DERIVATIVES QUARTERLY REPORT

April-June 2024

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1. Developments in Derivatives Market

Indian Markets

RBI Directions

- The Reserve Bank of India (RBI) on May 8, 2024 issued directions, with immediate effect, on the margin for derivatives contracts, wherein Authorised Dealers (ADs) may post and collect margin, in India and outside India, for a permitted derivative contract entered into with a person resident outside India and receive and pay interest on such margin. Additionally, ADs may also post and collect margin, in India and outside India, for derivative transactions of their overseas branches and IFSC Banking Units; and receive and pay interest on such margin.
- RBI has introduced master directions to govern the exchange of variation margin and initial margin for non-centrally cleared derivatives, slated to come into effect on November 8, 2024. The directions are termed RBI (Margining for Non-Centrally Cleared OTC Derivatives Directions) 2024.
- RBI comprehensively reviewed the regulatory framework governing the hedging of foreign exchange risks, and in a circular issued on January 5, 2024 stated that stock exchanges should offer forex derivative contracts involving the rupee to users only for hedging contracted exposure. This meant that proprietary traders and retail investors would be required to demonstrate contracted or prospective currency exposure to participate in the currency derivatives segments. The new rule came into effect on May 3, 2024.

Small Finance Banks (SFBs) Permitted to use Rupee Interest Rate Derivatives

- The RBI decided to permit SFBs to access permissible rupee interest rate derivatives for hedging purposes. This move aims to provide SFBs with greater flexibility in managing their interest rate risk and enhancing their resilience.

CCIL Consultation Paper on FX Options

- In continuation of its efforts to deepen the OTC derivatives markets in India, CCIL, along with its subsidiary Clearcorp, intends to offer an Electronic Trading Platform and clearing and settlement services for USD INR FX Options. A consultation paper on the proposal has been released on CCIL Website on May 16, 2024.

SEBI Consultation Paper on Mutual Fund Participation in CDS

- SEBI issued a consultation paper on flexibility in participation by mutual funds in credit default swaps market.

Portfolio Compression

- An 88.10% compression was achieved in the 34th Portfolio Compression cycle run by CCIL for IRS (MIBOR Benchmark) in June 2024.

Global Markets

Regulations

- ISDA published the ISDA Close-out Framework, a resource for market participants to prepare for potential terminations of collateralized derivatives contracts. The launch follows the March 2023 failures of Signature Bank and SVB in the U.S., which highlighted the complexities of terminating over-the-counter derivatives trading relationships under post-crisis regulatory reforms. These reforms require in-scope entities to post margin for non-cleared derivatives transactions and include mandatory stays on termination rights in bank resolution regimes. The ISDA Close-out Framework aims to help firms coordinate internal and external legal, operational, risk management, infrastructure, and other relevant service providers to ensure adequate preparation for future stress events.

- On April 30, 2024, The Commodity Futures Trading Commission (CFTC) announced the approval of final rules to amend its large trading reporting regulations for futures and options. These regulations require futures commission merchants, clearing members, foreign brokers, and certain reporting markets (reporting firms) to report to the Commission the position information for the largest futures and options traders.

Product Launches & Technology Advancements

- CME Group commenced trading of its new credit futures from June 17, 2024. The contracts are based on the Bloomberg U.S. Corporate Index, which measures the performance of investment grade corporate bonds, and the Bloomberg U.S. High Yield Very Liquid Index, which is designed to measure a liquid, diversified component of the high yield corporate bond market.
- CME Group launched options on Euro short-term rate (€STR) futures on May 20, 2024.
- LCH SA announced on May 08, 2024 that it received regulatory approval to clear Bitcoin index derivatives. Clearing services would be provided through its LCH DigitalAssetClear service for cash-settled Bitcoin index futures and options contracts traded on the UK-based digital asset derivatives trading venue, GFO-X.
- Hong Kong Exchanges and Clearing Limited announced on May 20, 2024, that its clearing subsidiary OTC Clear has implemented three enhancements to Swap Connect in partnership with China Foreign Exchange Trade System and Shanghai Clearing House. Swap Connect is the OTC derivatives trading link between Mainland China and Hong Kong, which allows market participants to trade IRS. The enhancements include the introduction of International Monetary Market (IMM) trades based on IMM dates, the launch of solo compression service that enables participating institutions to compress trades with equal but opposite economics and the introduction of backdated trades, which allow trades with a past effective date and can be used with solo compression for trade unwinding.
- Cboe Global Markets announced plans on June 17, 2024 to launch the Cboe 20+ Year Treasury Bond ETF Volatility Basis Point Index in the third quarter of this year. The new index will be calculated using listed options on the iShares 20+ Year Treasury Bond ETF and will enable market participants to track future expected volatility in the US Treasury market.

Market & Reference Rates

- The Canadian Alternative Reference Rate Working Group reiterated that market participants with CDOR-based loans, derivatives or securities must prepare for CDOR's cessation post June 28, 2024. Market participants that have financial contracts referencing CDOR need to be prepared to transition these contracts to CORRA, or Term CORRA.
- According to BIS data, the proportion of credit default swap (CDS) contracts cleared through central counterparties fell by 4.8% to 65.4% in the last six months of 2023, marking the largest drop since records began in 2010. The notional amounts of cleared CDSs stood at $5.59 trillion at the end of December, down 19.5% since June, while the notional of non-cleared CDSs remained flat at USD 2.95 trillion. Consequently, the share of centrally cleared CDSs decreased from a peak of 70.2% six months earlier. This was the fourth decrease since 2010 and significantly larger than the previous record drop of 1.6% in the second half of 2021.

2.1. Outstanding Notional Amount and GMV in Global OTC Derivatives Market

According to BIS data, the notional amount of global derivatives market fell to USD 667 trillion in the second half of 2023, compared to USD 712.88 trillion in first half of 2023. Interest rate derivatives market accounted for USD 529.81 trillion of the total outstanding notional amount followed by a foreign exchange derivatives contracts and equity derivatives market amounting to USD 118 trillion and USD 7.78 trillion respectively.

Chart 1: Outstanding Notional Amount (Amount in USD Trillion

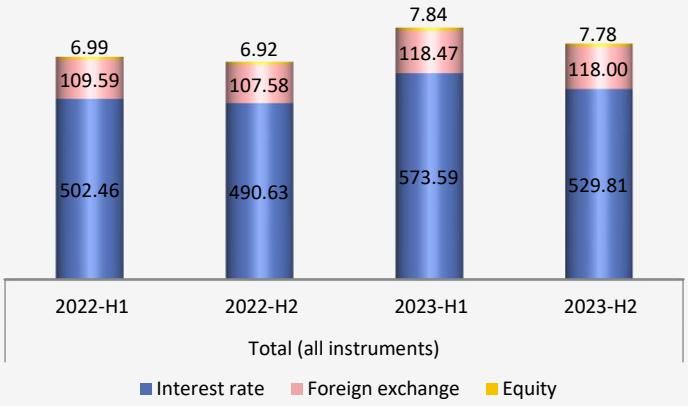
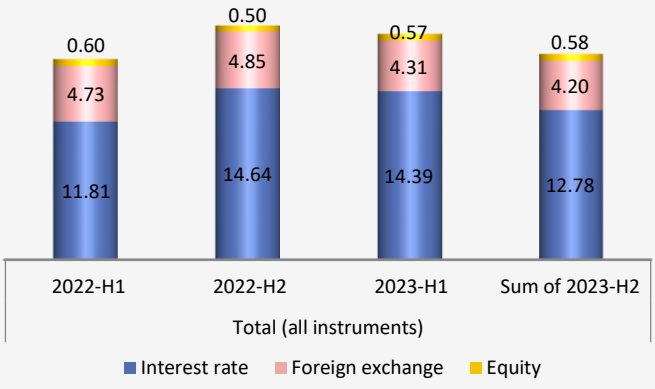


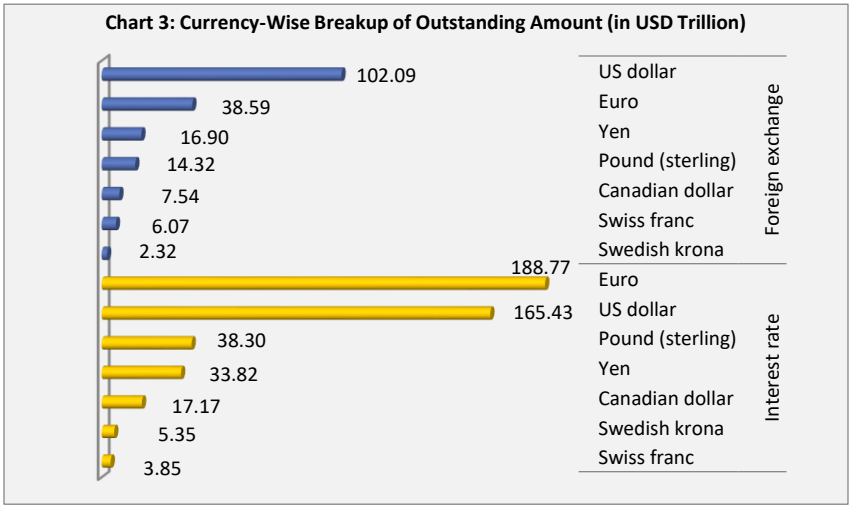
Chart 2: Gross Market Value (Amount in USD Trillion)



Source: BIS

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

Chart 3: Currency-Wise Breakup of Outstanding Amount (in USD Trillion)



Source: BIS

A currency wise analysis of outstanding amount for the global derivatives markets indicates that US dollar denominated foreign exchange derivatives account for a predominant share of market (USD 102.09 trillion) followed by Euro denominated foreign exchange contracts (USD 38.59 trillion) for the second half year of 2023.

In case of Interest rates derivatives, Euro and US denominated contracts accounted for USD 188.77 trillion and USD 165.43 trillion of the total global outstanding volumes for the second half year of 2023.

2.3. Instrument-Wise Breakup of Outstanding Amount in Global OTC Market

An instrument wise breakup of the global derivatives outstanding position in the OTC space in the second half of 2023 reveals that FX derivatives market are largely dominated by trades in the outright forwards and FX swap contracts (USD 67.80 trillion). This is followed by currency swaps and FX options. In case of interest rate derivatives, the market participants hold the largest outstanding position in interest rate swaps (USD 425.28 trillion) followed by Forward rate agreements (USD 56.02 trillion). The outstanding Equity derivatives products included positions in Equity Options (USD 3.95 trillion) and Equity forwards and swaps (USD 3.83 trillion).

Chart 4: Instrument-Wise FX Derivatives (USD Trillion)

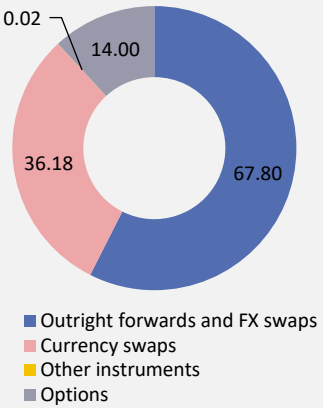


Chart 5: Instrument-Wise Interest Rate Derivatives (USD Trillion)

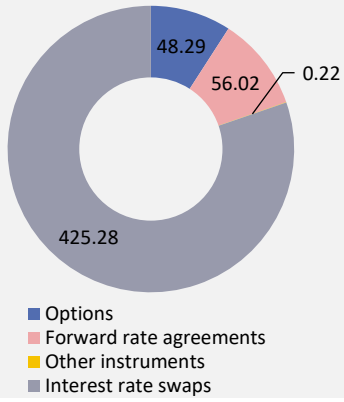
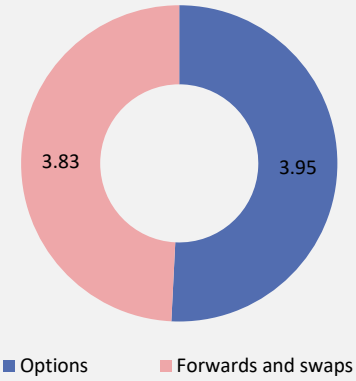


Chart 6: Instrument-Wise Equity Derivatives (USD Trillion)



2.4. Global Exchange Traded Derivatives

Table 1: Market Wise Open Interest of Exchange Traded Derivatives (in billions)

	Foreign exchange	Interest rate	
Product		**Short-term**	**Long-term**
Futures	342	33643	3350
Options	113	49202	520
Source: BIS			

The global exchange traded derivatives market has observed trading activity in interest rate derivatives, particularly for short term tenors. The Open interest (OI in billions) in Interest rate futures and options in the short term stood at 33643 and 49202 respectively for Oct-Dec 2023.

Likewise, futures and options for tenors greater than 1 year had an OI of 3350 billion and 520 billion respectively during the quarter. Currency wise, exchange traded derivatives are primarily denominated in USD dollars and the Euro. While the Open Interest of US dollar Interest rate derivatives stood at 436 billion, that of the USD FX derivatives stood at 60777 billion in the Oct-Dec 2023.

Chart 7: Currency Wise Open Interest Exchange Traded FX Derivatives (in Billons)

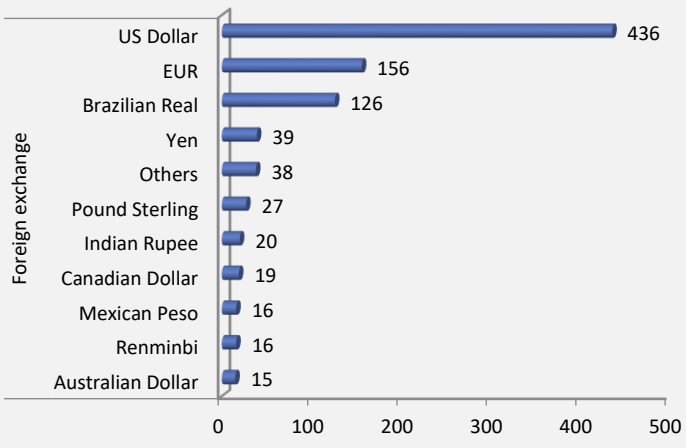
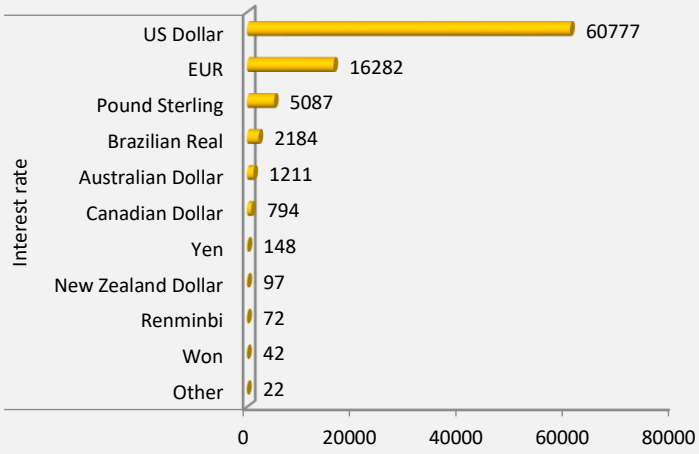


Chart 8: Currency Wise Open Interest Exchange Traded Interest Rate Derivatives (in Billions)



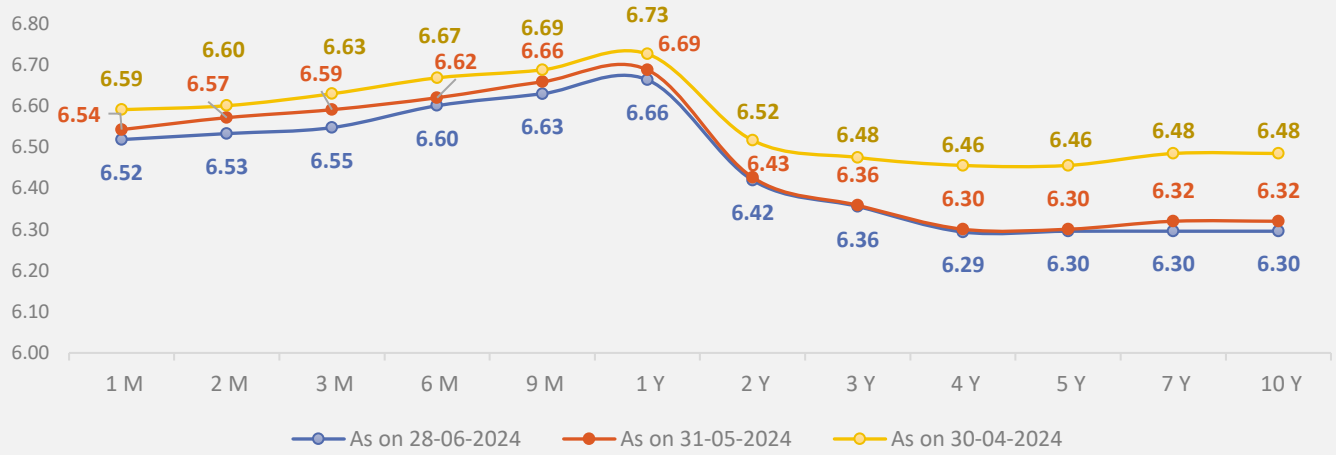
Source: BIS

3.1. Indian OTC Interest Rate Derivatives Market

3.1.1 MIBOR OIS Market - Curve & Spreads

MIBOR OIS rates moved lower between April and June 2024, driven by multiple factors. Domestic liquidity situation, along with the anticipation of rising Indian treasury yields were the key factors driving OIS rate movement during the quarter. Short term MIBOR OIS rates (up to 1 year) appeared to be driven by domestic policy scenario and liquidity situation, in which there appeared to be little change, as the RBI remained steadfast on controlling inflation. The central bank also managed the liquidity situation deftly, alternating between liquidity injection and absorption, and therefore the short term OIS rate moved within a tight band. The MIBOR OIS rate beyond 1 year softened due to lower domestic G-sec yields, on increased FPI inflows into the debt market in anticipation of the impending inclusion into the JPMorgan Emerging Markets (EM) Index.

