

IBOR transition

FTP in the era of new Alternate reference rates

October 2020

Subrahmanyam Oruganti (Partner, EY India FSRM), **Abhijit Pingle** (Director, EY India FSRM), **Rahul Pramanick** (Director, EY India FSRM) and **Padmajit Pharande** (Senior, EY India FSRM)

Executive Summary

Global industry efforts to move away from interbank offered rates (IBORs) towards alternate reference rates (ARRs) have accelerated in recent months as we inch towards the target date of end of 2021¹.

IBORs are extensively embedded throughout a range of treasury processes, systems and models, not to mention internal funding arrangements and funds transfer pricing (FTP). The impact of ARR adoption on FTP models, methodologies and systems will be significant and more importantly it will impact divisional profitability and potentially also pose P&L risk in some cases. Designing and implementing appropriate changes to FTP will be particularly challenging considering ongoing uncertainty, as well as varying timelines and approaches, across different regions and products. Furthermore, with benchmark rates changing, pegging internal rates to older benchmarks will lead to basis risk. Thus, the FTP framework would need to be enhanced to address alignment across lending rate, FTP rate and funding rates, i.e. essentially across the balance sheet. The FTP framework will factor in transition state of the lines of businesses while considering this alignment and plan and adjust accordingly.

The paper highlights the fundamental impact on the FTP rate components across Interest rate risk, liquidity risk and collateral charge along with the impact of these changes on NIM, FTP systems and associated processes. In this publication we outline some of key challenges, considerations and approaches / actions from the perspective of FTP-IBOR transition which treasuries should be taking.

The paper also outlines a quantitative impact study on hypothetical portfolios to quantify the impact of the IBOR transition on NIM in normal and stress scenarios, which will be a key question for top management of any bank. The paper also addresses the issue of NIM compression owing to IBOR-ARR switch and the inherent interest rate risk across different economies or currencies.

With the deadline for IBOR transition is quickly approaching, the treasuries of banks have a formidable task ahead. They will be critical in stewarding their organizations through intense financial uncertainty, they must fund and manage their institutions' balance sheets through, in what will be a period of upheaval. To succeed in this regard will require a deep understanding of FTP-IBOR dependencies across products, currencies, contracts, systems and models. Essential to developing a viable transition roadmap will be products analysis, methodology re-calibration, impact analysis and implementation. Furthermore, timely engagement with system owners/vendors will ensure sufficient runway to implement changes and obtain management approval for affected FTP framework. Also, interaction with internal business units and client-facing staff will be key around FTP development and avoiding misconduct. Given the financial and operational risks involved in FTP regime owing to ARR referencing of products, we recommend that treasuries act swiftly to get these efforts underway.

¹ 31st December 2021 for the reference rates published by ICE for USD, EUR (EONIA), GBP, JPY and CHF. Also, other rates which are derived from IBORs like HKD HIBOR, INR MIFOR etc. will also need to transition by this date. With respect to EURIBOR, the same has been reformed and is now IOSCO compliant and hence will continue after 31st December 2021.

Fund transfer pricing (FTP) - A brief introduction

FTP addresses risk components that should be identified in a transparent manner allowing for "fair" internal risk transfer. The key objectives of FTP are:

- ▶ Transferring Interest rate and liquidity risk from the business to specialist centres (e.g. Treasury, Global Markets)
- ▶ Ensuring interest rate and liquidity risk is correctly reflected in loan and deposit pricing
- ▶ Incentivising and rewarding the right business decisions fairly
- ▶ Supporting the mobilization of valuable, stable deposits appropriate to the business model of the institution
- ▶ Enabling the management of the Balance sheet structure to enhance Net interest margin (NIM) aligned to growth and performance objectives

The key components of banking FTP are Interest Rate Risk and Liquidity Risk (may also include FX & collateral charge, but the focus of this paper will be on these two topics) as shown below. The calculated FTP rates are then applied to product balances to arrive at FTP credits/debits and hence margins, to assess the customer and product profitability, product pricing, branch/BU performance, budgeting & forecasting etc., depending on Bank defined objective of the underlying FTP framework.

With ARR's replacing IBOR's, multiple components (Figure 1) of FTP will be impacted. Furthermore, various products (Figure 2) on Bank's balance sheet will also be impacted.

Figure 1: FTP components impacted due to IBOR transition

Interest rate risk	Base rate	IBOR / swap rate: it usually aligns with the index used by most of the firm's assets and is the base rate that Treasury manages Interest Rate exposure to
	Option cost	Embedded options accounted for by adding option costs to base FTP rate or by incorporating break funding charges
	Hedging cost	The cost of hedging either fixed rate assets / liabilities or basis risk between sources of funds and lending operations
Liquidity risk	Liquidity premium	The expected cost of funds required to support the exposure of its remaining life
	Contingent liquidity charge	The cost of maintaining sufficient cushion of high quality liquid assets to meet sudden or unexpected obligations
	Collateral charge / Credit	Charge to businesses that borrow collateral and credit to those that provide collateral
	Capital charge / Credit	Not impacted: Credit for funding assets with allocated capital or charge based on ROE hurdles

