



IBOR transition

A Swiss perspective

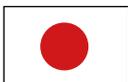
August 2018



End of the (L)IBOR era

Interbank offered rates (IBORs) are deeply embedded in a broad range of financial activities. IBORs serve as reference rates for financial instruments and other commercial and consumer contracts worth several hundred trillion US dollars, and are hardwired into valuation and other systems. However, IBORs are no longer deemed to be a desirable benchmark because of low transaction volumes in the unsecured interbank funding markets that underpin the IBOR panel banks' submissions. Following the announcement of the UK Financial Conduct Authority that it intends to no longer encourage or compel banks to provide quotes beyond 2021, the publication of London Interbank Offered Rate (LIBOR) after 2021 cannot be guaranteed. Moreover, Euro OverNight Index Average (EONIA) and Euro Interbank Offered Rate (EURIBOR) are not currently compliant with the European Benchmark Regulation, and thus cannot be used in their present form after 1 January 2020.

IBOR transition, which has begun with the publication of alternative reference rates (ARRs) in four major currencies, will be wide-ranging and significant for all kinds of financial activity.

Country and/or region	ARR
	Swiss Average Rate Overnight (SARON)
	Reformed Sterling Overnight Index Average (SONIA)
	Not yet selected
	Secured Overnight Financing Rate (SOFR)
	Tokyo Overnight Average Rate (TONAR)

ARRs for EURIBOR, EONIA and EUR LIBOR are still under consideration. This means that the industry will have little time to move over to the ARR.

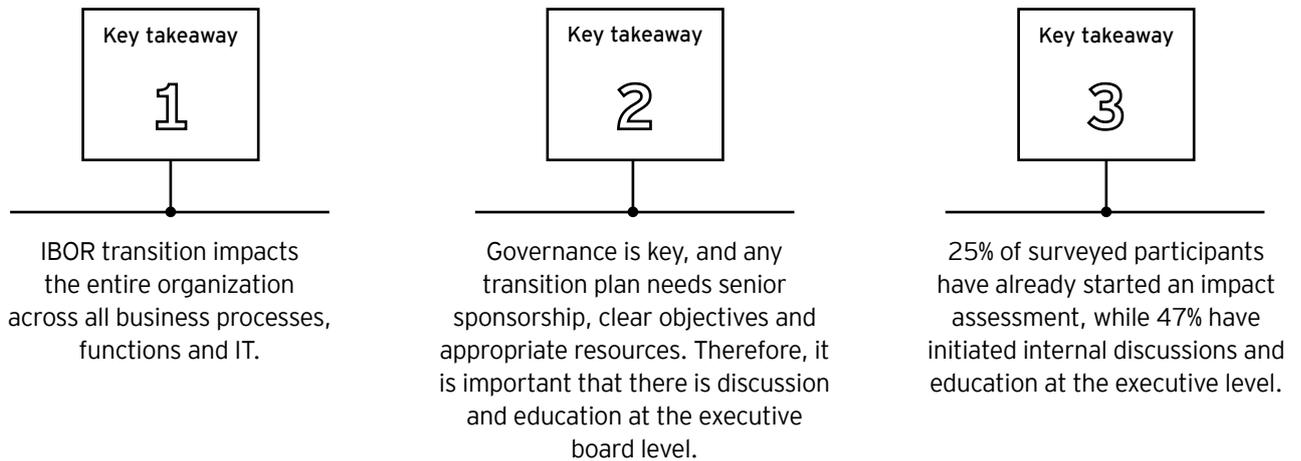
There are no plans to develop EONIA further, while development of EURIBOR is expected to continue until mid-2019.

The other candidates for euro ARR are:

- ▶ Euro Short-Term Rate (ESTER)
- ▶ GC Pooling Deferred
- ▶ RepoFunds Rate

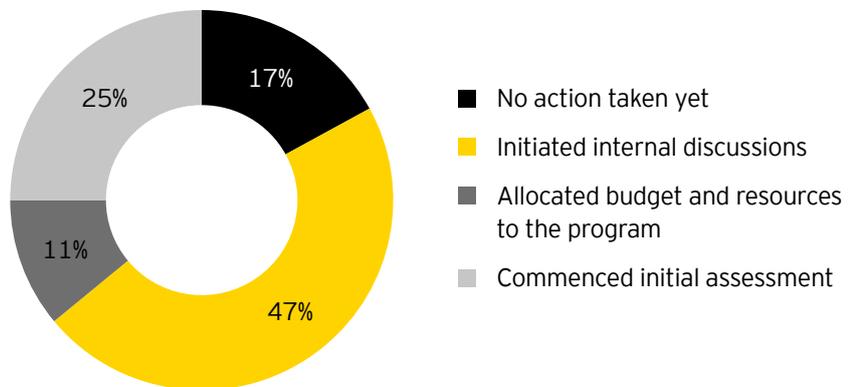
A Swiss perspective

The following is a Swiss perspective on IBOR transition based on insights from an EY-hosted panel in Zurich, comprising leading Swiss industry experts with an audience of over 50 delegates from banks and insurance companies, as well as feedback from EY client conversations in Switzerland.



