Journey from LIBORs to RFRs

February 2020

Mumbai

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Background and latest update on LIBOR replacement

The IBOR & Reference Rates Reform
A Global Initiative

- LIBOR is going away in Dec 2021
- Regulatory expectations expanding and clearly communicated (Dear CEO Letters). PRA has provided a transition guidelines.
- SOFR and SONIA cash issuances and derivatives volumes are increasing. SONIA linked products are catching up with GBP-LIBOR
- Other IBOR currencies are moving at different speeds
- Organizations planning ways to accelerate reducing LIBOR exposures - issuing new non-LIBOR linked products, encouraging refinancing options and calling deals early
- Clients and customer awareness and education directly impact a firm's transition activities and timing – regulators monitoring Conduct Risk

Currency	Existing rate	Proposed alternative	Borrowing Type
USD	USD LIBOR	SOFR	Secured
EUR	EURIBOR / EUR LIBOR	€STR	Unsecured
GBP	GBP LIBOR	Reformed-SONIA	Unsecured
CHF	CHF LIBOR	SARON	Secured
JPY	JPY LIBOR / TIBOR	TONAR	Unsecured

IBOR Reform Timeline

Sep 2012
UK FSA published the Wheatley report recommending ten-point plan for LIBOR reform.

Nov 2012
HKAB commissioned TMA to review HIBOR fixing mechanism.

Jul 2014
FSB undertook review of major interest rate benchmarks, including Hong Kong rates in 2015

Jul 2017
FCA CEO speech on the "Future of LIBOR" announcing the potential discontinuity of LIBOR by end 2021.

Feb 2018
ISDA released IBOR Global Benchmark Transition Roadmap.

Apr 2018
The US Fed introduced SOFR as an alternative to U.S. LIBOR. The Bank of England announced SONIA reform.

Sep 2018
UK FCA/PRA issued a "Dear CEOs" letter to request major banks and insurers to assess key risks relating to LIBOR discontinuation and provide firm actions plan details.

Dec 2018
SOFR recognized as benchmark rate for hedging purposes (FASB).

Feb 2019
TMA proposed HONIA as the ARRs for HIBOR.

Mar 2019
HKMA published circular to request firms to make preparations for the transition associated with the interest rate benchmark reform.

April 2019
TMA consulted on HONIA adjustments

Oct 2019
ECB to introduce €STR, a new unsecured overnight interest rate to replace EONIA.

Feb 2020
Transitional provisions under the EU Benchmarks Regulation cease to apply.

Q2 2021
CCPs change price alignment interest (PAI) to alternative o/n rate for cleared trades.

Q4 2021
SOFR term rate to be introduced.

End 2021
End of agreement with contributor banks to submit LIBOR.

Expected Milestones

LIBOR Transition - Wide-ranging impact across financial markets

Impact on products

1. Sales & Trading
Derivatives
Bonds
Loans
Securitization

2. Corporate Banking
Loans & Leases
Structured Debt
Trade Financing
Underwriting

3. Asset Management
Mutual Funds
ETFs
Alternative Funds
Pension Funds

4. Retail & Wealth
Deposits
Mortgages
Loans

Derivatives & Hedging

The move from IBOR to other reference rates would have a cascading effect on accounting. Effects would be seen in US GAAP & IFRS. Change in hedge accounting used may create uncertainty across other accounting entries and would possibly result in fluctuations across P&L.

Risk assessment

The use of different reference rates would result in P&L volatility which in turn would cause difficulty in risk assessment and shall require better system & infrastructure for risk management.

Tax implications

A change in interest calculation for debt instruments with modification in reference rates may cause tax implications for parties involved in the transaction. Tax implication might also arise due to contract modification

System infrastructure

The use of new reference rates shall require system modification to include modified valuation methodology, P&L calculation and assessment, risk management and capturing accounting entries.

Process and Controls

Process and controls might be updated to capture changes resulting from alternative reference rates. Process, framework and policies need to be updated to reflect new regulatory and ISDA guidelines

Product characteristics

The products dependent on IBOR such as debt & floating rate securities, corporate lending etc. may be impacted due to uncertainty in LIBORs future. Amendments as well as additional disclosures shall be required to reflect new reference rates.

