THE CLEARING CORPORATION OF INDIA LTD.

Derivatives Quarterly

April – June 2025

CCIL RESEARCH DEPARTMENT

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1. Developments in Derivatives Market

Indian Markets

Trading and Settlement Developments

- Clearcorp Dealing Systems (India) Limited will offer an anonymous Electronic Trading Platform to facilitate trading in USD-INR FX Option up to the tenor of 1 year. Initially, the following instruments will be made available to Members for dealing on the platform: i) Standard Instruments (ATM Straddle/ 25 Delta and 10 Delta Butterfly Spread / 25 Delta and 10 Delta Risk Reversal) on Central Limit Order Book Window; ii) Single Option(s) on Single Options Order Book Window based on Delta/ Strike Price; and iii) Forward Trades created out of Delta hedge.
- The Clearing Corporation of India Ltd. will offer central counterparty clearing of USD-INR Interbank FX Option Trades to the market participants for both bilateral trades as well as trades concluded on the FX Options Electronic Trading Platform of Clearcorp Dealing Systems (India) Limited. Market participants may also opt to settle their bilateral FX Option Trades on a non-guaranteed basis.

Portfolio Compression

- On 19th June 2025, CCIL successfully carried out the 38th cycle of the Portfolio Compression exercise in the Interest Rate Swaps market for MIBOR Benchmark, aimed at reducing the overall notional outstanding and the number of outstanding contracts by identifying economically redundant trades for early termination. Of the 30,172 trades between 28 members which were found to be eligible for being considered for compression, 26,281 trades were identified for early termination achieving a compression rate of 87.10%.

Global Markets

Product Launches & Technology Advancements

- Eurex will launch EU bond futures on September 10, 2025, expanding its European fixed income offering.
- LCH launched Malaysian Ringgit (MYR) non-deliverable swaps on 3rd April, clearing its first MYR interest rate swaps.
- HKEX launched 30-year RMB interest rate swaps on June 30 via Northbound Swap Connect.
- CME Group announced Spot-Quoted Futures on June 30, pending approval, covering bitcoin, ether, and major U.S. equity indices.
- IEX announced its planned launch of IEX Options at the end of the first quarter of 2026, pending regulatory approval.

Regulations

- ISDA expanded its Digital Regulatory Reporting to cover updated EU and UK MIFID/MIFIR requirements.

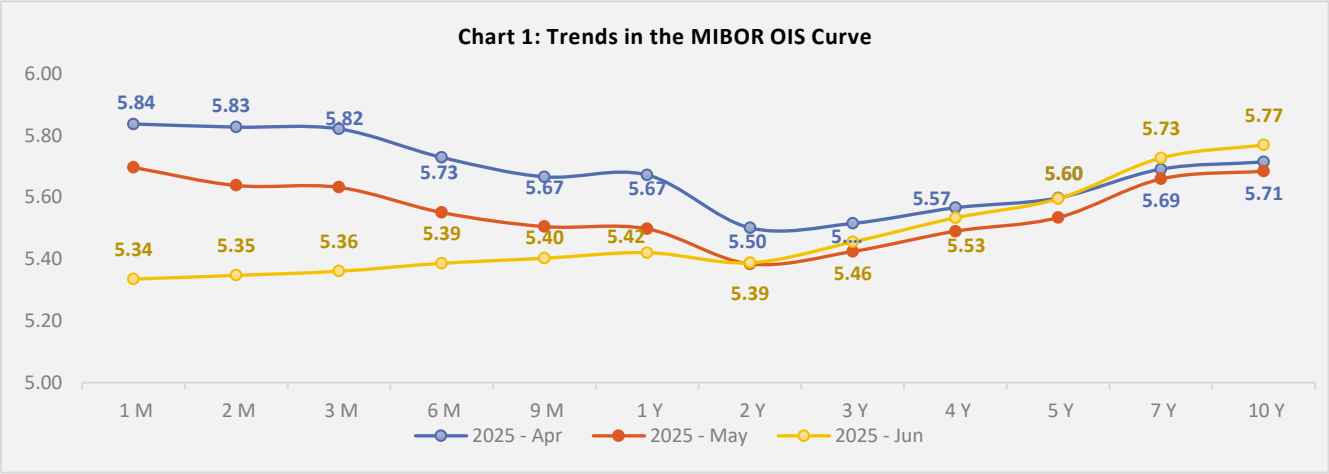
Benchmarks

- CME Group will launch CME FX Tape+ later this year, offering centralized reference prices and a comprehensive view of FX market liquidity from its central limit order book marketplaces, including FX futures, EBS Market, FX Spot+, and FX Link.

2.1 MIBOR OIS Market - Curve & Spreads

During the April to June 2025 quarter, OIS rates across the curve experienced a notable decline, particularly at the shorter end. This was driven by growing market expectations of monetary easing by the RBI. In April, as investors anticipated both a rate cut and a shift in the RBI's policy stance to accommodative, the 1-month OIS rate fell to around 5.84%. The RBI's 25-basis point rate cut that month coupled with softer inflation numbers and concerns over economic growth--heightened by the imposition of U.S. tariffs on Indian goods--fuelled expectations of a further rate cut in the coming months.

Chart 1: Trends in the MIBOR OIS Curve



Data Source: CCIL

In the month of May, the surplus market liquidity pushed OIS rates further down. The short end of the curve remained more reactive, with the 1M OIS rate dropping from 5.84% in April to 5.70% in May, and the 6M rate falling from 5.73% to 5.55%. The long end of the curve saw a more measured decline, with the 10Y rate easing slightly from 5.71% to 5.68%.

By June, the OIS curve turned distinctly more upward sloping. Early in the month, the central bank surprised markets with a 50-bps rate cut but simultaneously shifted its policy stance from accommodative to neutral, signaling a potential pause in the easing cycle. This led to a decline in short-term rates, while longer-tenor OIS rates saw a modest rise, with the 7-year rate increasing from 5.69% to 5.73% and the 10-year from 5.71% to 5.77%. The easing of the short-term rates was a reflection of markets expecting one more rate cut later in the year.

Chart 2: OIS Term Spreads (in bps)

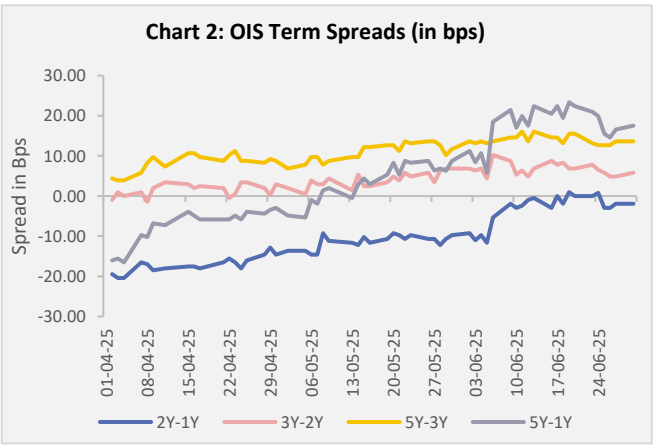
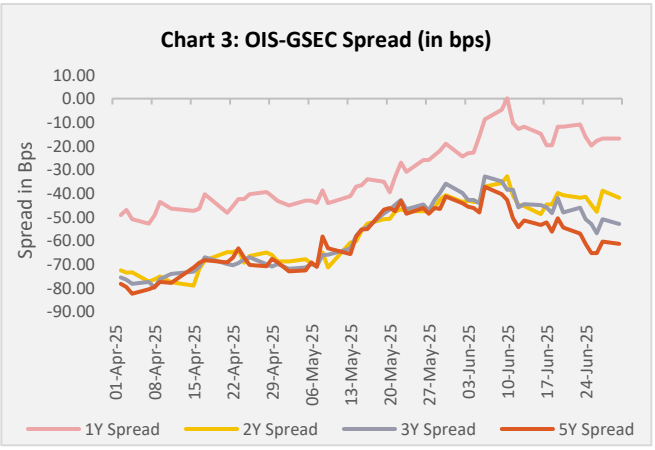


Chart 3: OIS-GSEC Spread (in bps)



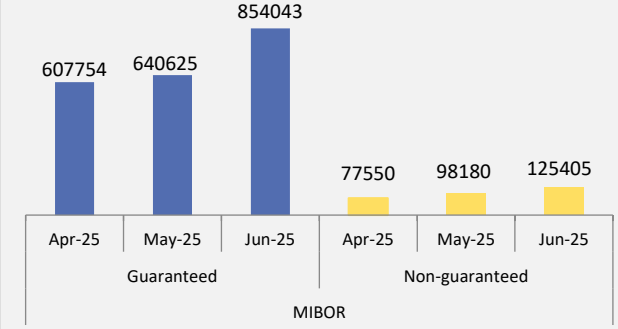
Data Source: Annualized OIS Rates, Refinitiv and G-Sec Par Rates, FBIL.

Over the April to June 2025 quarter, the OIS term spreads underwent a notable shift, reflecting changing market expectations around the interest rate trajectory. At the start of the quarter, the 5Y–1Y OIS spread was deeply negative, around -16 basis points, with 5-year rates trading well below 1-year rates, indicating strong expectations of continued monetary easing. However, sentiment shifted following two consecutive rate cuts by the RBI in April and June. The larger-than-expected cut, coupled with a change in policy stance was seen as a signal that the easing cycle might be nearing its end. Consequently, while short-term rates continued to decline, longer-tenor rates began to firm up, resulting in positive term spread of over 17 bps.

OIS-GSec spreads stayed negative across tenors, reflecting the OIS market's earlier pricing of rate cuts ahead of bond market adjustments. By May, yields in the bond market began catching up with OIS rates, narrowing spreads significantly—most notably in the 5-year segment, where the spread tightened from around -78 bps to -41 bps. However, by late June, bond yields at the long end rose faster than OIS rates, causing the OIS-GSec spread to turn more negative to around -62 bps.

2.2 MIBOR OIS – Trading and Settlement Pattern

Chart 4: Guaranteed and Non Guaranteed Trading Volumes in MIBOR OIS (Rs Cr)



Around 87% of the notional traded volumes of MIBOR-OIS were settled on a guaranteed basis. Total notional volume during April - June 2025 in the guaranteed settlement segment stood at Rs 21.02 lakh crore lower than Rs 25.96 lakh crore in the previous quarter. In the non-guaranteed settled segment, total notional volume decreased 21.4% to Rs 3.01 lakh crore in the current quarter, from Rs 3.83 lakh crore recorded previously.

