Global Research
& Risk Solutions

CRISIL
An S&P Global Company

TIIE-ing it up

Banco de México RFR transition phases, challenges and updates

June 2024

CRISIL GR&RS analytical contacts

Nageswara Ganduri
EMEA and APAC Head of Quantitative Services
nageswara.ganduri@crisil.com

Ashok Kumar Subramanian
UK Lead, Model Risk and Controls
ashok.subramanian@crisil.com

Nimisha Nidhi
Associate Director – Quantitative Services
nimisha.nidhi@crisil.com

Goodbye and a Fond-eo welcome

Mexico will replace its benchmark 28-day interbank equilibrium interest rate (TIIE) with a new risk-free rate (RFR), TIIE de Fondeo (F-TIIE or Funding TIIE), at the end of this year.

The 28-day TIIE is calculated by the Banco de México (Banxico) on each business day for a term of 28 days, based on quotes submitted by financial institutions interested in participating in the determination of the rate.

Therefore, this rate does not satisfy the international criteria for reference rate, which is poised to be based on transactions observed in Mexico's money market.

The 91-day and 182-day TIIE have already transitioned to the new F-TIIE from January 1, 2024.

The overnight F-TIIE is based on actual transaction data. It is computed using wholesale overnight repurchase agreement (repo) transactions denominated in Mexican peso, settled by banks and brokerage firms.

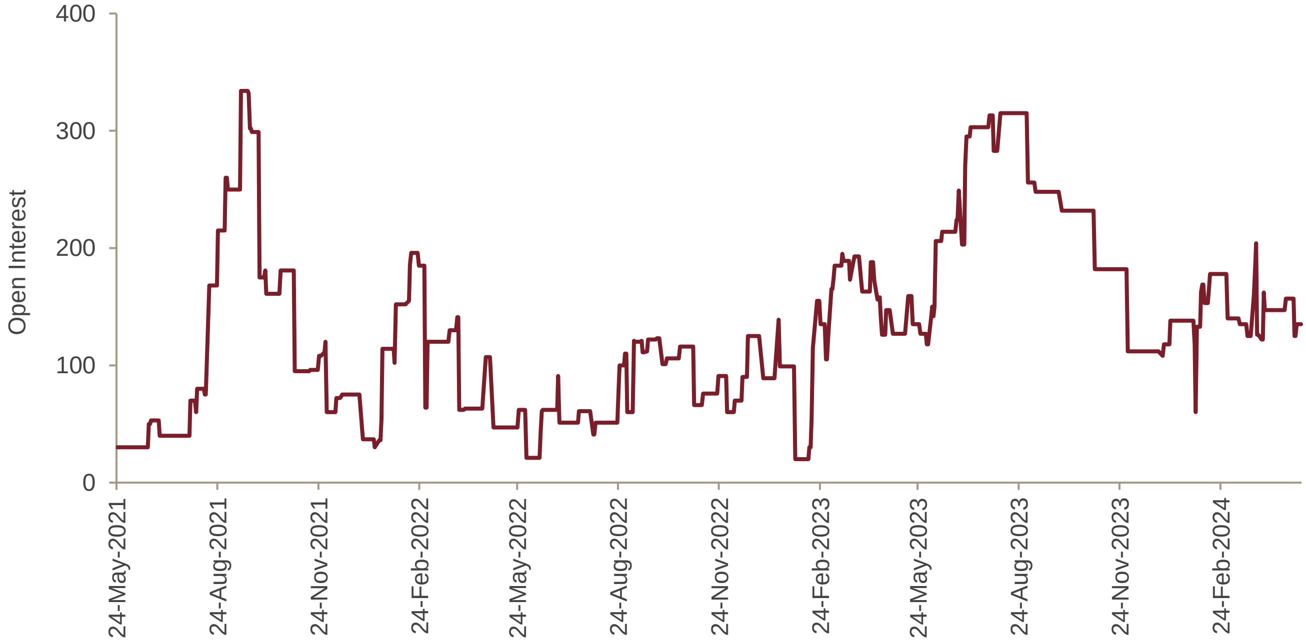
The repo transactions are secured by debt instruments issued by the Mexican federal government, the Mexican Bank Savings Protection Institute (IPAB) and Banxico.