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IBOR Program Overview

LIBOR Program Coverage

Program has eight key component start from strong governance framework

- A detailed LIBOR Program is must be prepared by incorporating the area of impact.
- LIBOR Program is very important necessary for successfully transition to new benchmark rate.
- There are eight key components for successful LIBOR Transition program
- After the *Initiation and Impact Assessment* phase the programs can run in parallel

Governance: Sample IBOR Transition Governance Model

A strong and clear governance model is critical to ensure oversight of all workstreams and ensure smooth and effective transition

Oversight

Group Board

Regional Board

Entity Board

- IBOR transition overseen by either Full Board or Risk Committee
- Updates on IBOR market/industry activity and progress on firm IBOR transition efforts should be part of Full Board's / Committee's standing agenda
- Awareness and training on IBOR for Board should begin immediately

Leadership

Risk Committees | Executive Committees | Audit Committees

Group / Regional LIBOR Transition Steering Committee

Program Lead (i.e., C-suite, business head, Treasurer, etc.*)

Sales & Trading | Corporate & Investment Banking | Retail Banking | Asset & Wealth Management

Transition workstreams

Regulatory and industry engagement	Governance	Trading and execution	Treasury	Risk and pricing	Accounting and taxation
Models and valuation	Operations, data, and technology	Client and product strategy	Client engagement & communications	Contract risk and remediation	Training

Managing Conduct Risk with principles and guidelines

Leading Regulators like PRA and US FED have warned the market participants and advised to manage Conduct risk

Ensure clients are informed and communications are **fair, clear, and not misleading**

Aim to **voluntarily switch** to alternative rates **ahead** of **fallback trigger events** to avoid market disruption

Address concerns around **market disruption** and **investor protection prior to the issuance** of any new IBOR-related products

Draft new (or amendments to existing) contract language to **minimize litigation**, **regulatory**, **reputational** and other **risks**

Minimize economic value transfer as a result of voluntary transition or fallback provisions

Maintain an **open** and **transparent communication** channel with regulators on transition plans and potential client impact

Following methodologies are used for pricing till the term structure emerges…

Compounded Settings in Arrears

USD Libor is substituted by

- Daily compounded SOFR fixings which would be observed in the period capturing the interest start and end date
- Hence all the fixings will be available only by the last day of the interest calculation period
- As such the fallback interest will be applied in arrears on the end date

