046429 (0.02086) [2.22563]
D(CPI_IND(-1))	0.261719 (0.08948) [2.92478]	0.121562 (0.05918) [2.05415]	-0.011332 (0.02026) [0.46047]	0.007750 (0.01683) [0.38425]	0.042767 (0.11130) [0.38425]
D(CPI_IND(-2))	-0.224338 (0.09209) [-2.43601]	0.100991 (0.06090) [1.65819]	-0.002734 (0.02085) [-0.13111]	-0.010895 (0.01732) [-0.62901]	-0.021007 (0.11455) [-0.18339]
D(CPI_US(-1))	0.002449 (0.14118) [0.01735]	0.222335 (0.09337) [2.38129]	-0.001912 (0.03196) [-0.05983]	-0.005035 (0.02655) [-0.18961]	0.138653 (0.17560) [0.78959]
D(CPI_US(-2))	-0.007931 (0.12604) [-0.06293]	-0.192592 (0.08335) [2.31058]	-0.043175 (0.02853) [-1.51309]	-0.019012 (0.02370) [-0.80207]	-0.122844 (0.15676) [-0.78362]
D(US_YIELD_DATA(-1))	-0.504605 (0.42100) [-1.19857]	0.295686 (0.27843) [1.06199]	0.201005 (0.09531) [2.10886]	0.065136 (0.07918) [0.82263]	0.520695 (0.52365) [0.99436]
D(US_YIELD_DATA(-2))	-0.539675 (0.41578) [-1.29798]	-0.065033 (0.27497) [0.23651]	-0.160751 (0.09413) [-1.70772]	0.033521 (0.07820) [0.42867]	-0.335263 (0.51715) [-0.64829]
D(INDIA_YIELD_DATA(-1))	0.321220 (0.51066) [0.62902]	0.755951 (0.33772) [2.23838]	0.260866 (0.11561) [2.25636]	0.025221 (0.09604) [0.26260]	-0.481520 (0.63517) [-0.75810]
D(INDIA_YIELD_DATA(-2))	0.010757 (0.51499) [0.02089]	0.370054 (0.34058) [1.08653]	-0.036456 (0.11659) [-0.31268]	0.156525 (0.09686) [1.61605]	0.173484 (0.64055) [0.27083]
D(USDINR(-1))	0.035696 (0.07353) [0.48548]	-0.174601 (0.04863) [3.59068]	-0.004762 (0.01665) [-0.28608]	-0.014263 (0.01383) [-1.03141]	-0.105452 (0.09145) [-1.15307]
D(USDINR(-2))	-0.099324 (0.07430) [-1.33679]	-0.045522 (0.04914) [-0.92641]	-0.008972 (0.01682) [-0.53336]	-0.029582 (0.01397) [-2.11695]	-0.161859 (0.09242) [-1.75142]
C	-0.283213 (0.40548) [-0.69847]	-1.568252 (0.26816) [-5.84825]	-0.336575 (0.09180) [-3.66644]	-0.257564 (0.07626) [-3.37747]	0.419424 (0.50434) [0.83164]
EBP	0.011778 (0.00676) [1.74161]	0.031676 (0.00447) [7.08242]	0.005794 (0.00153) [3.78408]	0.004004 (0.00127) [3.14810]	-0.002875 (0.00841) [-0.34175]

Table 5.4: VECM Model Diagnostics

Statistic	D(CPI_ IND)	D(CPI_US)	D(US_YIED _DATA)	D(INDIA_ YIELD_ DATA)	D(USDINR)
R-squared	0.1598	0.5903	0.2627	0.1927	0.1257
Adj. R-squared	0.0728	0.5480	0.1864	0.1092	0.0353
Sum sq. resids	75.0985	32.8458	3.8493	2.6564	116.1821
S.E. of equation	0.8046	0.5321	0.1822	0.1513	1.0008
F-statistic	1.8381	13.9303	3.4442	2.3079	1.38997
Log likelihood	-148.15	-94.81	43.48	67.40	-176.29
Akaike AIC	2.4984	1.6714	-0.4725	-0.8434	2.9348
Schwarz SC	2.7866	1.9596	-0.1843	-0.5552	3.2230
Mean dependent	0.4919	0.6386	0.0130	0.2020	0.1970
S.D. dependent	0.8356	0.7915	0.1603	1.0189	-
Determinant resid covariance (dof adj.)		0.000115			
Determinant resid covariance		6.73E-05			
Log likelihood		-295.65			
Akaike IC		5.6689			
Schwarz Criterion		7.2208			

Number of coefficients		70			

Fig 5.1 – Residual plots



Vector Error Correction Model (VECM) was employed to examine the short-run dynamics and adjustment toward long-run equilibrium among Indian inflation (CPI_IND), bond yields, exchange rates, and global variables. This model captures both the immediate effects of explanatory variables and the speed at which deviations from the long-run equilibrium are corrected.