Chart 5: Tenorwise MIBOR OIS Volume break-Upto 1 Year for Apr-Jun 2025

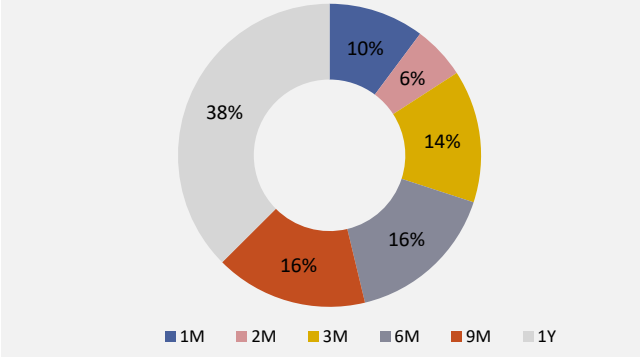
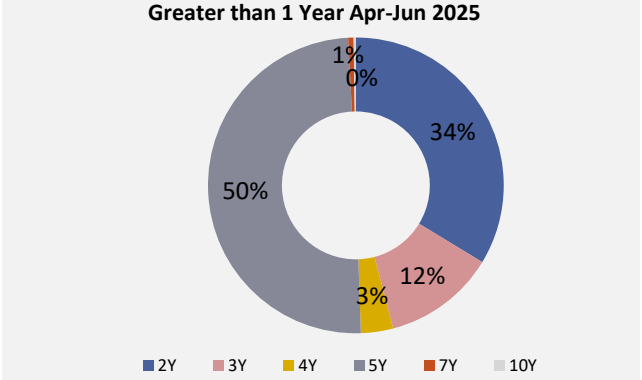
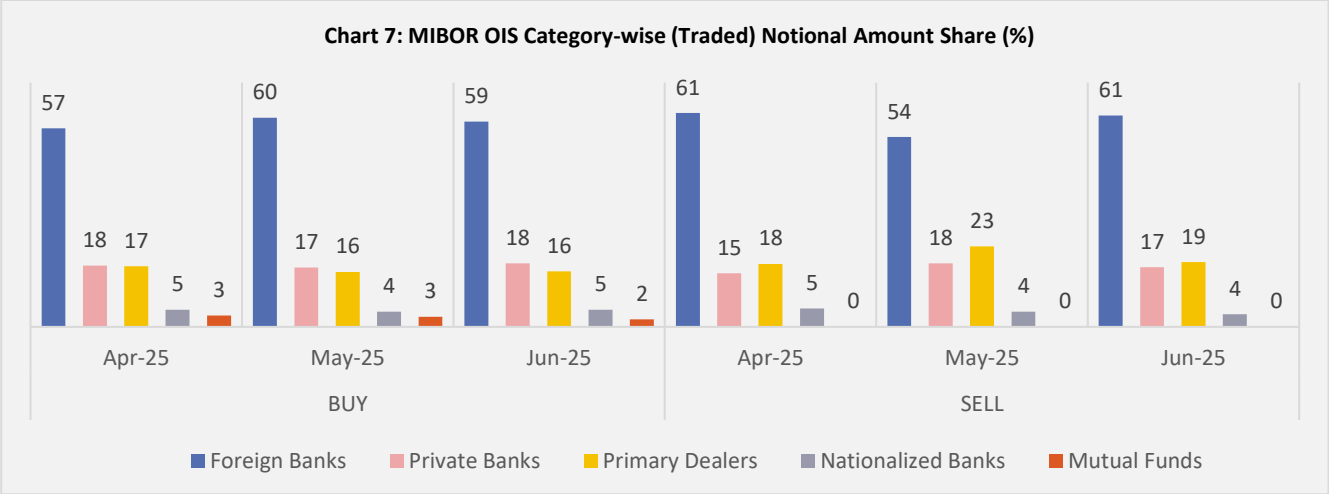


Chart 6: Tenorwise MIBOR OIS Volume break-up Greater than 1 Year Apr-Jun 2025



Data Source: CCIL

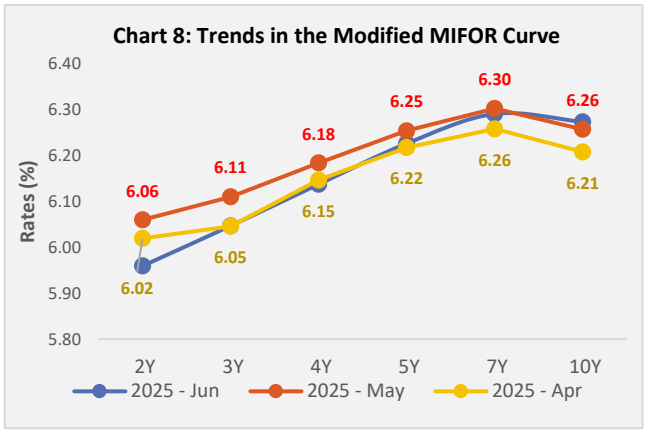
1-year OIS trades dominated trading activity in the short-term segment (up to 1 year) with a share of 38%, followed by trades in 9-month and 6-month tenor with 16% each. For tenors greater than 1 year, the 5-year OIS captured a market share of 50% in terms of traded volume, followed by 2-year (34%) and 3-year (12%), respectively. Foreign banks were the largest participants in the OIS market based on their market share in traded volumes. This was followed by primary dealers and private banks.

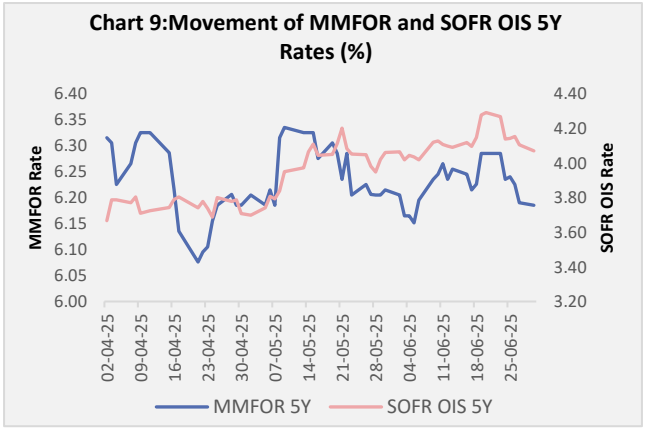


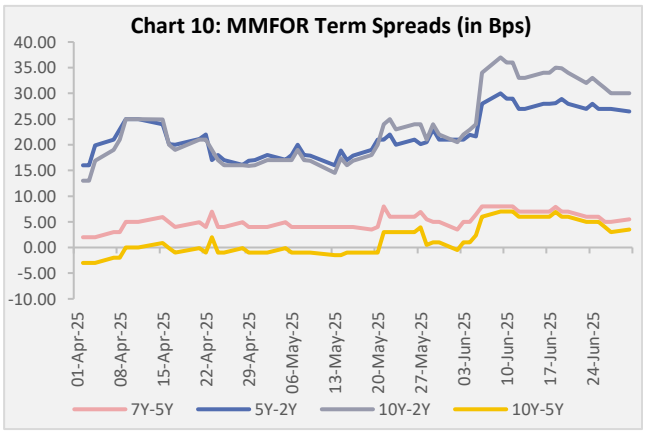
Data Source: CCIL

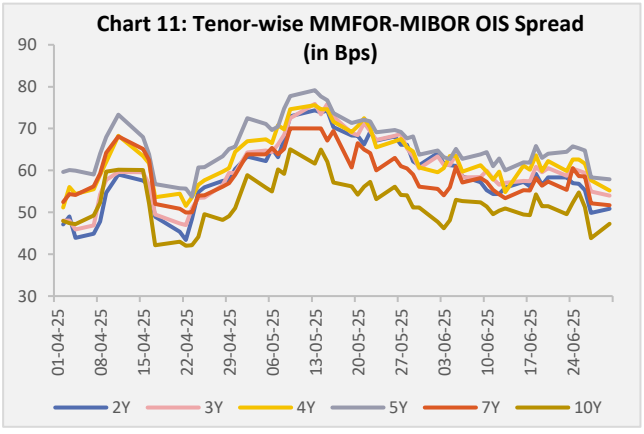
2.3 Modified MIFOR Market - Curve & Spreads

Between April and June 2025, the MMFOR curve steepened slightly beyond the 2-year tenor. During this time, 2-year rates declined marginally from 6.06% to 6.02%, while 10-year rates increased from 6.21% to 6.26%. The MMFOR curve closely tracked SOFR OIS rates, with this relationship especially evident in June. Throughout the period, tenor-wise term spreads remained positive. The MMFOR-MIFOR spreads were consistently positive.









Data Source: Refinitv

2.4 Modified MIFOR –Trading and Settlement Pattern

Trading volumes in the guaranteed segment of Modified MIFOR declined by 26% to ₹90,068 crore in the Apr-Jun quarter of 2025-26, compared with ₹1.21 lakh crore in the previous quarter. The total volume in the non-guaranteed segment exceeded that of the guaranteed settlement segment, standing at ₹93,200 crore. Foreign banks remained the most active participants in the MIFOR market. Volumes were highest in the 2-year tenor, followed by the 3-year and 5-year tenors, which recorded similar share in volumes.

Chart 12: Guaranteed and Non Guaranteed Trading Volumes in MMFOR (Rs Cr)

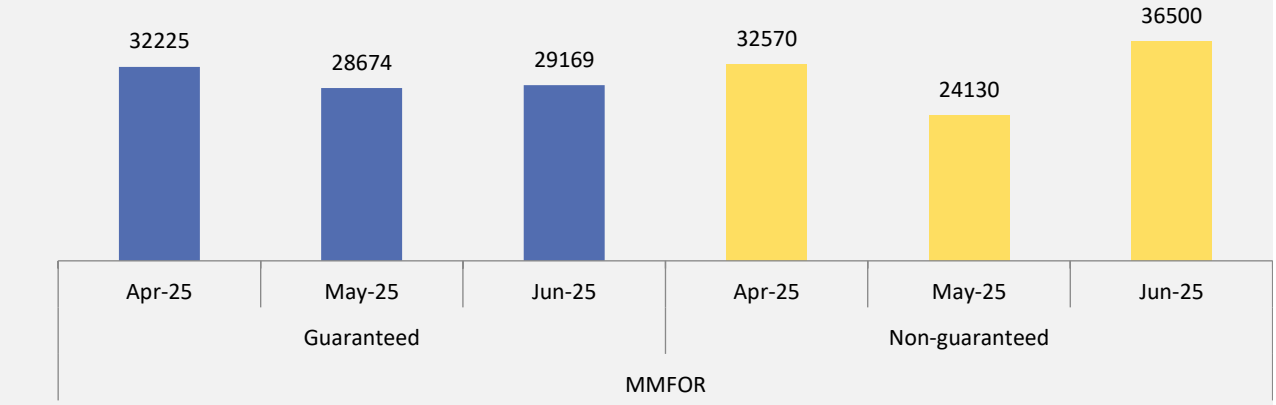


Chart 13: Tenor wise share MMFOR Volume breakup for Apr-Jun 2025

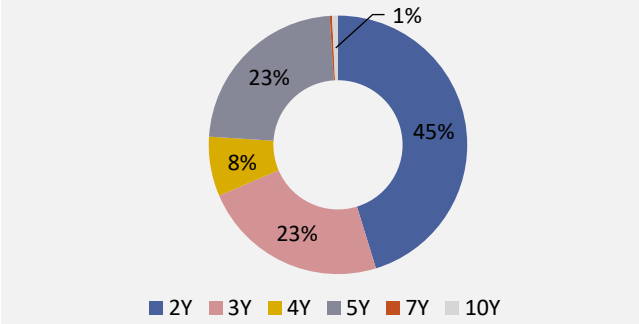
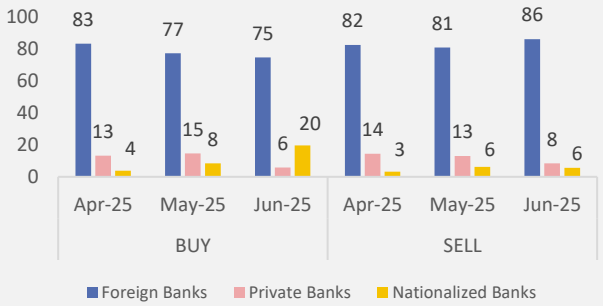


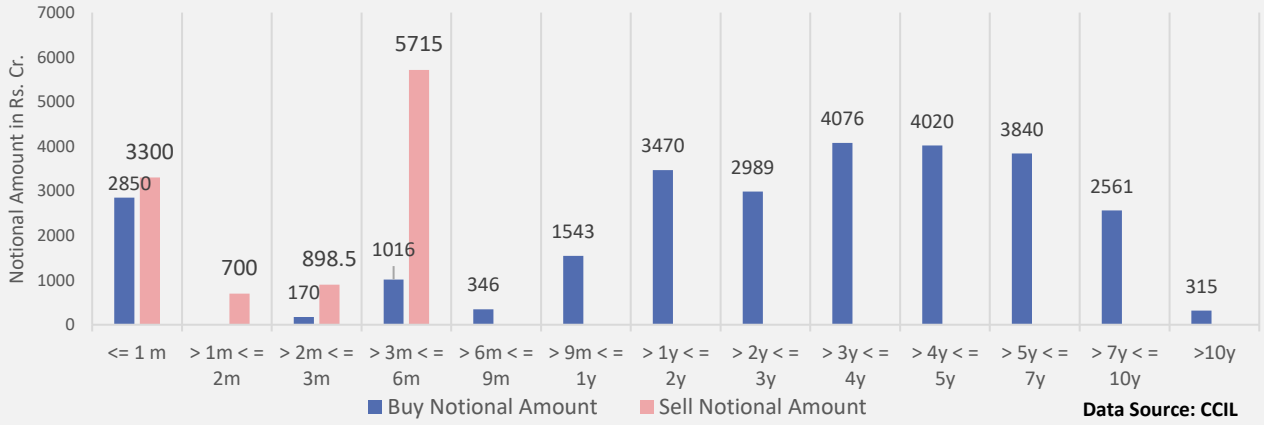
Chart 14: MMFOR Category-wise Traded (Notional) Amt Share (%) Apr-Jun 2025