Transitioning away from IBORs to the ARR will impact a broad range of products and contracts in all financial activities and almost all functional areas. The strong client representation at our event, with attendees from trading, risk, treasury, credit, legal and operations, shows how wide-reaching a change this will be.

What best describes your organization's stage of engagement for implementing ARRs?



Since the transition programs will be complex and it will take time to implement the change, institutions need to mobilize now to understand the impact on their business and on their clients, and form transition plans.

Source: Survey of leading Swiss industry experts and an audience of banks and insurance companies who participated in a panel event about the Swiss perspective on IBOR transition, hosted by EY on 29 May 2018 in Zurich

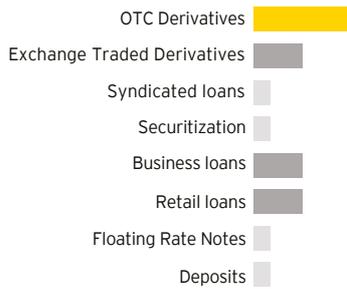
Is the Swiss market ready?

Where is LIBOR used today?

Swiss franc (CHF) LIBOR

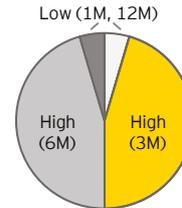
Saturation of products referencing CHF LIBOR by asset class

The highest saturation of CHF LIBOR-referencing contracts are for OTC Derivatives and Exchange Traded Derivatives.



Saturation of products referencing CHF LIBOR by tenor

The highest saturation of IBOR-referencing contracts across currencies are for three-month and six-month tenors.



■ High >US\$1t ■ Medium US\$1t > X > US\$100b ■ Low <US\$100b ■ 1M ■ 3M ■ 6M □ 12M

British pound sterling (GBP) LIBOR

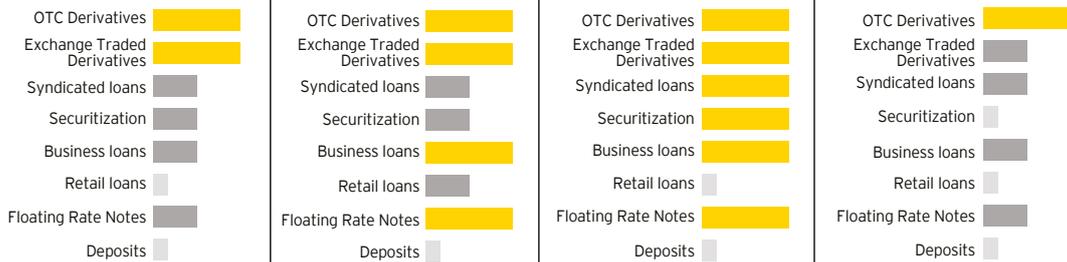
Euro (EUR) EURIBOR

US dollar (USD) LIBOR

Japanese yen (JPY) LIBOR

Saturation of products referencing IBOR benchmarks by asset class by currency

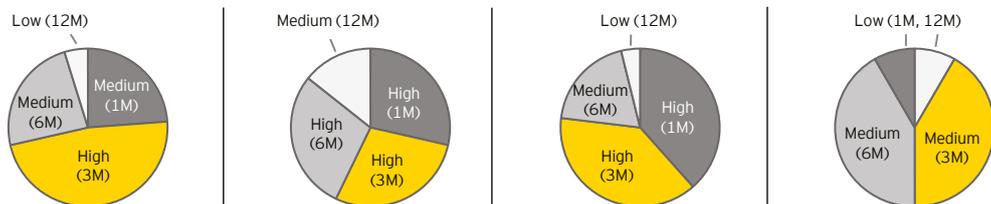
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Saturation of products referencing IBOR benchmarks by tenor by currency

The highest saturation of IBOR-referencing contracts across currencies are for three-month tenor.



■ 1M ■ 3M ■ 6M □ 12M



What is the alternative reference rate for CHF LIBOR?

SARON, administered by SIX Swiss Exchange, is based on transactions and binding quotes from the CHF interbank overnight repo market. The National Working Group (NWG) on Swiss Franc Reference Rates recommended SARON as the most resilient and reliable rate to be used for CHF derivatives and other financial contracts. SARON has been used as a replacement for the Tomorrow/Overnight Interest Swaps (TOIS) benchmark since December 2017.

Rationale for SARON selection



SARON is well-established as a reference in the interbank overnight repo market.



Between 2015 and 2017, the average daily trade and quote volume was around CHF7.5 billion (about 42% of those executed were repo transactions).



