TATA CONSULTANCY SERVICES

The End of the Road for LIBOR: Handling the Impact on the Financial World

Abstract

The London Interbank Offered Rate (LIBOR) has been the most widely used unsecure wholesale funding rate in the world. Since 1986, LIBOR has been used as a reference rate to price or hedge myriad financial instruments worth around USD 400 trillion across multiple jurisdictions.[1] In 2017, the UK's Financial Conduct Authority (FCA) announced that LIBOR panel bank submission will become discretionary from end 2021, which means availability of LIBOR as a benchmark rate becomes completely uncertain.[2] This will have a significant impact on the banking and financial services industry.

This paper analyzes the impact of the impending change and discusses ways that banks can adopt to handle the change and mitigate the risks involved in the transition.

LIBOR Transition: Evaluating the Impact

The impact of benchmark interest rates on the financial services industry and innumerable market participants is immense given that this rate is key to pricing and hedging a slew of cash and derivative instruments. Since the new rate is set to come into force in 2022, banks must take steps to assess the impact of LIBOR transition and initiate measures to address them. Banks will need to choose an alternative for LIBOR, build spread and term structure on par with LIBOR, determine LIBOR exposure, and efficiently manage the transition across different risk areas. In our view, using cognitive automation techniques and artificial intelligence (AI) will facilitate a smooth transition and help banks realize these outcomes. Let's examine some of the impacts and examine how they can be addressed:

Impact 1: Choosing the right ARR

Replacing LIBOR will require banks to select a replacement from several alternative risk-free reference rates (RFR) or identify a suitable proxy rate on par with LIBOR. Alternative risk-free rates are typically overnight and collateralized, which means that credit and liquidity risk premium must be added on as a spread adjustment factor to bring it at par with an unsecured reference rate such as LIBOR. The rates must be based on legitimate transactions and not on professional judgment. This means substantial transactional liquidity needs to be built up on these rates using both cash and derivative products before they can be adopted as the official reference rate. Moreover, lack of consensus about a single global reference rate has resulted in a number of bodies such as the Alternative Reference Rate Committees (ARRCs) and benchmark regulation and working groups defining a slew of alternative reference rates (ARRs) in various jurisdictions (see Figure 1).[3] These rates are secured and unsecured; however, secured overnight lending is perceived by market participants as more robust in the long term than unsecured overnight lending rates.[4]

Geography	🇬🇧	🇺🇸	🇨🇭	🇯🇵	🇪🇺	🇨🇦	🇦🇺
Proposed Alt Reference Rate (Overnight)	Reformed Sterling Overnight Index Average (SONIA)	Secured Overnight Financing Rate (SOFR)	Swiss Average Rate Overnight (SARON)	Tokyo Overnight Average Rate (TONAR)	Euro Short-term Rate (ESTER) by Oct '19	Canadian Overnight Repo Rate Average (CORRA)	RBA Cash Rate
Regulatory Body	**Bank of England**	FedReserve	SIX Swiss Exchange	Bank of Japan	European Central Bank	Banque Du Canada/Bank of Canada	Reserve Bank of Australia
Current Term Rate	**LIBOR**	LIBOR	LIBOR	Tokyo Interbank Offered Rate (TIBOR) and LIBOR	EURIBOR/EUR LIBOR	Canadian Dollar Offered Rate (CDOR)	Bank Bill Swap Rate (BBSW)
Transition Approach	Transition from LIBOR to SONIA	Transition from LIBOR to SOFR	Transition from LIBOR to SARON	Multiple rate approach	TBC	Multiple rate approach	Multiple rate approach
Regional Working Group	Working Group on Sterling Risk-Free Reference Rates	ARRC (Alternative Reference Rate Committee)	National Working Group on CHF Reference Interest Rates (NWG)	Study Group on Risk-Free Reference Rates	Working Group on Euro Risk-Free Rates	CARR Working Group	RBA

Figure 1: Proposed ARR Benchmarks Across Geographies

In our view, banks must use multivariate statistical techniques to compare values, trends, co-integration and distribution features between LIBOR and ARR historical time series to identify the closest proxy for LIBOR. Once the overnight ARR is selected, the forward term structure of the same will also need to be projected since ARRs are typically overnight unlike LIBOR, which has a term rate. Traditional curve construction methods such as bootstrapping or parametric models such as the Nelson-Siegel-Svensson™ method or deep learning based feature extraction of time series, are the tools of choice here. Banks have to examine the taxonomy, features and volume buildup of the proposed risk free rates and make an informed choice by weighing the risk and corresponding return.