Data Source: CCIL

2.5 Client Bond Forward Rate Agreements (FRA)

Chart 15: Tenor Bucket Wise Analysis of Client Bond FRAs in Apr-Jun 2025



Data Source: CCIL

Chart 16: Security Wise Client Bond FRA -Buy Side Notional Amount in Rs. Cr. (Apr-Jun 2025)

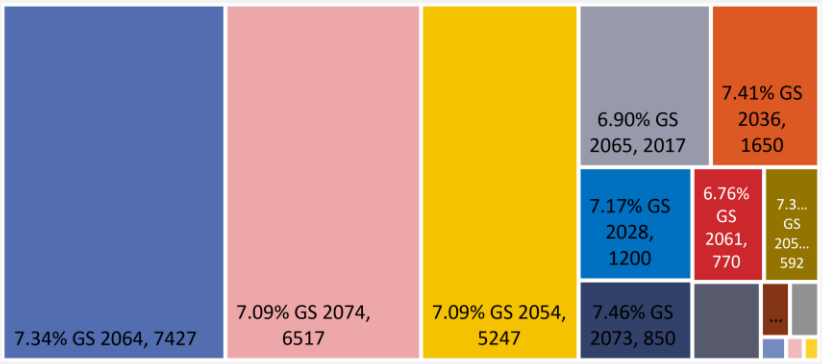
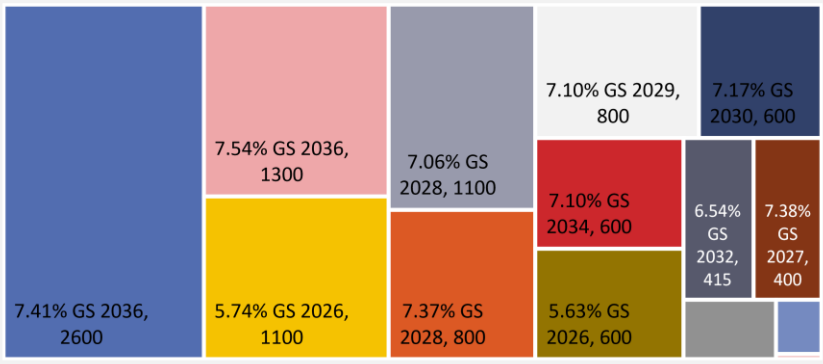


Chart 17: Security Wise Client Bond FRA -Sell Side Notional Amount in Rs. Cr. (Apr-Jun 2025)

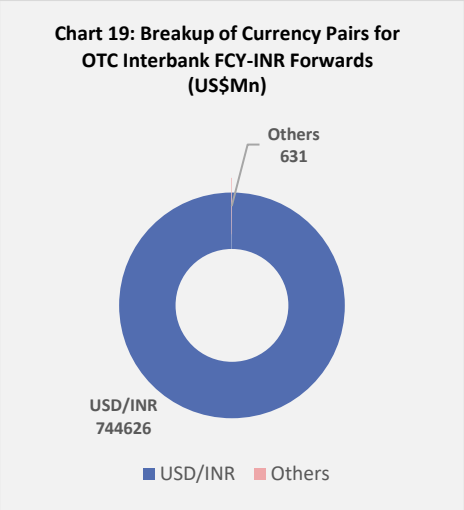


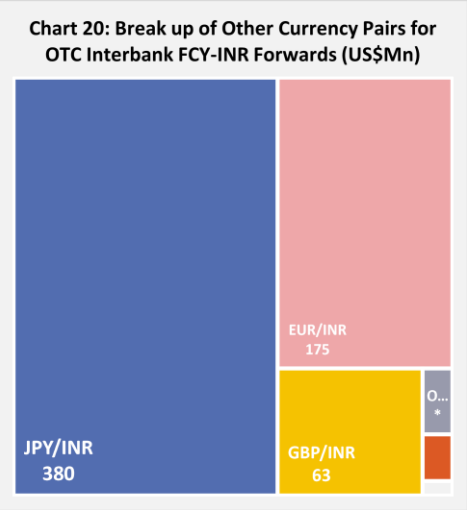
Data Source: CCIL

Based on Client trades reported to CCIL Trade Repository, on the Buy side, trading in Bond FRAs was dominated by tenors greater than 1 year, with the highest notional amount of Rs. 4076 Cr. being captured in >3 Year to <= 4 years tenor bucket, for the quarter ended June 2025. On the sell side, trading activity of Bond FRAs was largely concentrated in the <= I month and >3 and <= 6-month tenor buckets.

An ISIN wise analysis of the underlying instruments of Bond FRAs indicated that 7.34% GS 2064 and 7.09% GS 2074 were the top 2 securities on the buy side, while 7.41% GS 2036 and 7.54% GS 2036 were the top 2 securities on the sell side for the April-June quarter.

3.1 Trends across OTC Interbank FCY-INR Forwards





Data Source: CCIL. All values converted to USD Millions from Base Currency.

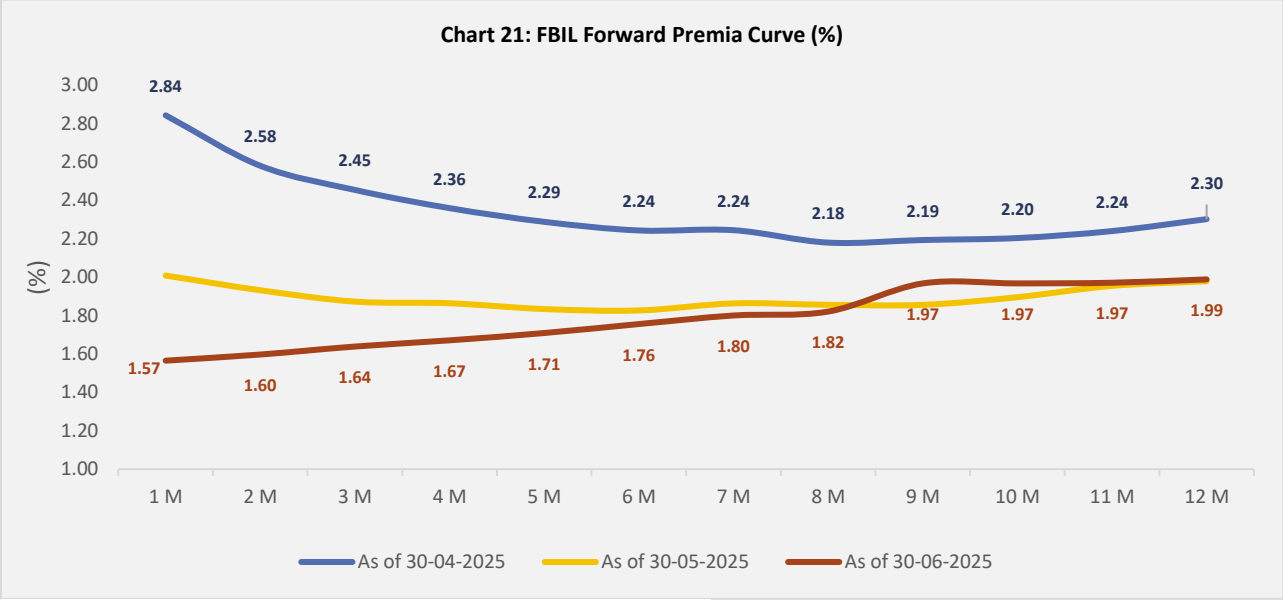
Trading volume in the OTC Interbank FCY-INR Forwards market edged lower compared to the previous quarter , Total quarterly volume stood at USD 745 billion, lower than the USD 833 billion recorded in the preceding quarter, with the volumes peaking at USD 266 billion in the month of June. The dominance of the U.S. dollar was evident, with USD/INR accounting for 99% of total trading activity, while other currency pairs—such as JPY/INR, EUR/INR, and GBP/INR—made up the remainder.

An analysis of USD-INR Interbank Forward transactions executed through Spot-Forward swaps revealed that the 12-month, 1-month, and 2-month contracts held the largest market share. The average share of the 1-month and 2-month tenors stood at 19%, while the 12-month tenor accounted for 22%.

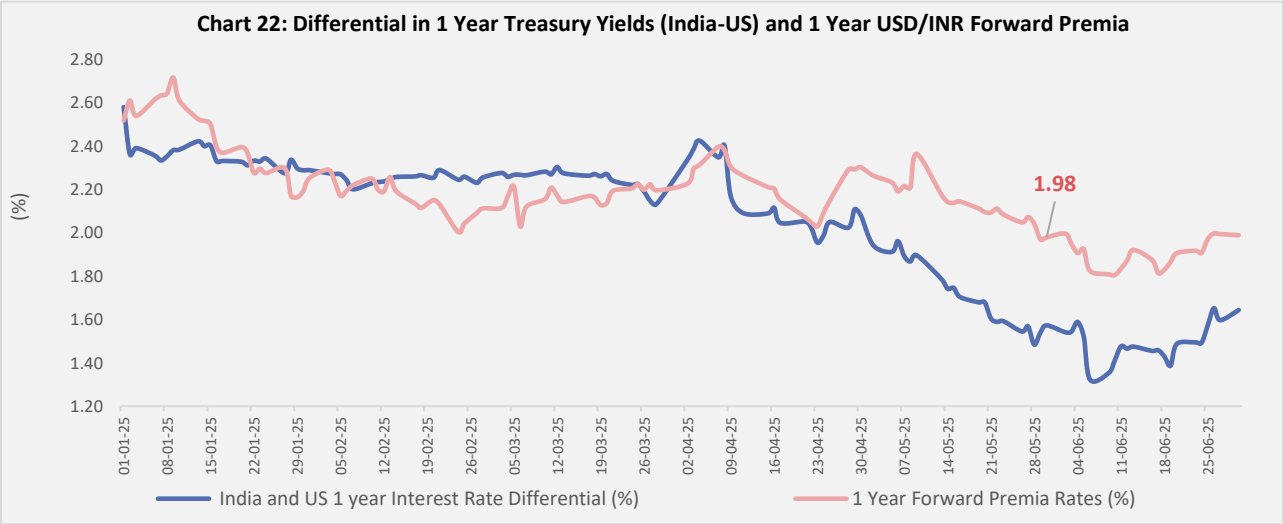
Table 1: Tenor-wise Share of USD-INR Interbank Forward transaction undertaken through swaps (Spot-Forward)

	Month End Spot-Forward Currency Swaps											
	1M	2M	3M	4M	5M	6M	7M	8M	9M	10M	11M	12M
Apr-25	20.56%	18.34%	8.88%	7.93%	3.32%	7.97%	2.50%	0.94%	1.44%	1.05%	2.03%	25.03%
May-25	15.73%	22.41%	5.74%	9.53%	3.97%	3.98%	5.86%	2.25%	2.27%	2.67%	3.87%	21.72%
Jun-25	19.72%	15.98%	11.85%	8.88%	3.98%	6.86%	4.69%	0.99%	2.62%	2.05%	1.77%	20.61%

3.2 USD/INR Forward Premia Curve Movement



Data Source: FBIL



Data Source: FBIL, CCIL and Investing.com

In the first quarter of 2025, the USD/INR forward premia rates experienced a clear downward shift across all tenors, accompanied by a noticeable flattening of the curve. The curve showed a steeper decline at the short end, with short-term premia falling more sharply than longer tenors. Over this period, the spread between the 12-month and 1-month premia narrowed significantly and eventually turned positive,