The overnight F-TIIE is calculated as a volume-weighted median of interest rates paid on Mexican peso-denominated repo transactions.

Banxico has been publishing the overnight F-TIIE since January 2020. The new rate is being increasingly used for cash market contracts, such as corporate bonds issuance, floating-rate notes, syndicated loans and certificates of deposit.

That said, the derivatives market is not up to speed in adopting the new rate.

Figure 1: Open interest of F-TIIE futures (launched by CME in 2021) across all maturities



Source: Bloomberg

Transition

Unlike the London Interbank Offered Rate (LIBOR), the benchmark 28-day TIIE will not cease to exist. Rather, it will be published with a modified methodology as a function of the overnight F-TIIE from the start of next year, strictly for legacy contracts only.

The change in methodology ensures that the legacy contracts will not have to undergo cumbersome paperwork for their continuation, which proved challenging during the LIBOR transition.

Referencing the new contracts to the modified TIIE will be prohibited from January 1, 2025.

In the modified methodology, the term TIIE will not be compounded in-arrears (like in the ISDA fallback methodology), but instead it will be known in advance.

Banxico will take the overnight F-TIIE of the day prior to the reference day being determined and compound that rate by the number of days in the corresponding term, with an added spread adjustment of 24 basis points (bps).

This has already taken effect for the 91-day and 182-day TIIE since the start of this year[1].

$$Term\ TIIE = \left[\left(1 + \frac{TF_{t-1} + A}{36000}\right)^{n} - 1\right] \times \frac{36000}{n} + Adjustment\ differential$$

Here,

n is the reference period of TIIE for terms greater than one banking business day, equivalent to 28, 91 and 182 days for each category of TIIE.

TF_{t-1} is Funding TIIE, expressed in percentage points, applicable on the previous banking business day.

A is a variable equivalent to the number of bps by which the overnight interbank interest rate, as determined by Banxico 's Board of Governors as the target rate for monetary policy purposes, applicable as of the banking business day corresponding to t, has been changed. This assumption will be observed only on the first day on which the change in the monetary policy target rate determined by the Board of Governors is applicable.

Adjustment differential is constant equivalent to 24 bps for any of the terms n. It is calculated as the historical median of the five years (November 2017-October 2022) of the daily differences between the TIIE with tenures greater than one business day and the overnight Funding TIIE compounded by the number of days of the respective term.

This methodology allows participants to know the cash flow amount at the start of the interest rate period in the case of a lending contract.

However, this could lead to more volatile payments as the methodology does not account for each day’s overnight rate in the compounding formula.

In contrast, the International Swaps and Derivatives Association’s (ISDA’s) methodology smoothens out the daily volatility by taking the compounded average of each day’s overnight rate.

However, the volatility will affect only the legacy contracts. The new contracts will need to refer to the in-arrears rate, similar to the ISDA approach, where the daily compounding will smooth out the volatility.

[1] Detailed in Annex 11 of Circular 4/2023

Phases

Banxico is aiming to build liquidity in F-TIIE derivatives with a three-part initiative, F-TIIE Primero.

That said, it is doubtful that markets can develop sufficient liquidity in the given time window, i.e., until year end, considering the modest liquidity at present.

The transition to the benchmark F-TIIE spans three phases.

Phase 1 was carried out in the first quarter of 2024. Participants had to provide liquidity in F-TIIE futures contracts and offer F-TIIE swaps as a priority. Further, corporates had to issue debt linked to the new RFR.

To note, banks have been issuing floating rate bonds tied to the RFR since 2021.

In phase 2, which spans the second quarter, firms should use F-TIIE in complex derivatives such as cross-currency swaps and swaptions. Additionally, F-TIIE curves are to be used for valuation purpose.

Phase 3 will take place in the second half of the year. Banks will have to link loan agreements to the new RFR, and clearing houses will need to complete the conversion of legacy TIIE swaps.

Phase 1	Phase 2	Phase 3
• First quarter of 2024 • Participants to provide liquidity in F-TIIE futures contracts • Participants to offer F-TIIE swaps • Corporates to issue debt linked to the new RFR	• Second quarter of 2024 • Firms to use F-TIIE in complex derivatives such as cross-currency swaps and swaptions • Firms to use F-TIIE curves for valuation purpose	• Second half of 2024 • Banks to link loan agreements to the new RFR • Clearing houses to complete conversion of legacy TIIE swaps

Challenges

The transition from the benchmark TIIE to F-TIIE faces some headwinds.