Compounded Settings in Advance

USD Libor is substituted by

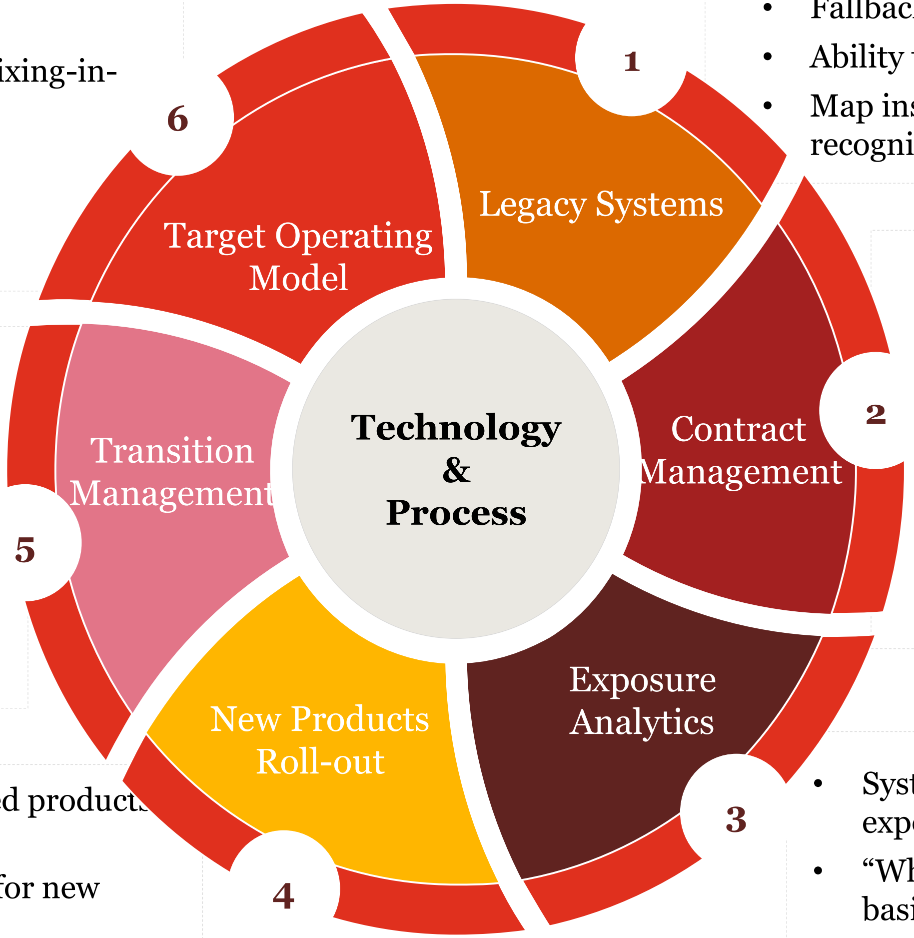
- Daily compounded SOFR fixings which would be observed in the period preceding the interest start and end date
- Hence all the fixings will be available on the first day of the interest calculation period
- As such the fallback interest will be applied in advance on the start date

OIS Forward rate

USD Libor is substituted by

- Prevalent OIS rate
- The OIS swap rate is a single rate representing the future daily SOFR Fixings
- The SOFR OIS rate is used as the fallback interest which will be applied in advance on the start date.

Key Considerations for Technology and Process Remediation during IBOR Transition



- Configure / source alternate reference rates and setup replacement products based on RFRs
- Fallback process and re-negotiation framework
- Ability to compute new spread based rate curves
- Map instruments based on new reference rates for recognition of instrument bundles as eligible hedges

- Update fallback clauses for existing contracts as per industry guidelines
- Maintain transparency in contract transition to avoid litigation over adjustment payments
- Digitize contract documentation and create cross-referenced inventory
- Dynamic document retrieval to support exposure analysis

- Systematic reporting and regular MI on IBOR based risk exposure and cash flow hedges
- "What-if" analysis to highlight sensitivity due to re-basing contracts as per changed reference rates
- Differentiate IBOR exposures based on future cash flow risk and discounting risk

- Agree on sun-set plan for existing IBOR based products prior to cessation
- Define term-sheets and standards contracts for new products based on RFRs
- Roll-out based on new product / business process approval standards

- Train Sales and Distribution team for contract re-negotiations and re-papering
- Convert legacy positions to new structure while ensuring income as per realized PnL
- Compensation payments for legacy contracts due to re-basing of contracts
- Identify limitations of existing legacy / vendor platforms and define mitigation steps

- Adapt to new settlement timelines of new reference rates and cash flow computations
- Compute term rates based on compounding and fixing-in-arrears
- Well defined client communication protocols
- Re-validate resourcing based on skill-set required to service new reference rates

Outreach Program

An effective outreach program should cover communication to **clients, industry bodies, regulators, board of directors and important key stakeholders**