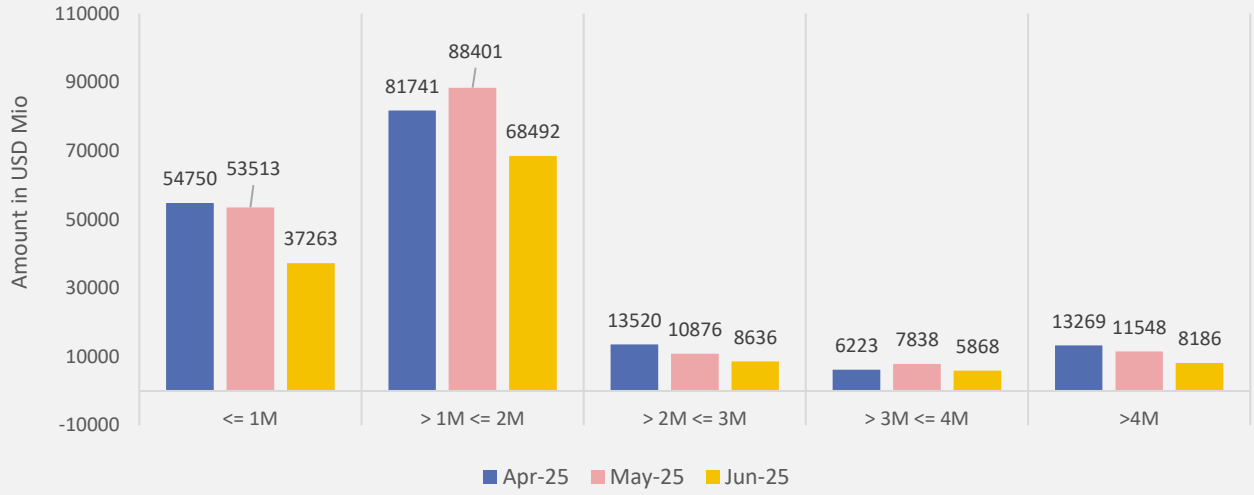
In line with the overall trend, the USD/INR forward premia declined during the month of April. By the end of the month, the 1-year forward premium had fallen to 2.30%. This movement occurred as the RBI implemented a 25-basis point rate cut during this period, leading to a narrower interest rate gap between India and the US., and driving down forward premia.

In May, the USD/INR 1-year forward premium further declined to 1.98%, reflecting the ongoing impact of diverging inflation trends between the two countries. India's retail inflation dropped to 2.82% in May and was expected to fall below 2% in June, prompting expectations of another interest rate cut by the RBI. In contrast, U.S. consumer prices surged due to the impact of the ongoing tariffs trade wars, leading to expectations that the Federal Reserve would maintain its current policy stance.

By mid of June, the 1-year forward premium had declined to 1.8%, following the RBI's surprise 50 basis point rate cut. Amidst benign inflation and the need to support growth, the RBI's larger-than-expected rate cut exceeded economists' forecasts of 25 basis points. Additionally, the central bank eased liquidity by lowering the cash reserve ratio for banks. This move, along with global economic uncertainties, further compressed the interest rate differential and reduced the forward premium. This reduced the rupee's carry advantage, which had previously supported its strength in the currency markets.

3.3 *Interbank NDF Volumes and Tenor-wise Breakup*

Chart 23: USD/INR NDF Notional Amount in NDF Market



Data Source: CCIL

Non-deliverable forwards (NDFs)—offshore, dollar-settled currency forwards used by investors to hedge their exposure—edged lower from the record volume levels seen in the previous quarter. Volumes declined by 11% quarter-on-quarter but jumped nearly 40% year-on-year to USD 470.1 billion in the April–June quarter. Notably, executed trades were concentrated in maturities of less than one month and between one to two months.

3.4 Trends across OTC Interbank FCY-INR Options

Chart 24: Traded volume for OTC Interbank FCY-INR Options (US$Mn)

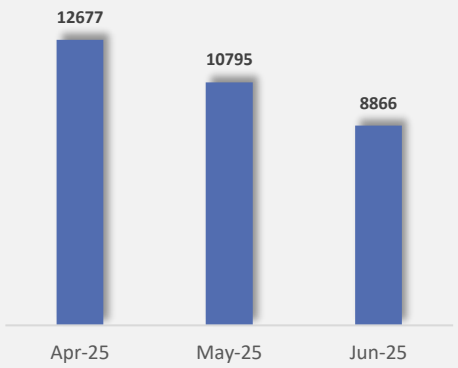


Chart 25: Breakup of Currency Pairs for OTC Interbank FCY-INR Options (US$Mn)

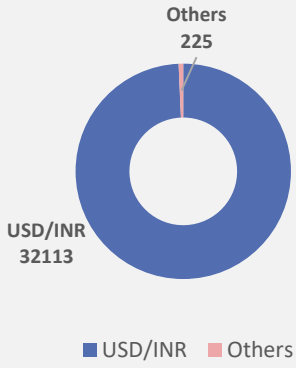
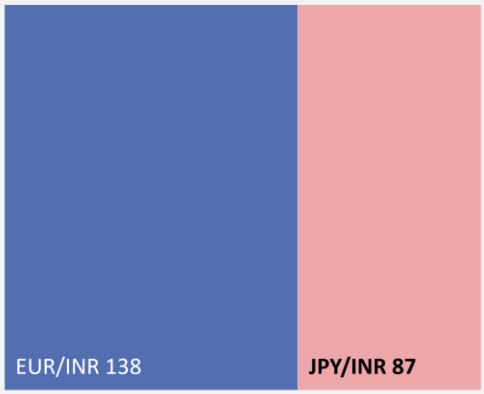
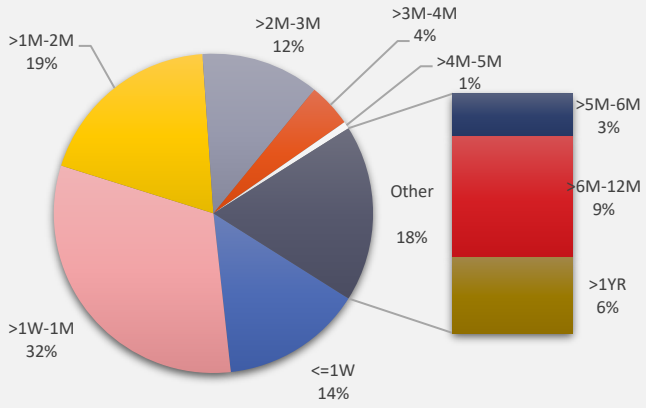


Chart 26: Break up of Other Currency Pairs for OTC Interbank FCY-INR Options (US$Mn)



Data Source: CCIL. All values converted to USD Millions from Base Currency.

Chart 27: Share of Traded Tenors in Interbank Options Apr-Jun 2025



The OTC interbank FCY-INR options segment witnessed a 22% decline in volumes on a sequential basis, reaching USD 32,338 million in the April–June quarter. Volumes peaked in April at USD 12,677 million and gradually declined in the subsequent months. The USD/INR currency pair dominated the segment, accounting for the vast majority of the total volume—USD 32,113 million—while options involving other currency pairs contributed only USD 225 million. An analysis of traded tenors shows that market participants preferred options, with tenors 1 week to 1 month (32%) and 1 month to 2 months (19%). The distribution of average implied volatility (IV) for options indicates that the April–June quarter recorded higher average IV (call and put) compared to the previous quarter. This increase can be attributed to domestic and geopolitical tensions that emerged during the period.

Chart 28: Distribution of Average IV of Call Options

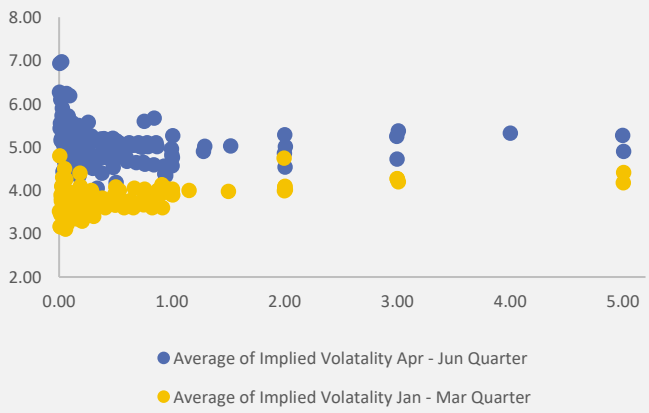
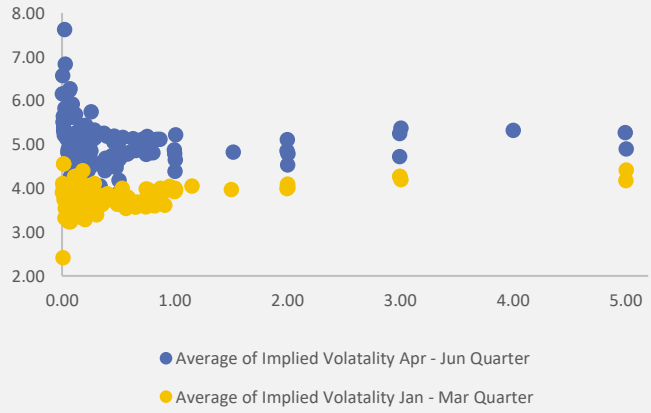
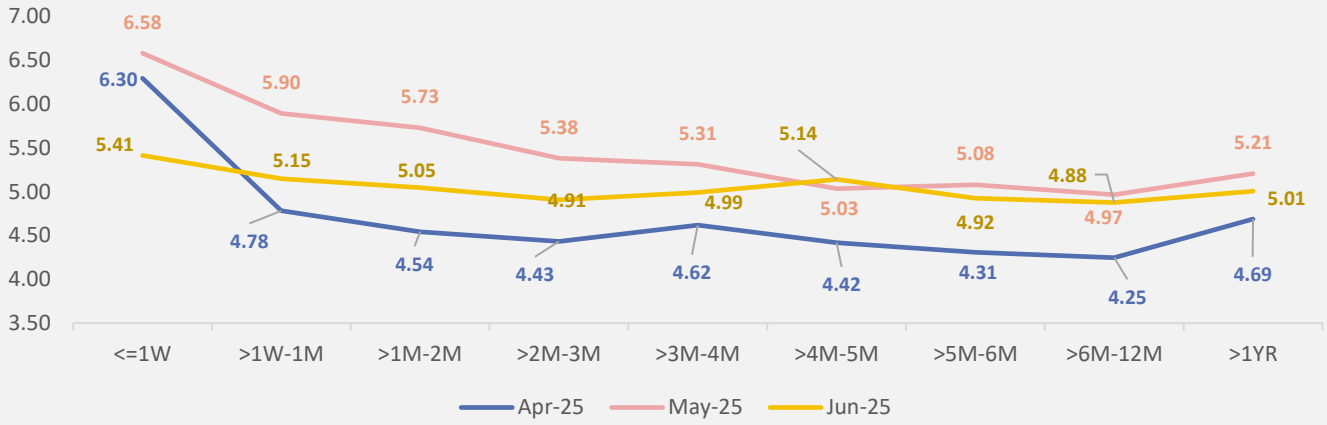


Chart 29: Distribution of Average IV of Put Options



Data Source: CCIL

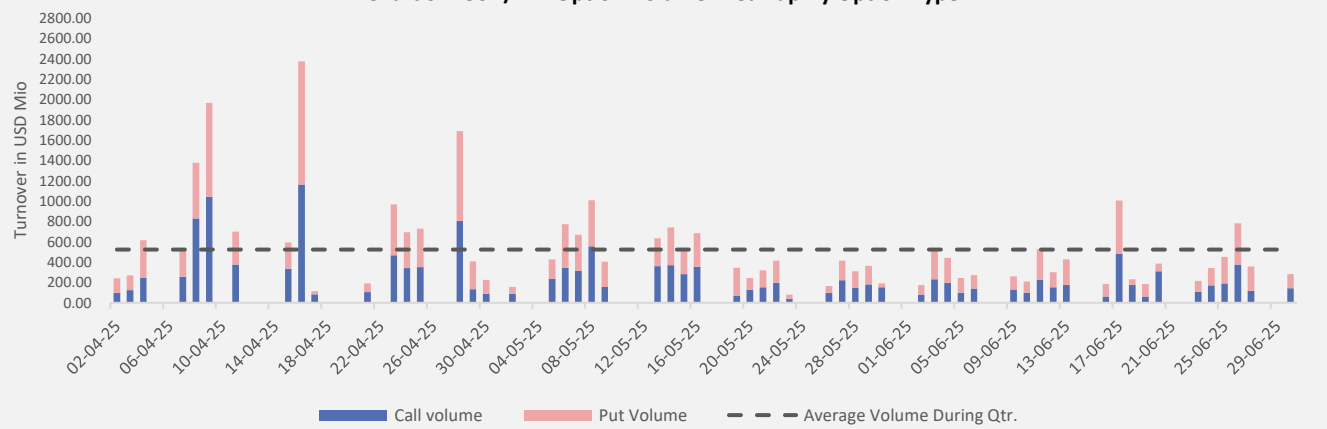
Chart 30: Tenor-wise Average Implied Volatility of OTC Interbank FCY-INR Options (%)



Data Source: CCIL

A tenor-wise analysis of the average implied volatility revealed that the near end of the average volatility curve was higher at the beginning of the quarter but shifted lower by the final month. The near end of the average implied volatility curve in May remained across tenors compared with April. However, by the last month of the quarter, the average volatility at the near end had subsided, as reflected in the downward shift of the curve, indicating that market participants perceived lower uncertainty and risk in the near term.