Lack of liquidity in F-TIIE derivatives

Lack of liquidity and the short window, until the end of 2024, to build liquidity in F-TIIE derivatives pose challenges.

By contrast, the SOFR transition for vanilla swaps was initiated in July 2021, around two years ahead of the LIBOR switch-off date, combined with a three-year track record for over-the-counter (OTC) clearing services.

The conversion of the legacy TIIE contracts to F-TIIE RFR contracts is expected to boost liquidity in the second half of this year.

Complexity of legacy contracts

The divergence from the ISDA fallback methodology in computing the term rate complicates the conversion of the legacy contracts to the new RFR.

Instead of adding a basis (like in the ISDA fallback methodology for LIBOR trades), the clearing house needs to chart a new transition plan for legacy swaps.

This makes the transition of the legacy contracts a challenging task. It would also lead to a mismatch in the way the overnight F-TIIE is compounded for the legacy and new contracts.

The legacy contracts will compound the previous day's overnight rate for 28 days and then add a spread adjustment of 24 bps. This would generate the interest rate in advance, which is an important criterion for lending contracts.

The new contracts will follow the ISDA methodology, which is daily compounding of the overnight F-TIIE for the period. This implies that the rate will be computed in-arrears.

Vendor platforms such as Murex and Numerix also need to account for the additional technical complexity on their platforms.

Conversion of legacy contracts

Converting the legacy contracts to F-TIIE RFR contracts is expected to be the preferred choice of market participants. Thus, a cash compensation needs to be computed.

However, the divergence between the Banxico methodology using single F-TIIE fixing and the multiple F-TIIE fixings for backward-looking F-TIIE RFR contracts makes the F-TIIE curve construction crucial for determining the net present values (NPVs) of contracts, and hence the cash compensation.

Updates

CME launched the F-TIIE futures contract in May 2021. This has helped market participants manage short-term interest rate risk on the new RFR index.

Most recently, CME launched its first clearing service of F-TIIE swaps on February 5, 2024.

The transition of approximately 60 trillion notional Mexican peso contracts (~USD 3.5 trillion) to F-TIIE needs to be completed by November. CME has over 90% market share in this.

The local central counterparty (CCP), Asigna, added the swap clearing service in late February. LCH is looking to launch this service in 2024 ahead of the benchmark rate conversion event.

CME and Asigna plan to convert the legacy cleared 28-day TIIE swaps to cleared F-TIIE swaps through a conversion process scheduled over the weekend of November 9, 2024. Meanwhile, LCH plans to complete the legacy transition over the weekend of November 23, 2024.

This will positively impact liquidity in the cleared F-TIIE market.

In December 2023, Banxico issued a waiver that permits an additional year for trading in 28-day TIIE contracts expiring by the end of 2025.

Considering this wavier, CME cleared 28-day TIIE swaps set to mature beyond the end of 2025 will be in scope for conversion to F-TIIE swaps. Swaps expiring before the end of 2025 will not be converted to F-TIIE.

It is important to take a call on the legacy TIIE contracts. Without conversion, the legacy contracts would refer to the new TIIE as per Banxico's methodology.

Market participants would prefer converting the legacy contracts to backward-looking F-TIIE contracts, taking into consideration liquidity, fungibility and hedging.

In case of no conversion, projections of F-TIIE fixings will be used to determine the future NPV of the TIIE contract.

If converted, the contract would be valued using multiple F-TIIE fixings (for backward-looking compounded rate).

The divergence between the estimated single F-TIIE fixing and multiple F-TIIE fixings makes the curve construction crucial in determining the cash compensation to account for the difference in NPV of the instruments referencing the F-TIIE RFR and the modified TIIE.

Conclusion

The transition from the quotes-based 28-day TIIE to the transactions-based F-TIIE RFR is not straightforward. It faces challenges from lack of liquidity in F-TIIE derivatives and complexity of the legacy contracts.

The illiquidity risk in F-TIIE derivatives is exacerbated by the fast-approaching expiry date of the 28-day TIIE, i.e., December 31, 2024.