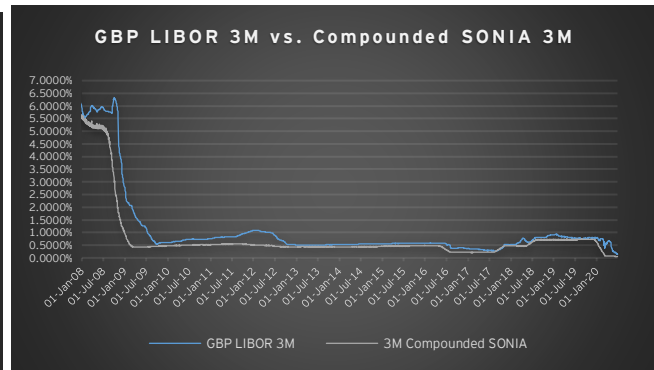
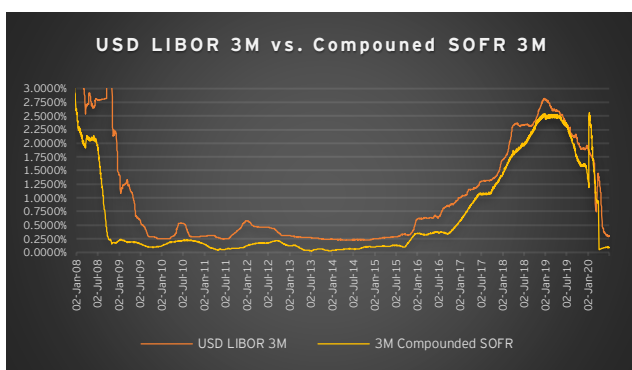
Figure 2: Indicative list of products impacted by IBOR transition

On-Balance Sheet Assets	On-Balance Sheet Liabilities
Assets	Liabilities
Cash and Cash Equivalents	Short-term Debt
Cash	Secured
Due from Banks	ABCP
Central Bank Deposits/Reserves	Government / Agency Borrowing
Reverse Repo	Unsecured (in case of roll-over)
Investment Securities	CP
Government	Structured Notes
Foreign Government	Wholesale CDs
Corporate	Long-term Debt
Foreign Corporate	Senior Debt
State and Municipal	Subordinated Debt
RMBS	Covered Bonds
ABS	Deposits
CMBS	Demand
Loans	Savings
Corporate / Commercial Loans	Time
Consumer / Small Business Card	Secured Funding
Mortgage Loans	
Auto Loans	
Other Assets	

Difference between IBOR and ARR

There are several fundamental differences between ARR's and IBOR's which will affect how a Bank considers its decisions around credit, liquidity, pricing, models and much more. Adjustments to ARR's will be required to ensure that the new rates continue to function in a similar manner to the original rate (IBOR). The key differences are:

Figure 3: Illustration - USD (GBP) LIBOR 3M² vs. Compounded SOFR 3M (SONIA 3M)³



² Source: <http://iborate.com/USD-libor/>

³ SOFR stands for Secured overnight financing rate and SONIA stands for Sterling overnight index average. Furthermore, the compounded ARR's (SOFR and SONIA in this case) are calculated using backward compounding method without considering any lag for the said tenor (3 months in this case)

Table 1: ARR vs. IBOR (Key differences)

LIBOR	SOFR
IBOR are forward-looking unsecured rates published for multiple maturities and currencies. IBORs are an indication of the average rates at which IBOR panel banks can obtain wholesale, unsecured funding.	ARRs are backward-looking overnight, secured (SOFR, SARON) / unsecured rates that closely correlate with money market rates and is based on actual transactions in a more liquid market.
IBORs include an element of bank credit risk based on the perceived financial stability of the contributing banks.	ARRs are based on transactions risk free (or nearly risk free) rates
IBORs are fixed at the beginning of the interest period.	ARRs are not fixed at the start of each interest period. Loans, derivatives and securities are expected to utilize a ARR average (or compounded average) over the interest period to calculate interest payments.
IBORs have in the past and are expected to continue to widen when there is severe credit market stress	There is a general view in the industry that ARR may stay flat (or potentially tighten) during periods of severe credit market stress

Impact of transition from IBORs to ARRs

With ARRs impacting both cash and derivative instruments, the impact on FTP and liquidity charges (w.r.t contingent liquidity for collateral) associated with it must be assessed and re-calibrated. Also, interest rate curves will have to be recalibrated to use ARR instruments. Furthermore, FTP rates will need to be published for ARRs in addition to IBORs till 2021 as Bank's assets and liabilities will be linked to both IBORs and ARRs across currencies. Hence, the FTP calculation methodology will need to be enhanced as cost of funds curve and term liquidity premiums will need to be re-calibrated. This can also be used as a lever by Treasuries of Banks / financial institutions to push business units to move away from IBORs to ARRs.

1. Interest rate risk

Base rate - Term rates derivation

Generally, in Banks the base rate is either IBOR or OIS and should align to most of its assets and liabilities. Currently, FTP is based on IBORs with forward-looking term structure (IBOR fixings are published by ICE at 11:00 am every business day for O/N, 1W, 2W, 1M, 2M, 3M, 6M and 12M⁴ for 5 major currencies; USD, EUR, GBP, JPY and CHF). Furthermore, for longer tenors, the base rate is determined based on the swap rates quoted in the derivatives market (the interest rate swap market referencing IBORs is quite liquid and extend up-to 50 years maturity for most of the above-mentioned currencies).

ARRs are different from IBORs, such that only the overnight (O/N) rates will be published by the regulators.

Once the derivatives market for ARR products (futures, swaps, basis swaps etc.) develop and there is enough liquidity across tenors, the forward-looking term structure for ARRs will be calculated based on the same. But, currently, a consistent market practice for deriving a term structure for ARRs is still evolving and has not been finalized. As a result of these challenges, many market participants are either moving to an overnight rate (from their existing 3M / 6M IBOR) or moving to a rate calculated using backward compounding in arrears for the chosen tenor (till 1-year).