Chart 9: Trends in the MIBOR OIS Curve



Data Source: Annualized OIS Rates, Refinitiv

Chart 10: OIS-GSEC Spread (in bps)

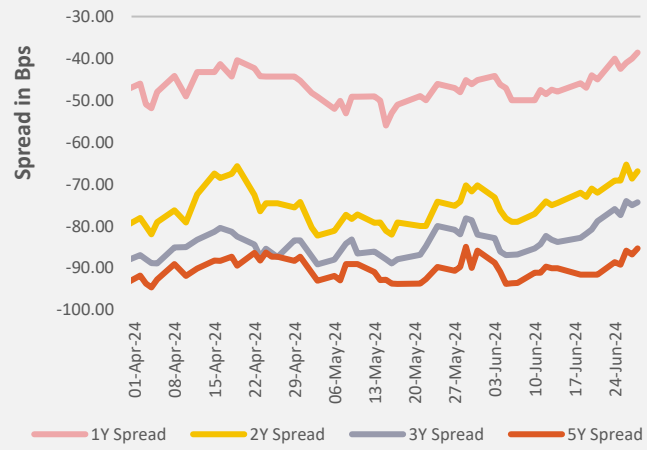
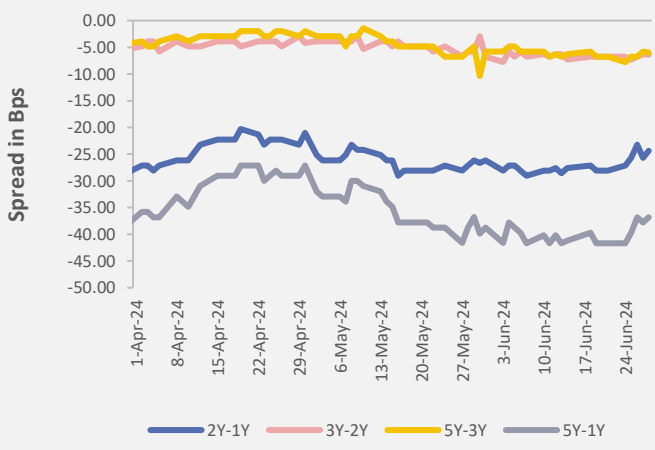


Chart 11: OIS Term Spreads (in bps)



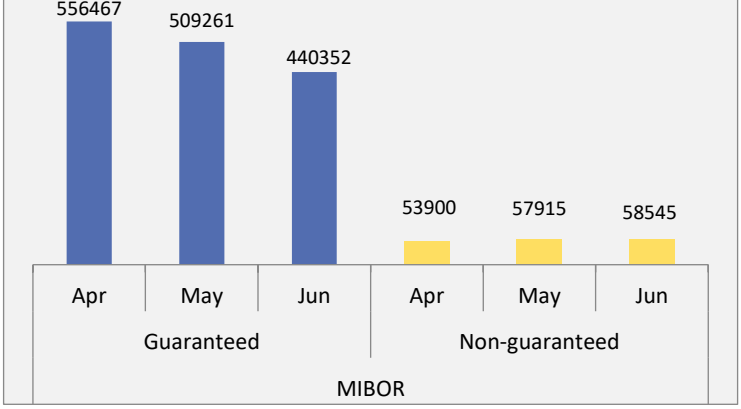
Data Source: Annualized OIS Rates, Refinitiv and G-Sec Par Rates, FBIL.

OIS G-Sec spreads for respective tenors indicated that the spreads remained range bound in April and May, before beginning to narrow from the beginning June onwards. A notable fall in G-sec yields across the tenors coupled with the sticky OIS rate, due to lack of cues from the RBI regarding policy cuts in the near future, led to a narrowing of OIS-GSEC spread throughout the month of June.

The 3Y-2Y and 5Y-3Y adjacent tenor OIS spreads were relatively stable, unlike the 5Y-1Y and 2Y-1Y spreads, which experienced more fluctuating movements.

3.1.2 MIBOR OIS – Trading and Settlement Pattern

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



Data Source: CCIL

In the MIBOR OIS segment, guaranteed settlement (GS) notional traded volumes continued to dominate the segment. Notional volume in the segment however decreased by 21% over the quarter, declining to Rs 440352 crores in June, from Rs 556467 crores in April 2024. On the contrary, volume increased by 8% in the non-guaranteed (NGS) segment, where notional volume increased to Rs 58545 crores in June, from Rs 53900 crores in April.

1-year OIS trades continued to dominate trading in the short-term segment (up to 1 year) with a share of 38%, followed by trades in 6-month and 9-month tenor, respectively. For tenors greater than 1 year, the 5 year OIS captured a market share of 56% in terms of traded volume, followed by 2 year and 3 year, respectively. In terms of market participants, foreign banks remained the dominant category, although their share declined from the previous quarter. Private Banks and Primary Dealers making up the majority of the remaining volume. Nationalized banks also made their presence felt, in both buy and sell categories, respectively.

Chart 13: Tenorwise MIBOR OIS Volume break-up Upto 1 Year for Apr-Jun 2024

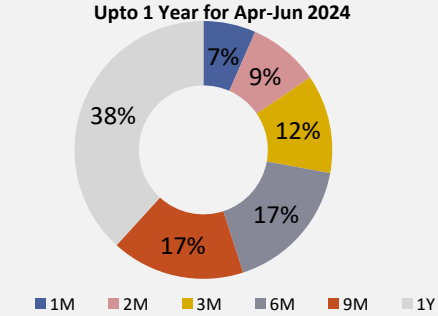
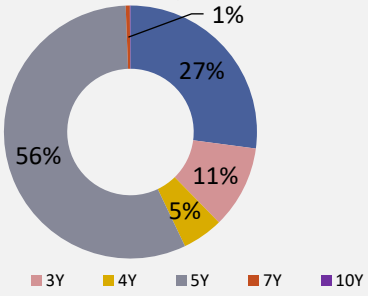
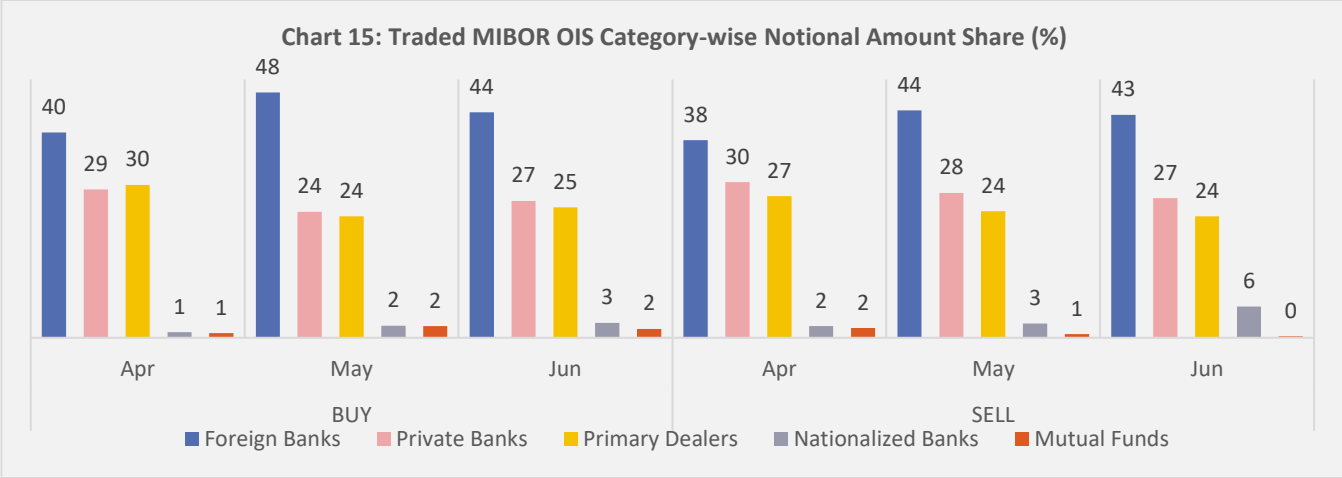


Chart 14: Tenorwise MIBOR OIS Volume break-up Greater than 1 Year for Apr-Jun 2024



Data Source: CCIL



Breaking Down the Swap Curve Movements…

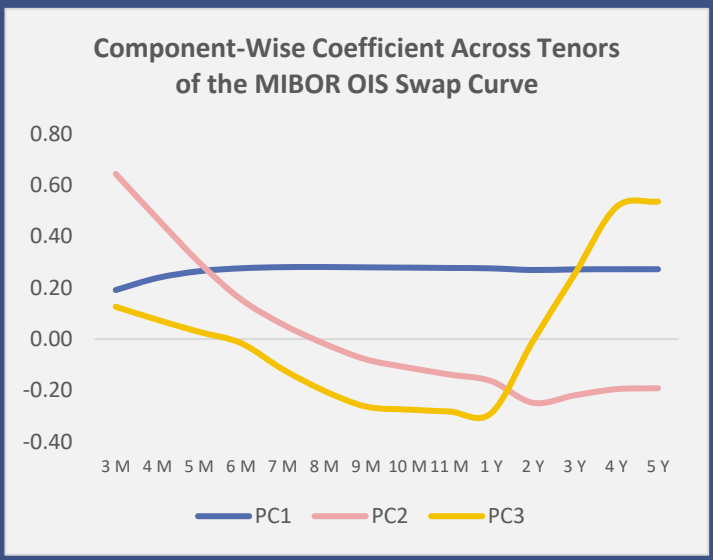
What drives the MIBOR OIS curve? Do the swap rates move in tandem across maturities? Are there common factors affecting rates through the curve? These questions can be addressed by decomposing the historical swap curve movements using statistical techniques like Principal Component Analysis (PCA). When applied to a swap curve, PCA can be used to simplify the variation in the rates by reducing its dimensionality. It does this by converting the original swap rate series across tenors into a new set of uncorrelated variables called principal components (PCs). These PCs are arranged in order of the amount of variance they capture, with the first few components retaining the majority of the variation across the swap rates.

Percentage of Variation in MIBOR OIS Swap Explained	
Principal Component 1 (PC1)	90.20%
Principal Component 2 (PC2)	9.20%
Principal Component 3 (PC3)	0.40%

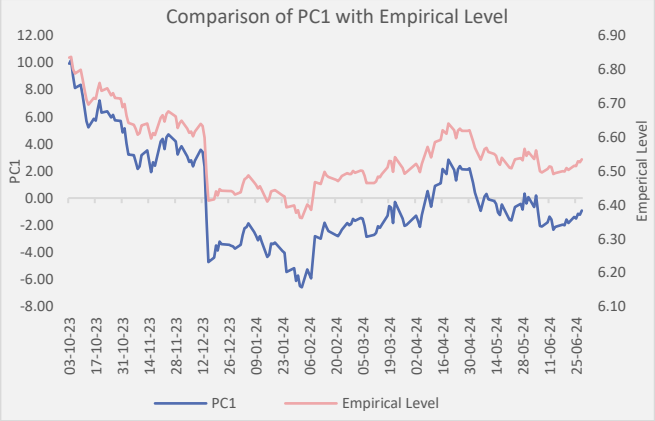
In the context of analyzing the swap curve movements from October 2023 to June 2024, it can be observed that the first component accounts for 90.20% of the variation in the swap rates, i.e. the majority of the changes or fluctuations observed across different maturities is explained by the first component.

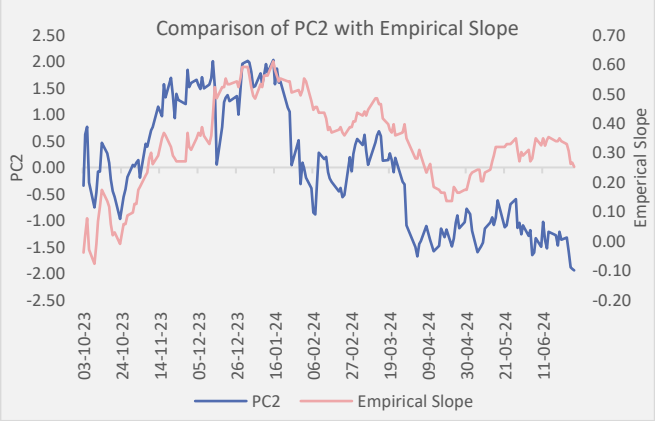
PC2 explains 9.20% of the variation. While this is much smaller than PC1, it still has important connotations when interpreting the changes to the swap curve. PC3 captures a small fraction (0.4%) of the overall variation in the curve. It is pertinent to note that the first three principal components collectively explain 99.80% of the variation in the swap curve.

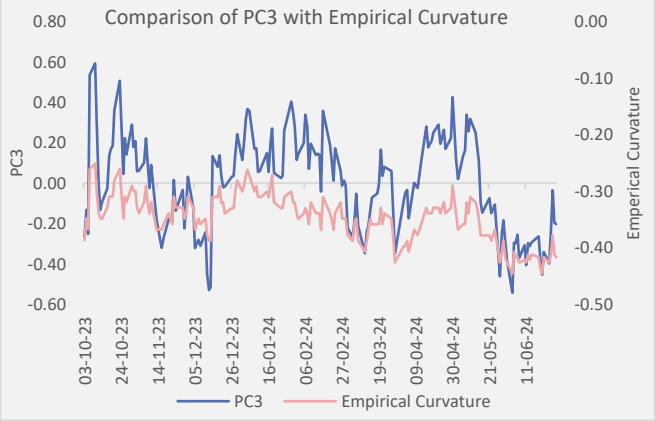
Examining the changes in the sign of the principal component coefficient, it can be observed that PC1 has a consistent sign across all maturities (from 3 months to 5 Years), which indicates that all rates move uniformly up or down together, reflecting the ***Level*** of the curve.



PC2, with one sign change, suggests that shorter-maturity rates move in the opposite direction compared to longer-maturity rates, representing the ***Slope*** of the curve. PC3 indicates that the shortest and longest maturities have the same sign and move in the same direction, while the middle maturities move in the opposite direction, illustrating the ***Curvature*** of the curve.