Post the 2008 crisis, dual curve stripping methods have been used for projecting and discounting the cash flows for interest rate swap valuation based on overnight index swap (OIS) and LIBOR curves. Such dual discounting frameworks will now have to replace LIBOR with the chosen ARR, which will involve a certain element of risk.

Impact 2: Bridging the gap between LIBOR and IBOR+

The credit risk capturing ability, near 'risk-free' status and fairness of LIBOR and other interbank offered rates (IBOR) have been repeatedly questioned due to events such as the subprime crisis, Lehman collapse, and rate manipulation by panel banks. This has eventually led to an overall deficiency in rate calculation, submission process and robustness of LIBOR as a benchmark rate. IBOR+ refers to a reformed state of interbank reference rates aligned with the Financial Stability Board's (FSB) recommendations on overcoming the drawbacks

of LIBOR.[5] IBOR+ relies on substantial reliable transaction volume rather than expert judgment with tighter rate submission and publication processes.

To heighten controls around the IBOR+ submission framework and keep rate-rigging malpractices at bay, we recommend that banks enhance their organization-wide policies, data, process control frameworks, governance and oversight in line with regulatory guidelines. Banks must consider developing and reforming interest rate benchmarks in accordance with principles laid down by the International Organization of Securities Commissions (IOSCO). However, during the initial stages of LIBOR cessation, the possibility of IBOR+ and the approved RFR being simultaneously used in a multiple-rate approach cannot be ruled out.

Impact 3: Evaluating LIBOR exposure and enhancing contractual robustness

Banks use LIBOR as a reference rate for pricing and interest modelling across a large volume of cash and derivative contracts. Identifying all the contracts that use LIBOR as a reference rate and modifying the explicit fallback language for handling temporary or permanent discontinuation scenarios is a daunting task. In addition, when fallback is triggered, spreads will need to be applied on the adjusted RFR to account for the credit risk premium component. Modifying contractual language to include fallback for cash products (such as securitization, floating rate notes, business loans, mortgage etc) is likely to take a more complicated route mainly because of the non-standard documentation.

We believe that banks must adopt a three-pronged approach to address this (see Figure 2):

- Use AI-based model libraries, optical character recognition and computer vision techniques to extract contextual information from digital documents. Natural language processing (NLP) technologies can be used to screen contracts and pinpoint language variations, identify contracts that have been impacted, and predict exposure in dollar value.

- Leverage robotic process automation (RPA) solutions to embed robust fallback provisions and mechanisms and enhance contractual robustness and reduce cycle time and manual interventions. For contracts where fallback provisions cannot be incorporated, International Swaps and Derivatives Association (ISDA) 2006 definitions need to be amended.

- Adopt automated modelling techniques built using machine learning (ML) algorithms and deep neural networks to adjust the RFR for pricing the instruments and derive the spread adjustment factor and apply as an add-on to the RFR to minimize instrument valuation effects. A ready reckoner matrix displaying the various traded instruments against relevant IBOR, currencies and corresponding fallback rate options is a great starting point for this exercise. However, banks must be cautious in leveraging AI strategies due to the possibility of fuzzy 'black box' factors that could create difficulties in explaining the premise of the decision to regulators and potentially expose banks to penalties.
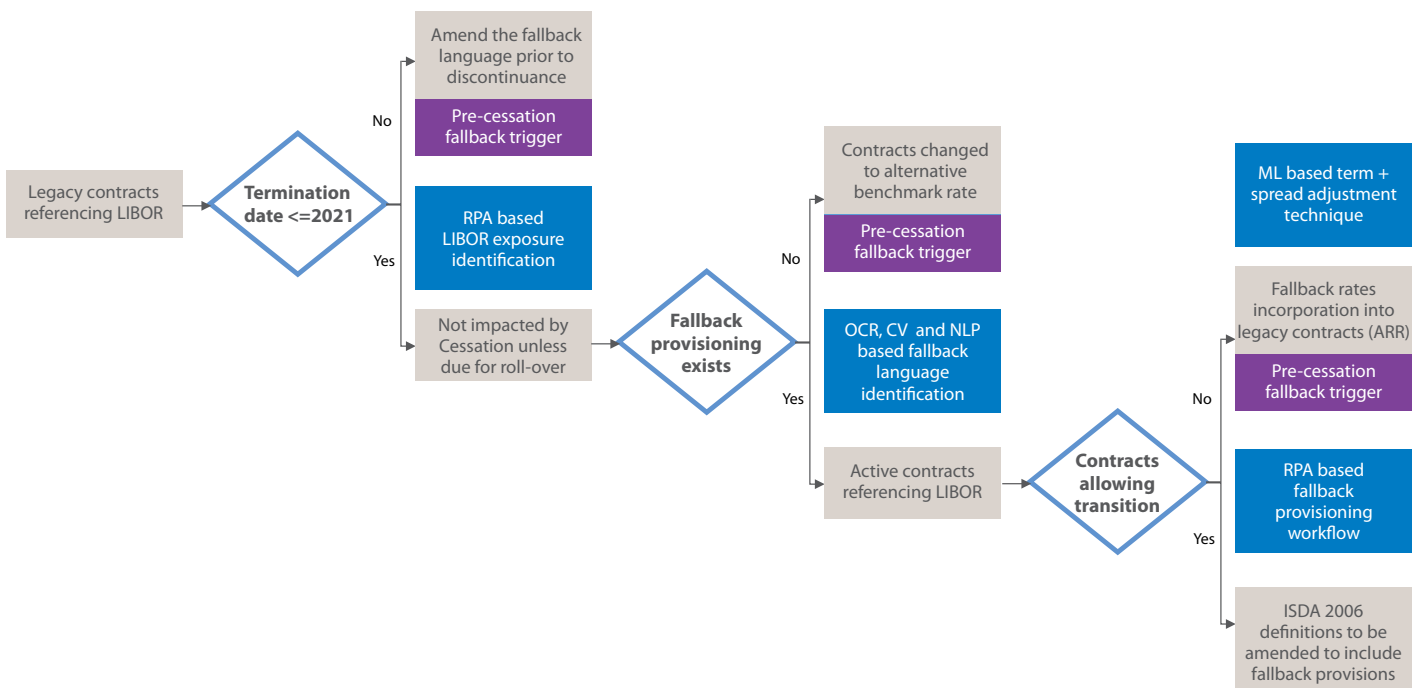