Option cost

Generally, on the asset side, customers have the option to pre-pay their loans and this leads to foregoing of future interest income. Hence, this cost of optionality is included in the calculation of cost of funds (CoF). Banks generally use various products (e.g. callable bonds, swaptions) and strategies to manage / hedge pre-payment risk / optionality in their asset portfolio. These products are also linked to IBORs and hence will be impacted by the transition from IBOR to ARR.

Hedging cost

Since, banks borrow (term deposits, CASA etc.) and lend (fixed rate loans) using fixed rate instruments, they are exposed to interest rate risk. Furthermore, banks also borrow and lend in different currencies (other than their base currency) and tenors and hence are exposed to foreign currency (FX) and tenor basis risks respectively. Also, with addition of ARR products to their portfolio, banks will also be exposed to basis IBOR-ARR basis. To mitigate these risks, banks enter into various hedges like interest rate swaps, FX forwards, cross currency swaps, basis swaps etc. and they have a cost associated with them. Since, in any bank, Treasury manages the interest rate and FX risk, this hedging is performed by them at portfolio level and the cost is passed on to different business units as part FTP.

⁴ Note: All the mentioned tenors may not be applicable to all the 5 currencies

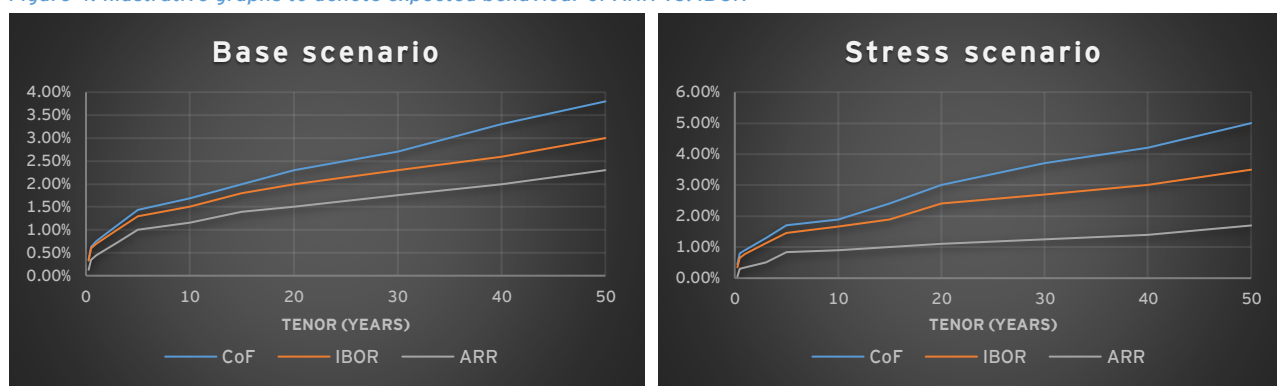
2. Liquidity risk

Liquidity premium (LP)

Liquidity premium or Term liquidity premium refers to the credit spread paid by the Bank for raising funds at a defined maturity. It also includes the spread associated with credit worthiness of the Bank. Generally, any Bank has multiple sources of funds, like deposits (retail and wholesale), short term borrowings, un-secured debt etc. and the cost of borrowing (CoF) depends on market conditions (normal vs stress), liquidity at different maturities (e.g. 3M vs. 1-year) and the credit worthiness (e.g. AA vs. BBB rating) of the Bank. The LPs for different maturities are then calculated from the market CoF and the base curve chosen by the Bank.

In a stress scenario, the liquidity premium for ARR will increase substantially compared to IBORs (larger impact at longer maturities compared to shorter maturities) as the ARR base rate will decrease vs an increase (or remain flat) in IBOR base rate. The same has been highlighted using an illustrative example below.

Figure 4: Illustrative graphs to denote expected behaviour of ARR vs. IBOR⁵



Contingent liquidity charge

Under Liquidity coverage ratio (LCR), each category of deposit and off-balance sheet commitment is assigned an outflow factor which reflects expected customer behaviour following a severe liquidity stress event and the net cost of the liquidity buffer is added as a spread to LP. Existing liquid assets (part of the "High Quality Liquid Assets" portfolio) may be linked to IBORs and as the market for IBORs becomes less liquid, the bank will have to replace them with ARR products or move to fixed rate liquid instruments. Hence, the composition of HQLA portfolio may need to be changed leading to additional costs / charges.

Furthermore, for products like revolving credit (customer is provided a limit for a period of time), the balance drawn is charged FTP similar to any funded variable rate loan. On the undrawn portion of the Revolver balance, a Contingent Liquidity Cost is charged to cover the cost of holding a contingent liquidity buffer. The size of the buffer is dependent of draw-down behaviour of revolvers and is determined through Internal Liquidity Stress Tests (ILST). During periods of stress, on one hand the cost of funding will increase and on the other hand, due to increased customer need (requirement to maintain higher cash balance) the drawdown will increase, leading to business losses. These losses compared to IBORs will be more as IBORs will also increase (or remain flat) in times of stress, leading to higher interest income.

3. Collateral charge

Generally, for various products in the bank's portfolio, the collateral management desk provides the funds (cash, securities linked to IBORs) required for collateral and the business units are charged for the same. Further, banks also receive collateral from its clients while dealing in various products and these can be used to borrow funds from the market, lowering the cost of funding.