To intuitively interpret the estimated Principal components, empirical proxies have been computed, for representing the level, slope and curvature of the swap curve, as follows:

$$Level = [3M + 6M + 9M + 12M + .. + 5Y]/n$$

$$Slope = [3M - 5Y]$$

$$Curvature = [3M + 5Y - 2 * 9M]$$

wherein,

- the proxy for level is computed as the simple average rate of all tenors from 3 months to 5 Years,
- the proxy for slope is computed as the spread between the short-term rate (3 months) and long-term rate (5 Years) and
- the proxy for curvature is computed as the difference between (a) the sum of the Short Rate [3 months] and Long Rate [5 Years] and (b) 2 times the rate at the intermittent tenor [9 months].

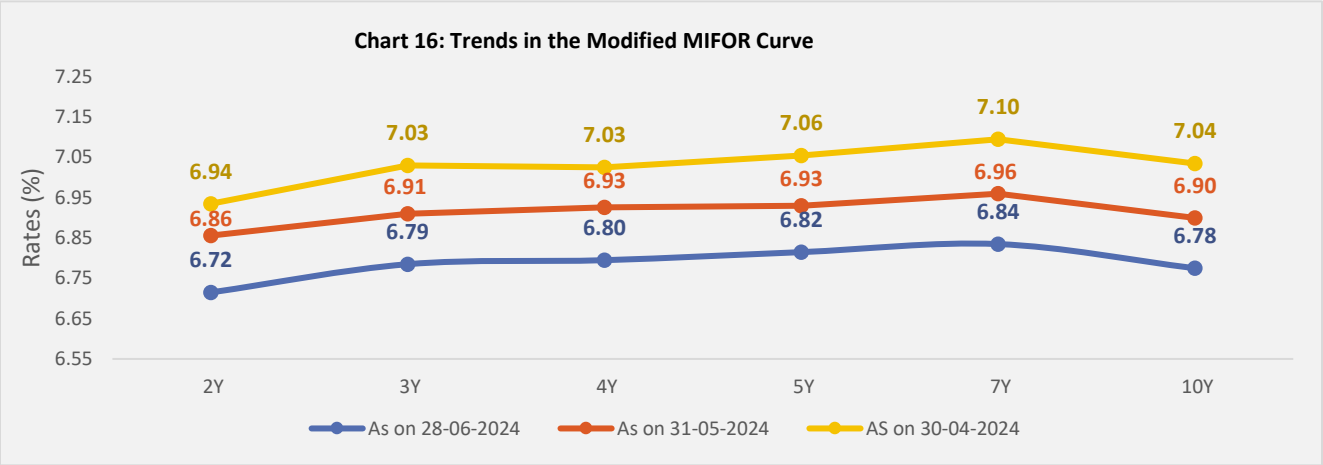
A Comparison of the first principal component with the empirical proxy for *Level* indicates that the first component tracks the simple average of the swap rates across the curve, with a correlation of 99.70%.

By comparing the second component with its empirical proxy, it is observed that that the *Slope* has correlation of 50.61%. While the principal component representing *Curvature* has a higher variability than its empirical proxy, their correlation stands at 84.63%.

After decomposing the swap curve into its level, slope, and curvature components, these principal factors can be monitored over time and in turn further be applied to various areas, including scenario analysis and relative value analysis.

3.1.3 Modified MIFOR Market - Curve & Spreads

Chart 16: Trends in the Modified MIFOR Curve



Data Source: Refinitiv

The modified MIFOR curve indicated a downward shift across tenors between April and June. The 2 year Modified MIFOR rate moved in a range (High-Low) of 22 bps during the quarter, while the corresponding range for the 10Y rate was 26 bps.

Modified MIFOR term spreads, along with MMFOR-MIBOR OIS spreads for the respective tenors moved in a tight band and exhibited downward movement as the quarter progressed.

Chart 17: MMFOR Term Spreads (in Bps)

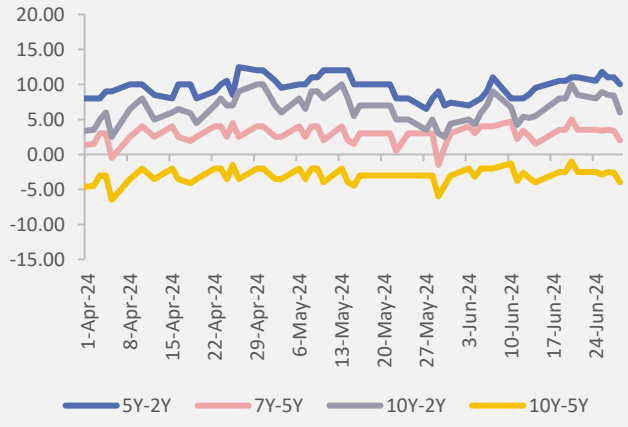
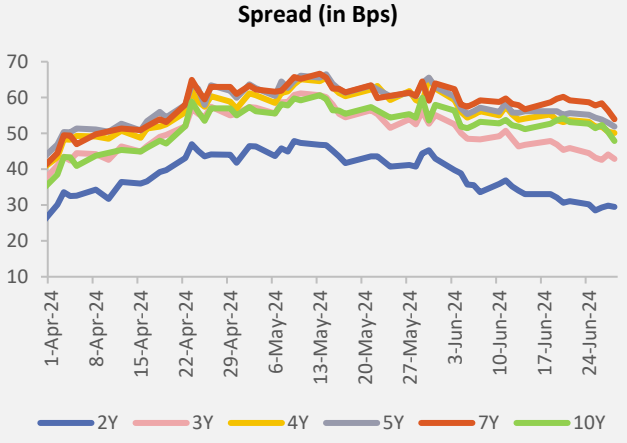


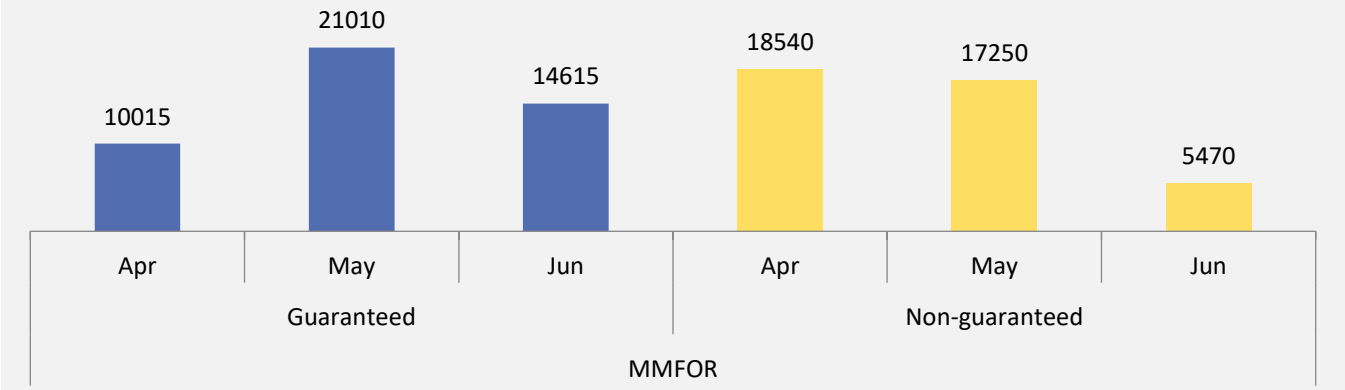
Chart 18: Tenor-wise MMFOR-MIBOR OIS Spread (in Bps)



Data Source: Refinitiv

3.1.4 Modified MIFOR –Trading and Settlement Pattern

Chart 19: Guaranteed and Non Guaranteed Trading Volumes in MMFOR (Rs Cr)



Data Source: CCIL

The trading volumes in the guaranteed segment of Modified MIFOR increased over the course of the quarter, with the volume in May reaching the highest level in 12 months. The volume in the NGS segment in contrast, declined by over 70% during the period. Foreign banks were by far the most active participants in the MMFOR markets, with their share as sellers being marginally higher, whereas private banks gradually reduced their share in activity. Volumes were highest in the 2 year tenor, followed by 3 year and 5 year tenors, respectively.

Chart 20: Tenor wise share MMFOR Volume breakup for Apr-Jun 2024

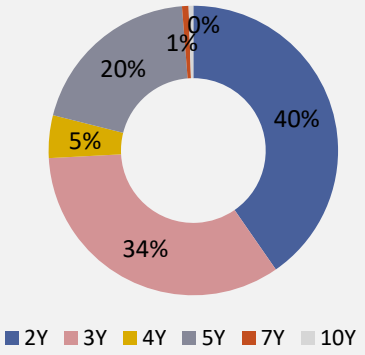
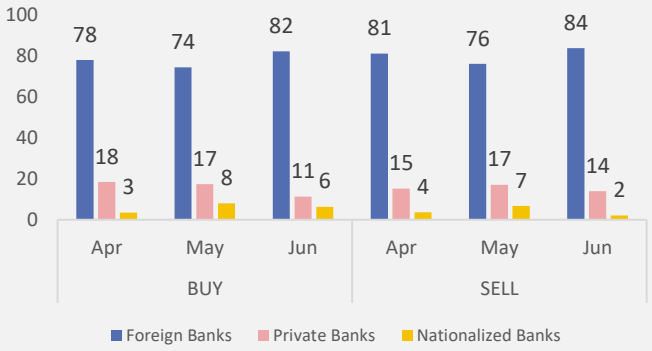


Chart 21: MMFOR Category-wise Traded (Notional) Amt Share (%) for Apr-Jun 2024



Data Source: CCIL

3.1.5 Client Bond Forward Rate Agreements (FRA)

Chart 22: Tenor Bucket Wise Analysis of Client Bond FRAs in Apr-Jun 2024

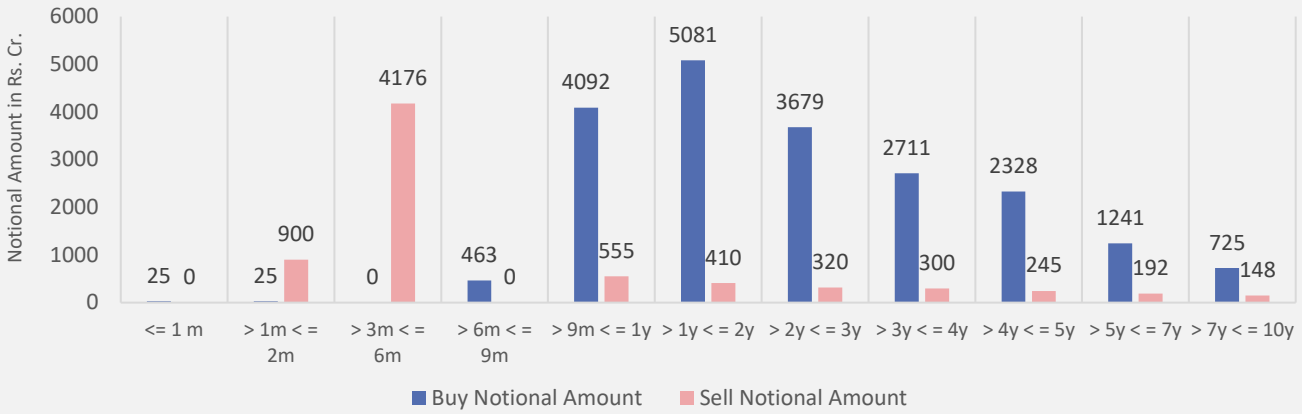


Chart 23: Buy Side Security Wise Client Bond FRA - Notional Amount in Rs. Cr. (Apr-Jun2024)

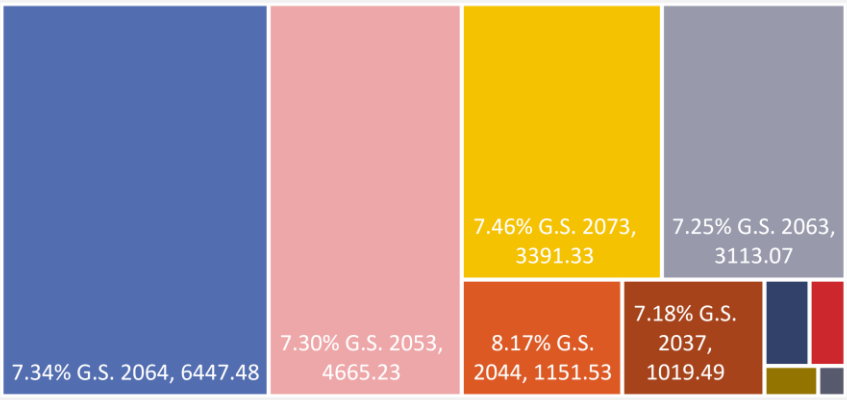
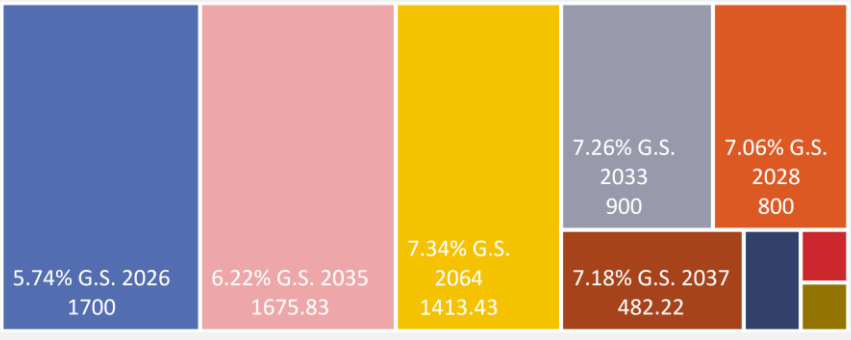


Chart 24: Sell Side Security Wise Client Bond FRA - Notional Amount in Rs. Cr. (Apr-Jun2024)



Data Source: CCIL

Based on Client trades reported to CCIL Trade Repository, on the Buy side, trading was predominantly seen in tenor buckets beyond 9 months, with the highest notional amount of Rs. 5081 Cr. being captured in >1 Year to <= 2 years tenor bucket, for the quarter ended June 2024. On the sell side, trading activity of Bond FRAs was largely recorded in the tenor bucket of >3 months to <=6 months.

An ISIN wise analysis of the underlying instruments of Bond FRAs indicated that 7.34% GS 2064 and 7.30% GS 2053 were the top 2 securities on the buy side while 5.74% GS 2026 and 6.22 GS 2035 were the top 2 securities on the sell side for the Apr-Jun 2024 quarter.

3.2. Indian OTC Forex Derivatives Market

3.2.1. Trends across OTC Interbank FCY-INR Forwards

Chart 25: Traded volume for OTC Interbank FCY-INR Forwards (US$Mn)

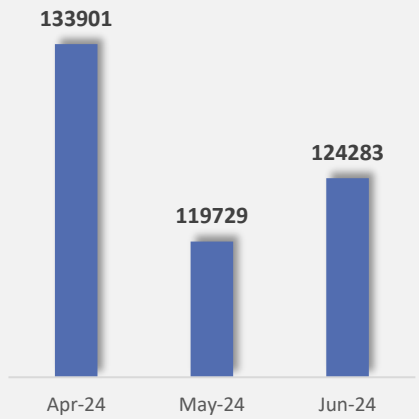


Chart 26: Breakup of Currency Pairs for OTC Interbank FCY-INR Forwards (US$Mn)

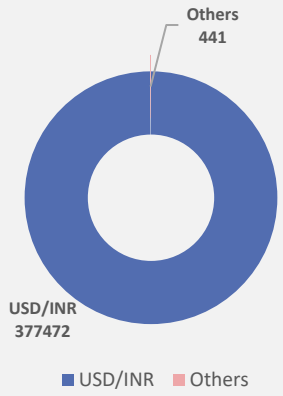
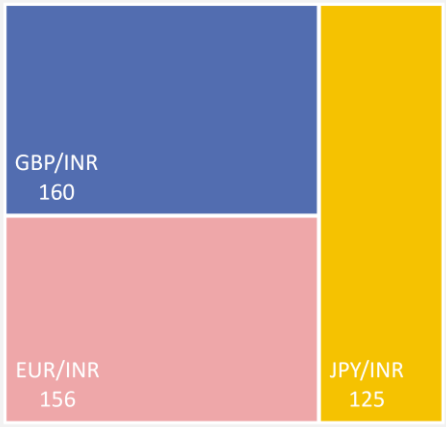


Chart 27: Break up of Other Currency Pairs for OTC Interbank FCY-INR Forwards (US$Mn)



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

The trading volume in Interbank FCY-INR Forwards peaked at USD 133 billion in the first month of the quarter and subsequently exhibited a drop in volumes in May 2024 to USD 119 billion, followed by an uptick in June 2024 to USD 124 billion. The dominance of the dollar was evident, with USD/INR accounting for 99% of the total trading activity, while other currencies such as GBP/INR, EUR/INR, and JPY/INR comprising of the remainder.

