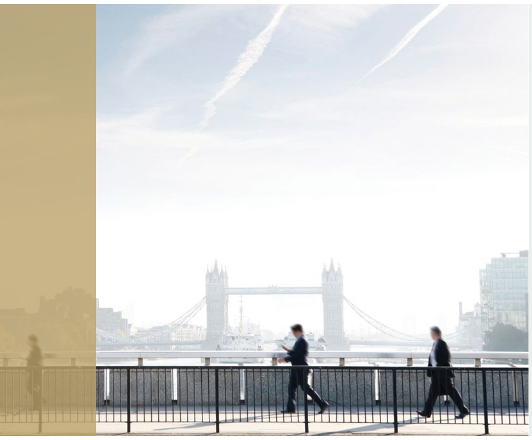


Transition and Readiness Overview:

LIBOR, CDOR, CORRA and more

Amid the financial crisis of 2008, The Wall Street Journal began reporting on a long-running scheme where employees at certain banks were attempting to manipulate the London Interbank Offered Rate (LIBOR), by coordinating their submission of the interest rate quotations that underpin the rate.

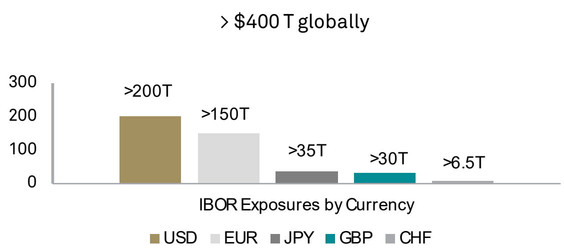
Multiple investigations by national regulators and central banks were launched, resulting in billions of dollars in fines, and dozens of lawsuits and settlements. As a result, panel banks became reluctant to continue making London Interbank Offered Rate (LIBOR) submissions, prompting the Financial Conduct Authority (FCA) to examine alternative rates that banks could utilize in lieu of LIBOR.

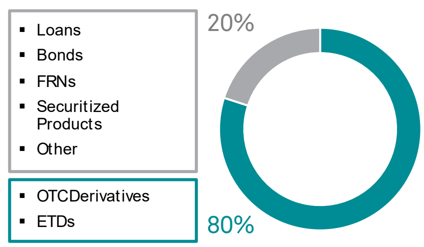
WHAT IS LIBOR AND WHY DOES IT MATTER?

IBORs are unsecured interest rates published for periods ranging from overnight to 12 months. These rates are used for a vast number of financial instruments and products, including products that you may have entered into or may be considering entering into with CIBC, CIBC Mellon and/or BNY Mellon.

One of the most widely used IBORs is the London Interbank Offered Rate (LIBOR), which is quoted in British Pound Sterling (GBP), US Dollar (USD), Euro (EUR), Swiss Franc (CHF) and Japanese Yen (JPY). These rates are derived from quotes submitted by a group of panel banks that represent each panel bank's cost of obtaining a loan from another member bank in the London interbank market for each of the published tenors.

Since the financial crisis, the aggregate amount of actual interbank transactions of actual unsecured interbank borrowing transactions has declined sharply – sometimes this is less than $1 billion per day. However, the IBORs also act as a benchmark for short-term interest rates across a wide spectrum of cash and derivative products. The volume of these transactions **exceeds $400 trillion globally**.





Source: ISDA IBOR Global Benchmark Survey – 2018 Transition Roadmap

TRANSITIONING AWAY FROM LIBOR

Given the structural weaknesses of LIBOR identified during these investigations, various regulatory authorities have announced support for a reduced reliance on IBORs in favour of rates based on actual underlying transaction rates. In particular, the London Interbank Offered Rate ("LIBOR") is expected to be phased out as early as the end of 2021.

Regulators around the globe have initiated forums for market participants to identify alternative reference rates.

These forums were tasked with three primary objectives:

- Identify a rate that was more firmly based on transactions from a robust underlying market and aligned with the International Organization of Securities Commissions ("IOSCO") principles
- Develop a plan to facilitate the acceptance and use of selected alternative rates by market participants
- Consider best practices in contract design that would ensure resiliency in the event of possible cessation or material alteration to the selected alternative rate or any subsequent reference rate

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PROPOSED REGIONAL BENCHMARK REPLACEMENTS

As part of this work, regulators have identified various alternative reference rates (ARRs) as possible replacements, and are considering ways of effecting the transition away from IBORs. Currently, it is not possible to confirm the rates that will be used as alternatives to LIBOR or, in the case of ARRs (if any), any adjustment spreads that may be applicable in respect of each such transition.

Jurisdiction	Prior Benchmark (internally assumed end date)	Replacement Rate	Description	Current Status
	CDOR	CORRA Complimentary Reference Rate to operate alongside CDOR	▪ Secured ▪ Fully transactions based ▪ Cost overnight general collateral funding	Publication of CORRA with new methodology to be published in 06/2020 CDOR* to co-exist next to CORRA
	USD LIBOR	SOFR Secured Overnight Financing Rate	▪ Secured ▪ Fully transaction-based ▪ Covers multiple Treasury repo market segments	Transition plan has been outlined Publication of rate since 04/2018
	EONIA EURIBOR	€STR – Euro Short Term Rate EURIBOR (reformed)	▪ Unsecured ▪ Transaction based ▪ Volume weighted-trimmed mean of transactions ▪ Gathered from 52 of the largest European banks	Publication of €STR since 10/2019 EURIBOR has been reformed and will continue as a BMR* compliant rate
	JPY LIBOR	TONAR Tokyo Overnight Average Rate	▪ Unsecured ▪ Transaction based (call rate market) ▪ Calculated on market broker information ▪ Weighted by volume	Investigation of market practices and contract design of TONAR ongoing
	GBP LIBOR	Reformed SONIA Sterling Overnight Index Average	▪ Unsecured ▪ Fully transaction based ▪ Encompasses a robust underlying market ▪ Includes volume-weighted trimmed mean	Reformed SONIA since 04/2018
	CHF LIBOR	SARON Swiss Average Overnight Rate	▪ Secured ▪ Became reference interbank overnight repo in 2009 ▪ Reflects interest paid on o/n repo	TOIS now discontinued SARON swaps began trading in 04/2017