As the collateral requirement varies based on market movements, contingent liquidity needs to be maintained by Treasury and this is also charged to the business units. Furthermore, collateral calculations will also be impacted, as currently the PAI and collateral valuations (discounting) is either based on OIS or IBOR and will move to ARR (has already happened for EUR currency derivatives cleared by CCPs on 24th July 2020 and will happen for USD from EFR to SOFR on 16th October 2020) and this will have an impact on collateral charge component of FTP.

⁵ The numbers in the graphs are hypothetical, but depict real market conditions

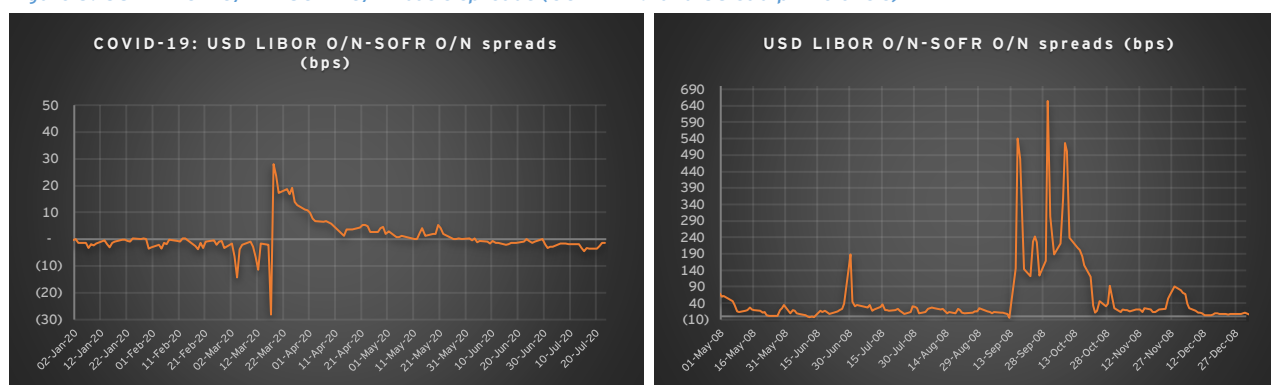
Downstream impacts

Due to the above-mentioned changes to different components of FTP, the FTP rate will undergo a change, and this will have an impact on the users of FTP (the business units). Furthermore, any changes in the FTP model / framework will require system enhancements.

1. Net interest margin (NIM)

Due to the inherent difference between ARR and IBOR; ARRs being risk free (or near risk free) and IBORs having an implied credit component (corresponding to AA rated Banks), there may be substantial impact on NIM. Due to this difference between IBORs and ARRs, during stressed market conditions, the two rates will behave very differently, leading to a large basis spread⁶. This can be observed in the current period of stress (COVID-19) and in September 2008 (sub-prime crisis) (illustrated in *Figures 5 and 6 for USD*).

Figure 5: USD LIBOR O/N⁷ - SOFR O/N⁸ basis spreads (COVID-19 and US sub-prime crisis)



Furthermore, during periods of stress, on the liability side, the cost of funds for banks will increase (or remain flat) due to increase in credit spreads. With respect to IBORs, since it has an inherent credit spread component, on the asset side, some of this increase in credit spread will be automatically passed on to a customer with IBOR linked loan and hence there will be less compression of NIM. On the other hand, for ARRs, since they are risk free, any increase in CoF on the liability side due to increased credit spread would not be passed it on to the customers on the asset side, leading to larger compression of NIM. The same has been illustrated using a hypothetical scenario analysis in the table below.

Table 2: Illustrative example for NIM compression

Particulars	Base scenario		Stress scenario	
	IBOR	ARR	IBOR	ARR
Liability				
CoF	2%	2%	2.2%	2.2%
Asset				
Reference rate	1.7%	1.5%	1.8%	1.4%
Spread	0.7%	0.9%	0.7%	0.9%
Lending rate (Ref. rate + spread)	2.4%	2.4%	2.5%	2.3%
NIM	0.4%	0.4%	0.3%	0.1%
Change in NIM (Stress sc. - Base sc.)			- 0.1%	-0.3%

The credit spread of an existing loan corresponding to the credit risk of the borrower will remain the same. Furthermore, the difference between the credit spread (0.2%) between IBOR and ARR linked asset is the ARR-IBOR basis spread. Also, the credit spread is set at the beginning of the facility and does not change (static), but if the same is also made floating, the impact on NIM will be largely mitigated. With respect to this approach there will be underlying challenges as customers outreach need to be done to explain the dynamics of rate determination.

Furthermore, NIM compression was already an issue in regions where IBOR rates are already negative (e.g. Europe, Japan etc.). Banks have generally been reluctant to charge retail customers interest for holding deposits; implying customer rate floor at 0% or near zero. But a corresponding floor has not always been implemented on the asset side. This leads to margin compression, which puts significant pressure on profitability of banks. This will become even more

⁶ The spreads are calculated as the difference between USD LIBOR and ARR in basis points

⁷ Source: <http://iborate.com/USD-libor/>

⁸ Source: <https://apps.newyorkfed.org/markets/autorates/SOFR>, <https://fred.stlouisfed.org/series/SOFR>

of an issue with ARR as they are very closely linked to Central Bank repo rates and as Central Banks cut rates to historical lows, this will have an adverse impact on banks' profitability. Hence, banks must respond by constantly examining their product mix to improve profitability, and the targeted product mix should be achieved through appropriate FTP incentivization.