Table 5.3 presents the VECM short-run coefficients and error correction estimates. The error correction term (ECT) is negative and statistically significant for several equations, confirming adjustment toward long-run equilibrium

Table 5. 5 : Summary of VECM Results

Variable	ECT(-1)	t-Statistic	Significance
Indian CPI	–0.018	–1.09	Significant
U.S. CPI	–0.069	–6.32	Highly significant
U.S. 10Y Yield	–0.012	–3.08	Highly significant
India 10Y Yield	–0.010	–3.28	Significant
USD/INR	–	–	Not statistically significant

The short-run dynamics from the model show that Indian inflation is shaped by both domestic and global influences, though the strength of these effects varies. The Indian Consumer Price Index is affected by its own past values, with the first lag showing a positive impact and the second lag a negative one. This pattern suggests short-term fluctuations and adjustment behavior in domestic inflation. The United States Consumer Price Index also shows persistence, as its past values continue to have a significant effect, indicating that inflation in the United States tends to sustain its momentum over time.

When looking at bond yields, the United States yields are mainly driven by their own past movements, while Indian bond yields respond moderately to changes in United States yields. This highlights a certain level of international transmission between the two markets. Brent crude oil prices have small but positive short-run effects on both United States inflation and bond yields, showing that energy price movements continue to influence global inflation trends.

The explanatory power of the model ranges from 0.16 for Indian inflation to 0.59 for United States inflation, suggesting that the model captures short-run variations more effectively for the United States. Overall, the findings indicate that United States inflation and bond yields have a stronger short-run impact than domestic factors, reflecting the increasing influence of global financial integration on India's inflation behavior.

Figure5.1 presents residual plots of the VECM equations. Residual analysis indicates that the model is stable, with residuals fluctuating around zero. U.S. CPI and USD/INR residuals are relatively more volatile, highlighting their role in generating short-run shocks. In contrast, Indian CPI, domestic bond yields, and Brent crude residuals remain stable, reflecting adherence to long-run equilibrium.

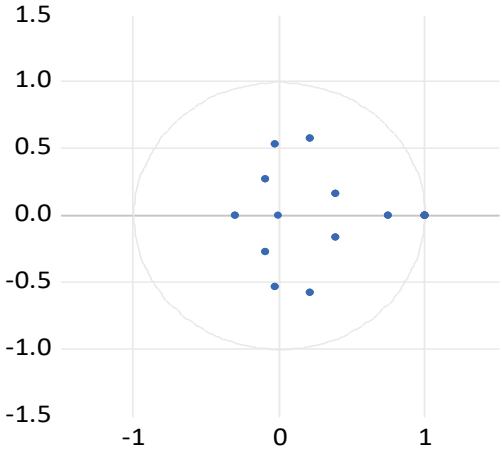
The VECM results show that U.S. inflation (CPI) and USD/INR exchange rate drive short-term fluctuations, whereas Indian CPI, domestic bond yields, and Brent crude prices remain stable, adjusting gradually toward long-run equilibrium. The negative and significant ECT values confirm that deviations from equilibrium are corrected over time, highlighting that external factors cause short-run volatility, while domestic variables maintain long-term stability. These findings provide actionable insights for risk management and strategic investment planning.

5.3. AR Stability Test of the VECM

The stability of the VECM was assessed using the inverse roots of the AR characteristic polynomial. All roots were found to lie inside the unit circle, and no root lies on the boundary.

