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# Interest Rate Derivatives, Benchmark Rates and Development of Financial Markets in EMDEs

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This paper outlines the critical role of interest rate derivatives (IRDs) in supporting the development of financial markets in emerging market and developing economies (EMDEs). It also examines the significance of reliable, robust interest rate (IR) benchmarks, a cornerstone for developing efficient IRD markets. The paper draws valuable lessons from the transition from LIBOR to overnight risk-free rates (RFRs) in advanced economies (AEs), applying these insights to the context of EMDEs. Through case studies, it shows how various EMDE jurisdictions have successfully adopted and implemented more robust and transparent IR benchmarks.

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## EXECUTIVE SUMMARY

Banks in EMDEs<sup>1</sup> play a critical role in financing economic activity and growth. However, the nature and type of financing they provide is often constrained by their ability to manage balance sheet risks. A primary example is the need to contain mismatches between the IR risks of their deposit bases (consisting of short-term floating-rate liabilities) and their loan portfolios. Without the ability to manage IR risk, banks will offer loans with either short-term fixed rates or floating-rate loans with a short duration. Longer-term fixed- or floating-rate financing is not available.

IRDs are used less by EMDE banks than by those in AEs<sup>2</sup>, but they offer a solution: they enable EMDE banks to manage their risks and constructively shift the profile of their lending activities to longer-term floating- or fixed-rate financing that supports economic growth.

Robust IR benchmarks are core building blocks in the development of financial and derivatives markets. Transaction-based benchmarks reflect actual market activity and can be customized to each market's specific needs and characteristics. Several EMDE jurisdictions – including Türkiye, Malaysia, Thailand, Kazakhstan and Egypt – have successfully adopted and implemented more robust and transparent IR benchmarks, reflecting a shift towards using actual transaction data for more accurate and reliable reference rates.

RFRs identified as alternatives to LIBOR in AEs are also examples of transaction-based benchmarks. The transition to these RFRs holds important insights for EMDEs undertaking similar processes.

<sup>1</sup> The term 'emerging market and developing markets' (EMDEs) as used in this paper refers to the International Monetary Fund's (IMF) World Economic Outlook country classification system, which divides the world into two major groups: advanced economies and EMDEs [www.imf.org/external/pubs/ft/weo/2021/02/weodata/groups.htm](http://www.imf.org/external/pubs/ft/weo/2021/02/weodata/groups.htm)

<sup>2</sup> Interest Rate Risk Management by EME Banks [www.bis.org/publ/qtrpdf/r\\_qt2309c.htm](http://www.bis.org/publ/qtrpdf/r_qt2309c.htm)

## EMDE BANKS AND MANAGING IR RISK<sup>3</sup>

Banks are typically an EMDE's dominant, if not only, form of financial intermediation. As such, they support economic growth and development via lending to corporations, managing customer deposits, investing in sovereign debt and facilitating the financing of foreign trade.

However, these activities can expose banks to a range of risks: credit risk from lending; IR risk on both sides of the balance sheet; foreign exchange risk from financing and trade receivables; and liquidity risk from maturity mismatches between assets and liabilities.

IR risk needs to be prudently managed so banks can efficiently support the economic activities of their customers and clients. Derivatives play a key role for banks in managing this risk. Without these risk management tools, banks may be significantly hampered by the amount and type of credit/loans they can extend, as they need to closely match assets and liabilities.

For example, EMDE banks potentially face an imbalance between the composition of their assets and their liabilities. Government bond issues held by banks (assets) will generally be fixed rate, relatively illiquid and longer dated. On the other hand, customer deposits (liabilities) are traditionally short term, can be withdrawn quickly and carry a floating rate.

To manage the risk of these imbalances/mismatches (both the maturity and IR profiles of the assets and liabilities), banks focus their lending activities on shorter-dated and/or floating-rate loans to offset their shorter-dated floating-rate deposits. However, this creates several challenges for banks, as well as for government issuers, corporate borrowers and individual depositors.

First, if banks need to manage their assets by balancing their liabilities without the ability to use derivatives, they will be restricted in what form they can provide credit to their corporate customers. They may not be able to provide lower-cost longer-term financing – meaning companies will instead have to rely on short-term fixed or effectively floating-rate loans. This creates higher costs for fixed-rate lending and uncertainty over IR flows for corporates, which may impede their ability to invest and grow.