Net interest income (NIM) volatility

In normal times, the volatility of ARR is similar to that of IBORs basis the empirical analysis performed using historical data (illustrated in in Figures 6 and 7) and hence the switch from IBOR to ARR will not lead to increased NIM volatility. But, as you can see in Figures 6 and 7 below, in times of stress, the volatility of ARR is different from volatility of IBOR, leading to higher volatility of ARR-IBOR basis and this will cause the NIM to be volatile when there is a mismatch between the funding reference curve and the lending reference curve. The same have been detailed using certain hypothetical scenarios below.

Figure 6: Hist. Ann. vols (SOFR O/N⁹ vs. USD LIBOR O/N¹⁰)

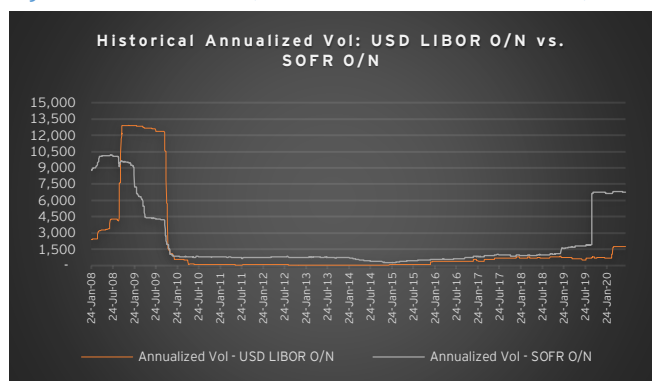
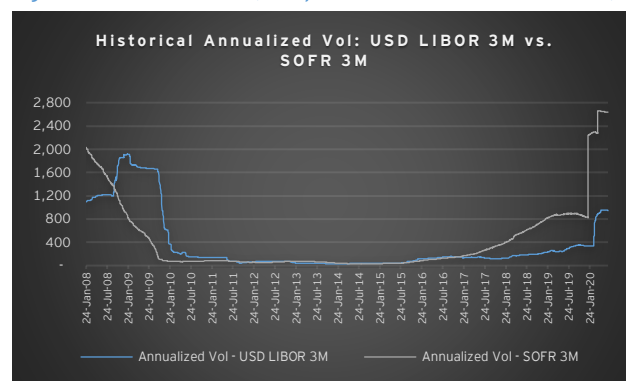


Figure 7: Hist. Ann. vols (Comp. SOFR 3M vs. USD LIBOR 3M)



Scenario 1 (No mismatch): Funding and lending both in ARR

Even if ARR is more volatile than IBOR, the change in rate will be passed on to the customer on the asset side and the Bank will make the same margins and hence there will not be any increase in NIM volatility. This scenario assumes that the Bank has converted (hedged the interest rate risk) all its fixed rate assets and liabilities into floating rate. In case the Bank has large un-hedged positions, the increase in ARR volatility in stress period will lead to higher NIM volatility.

Scenario 2 (Mismatch): Funding in IBOR and lending in SOFR or vice versa

Base scenario: The volatility of ARR O/N (or backward compounded) are similar to IBORs (assuming ARR-IBOR spread does not have any volatility) and hence, this will not lead to higher NIM volatility.

Stress scenario: ARR becomes more volatile during stress periods compared to IBORs and since there is mismatch between the funding and the lending benchmarks, the NIM will become volatile. This will be the case if the maturity profile of the bank is short dated; in case bank's assets and liabilities are both longer dated, the impact on NIM volatility will be lesser as the ARR-IBOR basis is less volatile at longer tenors.

2. System enhancements

Re-configuring and upgrading existing FTP infrastructure to accommodate the transition towards ARR remains one of the major system challenges that treasuries are set to face during program implementation. The major challenges that would be faced by FTP systems are as follows:

- Running parallel processes for individual product types using multiple reference rates for a single currency. This makes the modelling of a dual- or multi-rate environment per currency difficult.
- Maintain multiple versions of product books during transition; IBORs (back book / front book), ARR (front book / front book),
- Rate calculation methodology: Backward compounding in arrears (and associated conventions) will be a fundamental change in the rate calculation methodology, and many FTP systems will have to be enhanced to incorporate this feature. Systems need to be capable to switch to forward looking rates as soon as ARR term structure starts getting published and become reliable.

With evolving methodology and calculation conventions, this would need system adaptability. Hence, flexibility may be required, so that the upgraded systems can accommodate a variety of approaches and conventions.

⁹ Source: <https://apps.newyorkfed.org/markets/autorates/SOFR>, <https://fred.stlouisfed.org/series/SOFR>

¹⁰ Source: <http://iborate.com/USD-libor/>

3. Operational issues

Since the ARR rates published by the Central Banks on any given day are based on actual transactions by various market participants on the previous day, they represent the market as on the previous day of publication. Hence, the FTP rate calculated based on this rate will be effectively one day old. This will not cause any problems during normal market conditions, but in case of periods of large market volatility (e.g. Central Bank policy announcement dates, quarter ends, stress periods etc.), there may potentially be large difference between today's and yesterday's ARR rates and hence, the FTP (if using 1 day old ARR), may not be reflective of the actual cost of funding of the Bank as on that date.