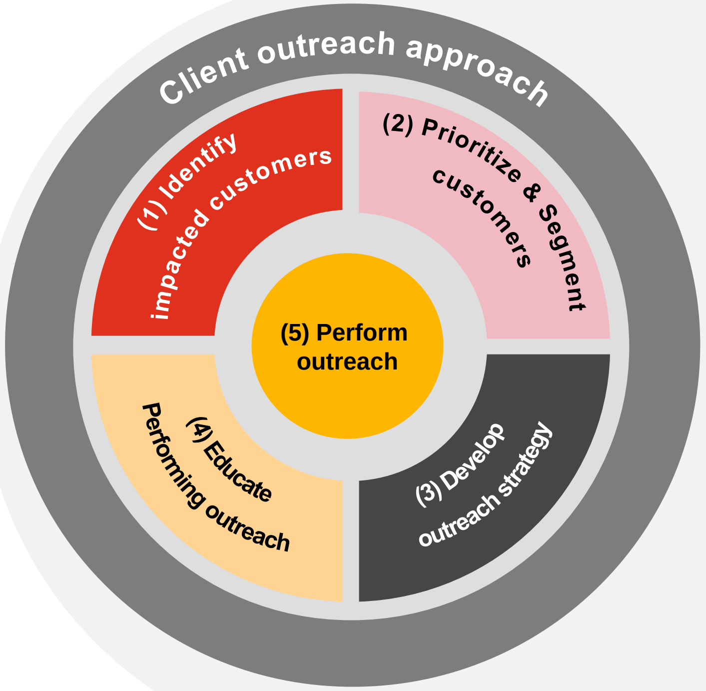
Client needs

- Remediate 100% of contracts, to avoid adverse impact of LIBOR cessation
- Maintain strong client relationships
- Maintain cost-efficiency

Effective contract remediation and client outreach program must:

- Be well planned, structured and executed
- Involve bank's client relationship personnel and legal department
- Be supported by technology to be efficient in remediating thousands of contracts with thousands of clients and counterparties

Effective client outreach project management



(1) Identify impacted customers across all business lines
It is critical to start with a comprehensive list of customers with current or potential future exposure to LIBOR and ensure the list is accurate and complete

(2) Prioritize and segment customers
The overall effort is significant, however, most of the exposure is usually concentrated with a smaller population of clients. Focus should be on the largest exposures, longer maturities and most strategic clients

(3) Develop outreach strategy
Strategy should be developed jointly with the business lines and relationship managers to ensure strong client relationships are maintained through the transition

(4) Educate personnel performing outreach
Client relationship managers should be enabled to perform follow up client discussions and lead resolution of issues

(5) Perform outreach
Execute in a structured way maintaining the above principles and framework

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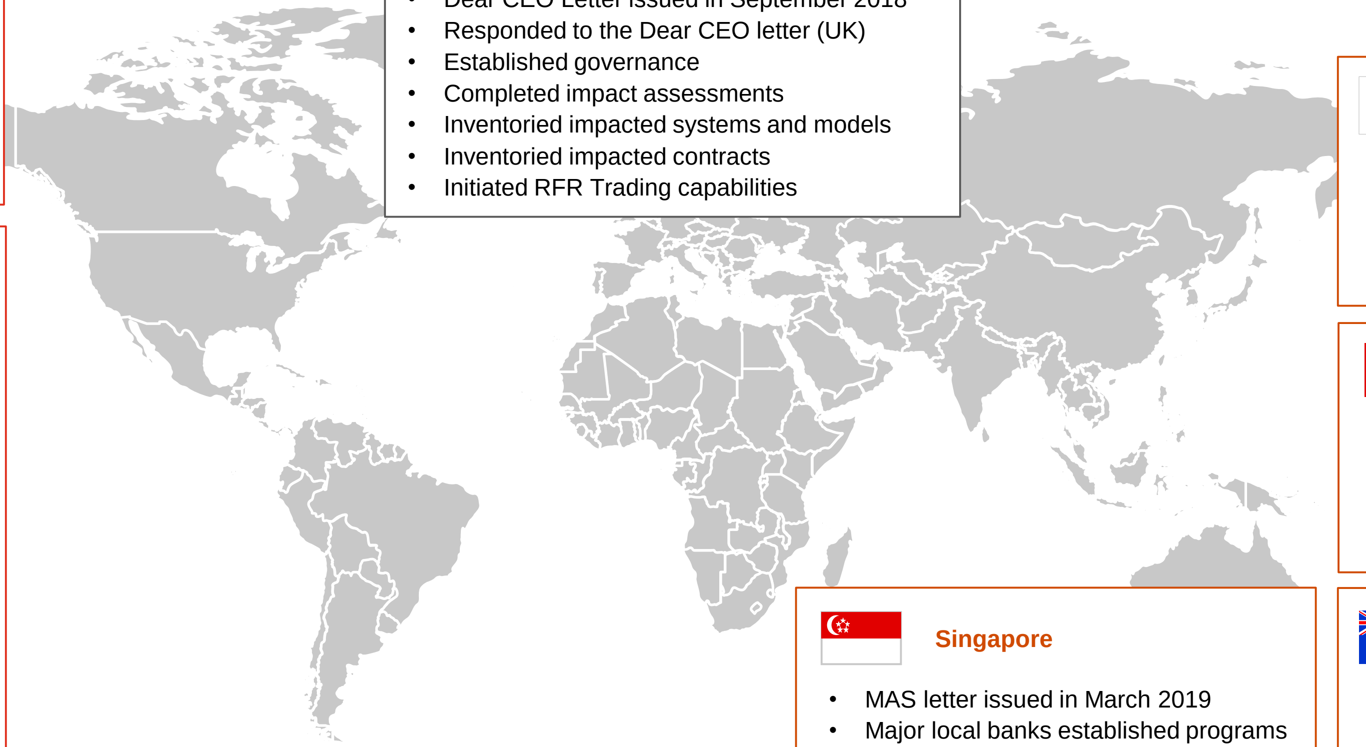
Journey of Global Institutions

