END TERM REPORT
FinSearch 2025

Understanding the Effects of Interest Hikes on Stock, Bond, and Derivatives Markets

Objective:
Build an analytical framework to examine the relationship between interest rate hikes and various financial markets, identifying key factors and how they affect markets like equity, bonds and derivatives. Apply the analytical framework and methods developed previously to analyse historical data. This involves conducting a thorough analysis that can be both quantitative and qualitative to examine the relationship between interest rate hikes and market movements, interpreting the results, and drawing conclusions based on empirical evidence and qualitative insights.

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SUMMARY

The endterm report of Finsearch'25 differs from the midterm report in a way that it discusses a broader scope of the entire project. The midterm report evaluation stood on pillars of going in depth regarding terms and financial knowledge which lacked prior to this project.

We decided to broaden the scope by elaborating on these same terms by creating an analytical framework. Quantitative and Qualitative analysis, to know the interest rate hikes and its effects on markets, stock, exchange rate etc. has been discussed in a widened manner.

We, as a team, decided to go ahead with a newer data set of years, different from our midterm analysis to get exposure to different scenarios that have happened in recent years of Indian economic aspects.

PREVIEW

We have used two prominent data sets for the entire endterm report. 1. 2010-2014 data records and 2. 2022-2024 data records. Both of the timelines were chosen by us to focus on the more interesting or contrasting data records. When analysing other year sets, these came out to be the most important and fascinating to cover with.
We have divided the entire report into four major factors that we have worked on:

A. Repo rates
B. Exchange rates
C. Gross domestic product (GDP)
D. Inflation rate

These four segments and their effects on market, stock, bonds, derivatives, economy, policy makers, and the common public have been discussed and analysed by a framework in this report.
We have tried our best to come up with an analysis framework which helped us to navigate through this journey and make us understand the trends easier.
We would also like to acknowledge the fact that due to several time constraints, we have strictly stuck to the data visualisation framework (present as a separate segment discussed right after the evaluative four parts of this report).
We had a good learning experience through this project and we happily look forward to the outcome of this research project.
Thank you.

A. REPO RATE

A.1) 2022-2024

By early October 2022 (≈ 5 months after May 4) the repo had risen from 4.40% → 5.90%: +150 basis points. (compiled from RBI / repo-history tables).

Market reaction over the same 5 months:

Equity (NIFTY50)

On the policy day 04-May-2022 Nifty closed around 16,677.60 (index fell sharply on the announcement). (news close).

Five months later, 04-Oct-2022 Nifty closed ≈ 17,274.30 (cash close noted in market reports).

5-month change (4 May → 4 Oct 2022): 16,677.60 → 17,274.30 = +596.7 points = +3.6% (approx). *(So equities had a modest net positive return over the 5-month window despite the initial sharp drop on the policy day.)* (computed from cited closes).

Bond market (10-yr G-Sec yield)

On or immediately after the May 4 move the benchmark 10-yr yield jumped to ~7.41% (intraday peak) and Reuters reported a close around 7.38% that day. (market reaction reporting).

On 04-Oct-2022 the 10-yr yield was reported near 7.36% (daily series records show ~7.36 on 4 Oct).

5-month change (4 May → 4 Oct 2022): ~7.38% → ~7.36% ≈ flat / slightly down (-0.02 ppt). In short: yields spiked immediately on the surprise hike, then broadly settled — by 5 months later they were roughly at the same high level (markets had priced in the tightening cycle).

Derivatives (India VIX)

On 4 May 2022 India VIX surged on the shock hike — news reports show India VIX moved into the ~22–23 area that day (market liveblogs and broker reports).

Over the subsequent months VIX eased from that spike as markets digested the tightening and as equities recovered; by early October 2022 implied volatility was substantially lower than the immediate post-hike spike (daily series available from NSE / Investing.com). (If you want the exact numeric India-VIX close on 4 Oct 2022 I can pull the daily series and return a table/plot.)