Key considerations for the transition

Resilient FTP transition

Development of ARR term structure and timing of the transition for each product, both on asset and liability side are uncertain; the transition plan needs to be sufficiently resilient to accommodate several possible outcomes. For instance, any push from regulators for the transition of business products (such as loan products) to ARR rates, while funding is still linked to IBORs will lead to basis risk and FTP should be updated in a way that minimises basis risk between the funding and business units. Banks need to be able to perform scenario analysis of the benchmark switch dates on assets and liabilities to understand the impact.

Legacy book migration

Legacy book migration efforts will focus on converting existing IBOR positions (maturing beyond 2021) into ARR positions and supporting clients through the transition. With fallback language kicking in, for some loans, both counterparties would have to agree on the fallback rate; fallback trigger, alternate rate (including rate calculation methodology, such as backward compounding in arrears), rate conventions and a spread adjustment (between IBOR and ARR). Additionally, in some cases (e.g. project finance loans with financial covenants linked to IBORs), restructuring may be necessary which may result in customized payment structure, impacting the return calculations of these deals. Due to this, from FTP funding and hedging standpoint, Treasury will have to incur additional costs (longer term borrowing, be-spoke hedges etc.) and will have to pass on the same to respective business units. Also, there is an industry-wide challenge of "tough legacy transactions" which also need to be considered for the overall book migration.

The funding plan alignment

With majority of asset side switching to ARR, the liability or funding side must also follow the same path as closely as possible to ensure that basis risk is mitigated. Appropriate funding plan must be in place to achieve the same and FTP process must be used to determine the transition of external funding rates and quantum of funding. In a scenario where banks cannot fund themselves in ARR rates (either due to higher cost of funding or lower liquidity in ARR market), they should enter into ARR-IBOR basis swaps to mitigate the basis risk between assets and liabilities. On the funding side, sometimes banks may need to have dual-curve framework to align as much as possible with the profile on the assets side. This will require careful system enhancements and also robust FTP methodology to ensure that all the underlying risks are appropriately priced.

The portfolio / product strategy

Banks use various IBOR linked products to raise funding, lend to its customers and as well as for risk management. The transition from IBORs to ARR rates will lead to changes in the market in terms of product liquidity (decrease in liquidity for IBOR products vs. increase in liquidity for ARR products) and could impact the liquidity profile of the bank and asset-liability mismatches in different maturity buckets and hence will require appropriate incentivization to funds providers at the right tenor. As these changes will be uncertain, stress testing (new liquidity stress scenarios will need to be developed for ARR rates), constant monitoring and mitigation plan must be in place in sync with funding plan.

Opportunity to overhaul of FTP regime

Developing or enhancing the FTP methodology and systems can be resource and time intensive and is done only under rare circumstances. The changes required by the IBOR transition offer an opportunity for the implementation of more fundamental enhancements which might previously have been overlooked in Bank's existing FTP setup. Moreover, we have noticed that a lot of smaller banks currently do not have robust FTP framework and banks may invest one-time effort to improve and stabilize the FTP regime.

The way forward

The overhaul of FTP framework required for the IBOR transition needs well-thought-out action-plan for Treasury to adopt the ARR rates and enhance both the methodology and implementation of its Funds transfer pricing process. Below, we have set out an approach to address and ensure a successful transition:

1. IBOR exposure identification and impact analysis

The first step in this journey is to identify the existing IBOR exposures across maturity buckets in the bank's portfolio (this will be spread across multiple products, currencies, business units and geographies). Furthermore, banks should identify the composition of their assets and liabilities that are hedged and using what instruments. Based on this information, banks will need to perform impact analysis (in terms of P&L) for different transition scenarios. This will help the bank with making business decisions (e.g. funding and product mix, timing of migrating existing IBOR deals, margins to be charged to customers etc.) with respect to both its front book (new products linked to ARR as well as IBORs) and back book (switching existing IBOR products to ARRs).

As a second step, banks need to identify associated impacts on FTP policies, procedures and methodologies (e.g. treatment of basis risks, residual treasury balances etc.) and associated impacts on FTP governance including composition of FTP committees/working groups, and reporting arrangements.

2. FTP transition planning

Products

The existing products will themselves have a transition plan which bank has to synchronize with Treasury. Further, banks should prepare a plan for the legacy book migration as well. Additionally, a plan must be in place to communicate FTP changes to lines of businesses and product managers, including implications for their front-book customer pricing vs. locked-in funding costs for their back-book positions.

Methodology

Due to this transition, the FTP calculation methodology will undergo a significant change due to various factors like unavailability of term ARRs, dual- / multi-rate environment, different conventions etc. Below, we have mentioned an approach to address some of these challenges.

Base rate curve construction: There can be multiple transition scenarios and each one of them will have its own pros and cons. One scenario can be to switch completely from the existing IBOR term rate to an O/N ARR rate; in this case the banks will have to calculate liquidity term premiums (detailed in the subsequent section) for various tenors as the assets may have a different maturity profile compared to funding. Another approach is to move from existing forward-looking term IBOR to a forward-looking term ARR. For this to be possible, the market needs to evolve a term structure for ARRs. This is already happening in the derivatives market as liquidity is developing in ARR derivative instruments (e.g. Futures, swaps, basis swaps etc.) and these instruments can potentially be used to create the ARR curve and the same can then be used to create the base FTP curve. Banks should develop capabilities to calculate the forward-looking ARR term rates and construct the ARR term structure in response to this scenario so that they can offer ARR linked products to their customers.