Chart 31: USD/INR Option Volume Break up By Option Type



Data Source: CCIL

Daily average volumes for OTC USD/INR options during the April–June quarter were lower compared to the previous quarter, reflecting subdued trading activity. The daily average volume for the April–June quarter stood at USD 523 million, down from the USD 708 million average recorded in the previous quarter. The highest single-day volume was observed on April 16, 2025, reaching USD 2,375 million.

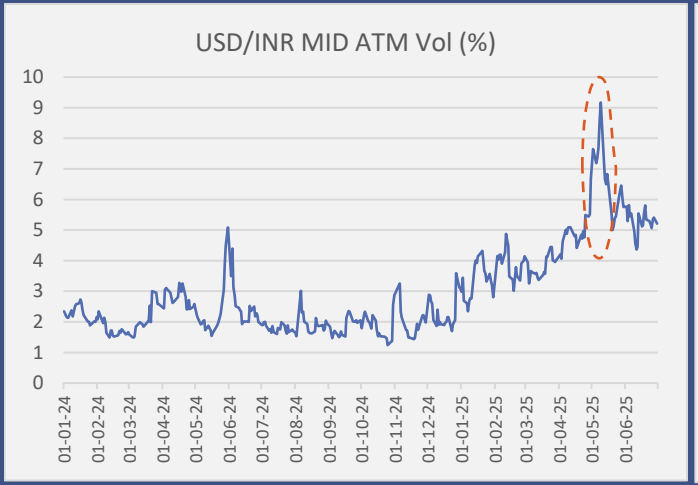
Reading the Currency Risk in 2025: What USD/INR Implied Volatility Tells Us About Market Sentiment

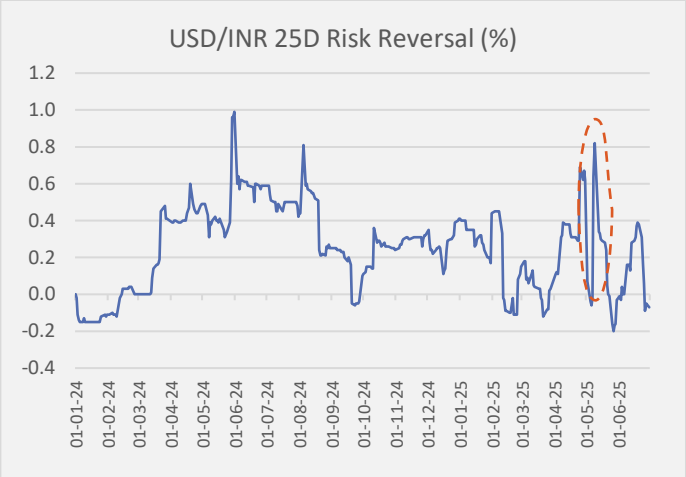
The USD/INR options implied volatility has proven to be a reliable proxy for gauging investor sentiment and anticipated currency risk in recent months. A series of geopolitical events—including the global trade wars, India-Pakistan conflict, and the flare-ups in the Middle East—have left a noticeable imprint on the USD/INR rate in 2025. The options market quickly priced in these risks, as reflected in key metrics such as At-the-Money Implied Volatility (ATM Vol) and Risk Reversals (RR).

For example, since the beginning of 2025, the USD/INR 1-week ATM Volatility, which seldom breached 4% in the previous by mid-January and began to tread upwards , even crossing 5% on April 11, as the uncertainty around tariffs continued to exert pressure on the rupee.

This trend intensified in May, with implied volatility peaking at 9.17% on May 9, following reports of military engagements and cross-border retaliations amid the India-Pakistan conflict. Concurrently, the 25-delta RR reached 0.82% on May 9. This highly positive skew in RR indicates that the market priced in a higher risk for USD/INR out of the money calls then puts, reflecting expectations of further rupee depreciation.

Following the announcement of a ceasefire between India and Pakistan in mid-May, USD/INR implied volatility moderated. The 1-week ATM Volatility dropped from 9.17% on May 9 to 6.8% by mid-June, while RR values retracted from 0.82 to the 0.3 range, signaling a reduction in directional risk.





In contrast, the market's reaction to the U.S. airstrikes on Iran's nuclear facilities in late June 2025 was notably more muted. Despite the geopolitical tension, implied volatility remained anchored between 5.3% and 5.8%, and 25-delta RR readings hovered close to neutral levels around 0.03%.

The market response to these geopolitical events tells an important story—each event triggered a distinct reaction in volatility metrics, reflecting the market's assessment of risk. The market reaction to tariffs led to an overall and more sustained increase in the levels of ATM volatility, indicating concerns over a longer impact on the currency. In comparison, the India-Pakistan conflict, though relatively short-lived, exerted a sharper but temporary spike in volatility metrics, reflecting immediate fears of escalation. On the other hand, while the Middle East tensions naturally raised concerns about potential oil supply disruptions—a sensitive factor for India as a major oil importer—the market appeared less convinced of a sustained escalation, resulting in a subdued ATM and RR levels.

3.5 Volatility Smile across tenors in OTC Interbank FCY-INR Options

Chart 32: Implied Volatility Curve (as on 30-Apr-25)

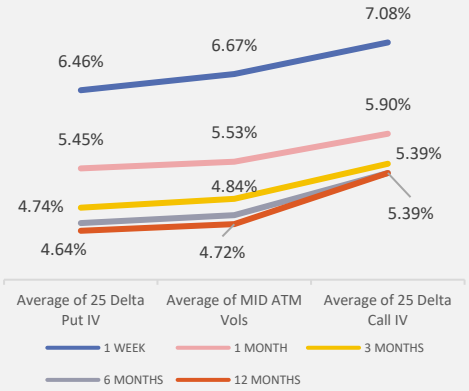


Chart 33: Implied Volatility Curve (as on 30-May-2025)

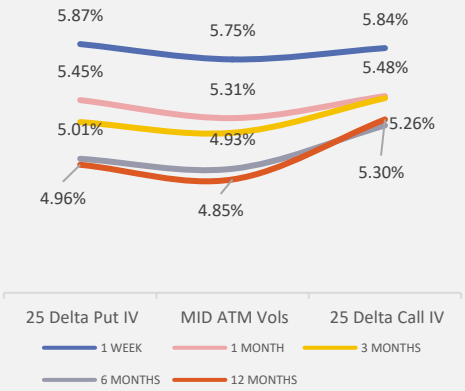
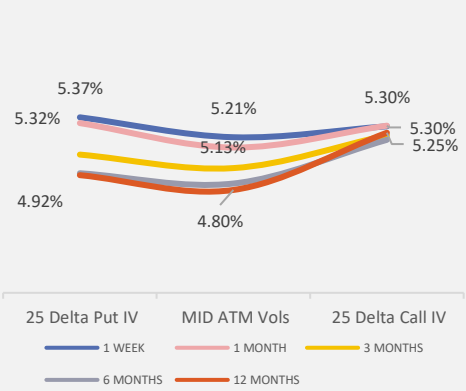


Chart 34: Implied Volatility Curve (as on 30-Jun-2025)



Data Source: ATM Vol. RR and STR from FBIL. Charts based authors' Calculations

The volatility smile, which reflects implied volatilities across strike prices, was elevated in the first month of the quarter, particularly due to uncertainty around emerging geopolitical risks. As the quarter progressed, the volatility smile moderated and eventually flattened by the end of the period, indicating lower perceived market risks. Meanwhile, the risk reversal (RR)—measured as the difference between the implied volatility (IV) of the 25-delta call and the 25-delta put—was higher in the first half of the month, indicating that OTM call options were priced higher than puts. As the quarter advanced, RR levels declined and briefly turned negative for the 1-week and 1-month tenors. This suggested that the cost of hedging against rupee appreciation had increased.

3.6 Trends across OTC Interbank FCY-INR Cross Currency Swap

Chart 35: Traded volume for OTC Interbank FCY-INR Swaps (US$Mn)

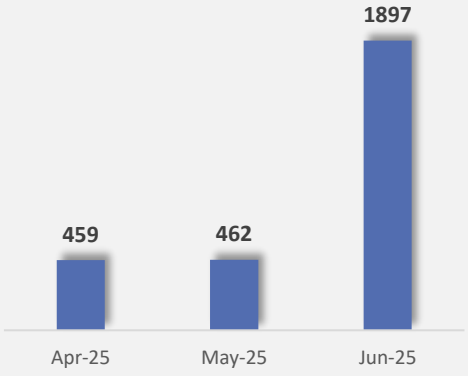


Chart 36: Breakup of Currency Pairs for OTC Interbank FCY-INR Swaps (US$Mn)

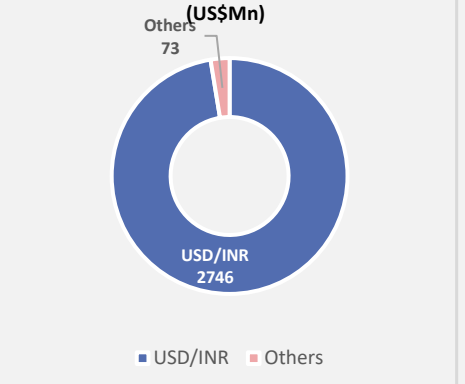


Chart 37: Break up of Other Currency Pairs for OTC Interbank FCY-INR Swaps (US$Mn)

Data Source: CCIL. All values converted to USD Millions from Base Currency

Interbank OTC FCY–INR cross-currency swap volumes declined 35% from the previous quarter, reflecting subdued trading activity. Quarterly volumes stood at a modest USD 2,819 million, with activity peaking at USD 1,897 million in the final month of the quarter. The bulk of transactions were in USD/INR swaps, which accounted for USD 2,746 million, while other currency pairs—primarily JPY/INR and EUR/INR—contributed a combined USD 73 million.

3.7 OTC Interbank FCY-FCY Forex Derivatives

A product wise analysis of OTC Interbank FCY-FCY Forex Derivatives is provided below.