Second, government financing activity could be more difficult without the ability to use derivatives by banks. If governments wish to lengthen the maturity of their debt to lower the rollover on their issuance program, they may face higher costs or less demand because banks that buy the debt cannot manage the risk of the longer maturity fixed-rate profile. Banks' use of derivatives to hedge the risk of longer-dated bonds could mitigate this issue.

In recent years, the percentage of total assets held by EMDE banks in securities has increased. It “has significantly exceeded that at AE banks since the Covid-19 crisis... For EMDE banks, this share rose as they stepped in to absorb the increased supply of government debt<sup>4</sup>.” As banks' holdings of government debt have grown, the duration of their portfolios has also increased.

EMDE markets often exhibit greater volatility than more advanced markets. This volatility could lead to liquidity events or other disruptions that result in a spike in rates and a sharp downturn in economic activity in markets where hedging is not possible. The ability to prudently and appropriately use derivatives to hedge exposures and manage risks can serve to absorb these shocks.

After the end of a period of sustained low interest rates on a global level, significant attention is being paid to interest rate risk in the banking book (IRRBB) by policymakers and market participants in all jurisdictions, including EMDEs.

<sup>3</sup> This section is adapted from the ISDA paper, *Policy Framework for Safe and Efficient Derivatives Activity in Emerging and Developing Markets* [www.isda.org/a/YHVgE/Policy-Framework-for-Safe-and-Efficient-Derivatives-Activity-in-Emerging-and-Developing-Markets.pdf](http://www.isda.org/a/YHVgE/Policy-Framework-for-Safe-and-Efficient-Derivatives-Activity-in-Emerging-and-Developing-Markets.pdf)

<sup>4</sup> Interest Rate Risk Management by EME Banks [www.bis.org/publ/qtrpdf/r\\_qt2309c.htm](http://www.bis.org/publ/qtrpdf/r_qt2309c.htm)

As the Bank for International Settlements has stated<sup>5</sup>: “IRRBB is an important risk that arises from banking activities and is encountered by all banks. It arises because interest rates can vary significantly over time, while the business of banking typically involves intermediation activity that produces exposures to both maturity mismatch (eg, long-maturity assets funded by short-maturity liabilities) and rate mismatch (eg, fixed-rate loans funded by variable rate deposits). In addition, there are optionalities embedded in many of the common banking products (eg, non-maturity deposits, term deposits, fixed-rate loans) that are triggered following changes in interest rates.”

Concerns like these underscore the need by banks for derivatives to help manage risks more effectively. Indeed, sound hedging and risk management frameworks within financial institutions are fundamental to the regulatory and supervisory process.

### How Banks in EMDEs Can Use Derivatives for Managing IR Risk

Derivatives enable banks to manage the floating-rate risk associated with their liabilities, while separately addressing the fixed-rate risk linked to their assets. This strategic use of derivatives empowers banks to structure their assets and liabilities in ways that closely align with the needs of their customers and the broader economy.

By entering a fixed-for-floating interest rate swap, a bank can exchange the fixed interest payments it receives from its government bonds for floating-rate payments. This transformation of fixed-rate income from long-term bonds into a floating-rate income stream mirrors the nature of the bank's liabilities, thereby reducing the risk mismatch.

This hedging mechanism is particularly beneficial in scenarios where market rates rise, as the increased floating-rate payments received by the bank on the swap can help offset the higher interest costs it must pay on customer deposits.

Furthermore, the use of interest rate derivatives provides the bank with the flexibility to offer loans that are more aligned with market demands and borrower needs. The bank can maintain its offerings of fixed-rate loans to corporate borrowers without incurring excessive risk due to its floating-rate deposits. This stability in loan offerings can lead to reduced costs and uncertainty for borrowers, encouraging corporate investments and contributing to economic growth in the emerging market and developing economy.

<sup>5</sup> See Basel Committee on Banking Supervision, Interest Rate Risk in the Banking Book [www.bis.org/bcbs/publ/d368.pdf](http://www.bis.org/bcbs/publ/d368.pdf)

## BENCHMARK RATES: A KEY BUILDING BLOCK FOR EMDEs

IR benchmark rates are used in several types of financial contracts, ranging from mortgages to swaps. Robust, transparent IR benchmarks that are based on observable transactions are fundamental to the development of safe and efficient financial and derivatives markets in EMDEs.