In another scenario, a bank may decide to continue with IBOR as the base rate and if some of the funding is through ARRs and / or assets are linked to ARRs, the bank will be exposed to basis risk. This risk can be mitigated by entering into different basis swaps (IBOR-ARR, OIS-ARR etc.). Also, there can be an approach where ARR is calculated by adding a static (e.g. ISDA proposed methodology: historical 5-year median spread for respective tenors) or dynamic (based on being NPV neutral, basis spreads quoted in the market etc.) spread over IBOR can the same can be offered to different business units as FTP rate.

Finally, multiple banks will have tough legacy IBOR contracts which will be difficult to migrate to ARRs even after the publication of LIBOR has ceased. Hence, for these contracts, the banks may need to maintain synthetic IBOR curves based on ARRs and a respective IBOR-ARR static spread. All of the above will lead to additional complexity in terms of calculation of the final FTP rate, liquidity management and systems implementation.

Term liquidity premium (TLP): Bank specific term liquidity premium that reflect risk inherent in longer-dated funding, will undergo changes depending on methodology used by the bank. TLP is assessed by isolating the spread of the banks true cost of funds versus the risk-free rate/curve. Many banks use various methods such as using wholesale funding curves, referencing bank's own credit default swap (CDS) spreads traded in the market, tenor basis swaps to calculate the same. The curve is also adjusted by referencing to other funding sources within the bank, for instance retail funding, short term borrowing from money markets, un-secured borrowing from capital markets etc. With addition of ARRs, there will be added complexity of calculating liquidity term premiums and various instruments like IBOR-ARR basis swaps (though it will be difficult to use these to determine the TLP at longer tenors due to low liquidity), bank's own CDS spreads, historical basis spreads across tenors between IBORs and ARRs etc, can be used to calculate the same.

However, banks need to be careful in ensuring that the existing or new methodology doesn't assume a flat credit term structure, as theoretically price of credit only should represent liquidity premium. This will be more crucial as ARR's do not reflect credit spread premiums.

Hedging costs: Due to addition of ARR's either as a source of funding or a benchmark for lending, Bank's will incur additional costs to hedge their interest rate risk, basis risk and FX risk. Since the liquidity in the ARR markets in many currencies is still low, this may lead to higher hedging costs.

Furthermore, as we approach the deadline for IBOR transition, the liquidity in the IBOR market will start decreasing and this may lead to existing IBOR hedges becoming in-effective. Also, as the banks start switching their existing IBOR exposures to ARR's, this will have an impact on the associated hedges. Hence, banks should continuously monitor liquidity in both IBOR and ARR markets, perform period impact analysis to understand the P&L impact of these scenarios and enter into ARR hedges when required to mitigate this risk.

Cost of Funds: Due to the impact of IBOR transition on various components of FTP, banks should make sure that they have considered all the impacts and the final cost of fund appropriately reflects these changes. This is extremely essential as overlooking any of these impacts may lead to in-correct calculation of FTP impacting banks' profitability.

System and resources

As part of FTP system enhancement, banks should first understand the broader impact on planning and management reporting process, models, systems and data requirements. As a second step, they should assess capability of existing ALM and FTP systems vs. other vendor offerings to accommodate ARR adoption. Furthermore, banks should assess the impact on net interest income and volatility of the same during the transition period. And finally, the bank should assess the resource and budgetary requirements with respect to this change.

3. Implementation

The implementation of the enhanced FTP framework will entail re-development and validation of existing models, re-configuration and upgradation of existing systems (including data sources and associated processes), testing and enhancing policy / methodology documents. Furthermore, banks would need to strengthen their existing controls around to mitigate any risks to the FTP process arising due to this transition any changes.

Quantitative impact study

We created hypothetical portfolios to quantify the impact of the IBOR transition on NIM. Further, the impact on the portfolios were calculated under 2 scenarios; (a) Base line and (b) Stress. The details of the portfolio (and underlying assumptions) are provided below. Also provided are the details and the assumptions underlying the 2 scenarios.

Assumptions

- The portfolio consists of single currency
- The portfolios consist of both fixed and floating rate assets and liabilities
- The entire portfolio is hedged, i.e. there is no interest rate risk or basis risk in the portfolio
- Floating rate assets / liabilities are less expensive compared to fixed rate assets / liabilities, due to the lower interest rate risk (and no cost of hedging IR risk)
- While considering the impact on NIM, we have considered the impact of IBOR transition on Liquidity premium and hedge costs (interest rate swaps to hedge interest rate risk and ARR-IBOR basis swap to hedge index risk)

Portfolio definition

Table 3: Hypothetical portfolio definition

#	Portfolio name	Fixed-Float ratio (%)		IBOR-ARR ratio - across A & L (%)	
		Assets (A)	Liabilities (L)	Assets (A)	Liabilities (L)
1	P0 (Base portfolio)	30-70	70-30	NA	NA
2	P1	50-50	50-50	NA	NA
3	P2	70-30	30-70	NA	NA
4	P3	30-70	70-30	50-50	50-50
5	P4	30-70	70-30	30-70	30-70
6	P5	30-70	70-30	70-30	70-30

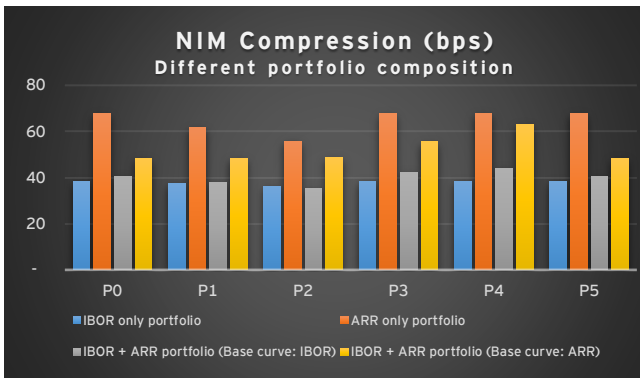
Scenario definition

The hypothetical stress scenario has the following characteristics:

- In the stress scenario, the portfolio will expand, and the cost of borrowing will also increase
- The cost of hedging will increase in the period of stress and also the cost of hedging is more for ARR compared to IBOR
- The period of stress is associated with higher credit risk and hence, the spreads charged to customers over the base rate will be higher compared to base line scenario
- The liquidity premium will increase more for the higher tenors compared to the lower tenors in the period of stress

Further, analysis was also performed to understand the impact of stress scenario in case the portfolio fixed-float mix and / or IBOR-ARR mix was changed.