Chart 38: Traded volume for OTC Interbank FCY-FCY Forwards (US$Mn)

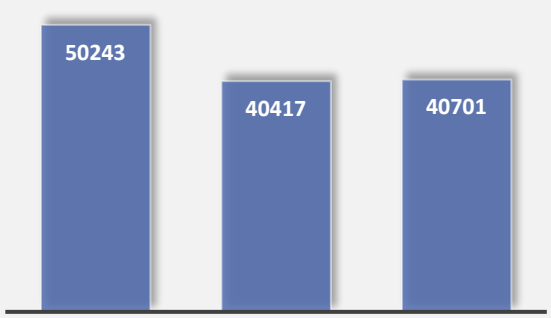


Chart 39: Traded volume for OTC Interbank FCY-FCY Options (US$Mn)

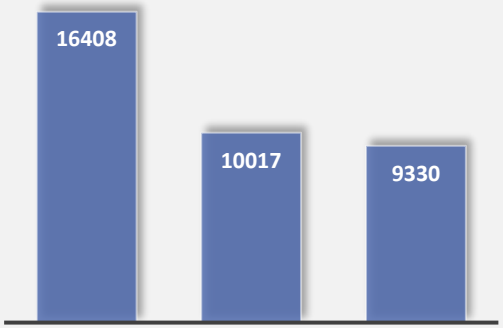


Chart 40: Traded volume for OTC Interbank FCY-FCY Swaps (US$Mn)

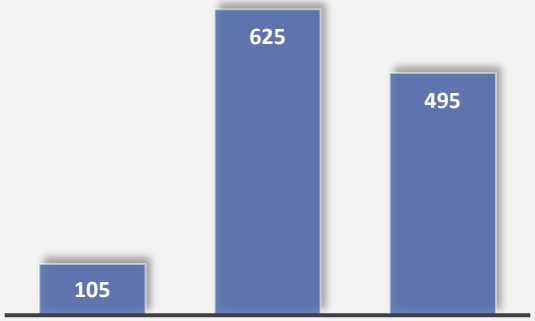


Chart 41: Break up of Currency Pairs for OTC Interbank FCY-FCY Forwards (US$Mn)

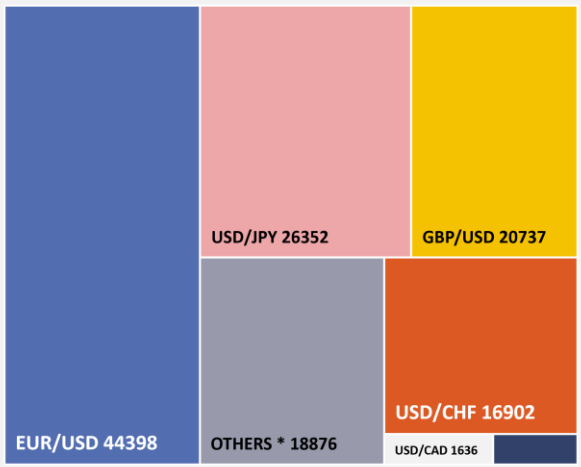


Chart 42: Break up of Currency Pairs for OTC Interbank FCY-FCY Options (US$Mn)

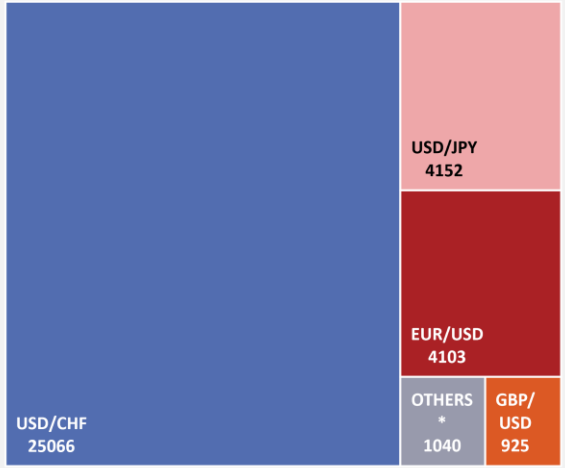
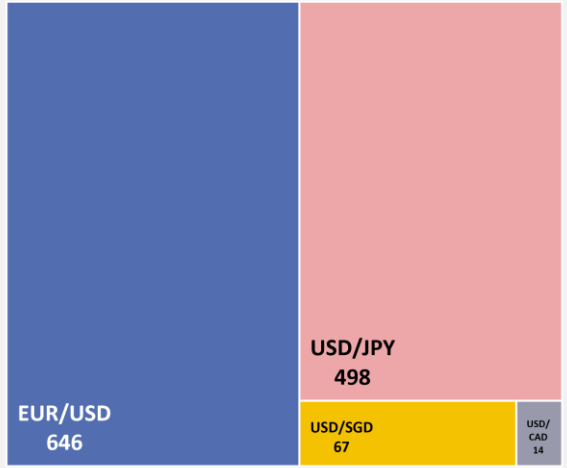


Chart 43: Break up of Currency Pairs for OTC Interbank FCY-FCY Swaps (US$Mn)



Data Source: CCIL. All values converted to USD Millions from Base Currency

3.8 OTC FCY-INR and FCY-FCY Client Forex Derivatives

A snapshot of Turnover in OTC Client Forex Derivatives is posted below:

Chart 44: Traded volume for OTC Client FCY-INR Forwards (US$Mn)

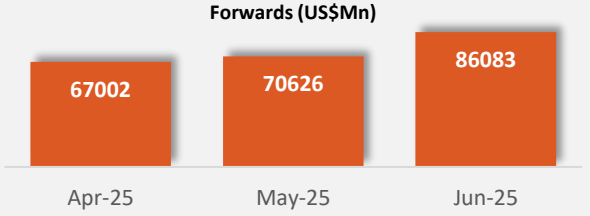


Chart 45: Traded volume for OTC Client FCY-INR Options (US$Mn)

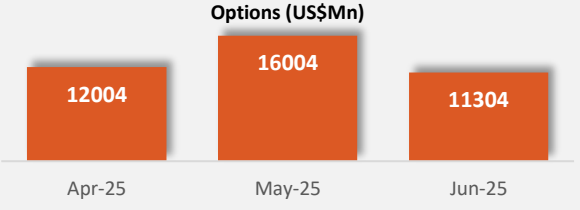


Chart 46: Traded volume for OTC Client FCY-INR Swaps (US$Mn)

Chart 47: Breakup of Currency Pairs for OTC Client FCY-INR Forwards (US$Mn)

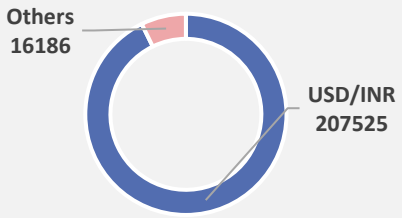


Chart 48: Breakup of Currency Pairs for OTC Client FCY-INR Options (US$Mn)

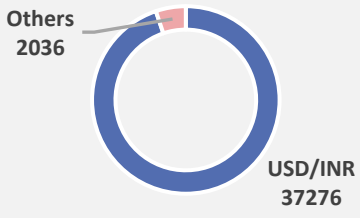


Chart 49: Breakup of Currency Pairs for OTC Client FCY-INR Swaps (US$Mn)

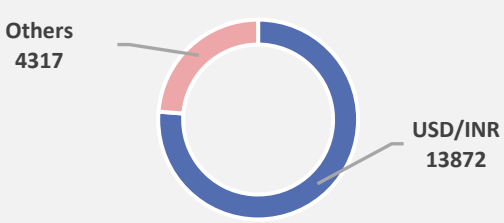


Chart 50: Traded volume for OTC Client FCY-FCY Forwards (US$Mn)

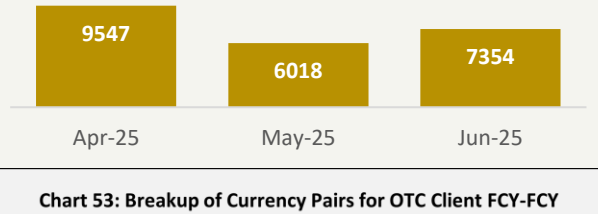


Chart 51: Traded volume for OTC Client FCY-FCY Options (US$Mn)

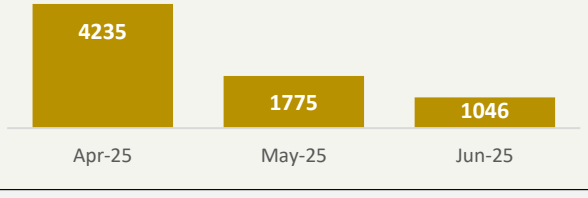


Chart 52: Traded volume for OTC Client FCY-FCY Swaps (US$Mn)

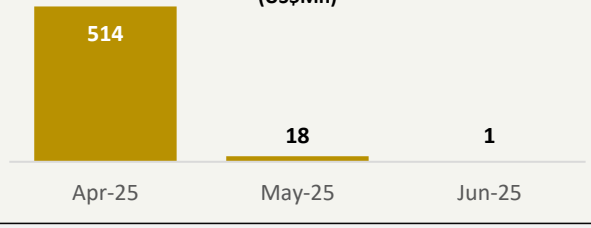


Chart 53: Breakup of Currency Pairs for OTC Client FCY-FCY Forwards (US$Mn)

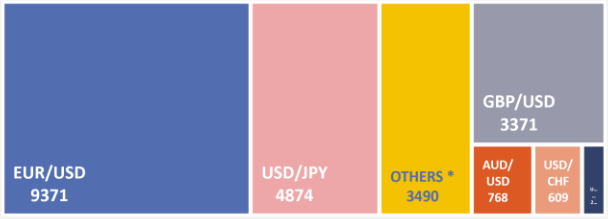


Chart 54: Break up of Other Currency Pairs for OTC Client FCY-FCY Options (US$Mn)

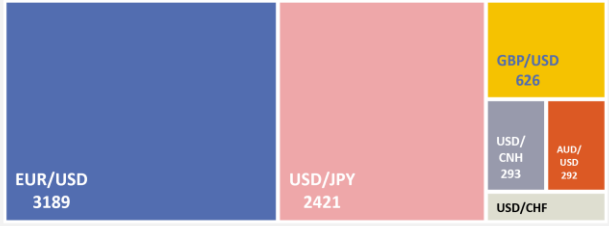


Chart 55: Breakup of Currency Pairs for OTC Client FCY-FCY Swaps (US$Mn)

Data Source: CCIL. All values converted to USD Millions from Base Currency

4. Global Derivatives Market

4.1 Outstanding Notional Amount and GMV in Global OTC Derivatives Market

According to data from the BIS, the notional amount of the global OTC derivatives market experienced a slight decline, falling to USD 687.34 trillion in the second half of 2024 from USD 717.38 trillion recorded in the first half of 2024. The interest rate derivatives segment constituted the largest portion, accounting for USD 548.34 trillion of the total outstanding notional amount, followed by foreign exchange derivatives and equity derivatives markets, which amounted to USD 130.09 trillion and USD 8.90 trillion, respectively.