*BMR = Benchmarks Regulation

CANADIAN CONTEXT

Last year in Canada, the Bank of Canada (BoC) announced its intention to become the administrator of the Canadian Overnight Repo Rate Average (CORRA).

The Bank of Canada will take over the responsibility for publishing CORRA, effective June 15, 2020. Beginning on this date, the Bank will provide this keyinterest rate benchmark for financial markets, at not cost, and make it available on the Bank's website as a public good.

In March 2018, the BoC announced the creation of the Canadian Alternative Reference Rate Working Group (CARR), which is sponsored by the Canadian Fixed-Income Forum (CFIF).

The BoC states that CARR's main goal is to identify and develop a Canadian dollar term risk-free rate benchmark that is reliable and resilient to any market stress, as well as consistent with international regulatory standards.

*The following information on the transition considerations and implementation requirements are not applicable to CDOR/CORRA. For more information on the CDOR/CORRA reform, please read the Bank of Canada's announcement.

We have established cross-functional working groups to assess the impact across our client base and develop a phased approach in transitioning impacted accounts from LIBOR to the final replacement benchmark rates.

CONSIDERATIONS OF TRANSITIONING

We are currently preparing for this transition, at both an industry level and across our organization. We are actively involved in industry efforts to manage the transition from IBORs and we continue to work through internal steps to balance benchmark transitioning with our obligations to our clients and counterparties.

It is critical for all entities to:

- Gauge their exposure to LIBOR;
- Identify potential risks associated with this transition; and
- Determine what action is necessary to mitigate those risks.

The transition will be two-fold:

1. Markets need to develop, accept and process new ARR products. Challenges and considerations during this phase include:
   - The new rates will likely have no term structure requiring complex and extensive changes to IT systems and processes to support the new products
   - Use of daily interest rates with straight and compounding calculations may limit or delay standardization
   - Lack of clarity combined with the time constraints = action under uncertainty

2. Markets need to prepare for the transition of legacy LIBOR products, if and when LIBOR ceases to exist:
   - In order to transition legacy contracts into the new ARR world, various prerequisites need to be fulfilled:
     - Analysis and understanding of existing fallback language in contracts
     - Existence of new ARR products to which old LIBOR products can be transitioned
     - Agreement on the P&L, Risk and Tax implications between counterparties arising out of transition

KEY INDUSTRY DEPENDENCIES IMPACTING THE TRANSITION WORKPLAN

2019

- New CORRA methodology approved. Bank of Canada announces new CORRA administrator role.
- 1H 2019 – Continued to build liquidity in SOFR markets. ARRC published final recommendations for better fallback language in FRNs, business loans and securitizations.

2020

- 1H 2020 – ISDA seeking to amend definitions and offer a protocol.
- Q2 2020 - Transition to CORRA methodology expected to take place.
- 2H 2020 – LCH and CME to move PAI/discounting to SOFR.

2021

- By Q2 2021 – CCPs to no longer accept new swap contracts for clearing with EFFR as PAI and discounting.
- EOY 2021 – Cessation of LIBOR.

IMPLEMENTATION CHECKLIST

As LIBOR is deeply embedded in the financial ecosystem, it is critical for entities to assess, mobilize, and execute a program that provides a solid foundation toward a smooth transition to the new benchmark rates. The information below, based on the Alternative Reference Rates Committee (ARRC) checklist, outlines a general list of action items that affected firms should consider as part of their overall strategy in transitioning to the new rates.

1. **Establish Program Governance**
   To oversee the delivery and coordination of the firm's enterprise-wide LIBOR transition program
2. **Develop Transition Management Program**
   To evaluate and mitigate the risks associated with transition with specific considerations for unique product and client exposures
3. **Implementation Communication Strategy**
   To proactively engage, consistently communicate, and increase levels of education with impacted internal and external stakeholders
4. **Identify and Validate Exposure**
   To value SOFR-based products as part of transition to using those products
5. **Develop Product Strategy**
   Or redesigning or transitioning the existing portfolio of LIBOR products, including creating or using new products based on SOFR
6. **Oversee Risk Management**
   To identify, measure, monitor and control financial and non-financial risks of transition and establishing processes
7. **Assess Contractual Remediation Impact and Design Plan**
   To understand the financial, customer, and legal impacts resulting from transitioning from LIBOR to SOFR
8. **Develop Operational and Technology Readiness Plan**
   To address the large-scale operating model, data and technology implications required for LIBOR transition
9. **Accounting and Reporting**
   To determine accounting considerations along with related reporting considerations
10. **Taxation and Regulation**
    To determine the tax and regulatory reporting considerations

As industry discussions on replacement benchmark rates progress, we continue to work with regulators, the industry and clients to execute this transition in a fair and transparent manner.

For more information on CIBC Mellon's preparedness for LIBOR and CORRA, please contact a member of the CIBC Mellon Business Development team or your Relationship Executive or Relationship Manager at 416-643-5000, or visit www.cibcmellon.com.

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