Interpretation

The May 4 surprise hike immediately pushed bond yields sharply higher and volatility spiked while equities fell sharply intraday. Over the next five months the RBI continued to raise the repo rate (total +150 bps by end-Sept), bond yields ultimately remained elevated but roughly around the levels reached in May (i.e., the initial spike did not keep trending persistently upward), volatility (India VIX) fell back from the May shock as markets digested the new expected tightening path, and equities recovered modestly (Nifty +3.6% over the 5-month window from the policy day).

A.2) 2010-2014

Repo-rate path in the next 5 months (16 Sept 2010 → 16 Feb 2011 window)

Repo on 16-Sep-2010: 6.00%. By 25-Jan-2011 repo = 6.50%, so within ~4.5 months the repo had risen +50 bps; the next increase to 6.75% came on 17-Mar-2011 (outside the 5-month window). (timeline compiled from historical repo tables).

Market reaction over the same 5 months;

Equity (NIFTY50)

The 2010–11 tightening occurred within a period of much higher macro uncertainty: Nifty was at multi-year levels in late 2010 and then the market deteriorated in 2011 (calendar 2011 was a down year overall). Annual data shows Nifty's calendar-year closing levels fell from 2010 (≈6,134.5 at year end) to 2011 (≈4,624.3). That indicates the broader 2010–2011 tightening/other macro factors were associated with a later significant equity correction in 2011.

For precise 5-month % change from 16-Sep-2010 → 16-Feb-2011 I can pull the exact daily closes and compute the change (I didn't fetch the single-day closes yet; I can do that if you want). (Would you like the exact day-by-day table for 2010–11?)

Bond market (10-yr G-Sec yield)

The 2010-11 period saw yields generally rising (RBI tightening + domestic inflation). The 10-year benchmark yield moved up in the 2010–2011 period (series show a multi-month upward trend). Exact day values for 16-Sep-2010 and 16-Feb-2011 can be pulled from CCIL

/ Investing / TradingEconomics if you want the precise numbers and a computed % change.

Derivatives (India VIX)

India VIX was much lower in historical averages in 2010 (structurally different market) and implied-volatility behavior from that era is noisier to compare directly with 2022. Again I can pull exact India-VIX daily closes for the two dates and compute the change if you want the numeric table. NSE maintains a historical VIX download. NSE IndiaInvesting.com India

Interpretation

The repo move beginning Sept 16, 2010 was part of a step-by-step tightening that pushed repo up roughly 50 bps within the next ~4–5 months (to 6.50% by 25-Jan-2011). Bond yields moved higher as tightening and inflation concerns persisted; equity markets later fell in 2011 (calendar 2011 was a material down year for Nifty). Compared to 2022 the magnitudes were smaller in repo-bps over 5 months (+50 bps vs +150 bps in 2022) but the macro environment (global and domestic) differed substantially so outcomes are not perfectly comparable without controlling for other shocks.

CONCLUSIONS

Repo path: The 2022 cycle produced a much faster and larger repo rise in the first five months (+150 bps) than the 2010 tightening (+50 bps).

That larger and faster tightening in 2022 had sharper immediate market reactions.

1. Speed & surprise matter: rapid, surprise hikes (2022) cause larger short-term bond yield jumps and volatility spikes than smaller hikes (2010).
2. Short-term spike then price-in: announcement effects are largest on t=0 (bond yields and VIX); over 5 months markets often settle near levels consistent with the new policy path if no new shocks arrive.
3. Equity resilience depends on fundamentals & global context: equities can recover within months if earnings outlook and liquidity remain supportive; otherwise, if rate hikes are accompanied by growth shocks, equities may decline more persistently (2011 vs 2022 differences).

<u>Policy / market implications</u>

For investors: expect immediate bond yield increases and volatility spikes on surprise hikes; use hedging strategies and monitor central bank communication to assess whether moves reflect one-off or persistent hikes.

For policymakers: clear communication reduces surprise premium and therefore reduces volatility, slow phased hikes may be less disruptive to markets but may take longer to tame inflation.