Because of their widespread use and importance, it is vital that benchmark rates are impartial and not subject to manipulation. Ideally, IR benchmarks should be representative of underlying markets, reliable, transparent and subject to clear governance and accountability. These attributes ensure benchmarks accurately reflect prevailing market conditions and are trusted by market participants, regulators and users across various sectors.

### Adapting IOSCO Principles for Financial Benchmarks to Suit EMDEs

As EMDEs consider appropriate IR benchmarks, they can benefit from adopting the *Principles for Financial Benchmarks* developed by the International Organization of Securities Commissions (IOSCO). The IOSCO principles provide a globally recognized and comprehensive set of guidelines that are intended to promote the reliability of benchmark determinations and address benchmark governance, quality and accountability mechanisms<sup>6</sup>.

When adapting the IOSCO principles for EMDEs, however, it is important to consider local market conditions. These adaptations should address specific challenges like lower market liquidity and less developed financial infrastructures.

To address lower levels of market liquidity in EMDEs compared to developed jurisdictions, it is important to adopt a flexible approach to benchmark selection. Firstly, EMDEs should use the most liquid underlying market available. This approach will help capture a more accurate and stable representation of borrowing costs, enhancing the credibility and utility of the benchmark.

Transaction-based benchmarks in AEs are typically based on overnight transactions in the interbank market. However, data sufficiency could be a paramount issue in EMDEs. While benchmarks must reflect the deepest underlying market, EMDEs should focus on defining a benchmark reflecting the rate at which the main market participants manage their overnight liquidity. In cases of lower liquidity – where transaction data may be limited – administrators may need to consider broadening data sources beyond the interbank market.

### IOSCO Principles for Financial Benchmarks

- 1. Overall Responsibility of the Administrator:** The administrator should keep primary responsibility for all aspects of the benchmark determination process, including its development, determination and dissemination, operation and governance. This encompasses defining the benchmark and methodology, ensuring correct compilation and publication, and establishing transparent governance procedures.
- 2. Oversight of Third Parties:** The administrator must maintain oversight of third parties involved in the benchmark determination process, ensuring roles and obligations are clearly defined, monitoring compliance with standards and managing operational risks associated with third-party involvement.
- 3. Conflicts of Interest for Administrators:** Administrators must have documented policies and procedures to identify, disclose, manage, mitigate or avoid conflicts of interest, ensuring the integrity and independence of benchmark determinations.

<sup>6</sup> *Principles for Financial Benchmarks* [www.iosco.org/library/pubdocs/pdf/IOSCOPD415.pdf](http://www.iosco.org/library/pubdocs/pdf/IOSCOPD415.pdf)

4. **Control Framework for Administrators:** An appropriate control framework must be implemented by the administrator, tailored to identified conflicts of interest, the use of discretion in the benchmark setting process and the nature of inputs and outputs.
5. **Internal Oversight:** Administrators should establish an oversight function to review and challenge the benchmark determination process, considering its design, integrity and the management of conflicts of interest.
6. **Benchmark Design:** The design should accurately and reliably represent the economic realities of the interest it looks to measure, eliminating factors that might distort the benchmark.
7. **Data Sufficiency:** Data used must be sufficient to accurately and reliably represent the interest measured by the benchmark, based on prices, rates, indices or values formed by supply and demand and anchored by observable transactions.
8. **Hierarchy of Data Inputs:** Clear guidelines should be established for the hierarchy of data inputs and the use of expert judgment in benchmark determination, prioritizing actual transaction data where possible.
9. **Transparency of Benchmark Determinations:** Administrators must publish concise explanations with each benchmark determination to facilitate understanding of how it was developed, including the use of expert judgment.
10. **Periodic Review:** The conditions in the underlying interest measured by the benchmark should be periodically reviewed to assess if structural changes or diminished functionality require changes to the benchmark design or methodology.
11. **Content of the Methodology:** The methodology used for benchmark determinations must be documented and made available, providing sufficient detail to understand how the benchmark is derived and its representativeness.
12. **Changes to the Methodology:** Any proposed material changes in the methodology must be published, including the rationale for such changes, and stakeholders should be consulted.
13. **Transition:** Clear policies and procedures should be in place for the cessation of a benchmark, considering the impact on contracts and financial instruments that reference it.
14. **Submitter Code of Conduct:** Guidelines for submitters must be developed and monitored for adherence, ensuring the integrity of submissions.
15. **Internal Controls Over Data Collection:** Administrators must have internal controls over data collection and transmission, ensuring the integrity and confidentiality of data.
16. **Complaints Procedures:** A written complaints procedure must be established for stakeholders to send complaints related to the benchmark determination process.
17. **Audits:** An independent audit should periodically review the administrator's adherence to its stated criteria and the principles, ensuring integrity and compliance.
18. **Audit Trail:** Written records must be kept for a minimum of five years, documenting all aspects of the benchmark determination process and any changes made.
19. **Cooperation with Regulatory Authorities:** Administrators must make relevant documents and audit trails available to regulatory authorities upon request, facilitating regulatory and supervisory duties.