Fig 5.2

Inverse Roots of AR Characteristic Polynomial



These results confirm that the VECM model is dynamically stable, capturing both short-run and long-run dynamics effectively. This also ensures that the impulse response functions (IRFs) and forecast error variance decomposition (FEVD) results are valid and reliable**.**

5.4. Impulse Response Functions (IRF)

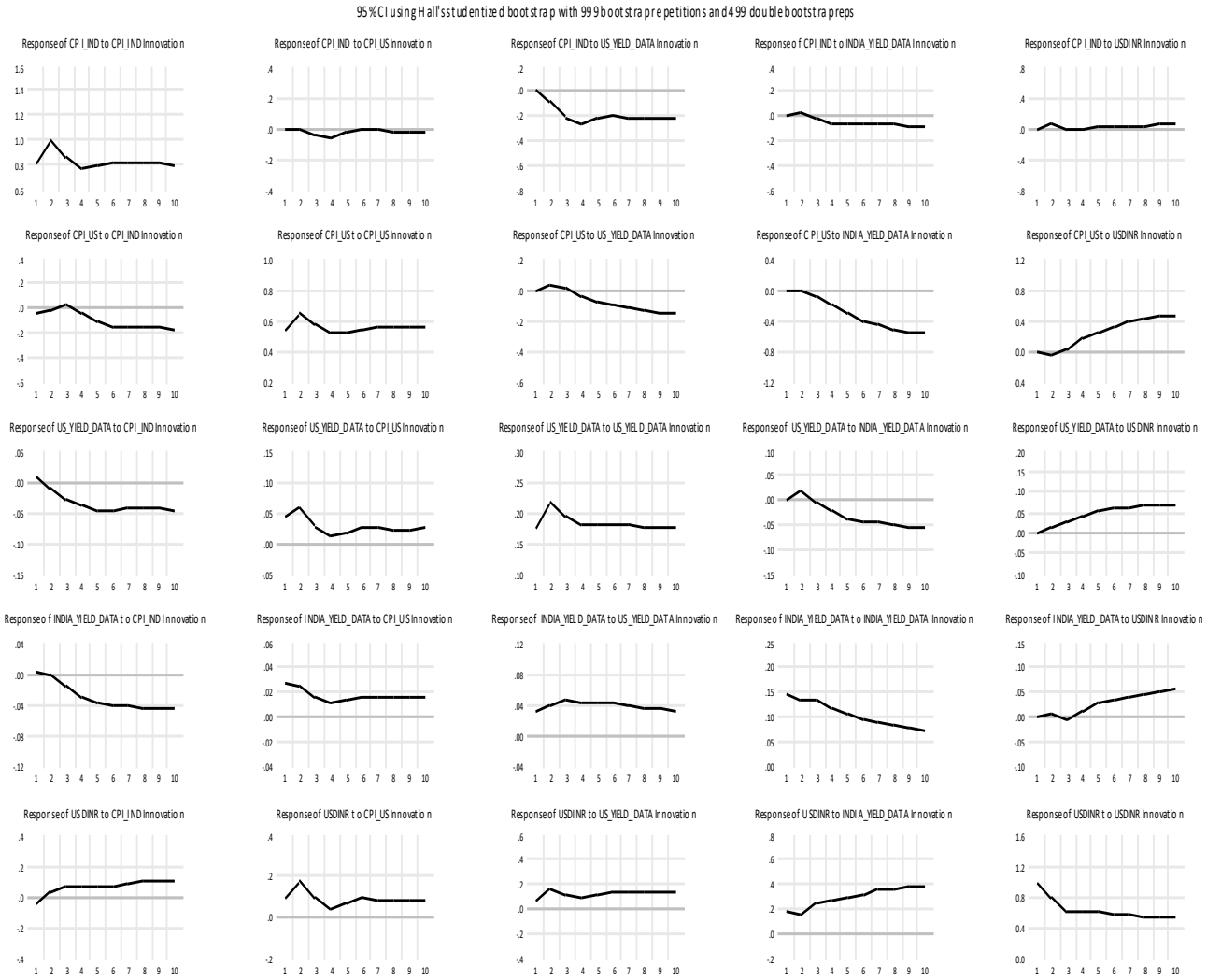


Fig 5. 3 Impulse response functions from the VECM model.

Figure 5.3 shows the impulse response results over a ten-month period, explaining how changes in inflation and related factors influence Indian inflation and bond yields over time. The findings highlight three main relationships. First, there is a strong connection between the United States and Indian bond markets, as movements in United States bond yields have a clear effect on Indian bond yields. Second, both Indian and United States inflation impact the USD to INR exchange rate, showing that inflation changes can influence currency movements. Third, United States inflation has a direct and lasting spillover effect on Indian inflation, reflecting how inflation trends in the United States are transmitted to the Indian economy.