An analysis of USD-INR Interbank Forward transactions conducted through Spot-Forward swaps revealed that the 1 month, 2 month and 12 months contracts dominated the market share. The average share in the 1 month stood at 22% while that of the 2 month and 12 month tenors were close to 17% and 22% respectively.

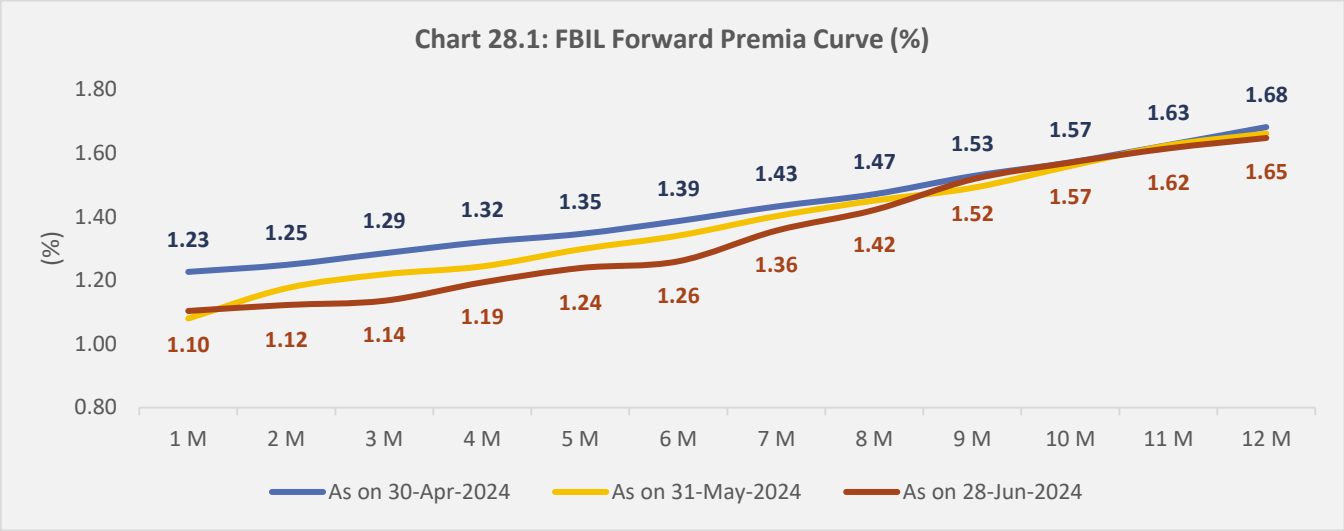
Table 2: Tenor-wise Share of USD-INR Interbank Forward transaction undertaken through swaps (Spot-Forward)

	Month End Spot-Forward Currency Swaps											
	1M	2M	3M	4M	5M	6M	7M	8M	9M	10M	11M	12M
Jan-24	22%	18%	9%	4%	2%	7%	4%	1%	1%	2%	5%	23%
Feb-24	24%	18%	9%	5%	4%	3%	5%	2%	2%	2%	6%	19%
Mar-24	18%	16%	9%	9%	4%	7%	5%	1%	3%	3%	4%	23%

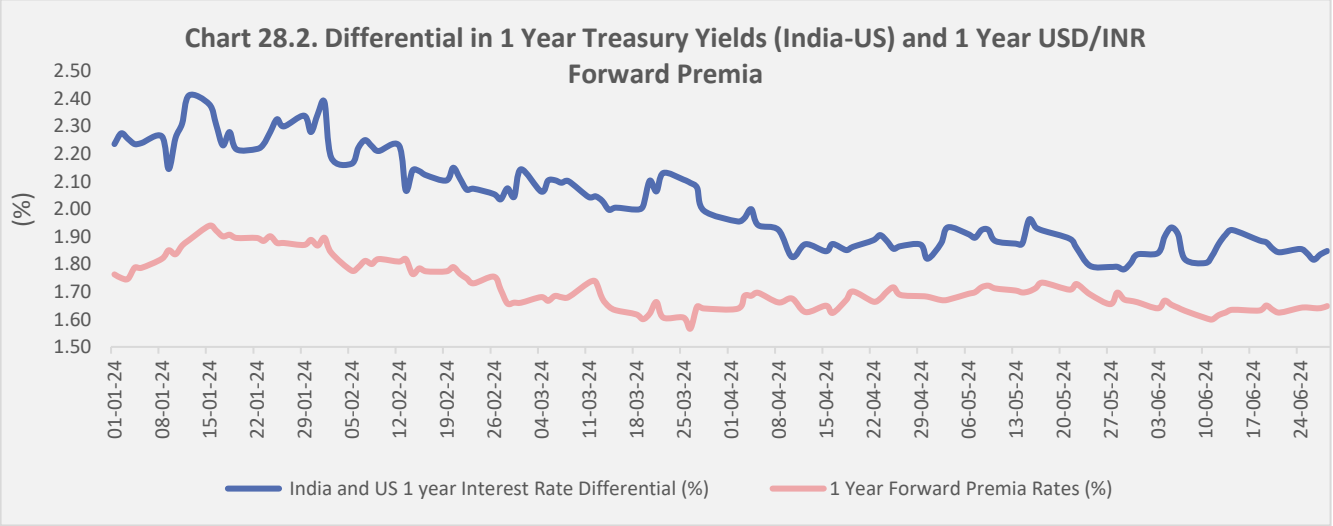
3.2.2. *USD/INR Forward Premia Curve Movement*

Compared to previous month, the USD/INR forward premia curve flattened during the month of April 2024, as the 1-month rate hardened by 23 bps while the 12-month rate, in comparison, recorded an increase of around 4 bps.

The interest rate differential between US and INR interest rates narrowed during the months of May and June 2024, on account of rising US treasury rates. This led to a change in the slope of the forward premia curve during the period. The short-term forward premia rates softening by 13 bps, while rates in intermittent tenors such as the 5-month declining by 11 bps. The 12-month forward premia rate stood between 1.65% to 1.68%, resulting in a steepening of the forward premia curve.

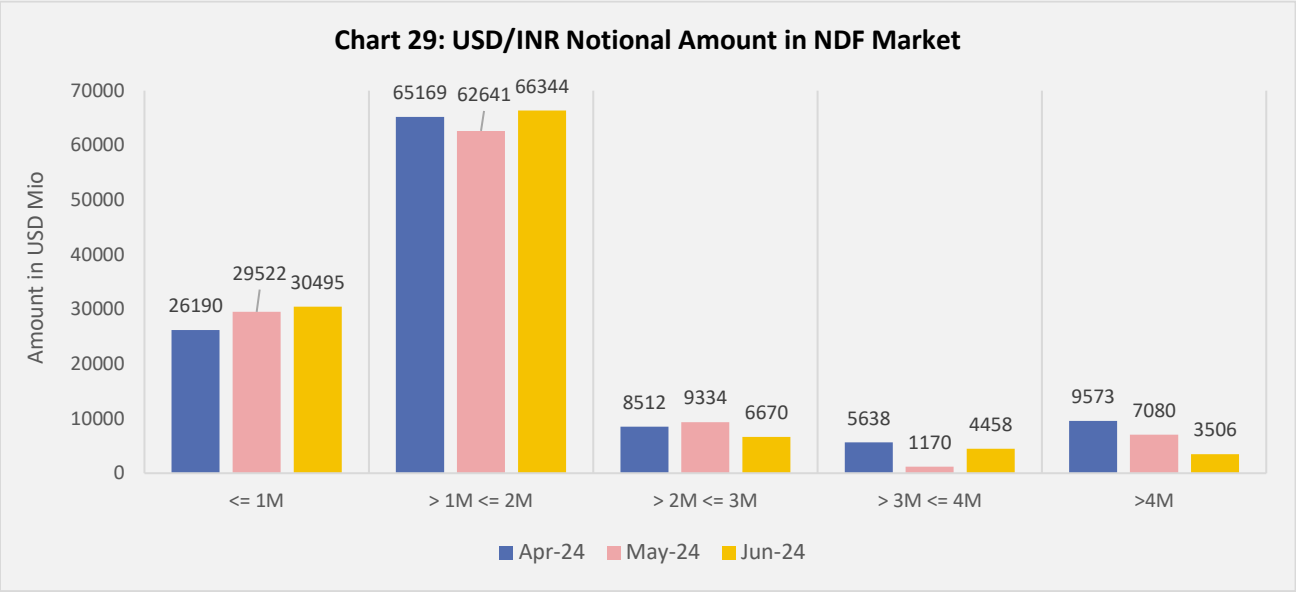


Data Source: FBIL



Data Source: FBIL, CCIL and Investing.com

3.2.3. *Interbank NDF Volumes and Tenor-wise Breakup*



Data Source: CCIL

Non-deliverable forwards (NDFs), which are offshore dollar-settled currency forwards used by investors with limited onshore market access to hedge their exposure, experienced robust turnover during the quarter. The notional interbank volume was USD 115,082 million in April 2024, USD 109746 million in May 2024, and USD 111472 million in June 2024. Notably, the executed trades were primarily for maturities of less than one month and maturities between one and two months.

3.2.4. *Trends across OTC Interbank FCY-INR Options*

Chart 30: Traded volume for OTC Interbank FCY-INR Options (US$Mn)

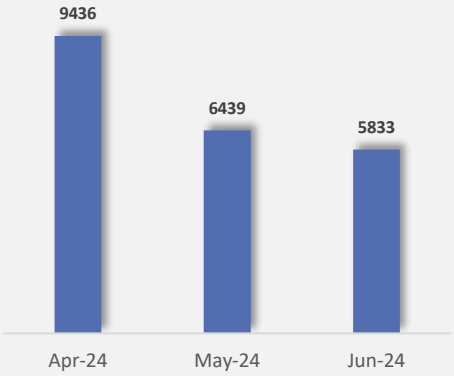


Chart 31: Breakup of Currency Pairs for OTC Interbank FCY-INR Options (US$Mn)

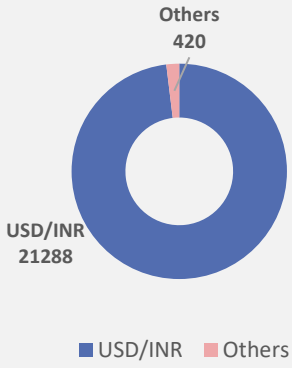
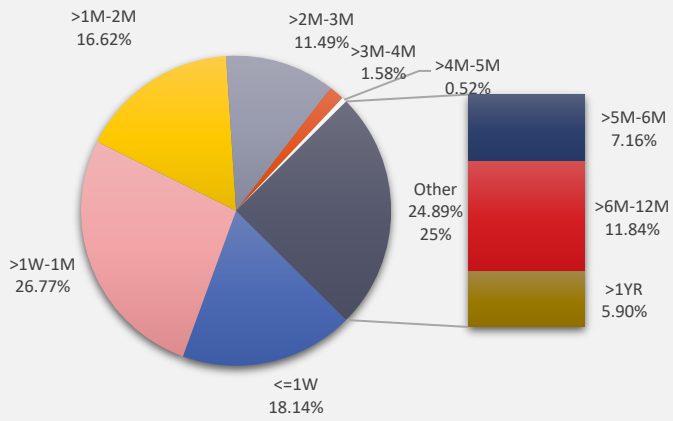


Chart 32: Break up of Other Currency Pairs for OTC Interbank FCY-INR Options (US$Mn)

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

Chart 33: Share of Traded Tenors in Interbank Options Apr-Jun 2024



The OTC Interbank FCY-INR options showcased a declining trend in the quarter of Apr-Jun 2024. Volume peaked in April at USD 9436 million and thereafter saw a decline. The USD/INR currency pair dominated the market, representing a significant proportion of the total volume. Specifically, USD/INR options accounted for USD 21,288 million, while options involving other currencies totaled USD 420 million.

An analysis of traded tenors shows that market participants preferred FCY-INR options with short-term maturities, with tenors buckets of less than 1 week and that between 1 week to 1 month accounting for around 44% of total trades.

The data distribution showing Average IV of options displayed wider dispersion in Call Option for the 3 to 5 year tenors as compared to Put Option.

Chart 34: Distribution of Average IV of Call Options

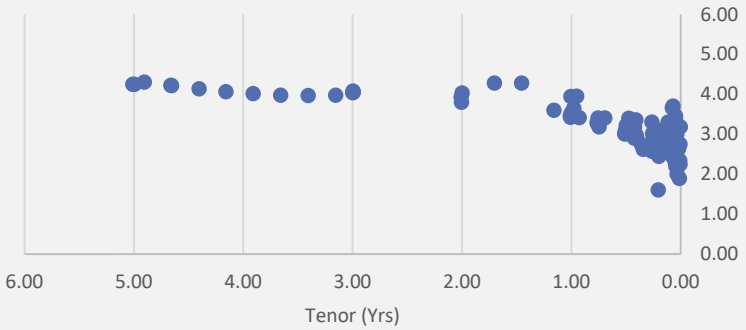
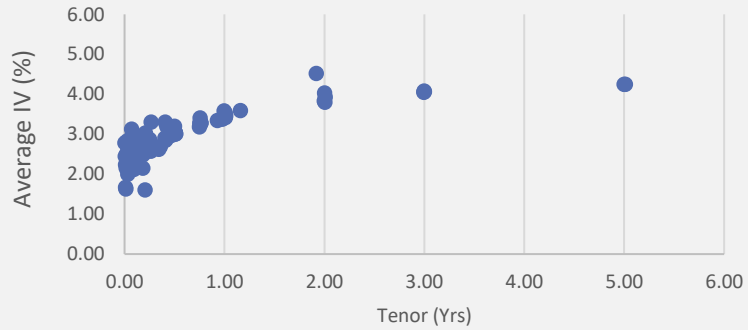
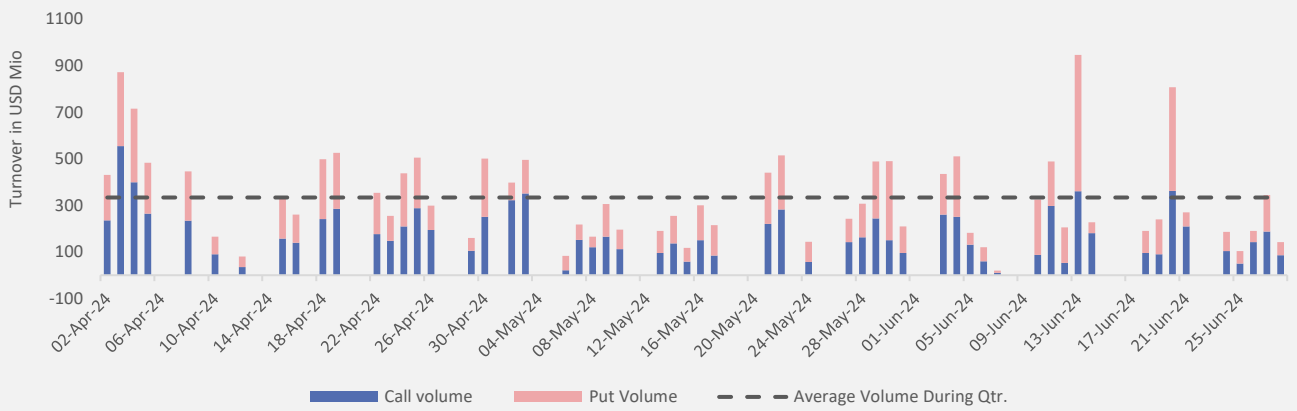