Establishing a clear hierarchy of data inputs and providing transparent guidelines about the prioritization of those inputs is essential to support benchmark quality in all jurisdictions, including EMDEs. Clear publishing of methodologies, waterfalls of data sources and changes to the benchmark calculation process is crucial. Regular audits and public disclosures can further enhance accountability and maintain trust among market participants.

Benchmarks in EMDEs should also be adaptable, with mechanisms for regular review and modification in response to significant market shifts or structural changes. Administrators should assess whether structural changes or diminishing functionality warrant adjustments to the methodology. These reviews, including the rationale for any revisions, should be made publicly available to ensure transparency and informed engagement by market participants.

The benchmark development and review process should involve active engagement with key stakeholders. Regulatory authorities, central banks and financial market participants should collaborate to ensure the benchmark accurately captures IR movements and effectively serves the needs of market participants. Not involving market participants in the process may lead to a lack of trust and an inability to manage their exposures to the benchmark. Ultimately, it may lead to them either charging a risk premium when using it as a reference rate for floating-rate transactions or, worse, not using it at all.

Governance structures play a crucial role in the integrity of benchmark setting. Where frameworks are still developing, EMDEs need robust governance systems. This involves clear rules to manage conflicts of interest, ensuring the independence of the benchmark-setting process.

## Factors to Consider When Constructing Interest Rate Benchmarks

The LIBOR transition in developed markets has provided several lessons on how to construct robust IR benchmarks in lesser liquid markets.

For decades, EMDEs tried to build reliable benchmarks similar to the LIBOR benchmarks. LIBOR collapsed because it was intended to be based on an interbank lending market that ceased to exist – even in bigger currency markets like US dollars. EMDEs have shallower markets and so had no real chance to build robust benchmarks designed like LIBOR. The move to a transaction-based benchmark methodology to replace LIBOR has opened an opportunity to develop a new suite of benchmarks in EMDEs.

### Constructing a New Benchmark

The first and most crucial factor is to decide what the benchmark should represent. RFRs are IR benchmarks that reflect the marginal cost of borrowing cash overnight in a specific currency without any (or limited to overnight) credit risk. RFRs are typically derived from transactions in the overnight market that can be secured (collateralized) or unsecured, depending on the specific RFR. The choice of secured or unsecured is generally driven by liquidity not pricing, as the pricing difference between the two segments in the overnight tenor tends to be irrelevant.

An overnight-based benchmark removes a large part of the incentive for manipulation, for two reasons. First, it concentrates all pay and receive legs of financial institutions into a single point – the overnight fix – meaning only the net position is open to fixing exposure. Second, the value of a basis point on \$1 billion in overnight exposure is negligible compared to the basis point value on fixings linked to a term benchmark. For instance, the basis point value of \$1 billion is \$275 on an overnight basis versus \$25,000 on a three-month term fixing.

The process of constructing IR benchmarks involves careful selection of financial instruments and the definition of fallbacks that meet specific criteria to ensure the benchmark's effectiveness and reliability. The methodology for transforming transaction data into a benchmark rate requires several critical steps, primarily focusing on data cleansing and aggregation. Outliers and non-representative transactions are filtered out to prevent distortion of the benchmark.