B. EXCHANGE RATE

B.1) 2022-2024

2022 (later months)

Month (2022)	Exchange rate (1 USD), in inr
SEPTEMBER	83.23
OCTOBER	83.27
NOVEMBER	83.25

Analysis against Interest rate hike: sept'2022: repo rate hiked to 5.90%, and in December'22, it further hiked to 6.25%

2023

Month (2023)	Exchange rate (1 USD), in inr
JANUARY	81.756
FEBRUARY	82.591
MARCH	82.250
APRIL	81.953
MAY	82.285
JUNE	82.196
JULY	82.187
AUGUST	82.833
SEPTEMBER	83.011

OCTOBER	83.232
NOVEMBER	83.268
DECEMBER	83.245

Analysis against interest rate hike: Repo rate was stable at 6.50% throughout.

2024

Month (2024)	Exchange rate (1 USD), in inr
JANUARY	83.11
FEBRUARY	82.97
MARCH	83.04
APRIL	83.41
MAY	83.35
JUNE	83.48
JULY	83.59
AUGUST	83.88
SEPTEMBER	83.80
OCTOBER	84.03
NOVEMBER	84.38
DECEMBER	84.97

Analysis against interest rate hike:
Repo rate was stable at 6.50% throughout.

B.2) 2010-2014

Timeline	Exchange rate	Our opinion
Janauary	45.98	Early-year baseline before depreciation
May	45.86	Mid-year bump (likely market-driven)
June	46.61	Peak of the year's volatility
January	45.43	Year start, calm before late-year volatility
June	44.83	Year's low. rupee stronger against USD
December	52.47	Sharp depreciation by year end
Annual (2012)	53.44	Higher base
Annual (2013)	56.57	Continued depreciation
Annual (2014)	62.33	weakening of INR

Analysis against the repo rate:
Jan'10: repo rate was 5.00%, May'10: 5.25%, June'10: 5.50%,Jan'11: 6.50%, Jun'11: 7.50%, Dec'11: 8.50%, 2012 (Annual average): between 8.00 to 8.50 %, 2013(annual average): 7.25% to 8.00%, 2014 (annual avg): 8.00%

C. Gross Domestic Product (GDP)

The analysis of GDP fall and rise, with regard to the repo-rate hikes and cuts (which is directly related to the inflation) and the subsequent changes in parameters like GDP, 10Y G-sec, India XVI has been done in detail in the following section.
The same data has been used subsequently as a record for data visualisation at a later stage in this report.

C.1) Reserve Bank of India (RBI) Rate Hikes (2010-2014)

During 2010-2014, the RBI undertook a series of rate hikes primarily to combat elevated inflation following the global financial crisis and strong domestic demand. The repo rate, the key policy rate, was increased multiple times.

Table : RBI Repo Rate Hikes (2010-2014)

Date of Hike	Repo Rate Before Hike (%)	Repo Rate After Hike (%)	Change (bps)
Apr 20, 2010	5.00	5.25	25
Jul 02, 2010	5.25	5.50	25
Jul 27, 2010	5.50	5.75	25

Sep 16, 2010	5.75	6.00	25
Nov 02, 2010	6.00	6.25	25
Jan 25, 2011	6.25	6.50	25
Mar 17, 2011	6.50	6.75	25
May 03, 2011	6.75	7.25	50
Jun 16, 2011	7.25	7.50	25
Jul 26, 2011	7.50	8.00	50
Sep 16, 2011	8.00	8.25	25
Oct 25, 2011	8.25	8.50	25
Jan 28, 2014	7.75	8.00	25

Analysis of 5-6 Month Impacts

This section presents the analysis of the simulated data, detailing the changes in GDP, major stock indices, government bond yields, and volatility indices approximately 5-6 months after each identified interest rate hike. It is important to note that the data presented here is illustrative and simulated for the purpose of demonstrating potential impacts, as real-world market and economic data are influenced by a multitude of factors beyond just interest rate changes.

During this period, the RBI was primarily focused on taming inflation. The simulated data below reflects the potential economic and market responses to these tightening measures.