Chart 35: Distribution of Average IV of Put Options



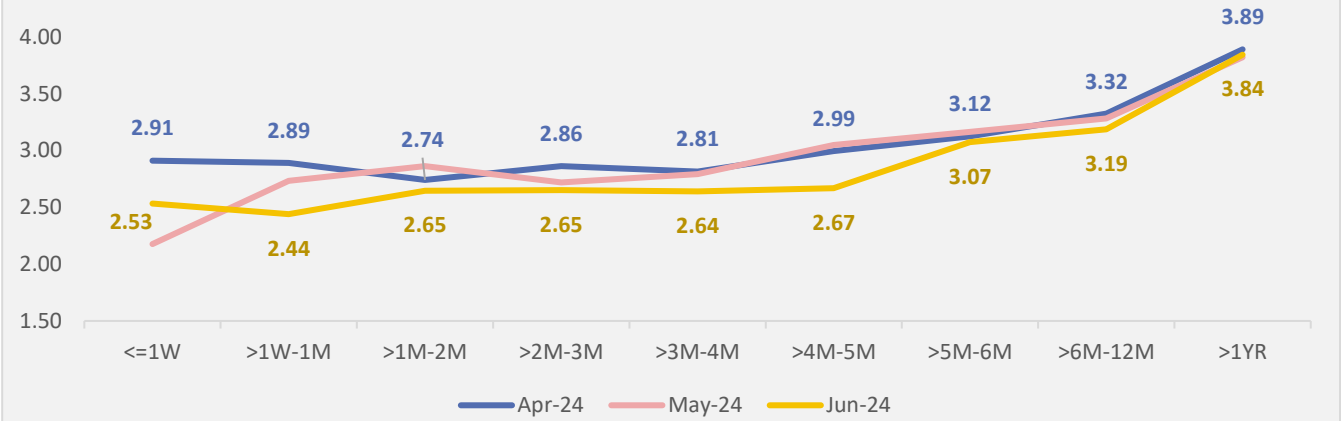
Data Source: CCIL

Chart 36: USD/INR Option Volume Break up By Option Type



Turnover in USD/INR options surged at the start of the quarter but stayed within a USD 300-500 million band during the quarter before hitting a high of USD 945 million on 13th June 2024. The daily average volume for USD/INR options for the quarter stood at USD 334 million.

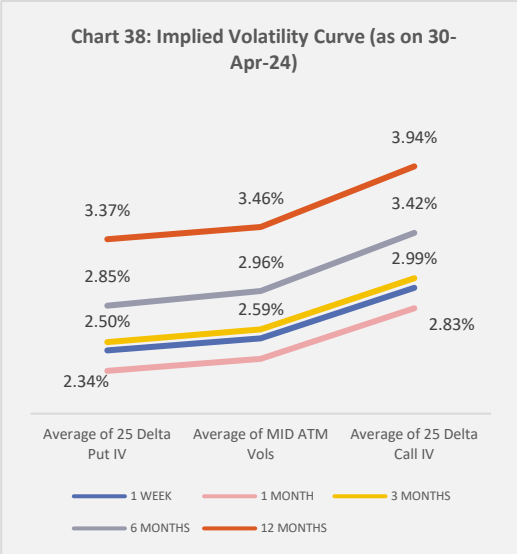
Chart 37: Tenor-wise Average Implied Volatility of OTC INterbank FCY-INR Options (%)

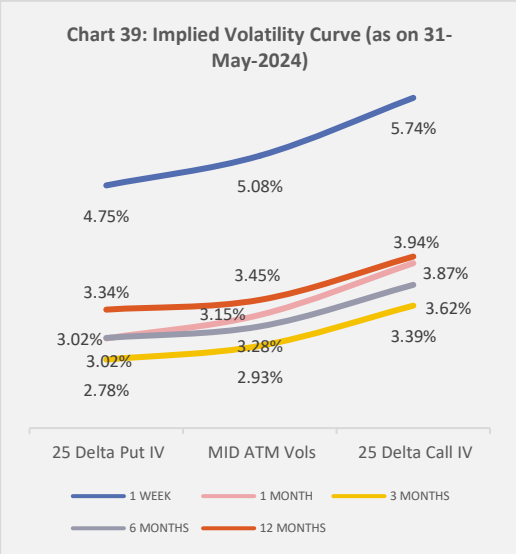


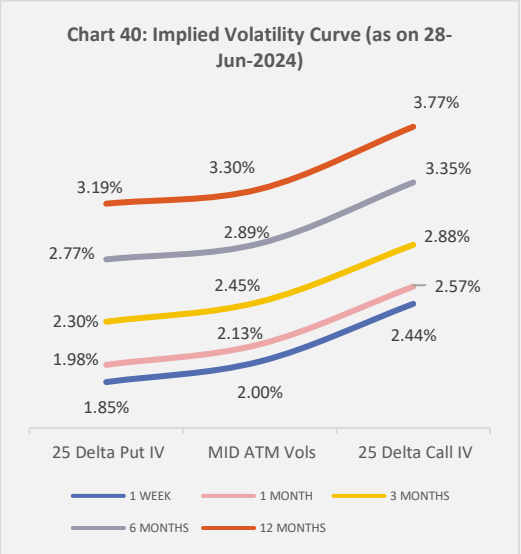
A tenor-wise analysis of the average implied volatility indicated that the IV of trades reported were higher at the start of the quarter in April but inched lower as the quarter progressed. The implied volatility curve shifted lower in June 2024. This trend indicates that market participant's uncertainty and risk perceptions decreased as the quarter advanced.

3.2.5. Volatility Smile across tenors in OTC Interbank FCY-INR Options

The volatility smile, representing implied volatilities across strikes, exhibited a relatively steep profile, with the highest IV numbers being recorded as on the last day of May 2024, indicating increased concern among market participants about extreme price movements. Implied volatilities for the 1-week tenor jumped in May, as shown in the chart, ahead of the General Assembly election counting in June. The risk reversal (RR), defined as the difference between the 25-delta call implied volatility (IV) and the 25-delta put IV for the 1-week tenor, expanded from 49 basis points in April to 99 basis points in May. The RR for the 1-month tenor also increased to 85 basis points in May from 49 basis points in April. In June, implied volatilities eased from the highs seen in May as uncertainty around the elections subsided.

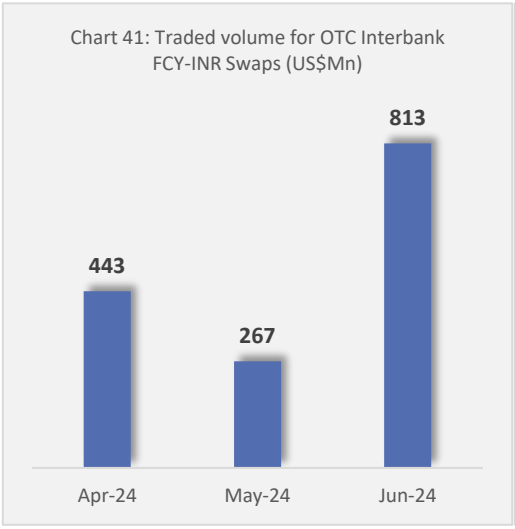


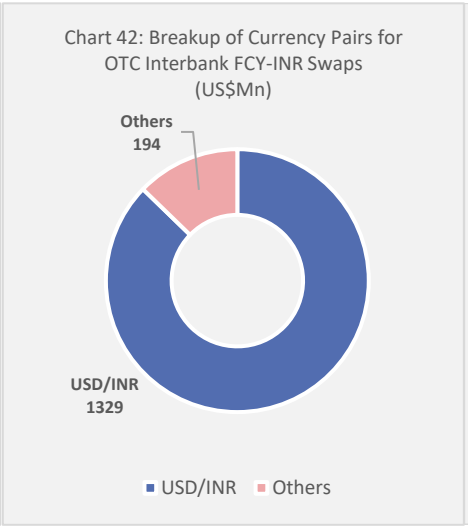


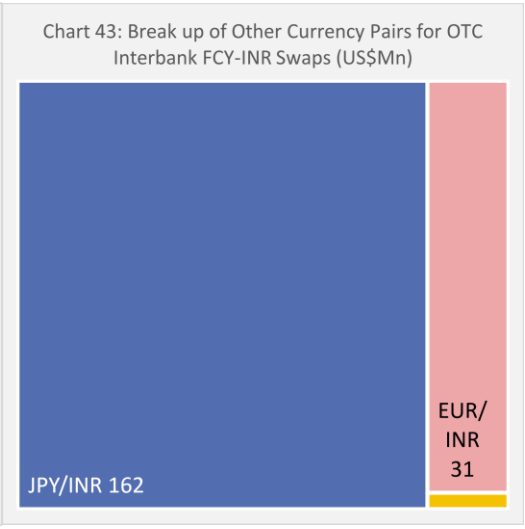


Data Source: ATM Vol. RR and STR from FBIL. Charts based authors' Calculations

3.2.6. Trends across OTC Interbank FCY-INR Cross Currency Swap







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

Interbank OTC FCY-INR cross-currency swap volumes, which remained subdued during the first two months of the quarter, sharply rose to USD 813 million in the last month of the quarter. The total FCY-INR cross-currency swap volume for the April-June 2024 quarter amounted to USD 1523 million, significantly lower than the previous quarter's total volume of USD 3290 million. The majority of the trades involved USD/INR swaps, which accounted for USD 1329 million. Other currencies, represented by JPY/INR and EUR/INR, contributed to USD 194 million to the total volume.

3.2.7. OTC Interbank FCY-FCY Forex Derivatives

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

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

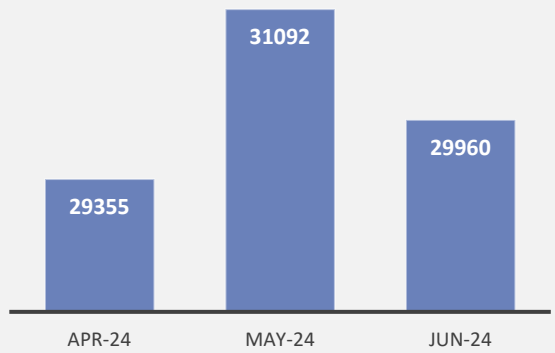


Chart 45: Traded volume for OTC Interbank FCY-FCY Options (US$Mn)

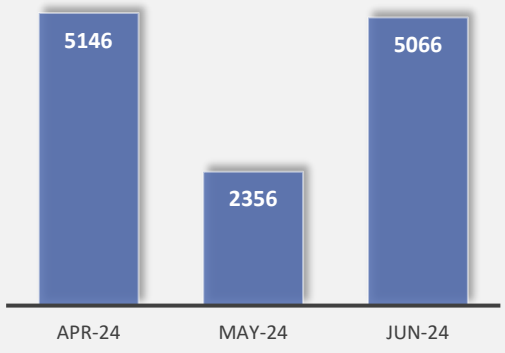


Chart 46: Traded volume for OTC Interbank FCY-FCY Swaps (US$Mn)

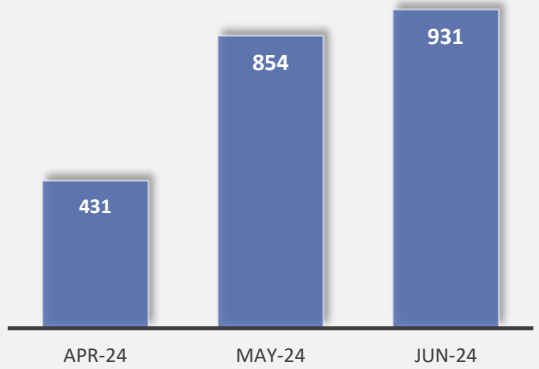


Chart 47: Break up of Currency Pairs for OTC Interbank FCY-FCY Forwards (US$Mn)

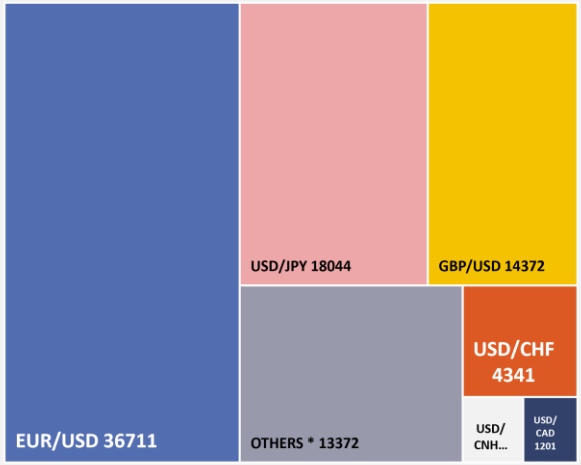


Chart 48: Break up of Currency Pairs for OTC Interbank FCY-FCY Options (US$Mn)

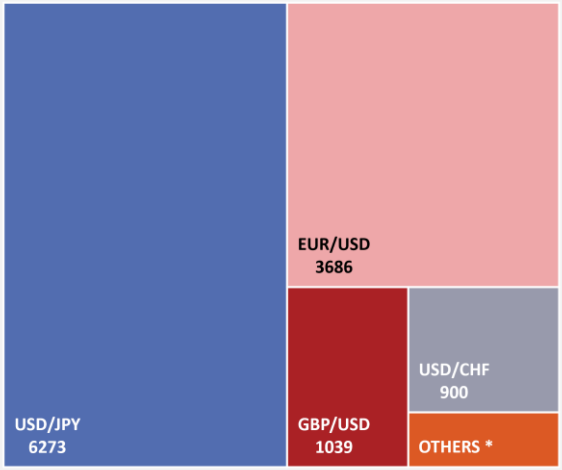
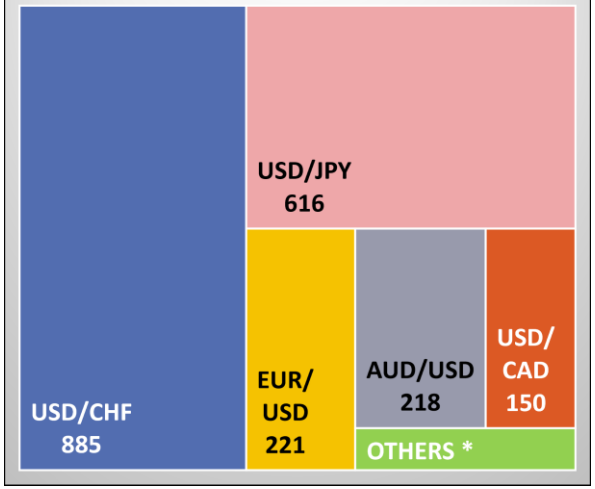


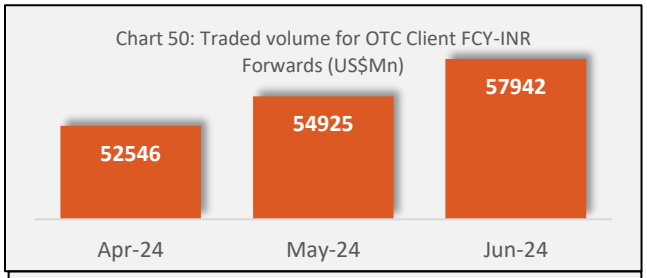
Chart 49: Break up of Currency Pairs for OTC Interbank FCY-FCY Swaps (US$Mn)