### Common Instruments Used for Overnight RFRs

Overnight risk-free rate (RFR) benchmarks are typically based on short-term, low-risk instruments that serve as proxies for the RFRs in financial markets. Commonly used instruments for RFR benchmarks include:

**Secured Transactions (Repo Rates):** For example, the Secured Overnight Financing Rate in the US is based on Treasury repurchase agreements (repos).

**Unsecured Lending Rates:** For example, the Sterling Overnight Index Average in the UK reflects average rates on overnight unsecured loans in the sterling market.

Central banks are well positioned to ensure overnight RFRs reflect actual market conditions and are aligned with broader economic and monetary policies, which is crucial for the overall financial stability of EMDEs. Their role in administering overnight RFRs can facilitate better regulatory oversight of benchmark calculation and publication and, therefore, increase transparency. If the RFR represents exchange-traded repo transactions, the exchange is also well positioned to be the administrator.

However, the specific level of engagement by central banks and exchanges must be customized to each EMDE's unique financial infrastructure, market depth and regulatory environment. Where necessary, collaborative arrangements with other financial institutions and/or market participants might be considered.



## LESSONS LEARNED FROM LIBOR TRANSITION

The transition from LIBOR to alternative reference rates based on overnight RFRs in developed markets offers valuable insights that can help EMDEs that currently have an IRD market based on an interbank offered rate.

### The Crucial Role of Collaboration

First, the transition highlighted the need for collaboration between policymakers and market participants. Many jurisdictions formed working groups that included regulators, industry participants and other stakeholders, including the Alternative Reference Rates Committee in the US, the Working Group on Sterling Risk-free Reference Rates in the UK and the Working Group on Euro Risk-free Rates in the EU. These groups played a crucial role in coordinating the transition, developing best practices and addressing challenges in a timely manner.

Although market participants selected the new benchmark, regulators set the direction of travel (eg, establishing the requirement to shift to a robust benchmark and the timeline for transition, and amending laws where needed).

The European Bank for Reconstruction and Development (EBRD) has found that creating a group comprising the central bank and major banks is an excellent way to drive benchmark reform and market development in general.

### Selecting Reliable and Suitable Alternatives

When selecting alternatives to LIBOR, the primary focus of the public-/private-sector working groups was on ensuring the chosen benchmark rates accurately reflect underlying market dynamics. This meant selecting a rate based on actual, observable transactions in a liquid market. The selected alternative needed to show consistency and resilience over time and be less susceptible to market disruptions or manipulation. The working groups considered a wide range of alternative benchmarks but ultimately determined that overnight RFRs best met the criteria.

Gaining broad market acceptance was essential and the selected alternative needed to be widely used by market participants, including banks, non-financial corporations and other financial institutions.

The alternative rate's applicability across different financial products was also vital. The chosen rate needed to be suitable for derivatives and cash products, facilitating hedging and ensuring wide-ranging applicability and utility in financial markets. This would limit the risk of fragmented market segments linked to different benchmarks, which could lead to the development of basis risk that may be difficult to manage.

In overnight index swaps (OIS), overnight RFRs are referenced on a compounded in arrears basis, with the rate calculated at the end of each interval based on the overnight rates published throughout the period. However, some central banks publish an RFR index that can simplify the calculation of the rate. The EBRD has found that RFR indices have been accepted in IRDs, floating-rate bond issuance and loan agreements – not just in US dollars, but also in some of the EBRD's countries of operation.

### Developing Liquid Alternative Reference Rate Markets

Once alternative reference rates were established, it was essential to develop depth and liquidity in those (derivatives and other) products referencing those rates. To support the trading of derivatives referencing the alternative rates, regulators provided clear endorsements and guidance with the publication of statements supporting the adoption of those rates and providing clarity on regulatory expectations. In the US and UK, regulators set target dates for new interdealer derivatives transactions to reference the alternative RFRs, which accelerated the transition and supported the development of liquid RFR-linked derivatives markets.