Chart 56: Outstanding Notional Amount (Amount in USD Trillion)

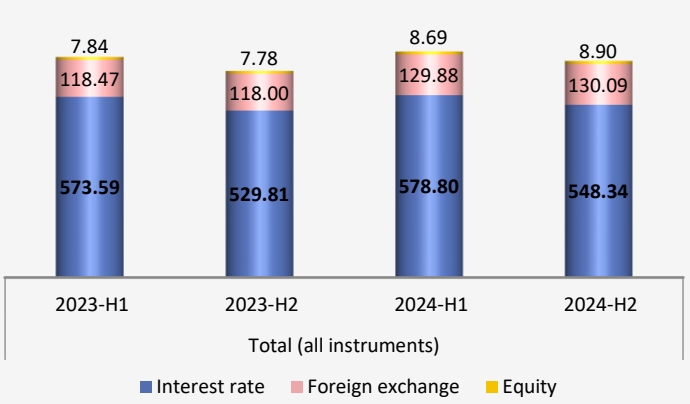
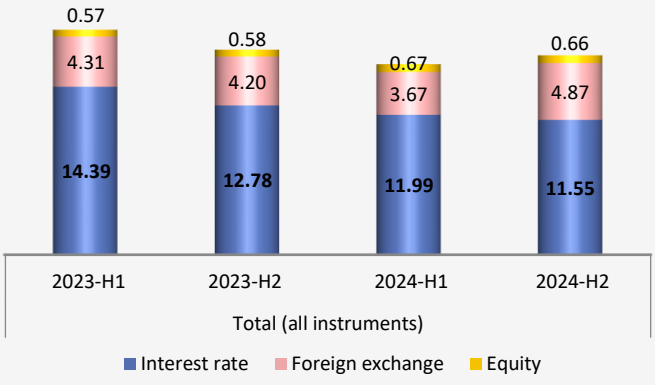


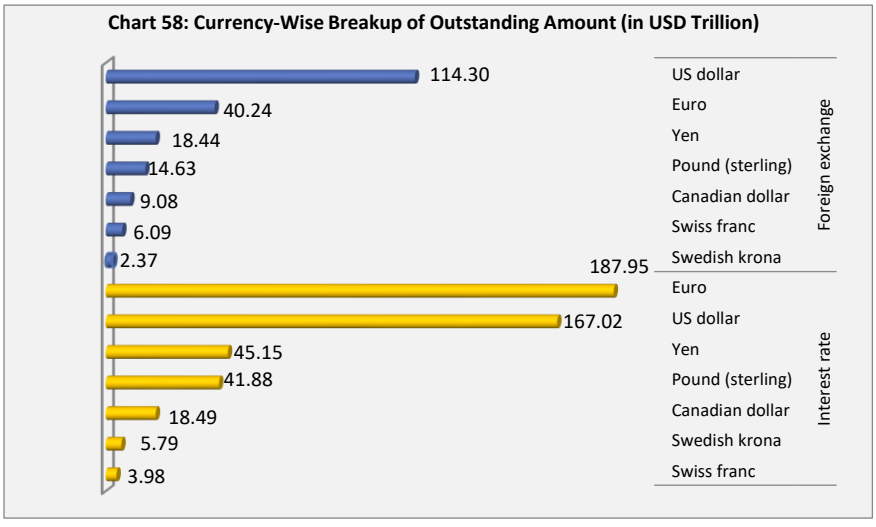
Chart 57: Gross Market Value (Amount in USD Trillion)



Data Source: BIS

4.2 Currency Wise Breakup of Outstanding Amount in the Global OTC Derivatives Market

Chart 58: Currency-Wise Breakup of Outstanding Amount (in USD Trillion)



A currency-wise analysis of the outstanding amounts in the global derivatives markets reveals that US dollar-denominated foreign exchange derivatives accounted for a market share of USD 114.30 trillion, followed by Euro-denominated foreign exchange contracts totalling USD 40.24 trillion in the second half of 2024.

In the interest rate derivatives segment, Euro- and US-denominated contracts represented approximately USD 187.95 trillion and USD 167.02 trillion, respectively, of the total global outstanding volumes.

Data Source: BIS

4.3 Instrument-Wise Breakup of Outstanding Amount in Global OTC Market

An instrument-wise breakdown of the global derivatives outstanding positions in the OTC market for the second half of 2024 indicates that the foreign exchange derivatives market is predominantly driven by outright forwards and FX swap contracts, totaling USD 72.83 trillion. This is followed by currency swaps and FX options. In the interest rate derivatives segment, market participants hold the largest outstanding positions in interest rate swaps, amounting to USD 446.87 trillion, followed by forward rate agreements at USD 55.11 trillion. Outstanding equity derivatives positions include equity options amounting to USD 4.23 trillion and equity forwards and swaps amounting to USD 4.67 trillion.

4. Global Derivatives Market

Chart 59: Instrument-Wise FX Derivatives (USD Trillion)

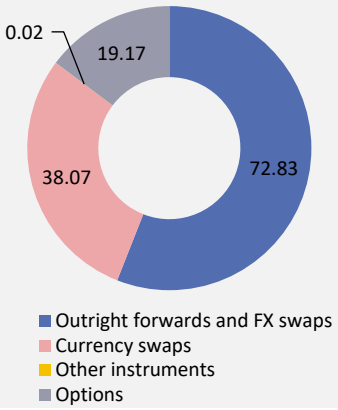


Chart 60: Instrument-Wise Interest Rate Derivatives (USD Trillion)

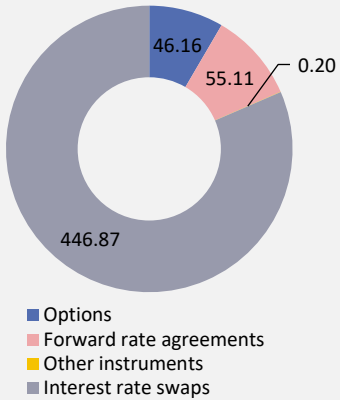
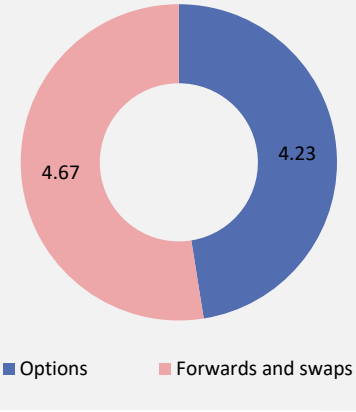


Chart 61: Instrument-Wise Equity Derivatives (USD Trillion)



Data Source: BIS

4.4 Global Exchange Traded Derivatives

Table 2: Market Wise Open Interest of Exchange Traded Derivatives (in billions)			
	Foreign exchange	**Interest rate**	
Product		**Short-term**	**Long-term**
Futures	353	41111	3749
Options	149	54681	705

Data Source: BIS

The global exchange-traded derivatives market has witnessed significant trading activity in interest rate derivatives, particularly within short-term tenors. Open interest (OI) in interest rate futures and options for the short term stood at 41,111 billion and 54,681 billion, respectively, during the period from January to March 2025.

Similarly, futures and options with tenors exceeding one year recorded an open interest (OI) of 3,749 billion and 705 billion, respectively, during the quarter. Currency-wise, exchange-traded derivatives are predominantly denominated in US dollars and the Euro. The open interest for US dollar foreign exchange derivatives stood at 481.94 billion, while that for US dollar interest rate derivatives amounted to 66,292.86 billion during the January–March 2025 period.

Chart 62: Currency Wise Open Interest Exchange Traded FX Derivatives (in Billons)

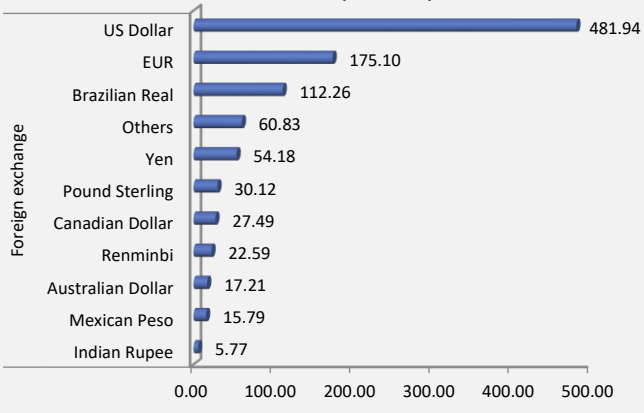
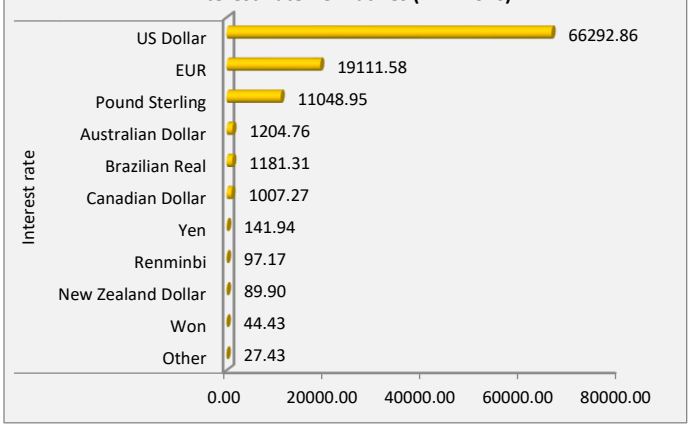


Chart 63: Currency Wise Open Interest Exchange Traded Interest Rate Derivatives (in Billions)



Data Source: BIS

Examining the Volatility in MIBOR OIS Rates: Some Stylized Facts

By Manoel Pacheco[¥]

1. Background

The Mumbai Interbank Outright Rate based Overnight Index Swap (MIBOR OIS) market plays a crucial role in the interest rate derivatives market in India, as it reflects the market expectations regarding the direction of interest rates and provides cues on the market's perception of the future monetary policy rates set by the Reserve Bank of India (RBI).

The MIBOR is the interbank benchmark interest rate at which banks lend rupee funds to one another, on an unsecured basis. While the rate was initially calculated as a polled-based rate, it evolved to a transaction-based rate using call money market trades on the RBI's NDS-Call platform.

The MIBOR OIS contracts, which reference the MIBOR as their floating leg, can be traded bilaterally or via an electronic trading platform such as ASTROID. The ASTROID platform is operated by Clearcorp Dealing Systems (India) Ltd and provides an anonymous, centrally cleared, and fully transparent trading venue for MIBOR-based OIS contracts, enabling seamless trade execution and price discovery.

While monitoring the movement of MIBOR OIS rates is important, gaining insight into the volatility of these movements and the underlying factors driving this volatility is equally critical. Volatility is an inherent characteristic of any financial instrument. It reflects the degree of variation in prices or rates over time. It is influenced by a multitude of factors, including market sentiment, economic indicators, geopolitical events etc. Periods of heightened volatility often coincide with significant market events or sudden shifts in economic conditions, leading to increased uncertainty and risk. Conversely, periods of low volatility may indicate a stability or calm in the market at that point in time.

The volatility in MIBOR OIS rates reflects more than just market fluctuations; it reveals how participants interpret shifts in policy decisions, in the prevailing interest rate scenario, and in the evolving domestic macroeconomic scenario. It captures prevailing interest rate risk perception and the speed at which new information is absorbed into pricing.

This article, takes a closer look at the volatility of MIBOR-OIS rates. It analyses volatility across short and long-term maturities, how it evolves over time, and how it responds to key monetary policy announcements.

2. Data & Approach Adopted

This analysis draws from a dataset of daily MIBOR-OIS rates, spanning tenors from three months to five years, and covers the period from April 2018 through June 2025. The OIS rates are first converted into daily changes, which are calculated as the difference between the rate on each trading day with that of the previous day, *where R_t is the FBIL MIBOR OIS rate for the day t* . This is done to convert non-stationary series into stationary series, which are more suitable for volatility analysis.

$$\Delta R_t = R_t - R_{t-1}$$

[¥] *Manoel Pacheco is a Senior Manager in the Research Department of CCIL.*

Volatility is then estimated using a **22-day rolling standard deviation** of these daily changes as follows:

$$\sigma_t = \sqrt{\frac{1}{N-1}\sum_{i=t-N+1}^{t}(\Delta R_i - \bar{\Delta R})^2}$$

where N=22 and ΔR is the daily changes over the window. This captures how volatility evolves over a one-month horizons. The rolling standard deviation is then converted to an annualised volatility as:

$$\sigma_{\text{annual}} = \sigma_{\text{daily}} \times \sqrt{252}$$

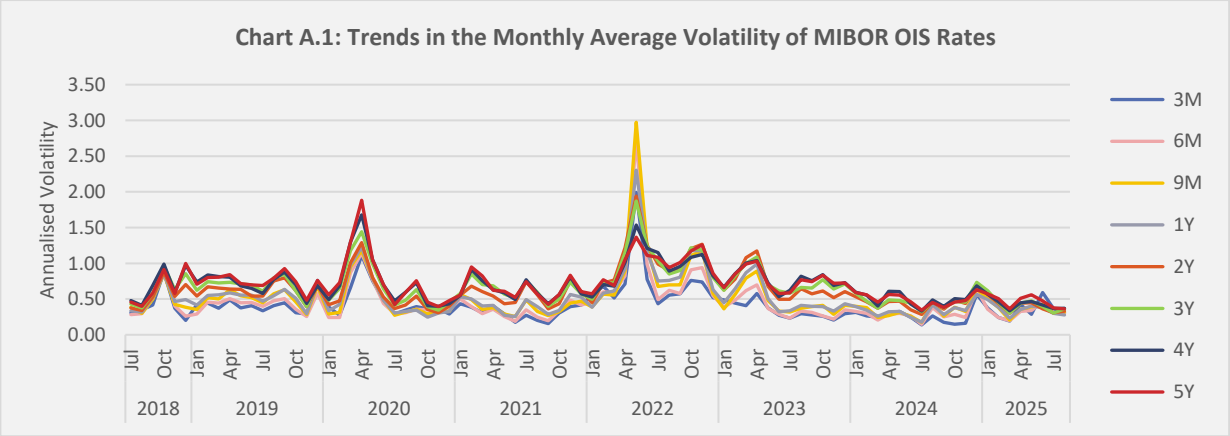
The study then examines how the volatility of MIBOR OIS rates behaves:

1. *Over Time* by tracking this volatility historically across different maturities and events that influence the monetary policy cycles.
2. *On Non-Policy Days versus Policy days* when RBI Monetary Policy Committee announces the policy rate.
3. *On Expected vs Surprise days*, i.e. the days when the policy outcomes are aligned with market forecasts ("expected") or deviated unexpectedly ("surprise").