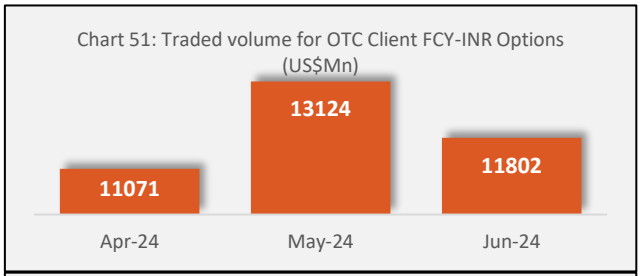


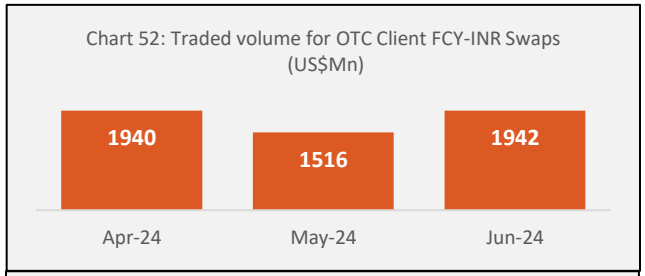
Data Source: CCIL. All values converted to USD Millions from Base Currency

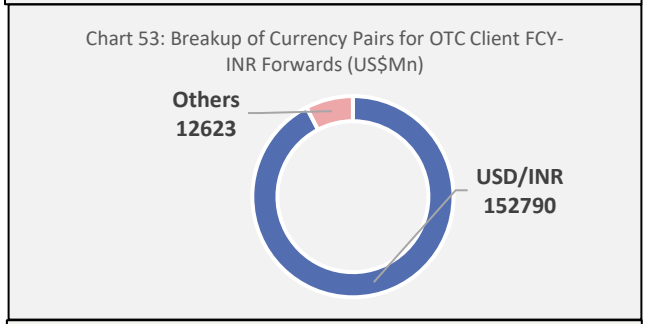
3.2.8. OTC FCY-INR and FCY-FCY Client Forex Derivatives

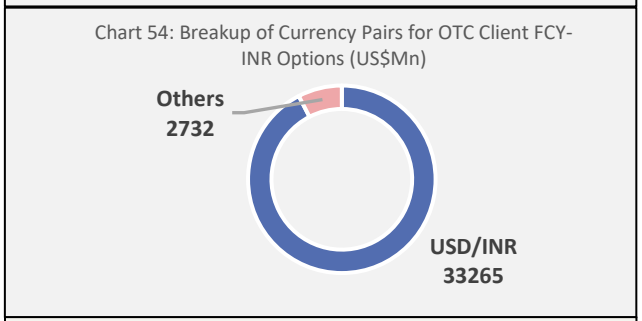
A snapshot of Turnover in OTC Client Forex Derivatives is posted below:

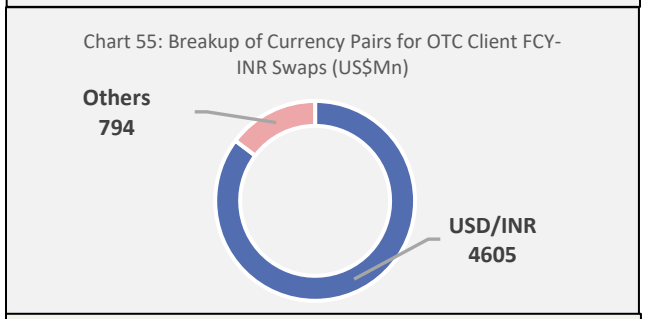


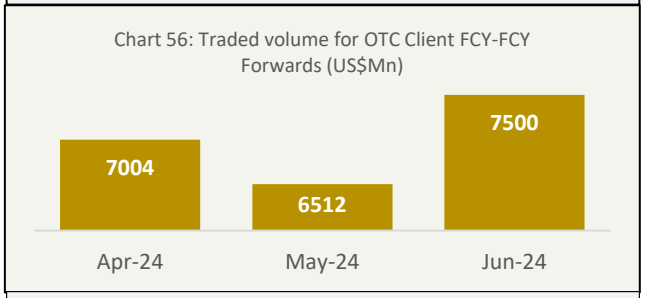


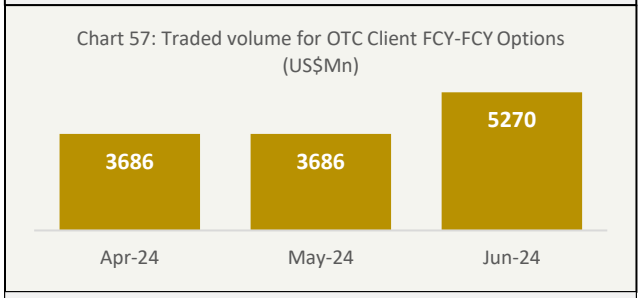


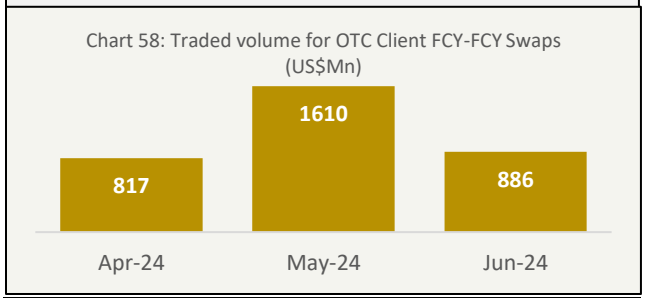


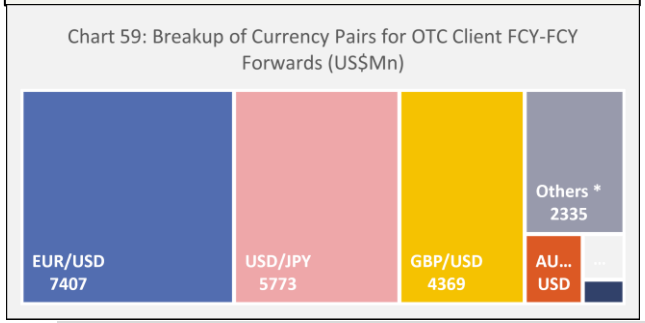


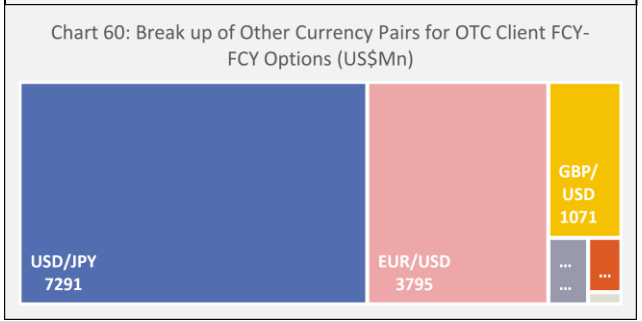


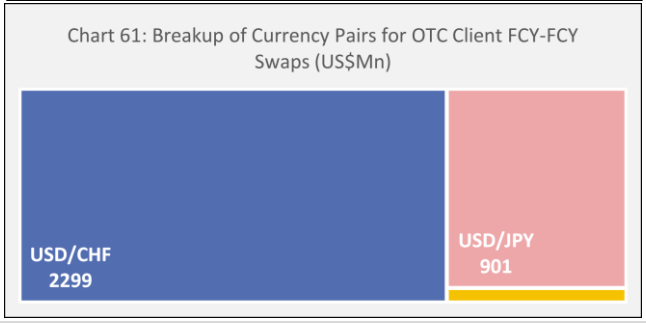












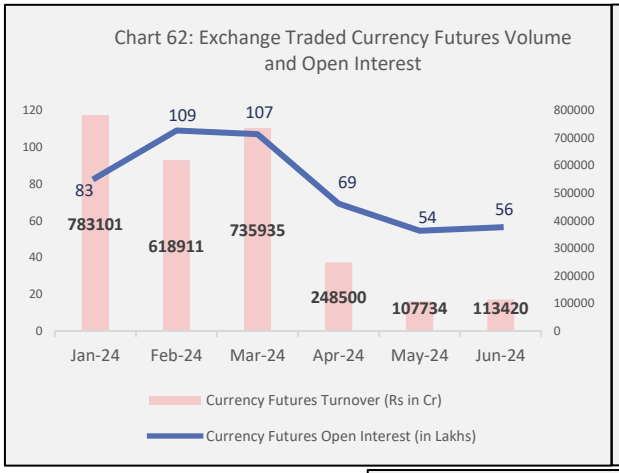
Data Source: CCIL. All values converted to USD Millions from Base Currency

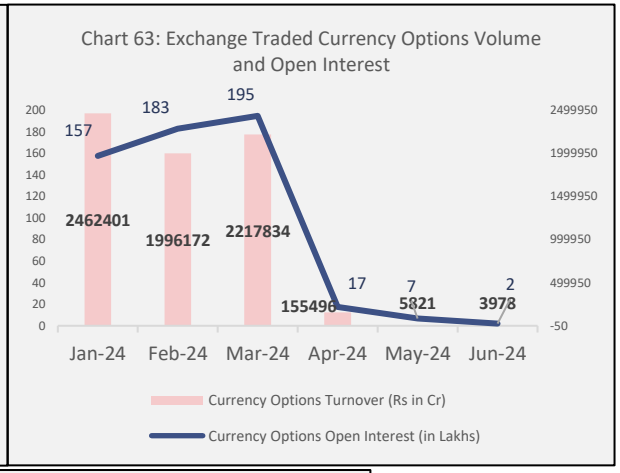
3.3. Indian Exchange Traded Derivatives Market

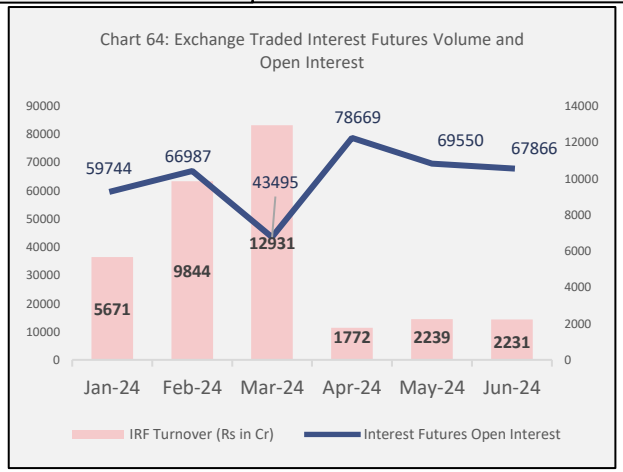
In the exchange-traded currency derivatives market, volumes in the currency futures and options segments witnessed a significant decline following the RBI's implementation of regulations for exchange-traded currency derivatives. Under the new regulations, rupee-denominated currency contracts traded on the NSE and the BSE, now require to demonstrate currency exposure. Although traders are not required to provide evidence of underlying exposure for positions up to $100 million, they must confirm the existence of such exposure.

Turnover in the currency futures segment slumped to Rs 113420 crore in June 2024 from Rs 735935 crore in March 2024. This decline in turnover was accompanied by a sharp reduction in open interest, which tumbled to 56 lakh contracts at the end of June 2024 from 107 lakh contracts in March 2024.

The same trend persisted in the currency options market, where turnover crashed to Rs 3978 crore in June 2024 from Rs 2217834 crore in March 2024. Open interest languished at just 2 lakh contracts at the end of June 2024, down from 195 lakh contracts in March 2024. In the exchange-traded interest rate derivatives market, turnover fell to a mere Rs 2231 crore from a peak of Rs 12931 crore posted in March 2024.







Data Source: NSE. BSE & MSEI. Amount in Rs Cr.

Trends and Insights into the Credit Default Swap Market

Manoel Pacheco and Abhishek Date[1]

1. Understanding Credit Default Swaps: Fundamentals and Mechanics

A Credit Default Swap (CDS) is a bilateral financial agreement in which the credit risk, on one or more reference entities, is transferred from one party to another. The structure of a CDS involves the reference entity, the Protection Buyer and the Protection Seller. The **Reference Entity** is the company which is the issuer of a debt obligation that underlies the CDS and is the entity on which the probability of default is assessed. The **Protection Buyer** purchases credit protection to safeguard against potential defaults by the reference entity. The **Protection Seller** agrees to compensate the buyer of protection in the event of a default or a certain credit event defined in the contract[2]. The Protection buyer entering into the CDS may have an exposure to the underlying reference entity or may merely want to express a view on specific credit risk related to the reference entity. The parties to the CDS agreement agree to align with ISDA specifications, which are documented in the ISDA Master Agreement.

In a CDS agreement, the credit protection buyer makes regular payments to the CDS credit protection seller. The periodic payments, referred to as **Coupon rate** on a CDS contract, is a compensation paid to the protection seller for taking on the credit risk of the reference entity. The CDS coupon rates are standardized based on the classification of the underlying reference obligation as either **investment-grade** or **high yield**. However, the credit risk, represented by the credit spread, can differ considerably among reference obligations, meaning that a uniform standardized rate may not always provide adequate compensation for the seller. For example, there are variations in credit spread among companies within the investment-grade and high-yield categories. Thus, the standardized rate might not align perfectly with the actual risk. This variation is managed by applying an **upfront premium,** which is the difference between the credit spread and the standardized rate, adjusted to present value. If the standardised rate is higher (lower) than the credit spread, the upfront premium is received (paid) by the credit protection buyer.

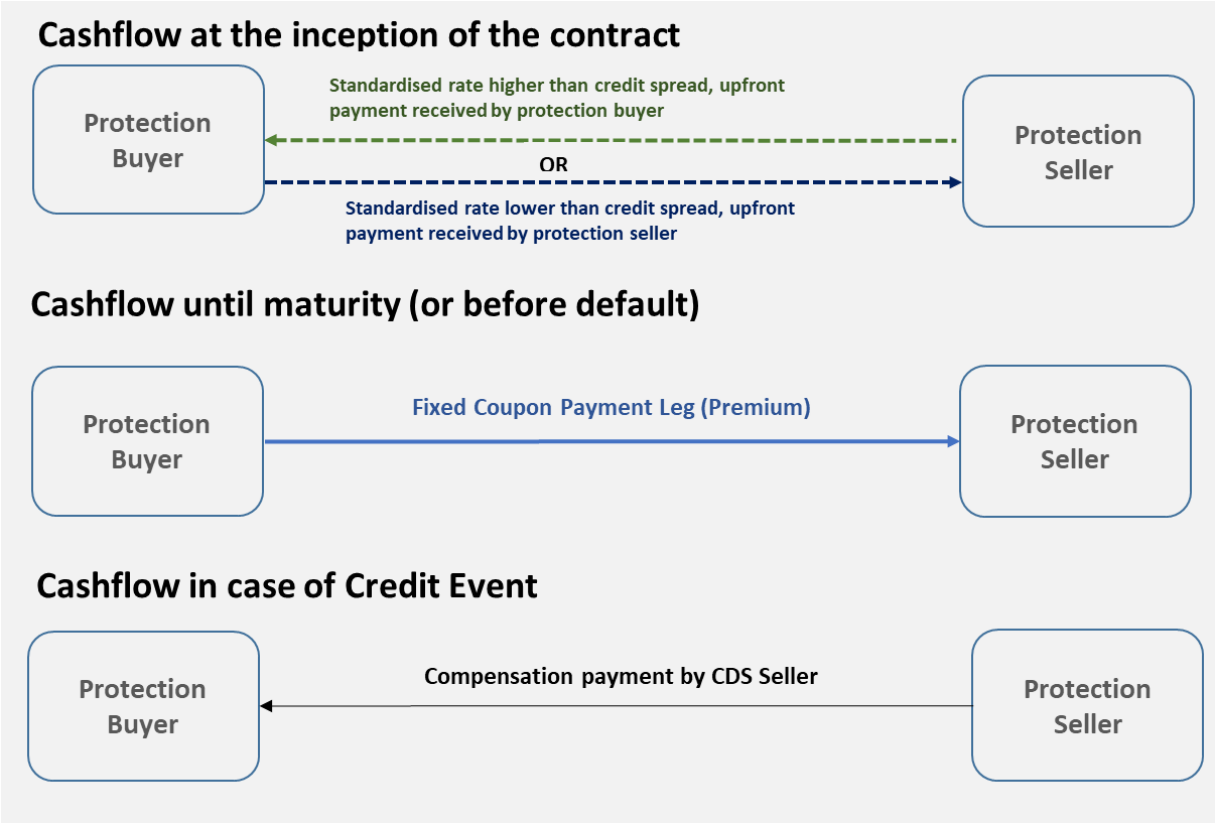
In case a credit event has occurred, CDS can be settled by physical settlement or by cash settlement. Physical delivery would involve that the reference obligation is exchanged for a payment by the credit protection seller. In cash settlement, the credit protection seller pays cash

[1] Manoel Pacheco is Senior Manager and Abhishek Date is Assistant Manager II, CCIL Research Department.