Nevertheless, unlike LIBOR/IBOR, the 28-day TIIE will not face any index cessation event.

It would instead be calculated using Banxico's new methodology. This methodology calculates the 28-day TIIE as a forward-looking value by compounding F-TIIE on the prior day and adding a spread adjustment of 24 bps.

As the modified TIIE will be known in advance, it will be useful for loan contracts.

However, being pegged to a single-day F-TIIE, the new TIIE will be volatile. Contracts referencing the modified TIIE will also face hedging obstacles.

Further, it implies that the legacy and new contracts would be valued differently.

Market participants would prefer to convert the legacy contracts to new F-TIIE RFR contracts. This will boost liquidity of the F-TIIE contracts in the derivatives markets towards the end of this year.

How CRISIL can help

CRISIL has a strong track record of aiding global banks in their IBOR transition efforts.

It has supported a wide range of functions within the banks, including front-office quants, risk quants, model risk, market risk, and front/middle-office COO functions.

CRISIL has been helping the banks design, build and test the new RFR curves, and replicate NPV and risk of products based on the RFR curves in pricing as well as in standard initial margin model (SIMM)/value at risk (VaR) framework.

It has also been supporting the banks in building new models and performing impact analysis, profit and loss (PnL) attribution, stress testing and VaR computation as part of an ongoing monitoring plan.

CRISIL, with its expertise and experience in IBOR transition, can assist market participants in the following key areas:

- Develop MXN curve framework and F-TIIE products
- Validate F-TIIE curve and other curves dependent on F-TIIE curve
- Perform and validate F-TIIE linear and non-linear products' valuation, PnL attribution, and risk analysis
- Calculate impact of transition on market risk and capital charges; carry out proxy and performance analysis for VaR, expected shortfall and margin models
- Model various adjustments, such as payment adjustments and convexity adjustments, if required
- Perform ongoing model and performance monitoring of F-TIIE products
- Analyse the upcoming trends in the market and run the transition programme

About Global Research & Risk Solutions

CRISIL GR&RS is a leading provider of high-end research, risk and analytics services. We are the world's largest provider of equity and fixed-income research support to banks and buy-side firms. We are also the foremost provider of end-to-end risk and analytics services that include quantitative support, front and middle office support, and regulatory and business process change management support to trading, risk management, regulatory and CFO functions at world's leading financial institutions. We also provide extensive support to banks in financial crime and compliance analytics. We are leaders in research support, and risk and analytics support, providing it to more than 75 global banks, 50 buy-side firms covering hedge funds, private equity, and asset management firms. Our research support enables coverage of over 3,300 stocks and 3,400 corporates and financial institutions globally. We support more than 15 bank holding companies in their regulatory requirements and submissions. We operate from 8 research centers in Argentina, China, Colombia, India, and Poland, and across several time zones and languages.

About CRISIL Limited

CRISIL is a leading, agile and innovative global analytics company driven by its mission of making markets function better.

It is India's foremost provider of ratings, data, research, analytics and solutions with a strong track record of growth, culture of innovation, and global footprint.

It has delivered independent opinions, actionable insights, and efficient solutions to over 100,000 customers through businesses that operate from India, the United States (US), the United Kingdom (UK), Argentina, Poland, China, Hong Kong, Singapore, Australia, Switzerland, Japan and the United Arab Emirates (UAE).

It is majority owned by S&P Global Inc, a leading provider of transparent and independent ratings, benchmarks, analytics and data to the capital and commodity markets worldwide.

CRISIL Privacy Notice

CRISIL respects your privacy. We may use your personal information, such as your name, location, contact number and email id to fulfil your request, service your account and to provide you with additional information from CRISIL. For further information on CRISIL's privacy policy please visit www.crisil.com/privacy.

Argentina | Australia | China | Colombia | Hong Kong | India | Japan | Poland | Singapore | Switzerland | UAE | UK | USA
CRISIL Limited: CRISIL House, Central Avenue, Hiranandani Business Park, Powai, Mumbai – 400076. India
Phone: + 91 22 3342 3000 | Fax: + 91 22 3342 3001 | www.crisil.com
/company/crisil-global-research-&-risk-solutions @CRISILGRRS /CRISILLimited /user/CRISILLimited /lifeatcrisil