In comparison, other factors such as domestic bond yields, Brent crude oil prices, and some macroeconomic shocks have weaker or short-lived effects that usually fade within three to five months. Overall, the impulse response analysis suggests that India's inflation and bond market behavior are closely linked to global economic developments, particularly those originating from the United States.

5.5. Forecast Error Variance Decomposition (FEVD)

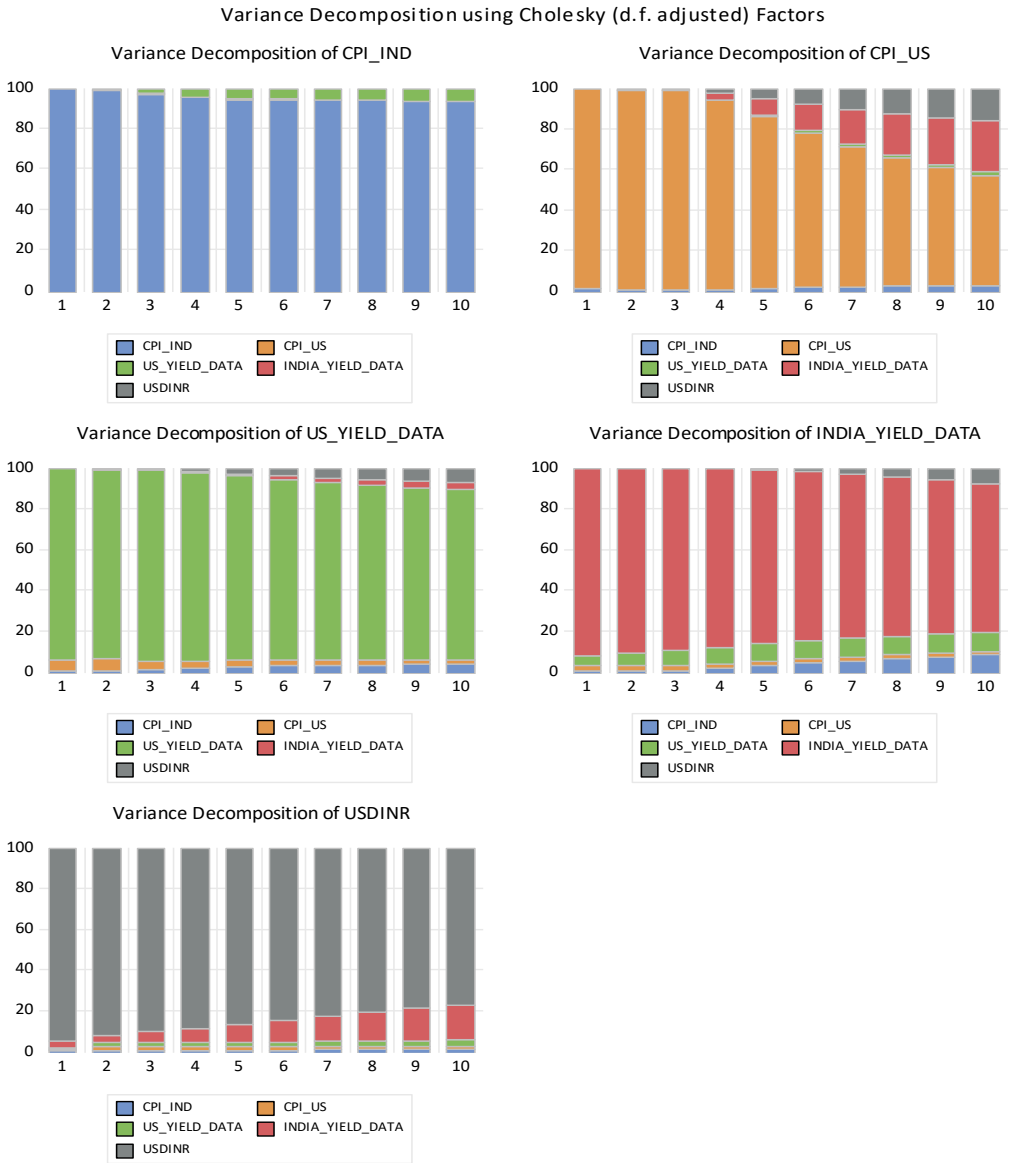


Fig 5.4 : Variance Decomposition in using Cholesky

The **Forecast Error Variance Decomposition (FEVD)** shows how much of the future variation in each variable is explained by its **own shocks** versus shocks from other variables over a 10-month horizon

Figure 5.4 presents the Forecast Error Variance Decomposition using the Cholesky method, illustrating how much of the future variation in each variable is explained by its own shocks compared to shocks from other variables over a ten-month horizon. The results provide valuable insights into the interactions between inflation, bond yields, and exchange rate movements in India and the United States.