[2] Credit events are specific situation that will trigger a pay out in case of a CDS contract. These events can be failure to timely service debt obligation, an obligation default, bankruptcy, restructuring of the obligation or even a government intervention credit event. Obligation acceleration and Repudiation/Moratorium can also trigger credit events.

to the credit protection buyer[3]. The Figure 1 illustrates the payment structure during the term of the CDS contract and at the time a credit event is triggered.

Chart 1: Mechanics of CDS Contract



CDS can be classified into **single-name CDS** and **multi-name CDS**. Single-name CDS are instruments that offer protection against the default of a single reference entity, such as a corporation or government. These instruments are particularly useful for investors seeking to hedge against the credit risk of a specific issuer. Multi-name CDS, on the other hand, provide a way to manage the credit risk of a portfolio of entities. This category also includes instruments like CDS indices, which cover a basket of entities. Multi-name CDS are useful for investors who want to gain or hedge exposure to the credit risk of a broader segment of the market.

The subsequent section delves into the global market landscape, which include the trends in the CDS market, participation wise break up, the profile of the reference entities underlying a CDS contract and the behaviour of CDS spreads.

[3] A Determination Committee is tasked with the responsibility to determine (a) whether a Credit event has occurred (b) whether an auction should be held to determine the final price for CDS settlement and (c) which obligations should be delivered or valued in the auction.

4. Article in Focus

2. The Global Landscape of Credit Default Swaps

CDS contracts initially traded as bespoke bilateral contracts in the early to mid-1990s, by banks looking to hedge credit risk in their loan portfolios. Subsequent decade saw an enormous growth in CDS market as the market evolved. As new participants entered the market, there was an increase in CDS contracts issued for asset-backed securities (ABS) and mortgage-backed securities (MBS). Naked CDS contracts, where investors bought protection without owning the underlying asset, became extremely common.

Notional Amount Outstanding and GMV: The CDS market was at its peak, up until the Global Financial Crisis of 2008. Thereafter, volumes in the CDS market receded. Some of the reasons for

Chart 2: Notional Amount Outstanding of Total CDS Contracts

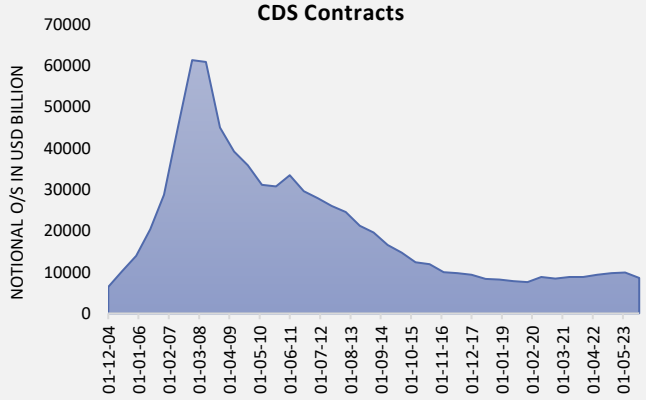
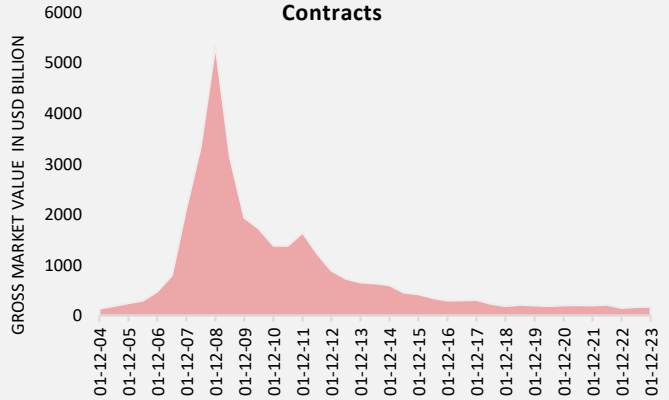
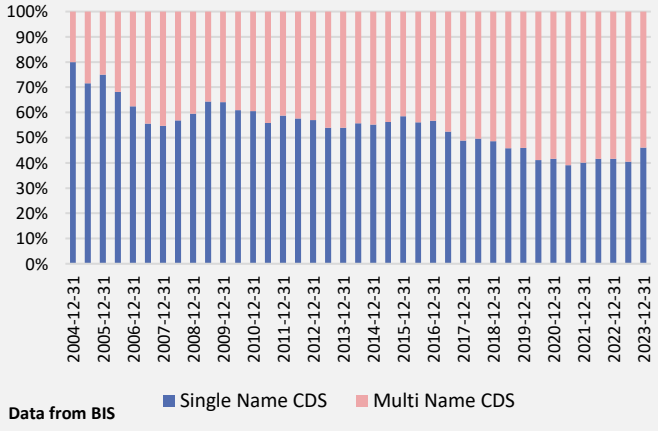


Chart 3: Gross Market Value of of Total CDS Contracts



a decline in volumes was the introduction of the compression of bilateral and multilateral portfolios, and the introduction of central clearing of CDS trades. Outstanding notional amounts fell from USD 61.2 trillion at the end of 2007 to USD 9.4 trillion, a decade later, standing at USD 8.54 trillion as of December 2023. Gross Market Value[4] of all outstanding derivative contracts witnessed a similar trend.

Chart 4: Share (%) of Single V/s Multi Name CDS



Type of CDS Contracts: Although the outstanding notional value of CDS contracts has been declining, the share of multi-name CDS within the total notional outstanding has been markedly increasing. This trend is partly driven by the growing popularity of CDS indices. Prominent examples of CDS indices include the iTraxx in Europe and the CDX in

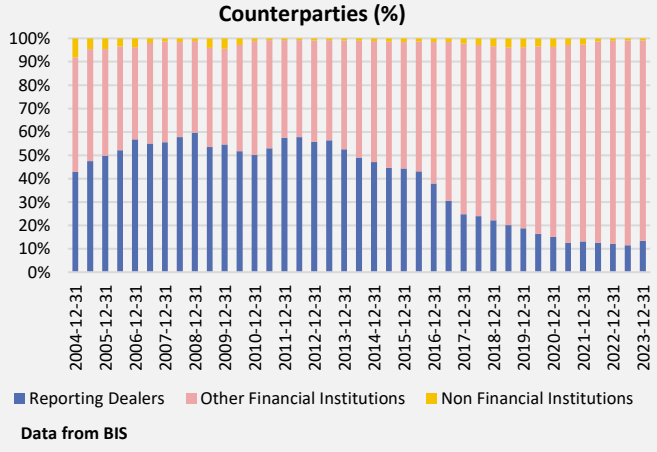
[4] Notional amount outstanding is defined as the gross notional value of all deals concluded and not yet settled at the reporting date. Gross market value is defined as the sum of the absolute values of all open contracts, with either positive or negative mark-to-market value, evaluated at market prices on the prevailing reporting date.

4. Article in Focus

North America, which cover a wide range of corporate issuers across different sectors and ratings. These indices offer a more diversified exposure compared to single-name CDS, making them attractive in times of market uncertainty. The increased transparency and standardization associated with CDS indices have also contributed to their rising share in the CDS market.

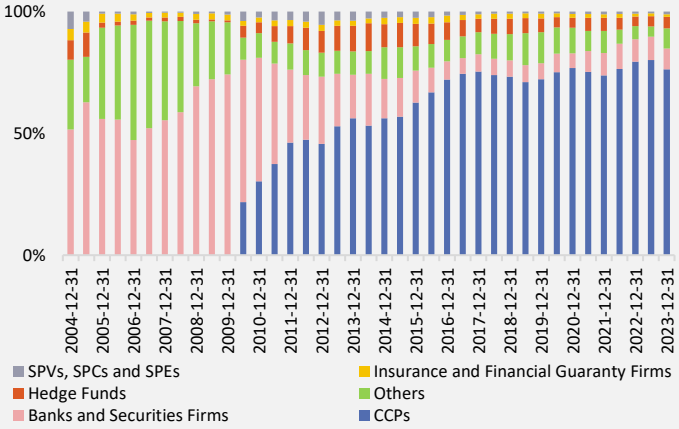
Participant-wise Analysis: According to BIS data, participants in the CDS market are categorized into three main groups: Reporting Dealers, Other Financial Institutions and Non-Financial Institutions. Reporting Dealers are commercial and investment banks and securities houses (that participate in the BIS semi-annual OTC derivatives statistic). Other Financial Institutions comprise of various other financial entities like banks, Central Counterparties (CCPs), funds and non-bank financial institutions which may be considered as financial end users (e.g., mutual funds, pension funds, hedge funds, etc). Non-Financial Institutions are corporations, high net worth individuals and non-financial government entities.

Chart 5.A: Categorywise Breakup of CDS Counterparties (%)



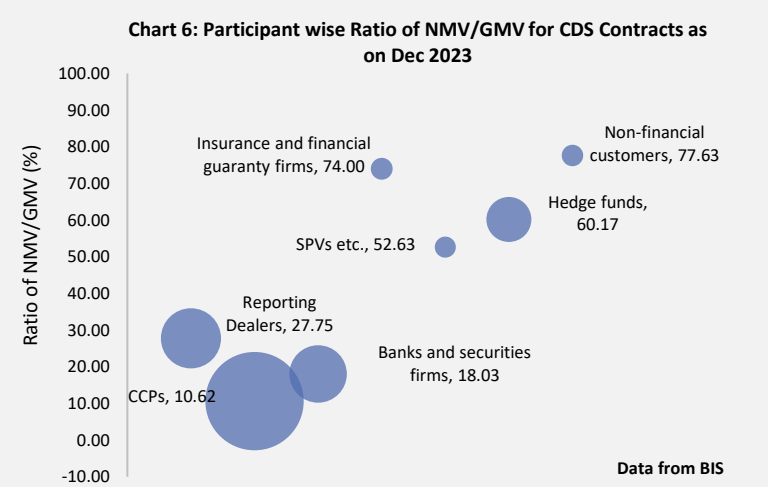
Data from BIS

Chart 5.B: Breakup of Other Financial Institutions (%)



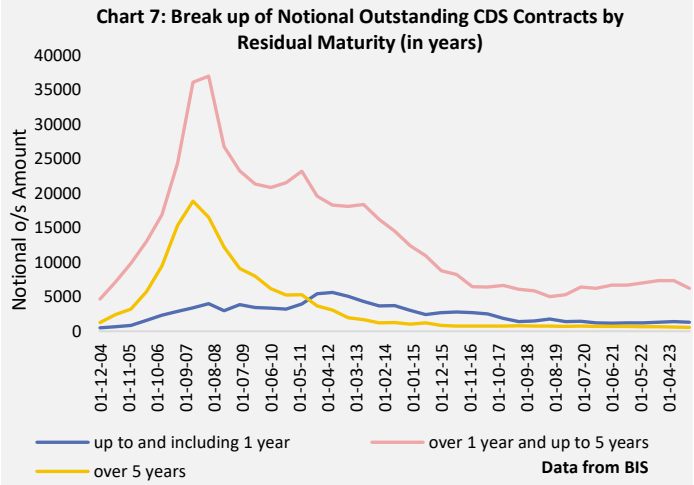
Traditionally, Reporting Dealers dominated the CDS market segment, reflecting their central role in market-making. However, since 2014, there has been a significant shift in the participant profile, as seen in Chart 5.A. Other Financial Institutions have increased their presence and now account for a larger share of the CDS market. Specifically, this growth has been largely driven by the increased use of CCPs. The emergence of CCPs in the CDS market (seen in chart 5.B) has contributed to the decline in the notional amount outstanding due to novation and multilateral netting.

4. Article in Focus



A counterparty profiling (Chart 6) indicates that the CCPs have one of the highest Gross Market Value[5] of CDS contracts and one of the lowest ratios of Net Market Value (NMV) to Gross Market Value, indicating a high degree of netting in comparison to other participants. Reporting Dealers and Banks/securities firms have an NMV/GMV ratio of 28% and 18% respectively. The highest ratios was recorded for insurance companies and non-financial companies, which suggests low incidences of netting for CDS trades by such counterparties.

Residual Maturity Profiling: A residual maturity-wise analysis of outstanding CDS contracts reveals that globally, contracts with residual maturities ranging from 1 to 5 years are the most prevalent, comprising over 75% of all outstanding contracts. This is followed by short-term contracts (less than 1 year), which make up 16% of the total. Notably, the 5-year tenor is the most active and frequently contracted tenor within the market.

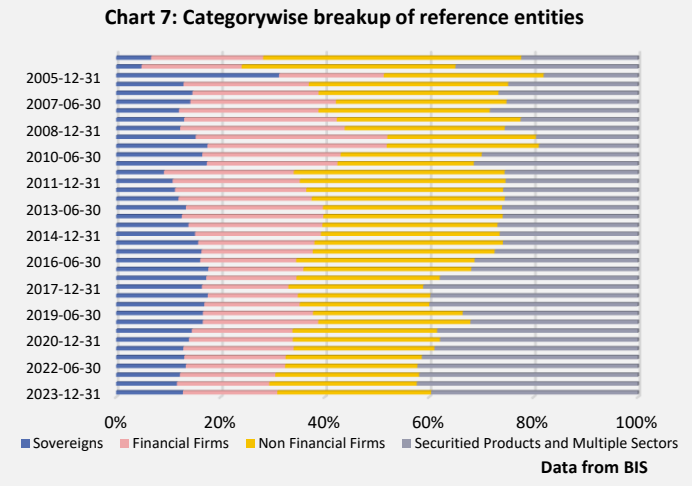


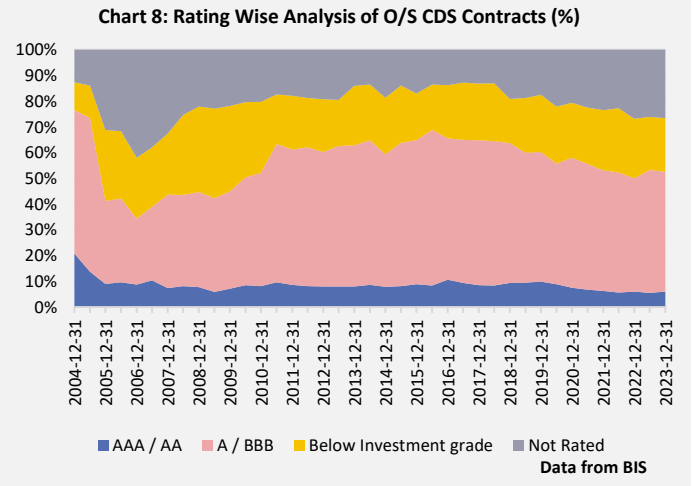
Breakup of Reference Entities and Rating: With respect to the reference entities as part of the CDS contracts, CDS protection against sovereign debt, financial firms as well as non-financial firms have witnessed a gradual decline (Chart 7). Additionally, before 2005, most CDS contracts were written on investment-grade reference obligations, representing about 70% of the market. However, between 2005 and 2009, the share of these contracts fell sharply to around 30% to 40%. During this time, there was a significant increase in CDS contracts linked to below-investment-grade obligations. Post the GFC, there has been a notable shift in CDS contracts towards entities with higher credit rating, with a substantial rise in contracts linked to 'A' rated and 'BBB' rated instruments.