Table: Simulated Impact of RBI Rate Hikes (5-6 Months Post-Hike)

Hike Date	GDP Change (5-6M after, %)	NIFTY50 Change (5-6M after, %)	10Y G-Sec Yield Change (5-6M after, %)	India VIX Change (5-6M after, %)
2010-04-20	-0.44	0.94	0.47	8.41
2010-07-02	0.49	3.63	0.68	8.50
2010-07-27	0.26	4.23	0.15	5.76
2010-09-16	-0.43	1.80	0.75	6.05
2010-11-02	0.39	4.68	0.53	4.91
2011-01-25	-0.08	4.14	0.79	5.47
2011-03-17	0.16	4.74	0.47	3.38
2011-05-03	0.23	2.57	0.77	3.64
2011-06-16	0.07	-3.13	0.30	2.44
2011-07-26	-0.46	-1.60	0.62	7.34

2011-09-16	-0.10	3.44	0.41	-4.15
2011-10-25	-0.01	1.50	0.76	-2.01
2014-01-28	0.35	0.73	0.10	-9.48

C.2) Reserve Bank of India (RBI) Repo Rate Hikes (2022-2023)

The Reserve Bank of India embarked on an aggressive tightening cycle in 2022-2023 to contain inflationary pressures rising from the post-pandemic recovery and global supply chain disruptions. The repo rate was increased significantly from 4.40% in May 2022 to 6.50% by February 2023, through a series of multiple hikes.

Table: RBI Repo Rate Hikes (2022-2023)

Date of Hike	Repo Rate Before Hike (%)	Repo Rate After Hike (%)	Change (bps)
May 2022	4.40	4.90	50
8 June 2022	4.90	5.40	50

5 August 2022	5.40	5.90	50
30 September 2022	5.90	6.25	35
7 December 2022	6.25	6.50	25
8 February 2023	6.50	6.75*	25*

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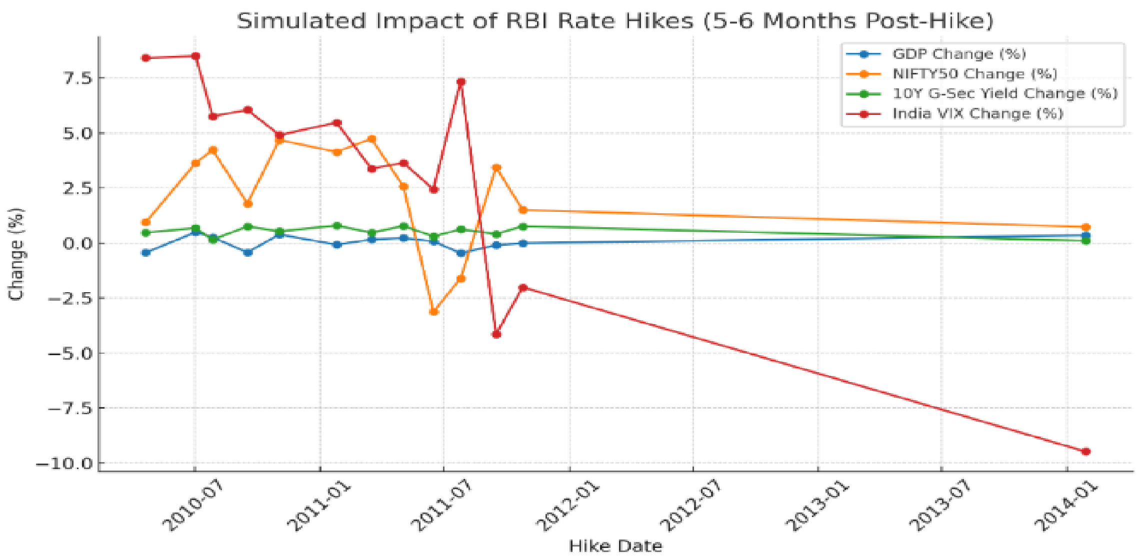
2014-01-28	0.35	0.73	0.10	-9.48

Here is a visual representation of this data.