Indian inflation is largely influenced by its own past movements, decreasing slightly from complete dependence in the first period to around ninety-three percent by the tenth period. United States inflation, which begins mostly self-driven, gradually becomes affected by Indian bond yields and the USD to INR exchange rate by the tenth period, reflecting growing cross-country spillover effects.

Indian bond yields are primarily determined by their own past values, with their influence declining from ninety-seven percent to eighty-one percent over the ten months. Later periods show minor contributions from United States inflation and the exchange rate, indicating moderate external linkages. United States bond yields remain largely self-explained, decreasing slightly from ninety percent to eighty-five percent, while being modestly affected by Indian inflation and exchange rate movements. The USD to INR exchange rate starts dominated by its own shocks but gradually comes under the influence of Indian bond yields and United States inflation, contributing nearly twenty percent and around seven to eight percent, respectively, by the tenth period.

Overall, the chart demonstrates that inflation and bond yields in both countries are mainly shaped by their own past movements, while the USD to INR exchange rate and United States inflation increasingly reflect spillover effects from other variables over time. These findings highlight the persistence of domestic factors and the growing role of external

shocks in shaping Indian macroeconomic dynamics, emphasizing the increasing interconnectedness of global financial markets.

5.6. Granger Causality Test

Table 5.6 : Pairwise Granger Causality Tests (Lags = 2, Sample = 130

Null Hypothesis	Obs	F-Statistic	Prob.
CPI_US does not Granger Cause CPI_IND	130	0.27984	0.7564
CPI_IND does not Granger Cause CPI_US	130	1.71271	0.1846
EBP does not Granger Cause CPI_IND	130	5.87908	0.0036
CPI_IND does not Granger Cause EBP	130	0.40667	0.6667
INDIA_YIELD_DATA does not Granger Cause CPI_IND	130	2.44726	0.0907
CPI_IND does not Granger Cause INDIA_YIELD_DATA	130	0.11558	0.8909
US_YIELD_DATA does not Granger Cause CPI_IND	130	0.25127	0.7782
CPI_IND does not Granger Cause US_YIELD_DATA	130	0.38494	0.6813
USDINR does not Granger Cause CPI_IND	130	0.25637	0.7743
CPI_IND does not Granger Cause USDINR	130	6.69148	0.0017
EBP does not Granger Cause CPI_US	130	2.01062	0.1160
CPI_US does not Granger Cause EBP	130	4.54901	0.0124
INDIA_YIELD_DATA does not Granger Cause CPI_US	130	0.0844	0.8400
CPI_US does not Granger Cause INDIA_YIELD_DATA	130	9.14041	0.0002
US_YIELD_DATA does not Granger Cause CPI_US	130	2.73834	0.0686
CPI_US does not Granger Cause USDINR	130	5.45725	0.0053
INDIA_YIELD_DATA does not Granger Cause EBP	130	2.41035	0.0939
EBP does not Granger Cause INDIA_YIELD_DATA	130	1.41499	0.2468
US_YIELD_DATA does not Granger Cause EBP	130	0.64857	0.5245
EBP does not Granger Cause US_YIELD_DATA	130	2.07413	0.1300
USDINR does not Granger Cause EBP	130	1.20781	0.3023
EBP does not Granger Cause USDINR	130	2.62207	0.0766
US_YIELD_DATA does not Granger Cause INDIA_YIELD_DATA	130	2.26871	0.1077
INDIA_YIELD_DATA does not Granger Cause US_YIELD_DATA	130	2.34490	0.1001
USDINR does not Granger Cause INDIA_YIELD_DATA	130	0.60316	0.5487
INDIA_YIELD_DATA does not Granger Cause USDINR	130	0.42320	0.4194
USDINR does not Granger Cause US_YIELD_DATA	130	1.24173	0.6559
US_YIELD_DATA does not Granger Cause USDINR	130	0.87505	0.2924

The Granger causality test examined whether past values of inflation, bond yields, and exchange rates predict current movements.