[5] The size of the bubble represents the GMV of the respective participants. The axis represents the Ratio of NMV/GMV.

Data from BIS

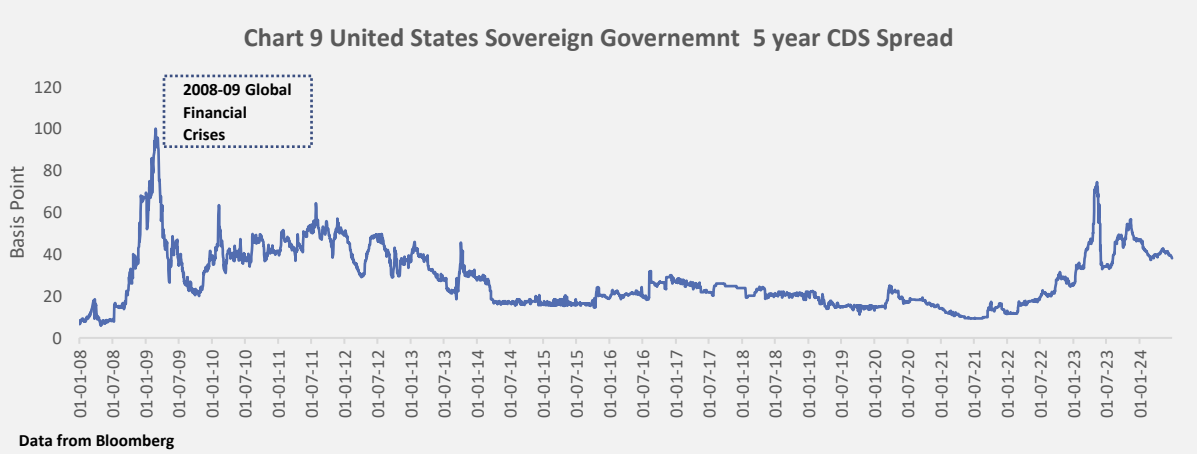
4. Article in Focus



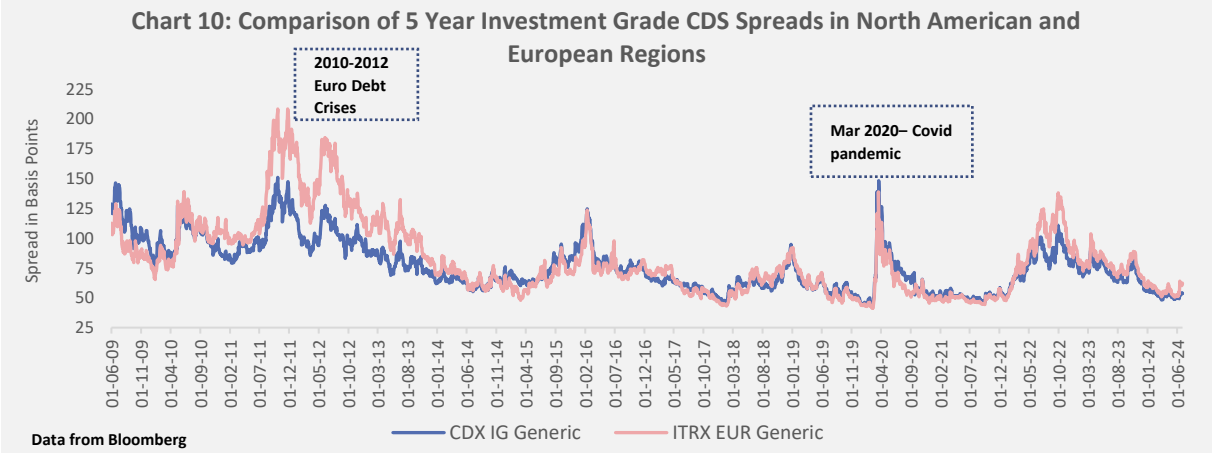


CDS Spread: CDS prices are frequently quoted in terms of credit spreads. CDS spreads are a useful indicator of widening credit risk, capturing the heightened fears of default across different geographies, countries, and companies. When investors perceive an increased risk of default, they demand higher spreads, reflecting their growing concerns about the creditworthiness of the issuer. This behaviour has been observed across different market conditions in the past.

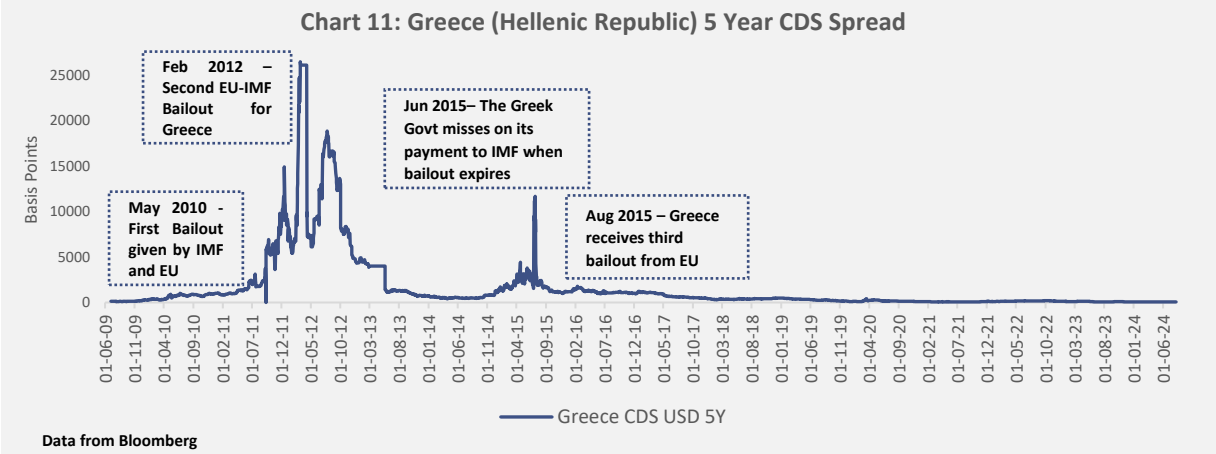
For example, during the Global Financial Crisis (GFC) of 2008, financial markets were gripped by a surge in credit risk, which was starkly reflected in widening CDS spreads. The collapse of Lehman Brothers, a pivotal event of the GFC, sent shockwaves through the financial system, and caused a significant widening of CDS spreads, not only on U.S. banks exposed to subprime mortgages but also on U.S. sovereign debt (Chart 9).



The Eurozone debt crisis that followed in 2010 brought its own set of challenges. As the crisis unfolded, CDS spreads across the European region saw a substantial increase on both sovereign and corporate debt, with a notable divergence between the CDS Indices on the European and North American region (Chart 10).

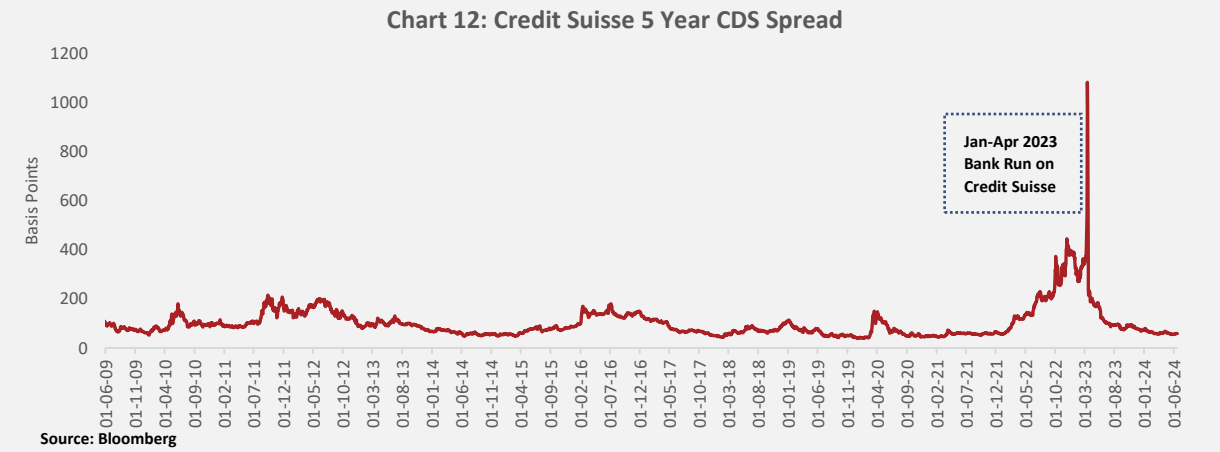


In particular, during this crisis, the CDS spreads for Greek sovereign debt surged dramatically as Greece teetered on the brink of default and required multiple bailouts (Chart 11). The contagion effect soon spread to other peripheral Eurozone countries, as fears of a broader Eurozone collapse intensified.



The COVID-19 pandemic in 2020 created a new wave of uncertainty, with CDS spreads again serving as a barometer of market anxiety. As the pandemic's economic impact became apparent, CDS spreads for a diverse range of issuers widened sharply.

The CDS market regained attention with the news of a bank run on Credit Suisse in early 2023. The failure of Credit Suisse led to an increase in its CDS spreads, mirroring investor concerns about the bank's solvency and the broader market implications (Chart 12). This episode further illustrated the role of CDS spreads in signaling volatility and credit risk.



3. CDS Market: The India Chapter

The Reserve Bank of India (RBI) first published draft guidelines for the introduction of credit derivatives in India in 2003.[6] These guidelines permitted banks to use credit derivatives only for managing their credit risk and prohibited them from taking long or short credit derivative positions with trading intent. In 2007, the RBI allowed primary dealers and commercial banks to begin transacting in single-entity CDS.[7]

Then, in 2011, the RBI introduced new CDS guidelines for plain vanilla OTC single-name CDS for corporate bonds in India.[8] The RBI also allowed non-banking financial companies, primary dealers, and commercial banks to quote both buy and sell CDS spreads, even without having the underlying bond. However, CDS was allowed only on reference entities whose corporate bonds were listed. In the 2013 guidelines, the RBI permitted rated unlisted corporate bonds to be used as reference entities in CDS contracts. Additionally, users were allowed to unwind their CDS bought position with original protection seller at mutually agreeable or FIMMDA price. CDS were also permitted on securities with original maturity up to one year like Commercial Papers, Certificates of Deposit and Non-Convertible Debentures.[9]

Another important regulatory development was the passage of the Act for Bilateral Netting of Qualified Financial Contracts, 2020, pursuant to which the RBI notified that OTC derivatives including CDS contracts were qualified financial contracts for netting[10].

In 2022, The RBI introduced new guidelines known as the Master Directions for Credit Derivatives, for all credit derivatives transactions undertaken in OTC markets and on recognized

[6] https://www.rbi.org.in/Scripts/NotificationUser.aspx?Id=1097&Mode=0

[7] https://www.rbi.org.in/Scripts/NotificationUser.aspx?Id=3521&Mode=0

[8] https://www.rbi.org.in/scripts/NotificationUser.aspx?Id=6853&Mode=0

[9] https://www.rbi.org.in/Scripts/NotificationUser.aspx?Id=7793&Mode=0

[10] Excerpt from Corporate Bond Markets in India – Challenges and prospects, keynote address delivered by Shri T Rabi Sankar, Deputy Governor on August 24, 2022 at BCCI, Mumbai

stock exchanges in India.[11] These guidelines allow scheduled commercial banks and NBFCs, except small finance banks, payment banks, local area banks, and regional rural banks, to be market makers in the CDS market. The guidelines also permit EXIM, NABARD, National Housing Bank, and SIDBI to become market makers. Insurance companies, pension funds, mutual funds, alternative investment funds, and foreign portfolio investors regulated by SEBI are eligible to act as protection buyers or sellers in the CDS market. Retail users are also allowed to buy protection for hedging, while non-retail users can buy CDS contracts for hedging or otherwise.

As per these extant Directions, the reference entity in a CDS contract must be a resident entity eligible to issue debt instruments. These eligible reference obligations in a CDS contract in India include money market debt instruments, rated rupee based corporate bonds and debentures, unrated rupee corporate bonds and debentures issued by special purpose vehicles set up by infrastructure companies, bonds with call/put options, asset-backed securities/mortgage-backed securities, and structured obligations.

Market participants can settle CDS contracts bilaterally or through any clearing and settlement arrangement approved by the Reserve Bank. CDS contracts can be cash settled, physically settled or settled through auction. Market-makers must report all OTC CDS transactions, including unwinding, novation, settlement transactions, and any credit, substitution, or succession events, within 30 minutes to the trade repository of the Clearing Corporation of India Ltd.

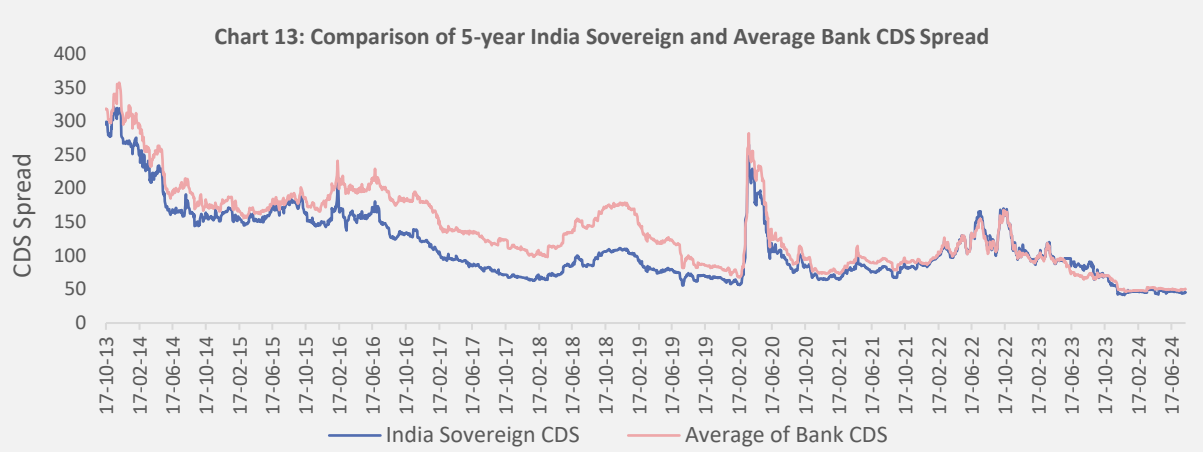
In January 2023, SEBI permitted Alternative Investment Funds (AIFs) to participate in the CDS market as both protection buyers and sellers, allowing them to hedge risks associated with the corporate bond market, provided they align with the Master Directions of the RBI. In June 2024, SEBI issued a consultation paper that proposes to allow mutual funds to buy and sell CDS, marking a significant step towards deepening the credit derivatives market in India.[12]

As of today, the Indian CDS market remains at a nascent stage; although, there is some level of activity in offshore CDS market consisting of contracts on dollar denominated debt issued by select Indian corporates and banks. Chart 13 compares 5 year Average Bank CDS spread[13] on such dollar denominated debt and the CDS spread on Indian Sovereign debt, wherein the average Bank spread is seen to be higher than the Sovereign CDS spread.

[11] https://www.rbi.org.in/Scripts/NotificationUser.aspx?Id=12226&Mode=0

[12] https://www.sebi.gov.in/reports-and-statistics/reports/jun-2024/consultation-paper-on-flexibility-in-participation-by-mutual-funds-in-credit-default-swaps-cds-_84021.html

[13] Average Bank CDS spread represents the simple average of the 5 year CDS spread on dollar denominated senior debt by ICICI bank, IDBI Bank, Bank of India, State Bank of India and EXIM Bank.



Nonetheless, hedging credit risk using derivatives such as CDS is yet to be widely adopted in India, as the underlying Indian corporate bond market has not yet achieved sufficient liquidity. The recent regulations that have facilitated a wider issuer base, participant base and an inclusion of a broader set of eligible reference obligations will foster the development of a deeper and more robust CDS market in India.

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