3. Stylised Facts

3.1. Historical Trend in the Volatility of OIS Rates:

Over the period analysed, it was observed that the annualised volatility of MIBOR OIS rates generally fluctuated between 0.2 and 1.00. However, two distinct periods—one in March 2020 and the other in May 2022—deviated significantly from this range.



In March 2020, the RBI implemented a substantial 75 basis point repo rate cut, reducing it to 4.4%. This was accompanied by a reduction in the Cash Reserve Ratio (CRR) to 3%. These aggressive monetary measures aimed to mitigate the economic impact of the COVID-19 pandemic and restore market confidence. The substantial policy rate change led to heightened uncertainty and a sharper reaction in OIS rates to the change, resulting in elevated volatility levels. The average annualized volatility increased to 1.29 in March and further to 1.88% in April 2020.

In May 2022, the RBI surprised markets with an unscheduled 40 basis point rate hike, raising the repo rate to 4.4%. This move, amidst surging inflation and renewed tightening expectations, impacted the OIS rates. The abruptness of the decision, coupled with inflationary pressures, led to significant volatility, particularly at the longer end of the curve. The average annualized volatility peaked at 2.97%, reflecting the market's heightened reaction to the unexpected policy shift.

3.2. Volatility of OIS Rates Across the Term Structure:

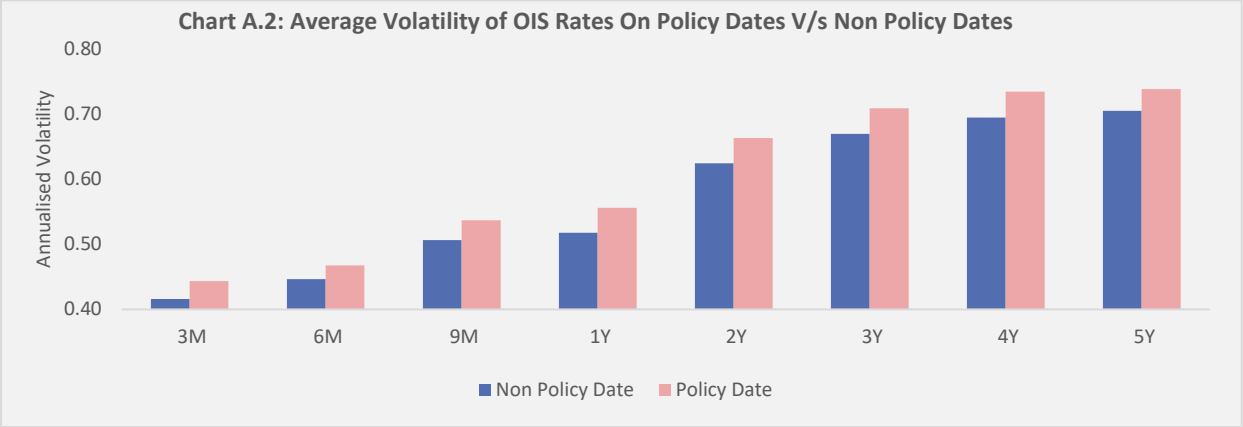
It was also observed that the average annualised volatility of MIBOR OIS rates increased with an increase in tenor during the period analysed. Short-term tenors, such as the 3-month and 6-month, demonstrated relatively stable volatility levels, averaging around 0.42 and 0.44, respectively. In contrast, longer tenors, such as 2 years to 5-years, displayed higher average volatilities, peaking at 1.03. Notably, the years 2020 and 2022 experienced significant volatility spikes across all maturities, with an increase in volatility in the longer tenors.

Table A.1: Average Annualized Volatility by Year

Tenor	2018	2019	2020	2021	2022	2023	2024	2025	Full Period
3M	0.42	0.42	0.46	0.31	0.73	0.34	0.26	0.36	0.42
6M	0.45	0.43	0.46	0.33	0.85	0.37	0.30	0.32	0.45
9M	0.48	0.51	0.48	0.39	0.96	0.46	0.35	0.37	0.51
1Y	0.50	0.53	0.49	0.41	0.94	0.50	0.34	0.37	0.52
2Y	0.56	0.62	0.56	0.56	1.03	0.68	0.45	0.41	0.63
3Y	0.64	0.68	0.66	0.62	1.02	0.73	0.47	0.43	0.67
4Y	0.69	0.71	0.72	0.64	0.98	0.77	0.51	0.44	0.70
5Y	0.66	0.74	0.75	0.65	0.99	0.76	0.49	0.48	0.71

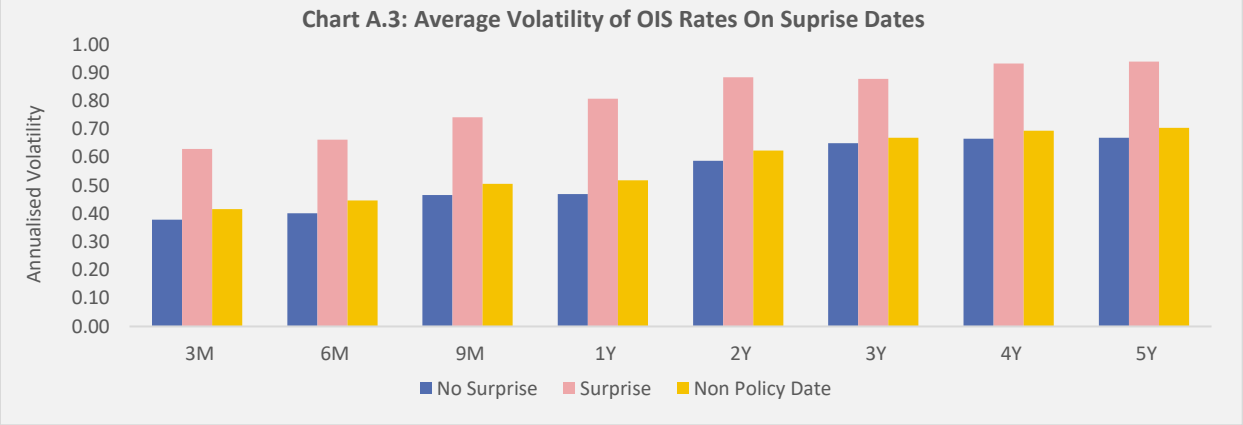
3.3. Volatility of OIS Rates on Policy Dates

The analysis further indicated that a higher volatility was observed on policy announcement days compared to non-policy days across all tenors. Specifically, the average annualized volatility increases from 0.42 to 0.44 for the 3-month tenor, from 0.45 to 0.47 for the 6-month, and from 0.51 to 0.54 for the 9-month. Longer maturities also exhibited a similar pattern with the volatility for the 1-year rising from 0.52 to 0.56, the 2-year from 0.62 to 0.66, 5-year tenors increasing from 0.70 to 0.74.



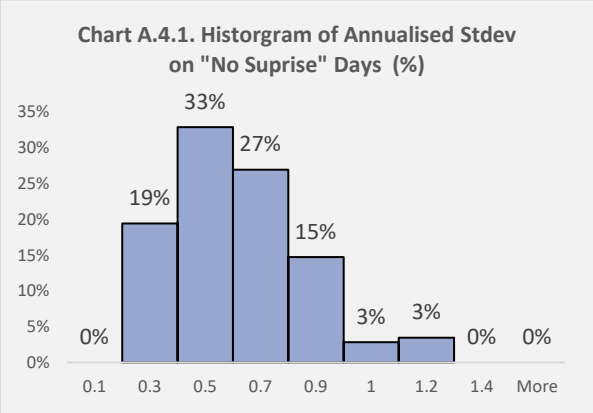
3.4. Volatility of OIS Rates on Policy Surprises

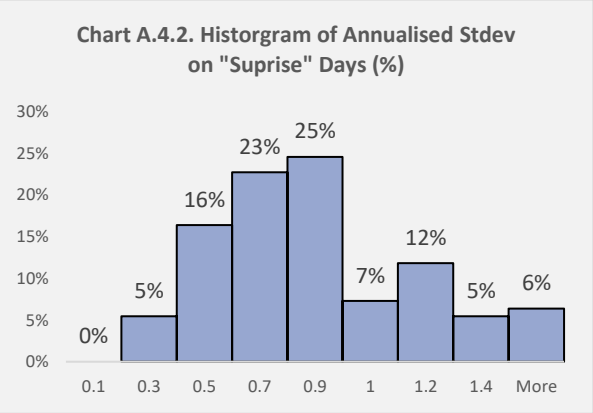
The average annualized volatility of MIBOR OIS rates also diverged depending on whether policy announcements aligned with or deviated from market expectations. On non-policy days, volatility remained modest across maturities—from 0.42 at the 3-month tenor up to 0.70 at the 5-year. When policy outcomes met market forecasts ("No Surprise" days), volatility was notably lower (between 0.38 and 0.67). But on "Surprise" days—when the market expectations deviated from RBI's policy rates—volatility surged significantly across the curve, especially at longer tenors: from 0.63 for 3-month to a heightened 0.94 for the 5-year.



This indicated that unexpected policy deviations trigger reassessments in rate expectations, leading to sharper volatility in OIS markets. A more recent example of the impact of a policy surprise was on June 6, 2025, when the RBI surprised market with a 50-basis point cut in the repo rate to 5.50% along with a reduction in the CRR by 100 basis points to 3%. Additionally, RBI shifted its policy stance from 'accommodative' to 'neutral',. The unexpected nature of these measures led to a significant spike in annualized volatility in OIS rates, particularly in the 1-month tenor, which surged to 1.10, its highest since 2022.

A comparison of the histogram of the annualized volatility numbers across tenors split between “Surprise” days and “No Surprise” days, concurs with the earlier findings. On "No Surprise" days volatility remains relatively contained. Approximately 94% of observations fall within the 0.3 to 0.9 bucket. A volatility above 1.0 was rare on these days.





In contrast, on "Surprise" days—when the RBI's decisions deviated from market forecasts—the distribution of volatility was skewed to the right, towards higher volatility buckets. Around 69% of the observations fell within the 0.3 to 0.9 range, while nearly 31% fell above the 0.9 mark.

4. Concluding Remarks

Overall, the volatility of MIBOR OIS rates exhibits distinct patterns across the term structure, over time, and around key policy events. Volatility tends to rise with maturity, reflecting greater uncertainty at longer tenors. It also spikes noticeably on policy announcement days, especially when the outcomes differ from market expectations.

These findings highlight the role of MIBOR OIS as a tool to gauge of market uncertainty. For both policymakers and market participants, tracking volatility of OIS trends provides insights into how monetary policy signals are received and how the markets reacts across the curve.

Looking ahead, further research could delve deeper into the underlying drivers of these volatility patterns. Factors such as liquidity conditions, the interplay between trading volume and volatility, cross-market volatility, and global economic influences may provide shed further light on the dynamics of MIBOR OIS rate volatility. A study on these line would further help to understand and manage volatility in the Indian interest rate markets in a broader context.

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