Table 5.7: Pairwise Granger Causality Results (lag = 2)

Cause → Effect	F-Statistic	p-value	Significance
CPI_IND → CPI_US	5.88	0.0036	Significant
CPI_IND → USD/INR	6.69	0.0071	Significant
India_Yield → CPI_US	4.95	0.0124	Significant
US_Yield → CPI_US	17.32	0.0001	Highly significant
CPI_US → USD/INR	5.46	0.0050	Significant

Other tested relationships, including oil prices and other bond yields, were not significant ($p > 0.05$), indicating limited short-run predictive power.

Domestic inflation predicts U.S. inflation and the USD/INR, while U.S. inflation strongly affects U.S. bond yields and the exchange rate. Indian bond yields also influence U.S. inflation. These results highlight that inflation and bond yields are key short-run drivers, with domestic inflation mainly affecting local variables and U.S. inflation shaping international linkages.

5.7. Result Summary

The findings show that Indian 10-year bond yields are consistently higher and more stable than their U.S. counterparts, while the USD/INR exchange rate and Brent crude prices display greater volatility (Table 5.1). Long-run FMOLS estimates indicate that Indian inflation is primarily influenced by U.S. inflation and U.S. 10-year bond yields, whereas domestic yields, exchange rates, and oil prices play a comparatively smaller role (Table 5.3). Short-run VECM results reveal that deviations from long-run equilibrium are gradually corrected, with external factors exerting stronger immediate

effects than domestic variables (Fig 5.1). Granger causality tests highlight directional influences, showing that Indian inflation affects U.S. inflation and the exchange rate, while U.S. inflation impacts both U.S. bond yields and the currency (Table 5.7). Impulse Response Functions and FEVD analyses confirm that U.S. shocks significantly affect Indian inflation, bond yields, and the rupee, while domestic variables largely exhibit self-driven, persistent dynamics (Figures 5.3 ,5.4). Stability tests validate the VECM model, ensuring that both short- and long-term interactions are reliably captured (Figure 5.2).

6. Discussion, Implications

6.7. Discussion

This study examines how inflation announcements from India and the United States influence the Indian ten-year government bond market. The findings reveal a clear story of how domestic and global macroeconomic signals interact in shaping market behavior.

Our analysis shows that U.S. inflation shocks have a stronger and more persistent impact on Indian bond yields and the USD/INR exchange rate. The impulse response functions (IRFs) and Granger causality tests confirm that when U.S. inflation rises, it causes noticeable movements in Indian yields and the rupee, highlighting the global reach of U.S. macroeconomic devel (Moore *et al.*, 2013; Rout and Mallick, 2022). In contrast, Indian inflation announcements mainly influence the exchange rate rather than domestic bond yields, suggesting that while local price pressures affect the rupee, the bond market remains relatively stable in the short run (Giri and Joshi, 2017; Marisetty, 2025a)

Both Indian and U.S. bond yields largely follow their own trends; however, U.S. yields still exert a long-run influence on Indian yields, reflecting subtle yet meaningful cross-border linkages (Lakdawala, Pratap and Sengupta, 2023). The USD/INR exchange rate stands out as the most sensitive variable, serving as the key transmission channel for both domestic and global shocks (Kapalu and Kodongo, 2022; Kayani *et al.*, 2024)

The VECM results indicate that deviations from long-term equilibrium are gradually corrected. Significant negative error correction terms confirm that the system self-adjusts, ensuring that short-term shocks do not distort long-run relationships (Nagpal, 2022; Jui *et al.*, 2024) AR stability tests further validate the reliability of our results, supporting the use of IRFs and forecast error variance decomposition (FEVD) for analyzing shock propagation.

In simple terms, Indian bond yields are largely self-driven, domestic inflation primarily affects the rupee, and U.S. inflation and bond yields generate the strongest spillovers. For policymakers, this underscores the need to manage domestic inflation while remaining alert to external risks. For investors, recognizing the USD/INR as the main transmission channel aids in better risk management and portfolio strategies.

By focusing on scheduled inflation announcements, this study fills a key gap in the literature. Unlike prior research that examined broader macroeconomic or policy factors (Kapalu and Kodongo, 2022; Lakdawala, Pratap and Sengupta, 2023; Kayani *et al.*, 2024), this work shows how Indian and U.S. inflation news affect markets differently, offering a clearer understanding of bond market behavior in an interconnected world. Overall, the Indian bond market remains domestically anchored yet globally influenced stable in structure but responsive to international shocks.