Global Update - IBOR Transition Programs At a Glance

The IBOR transition programs have different levels of maturity across the globe. Most of the banks in North America and Europe have already completed their impact assessment and started their remediation, while impact assessments are still ongoing or just initiated for banks in APAC.



Canada

Largest Banks

- Initiated programs
- Established governance
- Completed impact assessments
- Begun remediation activities late in 2018 / early 2019

United States

Majority FIs

- Initiated programs
- Governance established
- Impact assessments complete
- Initiated client outreach

Advanced FIs

- Added contract fallback language to new LIBOR deals
- Issued RFR-linked product
- Half-way through remediation of models and IT systems

FED/OCC LIBOR discussions

SEC LIBOR Letter

Europe

- Dear CEO Letter issued in September 2018
- Responded to the Dear CEO letter (UK)
- Established governance
- Completed impact assessments
- Inventoried impacted systems and models
- Inventoried impacted contracts
- Initiated RFR Trading capabilities

Japan

- Initiated programs
- Established governance
- Completed/Ongoing impact assessment
- Launched remediation workstreams
- BOJ consultation

Hong Kong

- HKMA circular issued in March 2019
- Initiated programs
- Ongoing impact assessment
- MNCs banks are more advanced compared to local banks

Singapore

- MAS letter issued in March 2019
- Major local banks established programs
- Ongoing impact assessment
- New product development on RFRs
- Management of basis risks and ALM

Australia

- ASIC Letter issued in May 2019
- Initiated programs as local industry reacted to UK PRA letter responses
- Established governance
- Completed/Ongoing impact assessment
- Launched remediation workstream

Source: PwC

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IBOR – India Perspective

IBOR - India Perspective

Recent Developments

- Concrete steps has been taken by Indian Banking Association (IBA) buy forming a dedicated Working Group with sole purpose of identifying impact on Indian markets
- The Working group is represented by participants from IBA, FIMMDA, FEDAI, FBIL, Domestic bank, Foreign Bank, Legal firm, Bloomberg etc
- Two work streams are formed to access the overall impact of transition and to finalise methodology for Indian Benchmark

Indian Benchmark

- Indian Benchmark - MIFOR, which is derived from the rolling forward premia in percentage term and the USD LIBOR for the relevant tenor will get impacted
- There will be impact on the Derivative contracts which uses MIFOR as underlying
- Survey is circulated by IBA to the MIFOR market players for their feedback – to be closed by this week

Action by Banks

- Few large banks have taken first step by forming a special task force represented by senior management
- Banks are trying to review the preparedness for the remediation and have started thinking about impact assessment
- They are yet to formulate a detailed IBOR Program which is critical for successful implementation

Thank you

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