## CASE STUDIES ON INTEREST RATE BENCHMARKS IN EMDEs

This section highlights case studies of RFR creation and/or transition in a range of EMDE countries, ranging from the large Group-of-20 members to smaller and less developed markets. The case studies show how different EMDEs have selected and implemented more robust and transparent IR benchmarks, reflecting a shift towards using actual transaction data for more accurate and reliable financial benchmarking.

While the adoption of new IR benchmarks – which are primarily overnight RFRs – is a positive step, it is crucial to recognize that the transition is not universal across all emerging markets. The process involves careful consideration of diverse factors, including market dynamics, regulatory frameworks and the overall stability of the financial system. Each EMDE must tailor its approach to the unique challenges and opportunities it faces, ensuring a smooth integration of benchmarks into its financial infrastructure.

### Turkish Lira Overnight Reference Interest

In Türkiye, the Turkish Lira Overnight Reference Interest (TLREF) has been selected and implemented as a short-term reference IR that can be used in derivatives, debt instruments, loans and various financial contracts. TLREF reflects the cost of borrowing Turkish lira overnight in the Turkish interbank market. The TLREF rate and the TLREF compounded index have been published daily by Borsa Istanbul since June 17, 2019.

The establishment of TLREF involved a dedicated working group known as the National Working Committee. The committee included representatives from the Central Bank of the Republic of Türkiye, the Banking Regulation and Supervision Agency, the Capital Markets Board, Borsa Istanbul, the Settlement and Custody Bank, the Turkish Capital Markets Association, the Association of Financial Institutions, the Participation Banks Association of Türkiye and the Banks Association of Türkiye.

The committee was responsible for coordinating the transition to TLREF, developing the methodology, overseeing implementation, ensuring regulatory compliance and educating market participants. The committee included six sub-working groups that focused on various aspects of the transition process, such as local legislation and law, compliance with international regulations, financial coordination, quantitative analysis and risk, TLREF products and communication<sup>7</sup>.

TLREF is calculated using data from overnight repo transactions that are secured by Turkish-lira-denominated government debt securities and realized on the Borsa Istanbul Repo-Reverse Repo Market. The rate is calculated as the volume-weighted mean rate based on the central 70% of the volume-weighted distribution. The TLREF methodology also defines data sufficiency conditions and sets out a contingent approach if these conditions are not met<sup>8</sup>.

TLREF was designed to replace TRLIBOR, which was not considered robust enough for the IRD market. The only way to trade fixed-rate Turkish lira before TLREF was via cross-currency swaps against floating-rate US dollars. With the introduction of TLREF, it became possible to develop an interest rate swap market that was based purely on domestic interest rates.

Instruments linked to TLREF started developing very soon after the rate began to be published in 2019. The market was waiting for a credible IR benchmark and both cash and derivatives started to be executed within months of TLREF's launch. The Ministry of Finance promptly started issuing bonds indexed to TLREF and banks began offering loans and transacting OIS. The development of the OIS market has played a crucial role in enhancing the stability and resilience of the Turkish financial sector, offering hedging opportunities against IR volatility.

This is particularly important for financial institutions, as it enables them to manage risks associated with fluctuating interest rates more effectively.

<sup>7</sup> The IBOR Transition Process and TLREF Works [www.tbb.org.tr/entlref/tlref.html](http://www.tbb.org.tr/entlref/tlref.html)

<sup>8</sup> Turkish Lira Overnight Reference Rate Rules [www.borsaistanbul.com/files/turkish-lira-overnight-reference-rate-rules.pdf](http://www.borsaistanbul.com/files/turkish-lira-overnight-reference-rate-rules.pdf)

## The Malaysia Overnight Rate

The Malaysia Overnight Rate (MYOR) is a short-term transaction-based alternative reference rate, grounded on unsecured overnight Malaysian ringgit interbank transactions. It was launched by Bank Negara Malaysia in September 2021<sup>9</sup>.

The development of MYOR involved the Financial Markets Committee (FMC), which includes representatives from Bank Negara Malaysia, financial institutions, corporations, financial service providers and other stakeholders. This committee developed MYOR's methodology, oversaw its implementation, ensured compliance with regulatory standards and helped the transition from earlier benchmark rates<sup>10</sup>.

MYOR is calculated by Bank Negara Malaysia as the volume-weighted average rate of unsecured overnight Malaysian ringgit interbank transactions. Eligible transactions include wholesale conventional unsecured deposits between interbank institutions (either brokered or direct/bilateral) and the bank's conventional overnight monetary operations<sup>11</sup>.