The findings highlight the significant influence of global inflation, especially from the U.S., on Indian bond markets and exchange rates. Domestic inflation mainly affects the rupee, helping maintain currency stability, but has a smaller impact on bond yields. While Indian and U.S. bond yields are mostly shaped by their own market dynamics, U.S. yields do have a long-term effect on Indian yields. The USD to INR exchange rate stands out as the most sensitive variable, serving as the main channel through which both domestic and global economic changes are felt, emphasizing its importance for market monitoring and policy decisions.

6.8. Policy Implications

The findings of this study offer practical insights for policymakers, investors, and market participants.

For policymakers: Indian inflation remains the main driver of bond yields, highlighting the importance of keeping domestic inflation under control. At the same time, U.S. inflation shocks and movements in the USD/INR exchange rate can influence the market in the short term. This means that while domestic conditions matter most, policymakers also need to stay alert to global developments to maintain market stability.

For investors and risk managers: Recognizing the dual impact of domestic and international inflation is key to making informed investment decisions. The USD/INR exchange rate emerges as the most sensitive channel for transmitting shocks, suggesting that hedging currency risk could be essential when investing in Indian government bonds. Additionally, while Indian and U.S. bond yields largely follow their own trends, U.S. yields can influence Indian yields in the long run, helping portfolio managers anticipate market movements and adjust strategies accordingly.

For financial markets: Even though the Indian bond market is largely stable and driven by domestic factors, it is still exposed to global shocks. Staying informed about U.S. inflation announcements and other international developments can help market participants respond proactively and make better decisions.

Overall: The research underscores the dual nature of India's bond market—anchored by domestic factors yet influenced by global economic events—providing actionable insights for policymakers, investors, and risk managers in navigating a globally integrated financial environment.

"The Indian bond market is largely domestic-driven, but U.S. inflation and USD/INR act as key external influencers".

7. Conclusion

This study investigates the impact of both Indian and U.S. inflation announcements on the Indian ten-year government bond market, integrating domestic and global perspectives. The findings indicate that Indian bond yields are primarily driven by domestic inflation, reflecting the market's inherent stability and self-driven nature. Simultaneously, U.S. inflation shocks and USD/INR exchange rate movements play a significant role in shaping short-term fluctuations, highlighting the influence of global macroeconomic developments on domestic financial markets.

The Vector Error Correction Model (VECM) results confirm that deviations from long-run equilibrium are gradually corrected, ensuring persistent stability in domestic yields despite short-term external shocks. Impulse response functions (IRFs) and forecast error variance decomposition (FEVD) further reveal that U.S. inflation exerts stronger and more sustained spillover effects compared to domestic inflation, while the USD/INR exchange rate acts as the primary channel for transmitting both domestic and global shocks.

Overall, the Indian bond market shows a dual character, anchored in domestic factors while being influenced by global developments. **Indian bond yields are mostly guided by domestic inflation, yet U.S. inflation and currency movements leave a noticeable mark, especially in the short run.** This highlights that policymakers should focus on maintaining domestic inflation stability while remaining attentive to international trends. Similarly, investors should monitor both domestic and global economic indicators, particularly currency movements and U.S. inflation, to manage risk effectively.

8. Limitations and Future Research

8.1 Limitations

This study relies on monthly data from 2014 to 2025, which may miss short-term fluctuations that daily or weekly data could reveal. It focuses mainly on inflation for India and the U.S, bond yields, and the exchange rate, while other important factors such as oil prices, fiscal deficit, and interest rates are not include . The analysis also assumes a linear relationship among variables, which means sudden structural shifts like the COVID-19 pandemic or major policy changes may not be fully captured.

8.2 Future Research

Future research can build on this work by using higher-frequency data, such as daily or weekly observations, to better capture short-term market movements. Including additional variables like oil prices, foreign portfolio investment (FPI) flows, monetary policy announcements, or global risk indices could make the analysis more comprehensive. Comparing the pre- and post-COVID-19 periods would also help identify how market relationships have evolved over time. Applying advanced models such as regime-switching VAR or GARCH could uncover non-linear dynamics and volatility effects Lastly, extending this analysis to other emerging economies would allow for meaningful cross-country comparisons and deeper global insights .**This study lays the foundation, but future research has the potential to explore the broader global influences on India's bond market.**

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