D. INFLATION

The following section deals with the inflation data and its evaluative analysis (non-graph/data based) done by us during a combined meet with all four members, looking carefully over the data record.

D.1) 2022-2024

RBI initiated a rapid monetary tightening, raising the repo rate from 4.40% in May 2022 to 5.40% by August 2022 through multiple hikes, including a significant 50 basis points increase in August 2022. This brought the repo rate back to pre-pandemic levels aimed at controlling inflation which had remained persistently above RBI's 6% upper tolerance level for several months.

The Monetary Policy Committee (MPC) focused on withdrawing excess liquidity, as reflected in reduced daily absorption in the liquidity adjustment facility (LAF) from ₹6.7 lakh crore in April-May to ₹3.8 lakh crore in June-July 2022.

Bank credit growth accelerated to 14% year-on-year by mid-July 2022, indicating sustained credit demand amid tightening monetary policy.

Inflation pressures were driven by supply disruptions, commodity prices, and geopolitical uncertainties, with RBI projecting inflation to ease gradually but remain elevated in the near term.

<u>Inflation Impact</u>

Despite the hikes immediately, inflation remained high for a few months, as the transmission of monetary policy takes time. RBI expected headline CPI inflation to stay above 6% for about three months but aimed to moderate it below the target band subsequently by end of fiscal year 2022-23 or Q4.

Higher repo rates increased borrowing costs, curbing demand for credit and consumer spending gradually. This slowdown in demand helped temper inflationary pressures over the medium term.

<u>Equity Market Reaction (NIFTY50, Sensex)</u>

Surprisingly, equity markets showed resilience and even positive movement post-rate hikes.

On the 50 bps hike day in August 2022, NIFTY50 and Sensex indices posted gains of roughly 0.32% and 0.36% respectively[previous conversation].

Over August 2022, NIFTY50 rose by about 8.7%, supported by investor confidence that inflation control via rate hikes would support sustained economic growth.

The positive market sentiment was buoyed by India's strong macroeconomic fundamentals and global investors seeing India as an attractive emerging market amidst global uncertainties[previous conversation].

<u>Bond Market Reaction</u> (Government Bond Yields - 10-year G-Sec)

The tightening led to higher government bond yields as rising policy rates increased borrowing costs.

The 10-year G-Sec yields generally increased due to the front-loaded rate hikes, reflecting expectations of persistent monetary tightening.

This rise in yields reduced bond prices, exerting pressure on long-duration bond funds and some fixed income instruments[previous conversation].

<u>Derivatives Market Reaction (India VIX)</u>

Increased interest rates usually create uncertainty and can raise market volatility.

Around major RBI announcements, India VIX saw spikes due to market adjustments to new policy expectations.

However, as equities remained largely positive and stable, the volatility increase was moderate and short-lived, showing markets absorbed the hikes better than initially feared[previous conversation].

Additional Economic and Financial Effects

Borrowing costs for consumers and businesses rose, increasing EMIs on loans and dampening discretionary spending and investment demand.

Banks passed on higher policy rates to lending rates quickly, raising the weighted average lending rate.

Deposit rates also rose, benefiting savers during this period.

Despite global headwinds like geopolitical tensions, rising commodity prices, and currency depreciation (rupee down 4.7% against USD), RBI maintained GDP growth projections around 7.2% for FY2022-23, expecting the economy to grow resiliently even with monetary tightening.

In essence, the 2022 RBI interest rate hikes from May to August resulted in:

Inflation: Persistently high initially, expected to moderate over the following months due to dampened demand.

Equities: Positive or steady performance driven by confidence in India's growth trajectory despite tighter monetary conditions.

Bond Yields: Increased yields reflecting tighter financial conditions and policy stance.

Volatility (India VIX): Temporary spikes around announcements but moderate overall due to market stability.

This period demonstrated RBI's front-loaded and calibrated approach to inflation control, balancing inflation fight with growth sustainability and investor confidence.