Building liquidity in MYOR required collaboration from the central bank, regulators, corporations and financial institutions. The development of a timeline and framework by policymakers in coordination with financial institutions provided clarity to corporate users and helped in the planning for adoption. Communication between financial institutions and corporations also helped in the development of new financial products<sup>12</sup>.

MYOR is used in a range of financial products and contracts, including short-term loans, derivatives and other instruments where a variable IR is essential. Its introduction has significantly influenced the Malaysian financial landscape, particularly in terms of risk management and product pricing.

## Thai Overnight Repurchase Rate

The Thai Overnight Repurchase Rate (THOR) serves as a crucial benchmark in Thailand's financial market, representing a reference IR in the interbank overnight repurchase market for private sector bonds<sup>13</sup>.

THOR was developed by the Bank of Thailand in collaboration with a dedicated working group, including representatives from commercial banks and other financial institutions. The development of THOR was aimed at establishing a more reliable and market-representative benchmark for the Thai financial market, as well as to stimulate the growth of the THOR-based IRD market, enhancing its liquidity and utility.

## Tenge Overnight Index Average<sup>14</sup>

Reformed TONIA was created by a working group comprising the National Bank of Kazakhstan, the EBRD, the Kazakhstan Stock Exchange (KASE) and the major Kazakh banks. During a two-year process, the working group decided on which underlying market to choose as the reference rate, the types of trades and the calculation methodology, including fallbacks.

Reformed TONIA reflects interbank repo transactions on KASE and was officially launched in December 2020. It has now been used as the underlying index in bond issuances, loans and some IRDs. KASE also started publishing the TONIA Compounded Index and TONIA Compounded Rate in December 2020.

<sup>9</sup> Financial Benchmark Reform – the Malaysia Overnight Rate (MYOR) [www.bnm.gov.my/-/launch-malaysia-overnight-rate-myor#:~:text=The%20Bank%20will%20also%20discontinue,contracts%2C%20on%201%20January%202023](http://www.bnm.gov.my/-/launch-malaysia-overnight-rate-myor#:~:text=The%20Bank%20will%20also%20discontinue,contracts%2C%20on%201%20January%202023)

<sup>10</sup> Financial Markets Committee [www.bnm.gov.my/committees/fmc](http://www.bnm.gov.my/committees/fmc)

<sup>11</sup> Malaysia Overnight Rate (MYOR) [www.bnm.gov.my/PD\\_MYOR.pdf](http://www.bnm.gov.my/PD_MYOR.pdf)

<sup>12</sup> Financial Benchmark Reforms in Malaysia: Creating Opportunities Through Collaboration [www.bloomberg.com/professional/insights/markets/financial-benchmark-reforms-in-malaysia-creating-opportunities-through-collaboration/](http://www.bloomberg.com/professional/insights/markets/financial-benchmark-reforms-in-malaysia-creating-opportunities-through-collaboration/)

<sup>13</sup> Thai Overnight Repurchase Rate: THOR [www.bot.or.th/th/our-roles/financial-markets/Financial-Market-Development-and-Standards/Reference-Rates/THOR.html](http://www.bot.or.th/th/our-roles/financial-markets/Financial-Market-Development-and-Standards/Reference-Rates/THOR.html)

<sup>14</sup> TONIA - Kazakhstan Stock Exchange [https://kase.kz/en/money\\_market/repo-indicators/tonia/](https://kase.kz/en/money_market/repo-indicators/tonia/)

## Cairo Overnight Index Average<sup>15</sup>

The Cairo Overnight Index Average (CONIA) was created by a working group consisting of the Central Bank of Egypt (CBE), the EBRD and the major banks. The working group went through a similar process as Kazakhstan, choosing the underlying market, the types of trades, the calculation methodology and fallbacks.

It was officially launched in October 2019, and has started to be used in various instruments. Since the launch of CONIA, the CBE also started publishing a CONIA compounded index and compounded rates in 2021.