Results



NIM compression (bps)						
Portfolio	P0	P1	P2	P3	P4	P5
IBOR only portfolio	38	37	36	38	38	38
ARR only portfolio	68	62	56	68	68	68
IBOR + ARR portfolio (Base curve: IBOR)	40	38	35	42	44	40
IBOR + ARR portfolio (Base curve: ARR)	48	48	49	56	63	48

As observed in the graph, the NIM compression is maximum when the portfolio consists only of ARR products and this is observed across different portfolio compositions.

Our offices

Ahmedabad

22nd Floor, B Wing, Privilon,
Ambli BRT Road, Behind Iskcon
Temple, Off SG Highway,
Ahmedabad - 380 015
Tel: + 91 79 6608 3800

Bengaluru

6th, 12th & 13th floor
"UB City," Canberra Block
No. 24 Vittal Mallya Road
Bengaluru - 560 001
Tel: + 91 80 6727 5000

Ground Floor, 'A' wing
Divyasree Chambers
11, O'Shaughnessy Road
Langford Gardens
Bengaluru - 560 025
Tel: +91 80 6727 5000

Chandigarh

1st Floor, SCO: 166-167
Sector 9-C, Madhya Marg
Chandigarh - 160 009
Tel: +91 172 331 7800

Chennai

Tidel Park, 6th & 7th Floor
A Block, No. 4, Rajiv Gandhi Salai
Taramani, Chennai - 600 113
Tel: + 91 44 6654 8100

Delhi NCR

Golf View Corporate Tower B
Sector 42, Sector Road
Gurgaon - 122 002
Tel: + 91 124 464 4000

3rd & 6th Floor, Worldmark-1
IGI Airport Hospitality District
Aerocity, New Delhi - 110 037
Tel: + 91 11 4731 8000

4th & 5th Floor, Plot No 2B
Tower 2, Sector 126
NOIDA - 201 304
Gautam Budh Nagar, U.P.
Tel: + 91 120 671 7000

Hyderabad

Oval Office, 18, iLabs Center
Hitech City, Madhapur
Hyderabad - 500 081
Tel: + 91 40 6736 2000

Jamshedpur

1st Floor, Shantiniketan Building
Holding No. 1, SB Shop Area
Bistupur, Jamshedpur - 831 001
Tel: +91 657 663 1000

Kochi

9th Floor, ABAD Nucleus
NH-49, Maradu PO
Kochi - 682 304
Tel: + 91 484 433 4000

Kolkata

22 Camac Street
3rd Floor, Block 'C'
Kolkata - 700 016
Tel: + 91 33 6615 3400

Mumbai

14th Floor, The Ruby
29 Senapati Bapat Marg
Dadar (W), Mumbai - 400 028
Tel: + 91 22 6192 0000

5th Floor, Block B-2

Nirlon Knowledge Park
Off. Western Express Highway
Goregaon (E)
Mumbai - 400 063
Tel: + 91 22 6192 0000

Pune

C-401, 4th floor
Panchshil Tech Park
Yerwada
(Near Don Bosco School)
Pune - 411 006
Tel: + 91 20 4912 6000

Ernst & Young LLP

EY | Assurance | Tax | Transactions | Advisory

About EY

EY is a global leader in assurance, tax, transaction and advisory services. The insights and quality services we deliver help build trust and confidence in the capital markets and in economies the world over. We develop outstanding leaders who team to deliver on our promises to all of our stakeholder. In so doing, we play a critical role in building a better working world for our people, for our clients and for our communities.

EY refers to the global organization, and may refer to one or more, of the member firms of Ernst & Young Global Limited, each of which is a separate legal entity. Ernst & Young Global Limited, a UK company limited by guarantee, does not provide services to clients. For more information about our organization, please visit ey.com.

Ernst & Young LLP is one of the Indian client serving member firms of EYGM Limited. For more information about our organization, please visit www.ey.com/in.

Ernst & Young LLP is a Limited Liability Partnership, registered under the Limited Liability Partnership Act, 2008 in India, having its registered office at 22 Camac Street, 3rd Floor, Block C, Kolkata - 700016

© 2020 Ernst & Young LLP. Published in India.
All Rights Reserved.

EYIN2003-019

This publication contains information in summary form and is therefore intended for general guidance only. It is not intended to be a substitute for detailed research or the exercise of professional judgment. Neither Ernst & Young LLP nor any other member of the global Ernst & Young organization can accept any responsibility for loss occasioned to any person acting or refraining from action as a result of any material in this publication. On any specific matter, reference should be made to the appropriate advisor.

ey.com/in



@EY_India



EY|LinkedIn



YouTube

EY India



EY India careers



ey_indiacareers