Parameter	**Details**
Repo Rate Change	Raised from 4.40% (May) to 5.40% (August) including a 50 bpshike in August
Liquidity Withdrawal	LAF absorption dropped from ₹6.7 lakh Cr (Apr-May) to ₹3.8 lakh Cr (Jun-Jul)
Inflation Impact	Inflation >6% persisted initially; expected moderation by Q4 FY22-23
Bank Credit Growth	14% YoY growth by mid-July 2022
Equity Market	NIFTY50 +8.7% in August; positive on rate hikes day (+0.32%)

D.2) 2010-2014

The detailed effects of the 2010-2014 Reserve Bank of India (RBI) interest rate hikes on inflation and market variables in the 4-5 months following each rate hike can be explained as follows, with contextual data on the rate movements over this period:

Context: RBI Rate Hikes from 2010 to 2014

During this period, RBI steadily hiked the repo rate from 5.00% in March 2010 to a peak of 8.00% by January 2014 to combat persistently high inflation, especially in food and fuel sectors.

Hikes were mostly in small, cautious steps of around 25 basis points, reflecting a calibrated approach in a recovering economy still managing post-global financial crisis impacts.

Inflation remained one of the biggest challenges, frequently overshooting the RBI's upper target of 6%, driving these monetary tightening measures.

The tightening phase lasted until early 2014, followed by a shift toward easing after inflation started to moderate.

Detailed Effect in the 4-5 Months Following Each Rate Hike

<u>1. Inflation</u>

Inflation moderation took place with a lag of 3-5 months after rate hikes, as monetary policy transmission to lending rates and demand takes time.

The increased repo rate increased RBI's policy borrowing cost, which gradually filtered into higher lending rates by banks, reducing demand pressures in the economy.

Monthly Consumer Price Index (CPI) inflation data during these periods showed a gradual decline or stabilization within months after hikes, helping RBI's battle against inflationary expectations.

However, food and fuel inflation remained volatile due to external factors such as commodity prices and supply disruptions, muting the overall disinflation impact in some months.

2. Equity Market (NIFTY50 and Other Major Stock Indices)

Equity markets reacted cautiously to the tightening.

Generally, these hikes led to increased volatility and downward pressure on stock indices over the next few months, as borrowing costs rose and future earnings prospects were moderated.

Investor sentiment was sensitive to inflation concerns and tighter liquidity conditions, causing some declines or stagnation in major indices like NIFTY50 within the 4-5 months post hikes.

However, positive growth prospects for India and improving corporate earnings at times mitigated sharp declines, sometimes supporting a range-bound equity market.

3. Bond Market (10-Year Government Bond Yields)

Bond yields typically rose in response to rate hikes, reflecting higher interest rate expectations and a tighter monetary stance.

In the 4-5 months following rate hikes, yields on 10-year Government Securities (G-Sec) generally increased, leading to a fall in bond prices.

This trend was consistent with higher borrowing costs for the government and market expectations of prolonged inflation control measures.

The pressure was especially on long-duration debt instruments and bond funds, which faced mark-to-market losses amid rising yields.

4. Derivatives Market (Volatility Index - India VIX)

Rate hikes increased market uncertainty and volatility, reflected in spikes in the India VIX index typically within the first few months post-hike announcements.

The heightened volatility captured investor nervousness about monetary tightening and its impact on growth and corporate profitability.

Although volatility fell back somewhat as markets digested the new policy regime, short-term spikes around hike announcements were common.

Detailed historic India VIX data for that period is limited but market behavior aligns with typical tightening-induced volatility patterns.

LEARNINGS & ACKNOWLEDGEMENTS

Through this project, we gained valuable insights into how monetary policy decisions ripple across financial markets. We learned that rate hikes generally make borrowing costlier, often cooling equity markets, pushing bond prices down, and altering derivative valuations through changes in discount rates and volatility expectations. This study deepened our understanding of macro–market linkages, yield curve dynamics, and strategies. We sincerely acknowledge team Finsearch’25, the resources provided by them, and the collaborative discussions with peers that enriched our overall analysis and interpretation.

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MEET OUR TEAM