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<sup>15</sup> CONIA brochure [www.cbe.org.eg/-/media/project/cbe/page-content/related-links/conia/brochure---conia.pdf](http://www.cbe.org.eg/-/media/project/cbe/page-content/related-links/conia/brochure---conia.pdf)

## CONCLUSION

Well-functioning IRD markets are instrumental in providing market participants, particularly banks, with effective tools to manage and hedge IR risk, contributing to the overall safety and stability of the financial system.

The effectiveness of IRD markets hinges on the reliability of IR benchmarks. The adoption of IR benchmarks that are based on actual market transactions and underpinned by transparent methodologies offers a more stable and manipulation-resistant benchmarking alternative.

The IOSCO *Principles for Financial Benchmarks* are fundamental guidelines for the consideration and development of IR benchmarks. However, customizing these principles to suit the unique market nuances and specific challenges of EMDEs is equally crucial. This approach ensures a balanced alignment of global best practices with local market realities, facilitating a smoother and more effective integration of these standards into EMDE financial frameworks.

The examples of Türkiye, Malaysia, Thailand, Kazakhstan and Egypt show the successful implementation of more robust and transparent benchmark interest rates. These case studies demonstrate the benefits of leveraging actual transaction data for more accurate and reliable benchmarking, setting a precedent for other EMDEs to follow.

## APPENDIX

### Various Conventions for Overnight RFRs

Various conventions for use of overnight RFRs in derivatives have been developed to address the diverse needs of financial markets and products. These conventions determine how to calculate the RFR-based rates used in financial instruments and contracts.

Financial products generally reference some kind of RFR average rather than a single day's rate to determine the floating-rate payments that are to be paid or received. An average accurately reflects movements in interest rates over a given period and smooths out any idiosyncratic, day-to-day fluctuations in market rates.

**Simple averaging method:** Simple average is calculated as the average of the daily RFRs over the interest period. Each day's rate is given equal weight, and the total is divided by the number of days in the period. Simple average is straightforward but can be less responsive to rapid market changes since it does not account for the compounding effect.

**Compounding methods:** Compounded average calculates the average rate by compounding the daily rate over the interest period. Each day's interest is added to the principal for the next day's interest calculation, reflecting the effect of earning interest on interest. Compounded averaging provides a more accurate reflection of the actual borrowing costs over the period, especially in volatile markets. Various administrators in both developed markets (including the Federal Reserve and the Bank of England) and EMDEs (eg, Türkiye, Egypt, Kazakhstan, Georgia, etc) publish a compounded index to make the calculation of the compounded rate over any period simple. Using a ratio of the published index at the beginning of the period and the end of the period internalizes the calculation, removing the risk of calculation mistakes and operational discrepancies between parties.

Compounding can be in arrears or in advance. Compounded in arrears means interest is calculated at the end of the period based on fluctuating daily rates. To allow for notice of payment amounts before such payments are due, some instruments use mechanisms to delay payments or calculate the compounded average a number of days before the end of the period (introducing a look-back period).

Compounded in advance involves calculating the compounded interest at the start of the interest period based on the rates from an earlier period. While this approach offers the advantage of knowing the interest amount upfront, it does not reflect real-time changes in borrowing costs during the interest period.

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## ABOUT ISDA

Since 1985, ISDA has worked to make the global derivatives markets safer and more efficient. Today, ISDA has over 1,000 member institutions from 77 countries. These members comprise a broad range of derivatives market participants, including corporations, investment managers, government and supranational entities, insurance companies, energy and commodities firms, and international and regional banks. In

addition to market participants, members also include key components of the derivatives market infrastructure, such as exchanges, intermediaries, clearing houses and repositories, as well as law firms, accounting firms and other service providers. Information about ISDA and its activities is available on the Association's website: [www.isda.org](http://www.isda.org). Follow us on [X](#), [LinkedIn](#), [Facebook](#) and [YouTube](#).

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## ABOUT EBRD

The EBRD is investing in changing people's lives from central Europe to central Asia, the Western Balkans and the southern and eastern Mediterranean region. Since 1991, we have invested over €190 billion in around 7,000 projects. With an emphasis on working with the private sector, we invest in

projects, engage in policy dialogue and provide technical advice which fosters innovation and builds modern economies that are competitive, well governed, green, inclusive, resilient and integrated. The Bank is owned by 72 countries as well as the EU and the EIB.