Figure 2: Contract Fallback Flowchart Post LIBOR Discontinuation

Impact 4: Effect on various risk functions

LIBOR transition will impact all the risk functions (see Figure 3).

Risk Function	Details
ALM risk	■ New contracts and products, using the new reference rates, will not be economically identical to the old ones based on LIBOR
Operational risk	■ Limited awareness among financial institutions on the new reference rate to be adopted ■ Financial institutions will need to upgrade their systems, data, models and existing processes ■ Risk of errors in including fallback provisions for derivative contracts
Liquidity risk	■ Without market depth and liquidity for derivatives, market adoption of ARR is difficult ■ Impairment concerns regarding recoverability of cash instrument
Conduct risk	■ Long-dated contracts that extend beyond LIBOR transition may expose banks to conduct risk due to information asymmetry between counterparty and banks regarding LIBOR fallback ■ Lack of adequate approval and control framework during transition
Credit and market risks	■ Derived term structure modelling is susceptible to model risk and creates computational challenges ■ Derived and implied term-structure for new reference rates will affect interest payments creating valuation differences for existing financial products
Reputational risk	■ Legal and reputational risk due to variance in long-term benchmark rates
Systemic risk	■ Lack of clarity around the durability and robustness of the alternative IBOR rates due to liquidity concerns
Basis risk	■ Divergence in application of fallback methodology across CCPs will cause basis risk in a counterparty's cleared trading book
Litigation Risk	■ Incorporation of an ARR fundamentally different from a cost-of-funding based rate like LIBOR into the contract runs into risk of legal implications

Figure 3: Impact of LIBOR Transition on Risk Functions

Banks must set up a committee comprising stakeholders from each impacted risk function as well as IT to oversee the transition. In our view, this committee must spearhead the formation of a function-wise target-operating model and draw up an implementation roadmap with set milestones and timelines to orchestrate the seamless transition to the new benchmark rate. The way forward lies in starting early and setting up an organization wide change management matrix depicting the risk functions impacted by LIBOR decommission and their mitigation strategy. For example, for treasury business, the core risk functions impacted are market, liquidity, asset liability management (ALM) and basis risk. The impact can be handled by defining the ARR and the curve building process. Program implementation based on agile methodologies will help banks to comply with regulatory guidelines involving model enhancement, benchmark rules, rate liquidity building and so on. Also, banks must keep in touch with regulatory bodies and external working committees to stay abreast of the latest developments and industry practices.

In a Nutshell

Gearing up for LIBOR transition will require banks to conduct a meticulous due diligence exercise to understand their current portfolio of LIBOR-linked products, exposures, services, operations and strategies. Banks would do well to start early and draw up a detailed strategy to transition to the new benchmark taking into consideration their individual agile and digital maturity.

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