SARON covers the most liquid segment of the CHF money market and follows International Organization of Securities Commissions (IOSCO) principles.



The potential of unsecured alternative rates has been extensively analyzed by the NWG (with a negative outcome).

Challenges to consider with SARON adoption

1

Develop term fixing for SARON or compounded overnight fixing as alternatives to CHF LIBOR term rates.

2

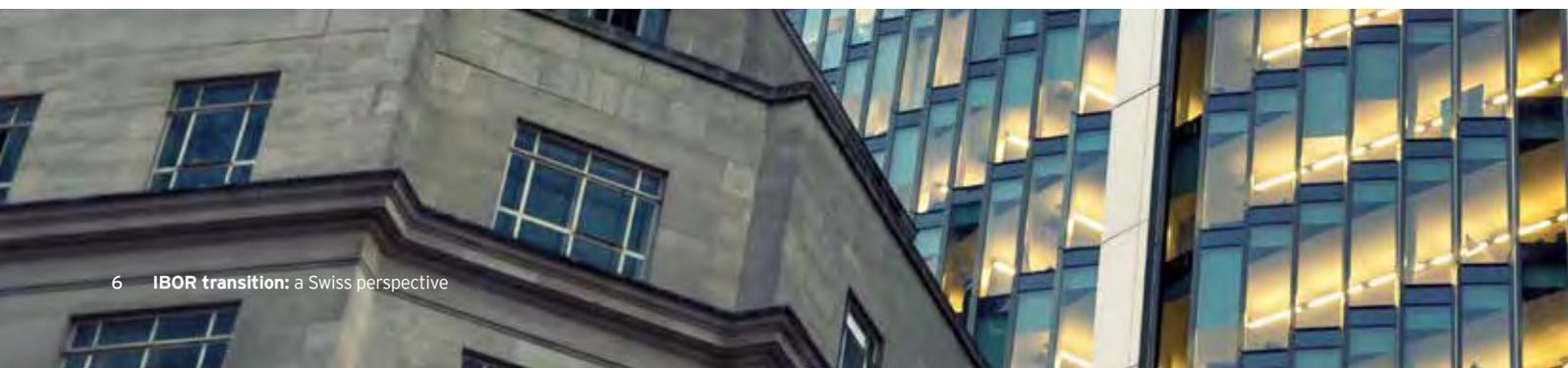
Develop liquidity in CHF ARR referenced instruments.

Although the Swiss market has valuable practical experience from the TOIS to SARON transition at the end of 2017, the LIBOR transition will be on a significantly larger scale, encompassing the entire market. Consequently, it is going to be significantly more complex and time-consuming.

Which alternative rates and methodologies are being proposed in other jurisdictions?

The market is likely to transition at different times in various currencies, as the transition process is not coordinated globally. Moreover, different rates and methodologies are being proposed in different jurisdictions. For example, certain ARR are secured and others unsecured. This can cause issues, particularly for cross-currency swaps or multi-currency facilities until the ARRs in each relevant currency are identified and liquid.

Jurisdiction					
Rate administrator	SIX Swiss Exchange	Bank of England	ECB, FSMA, ESMA and European Commission	Federal Reserve Bank of New York	Bank of Japan
Working group	National Working Group on Swiss Franc Reference Rates	Working Group on Sterling Risk-Free Reference Rates	Working Group on Euro Risk-Free Rates	Alternative Reference Rates Committee	Study Group on Risk-Free Reference Rate
ARR	SARON	SONIA	Not yet selected	SOFR	TONAR
Description	<ul style="list-style-type: none"> ▸ Secured ▸ Became the reference interbank overnight repo on 25 August 2009 ▸ Secured rate that reflects interest paid on interbank overnight repo 	<ul style="list-style-type: none"> ▸ Unsecured ▸ Fully transaction-based ▸ Encompasses a robust underlying market ▸ Overnight, nearly risk-free reference rate ▸ Includes a volume-weighted trimmed mean 	<ul style="list-style-type: none"> ▸ The Working Group has not yet selected an ARR, but the candidates for euro ARRs are: <ul style="list-style-type: none"> ▸ ESTER, the new wholesale unsecured overnight bank borrowing rate, which the ECB will produce before 2020 ▸ GC Pooling Deferred, a one-day secured, centrally cleared, general collateral repo rate, which is produced by STOXX ▸ RepoFunds Rate, a one-day secured, centrally cleared, combined general and specific collateral repo rate, which is produced by NEX 	<ul style="list-style-type: none"> ▸ Secured ▸ Fully transaction-based ▸ Encompasses a robust underlying market ▸ Overnight, nearly risk-free reference rate that correlates closely with other money market rates ▸ Covers multiple repo market segments, allowing for future market evolution 	<ul style="list-style-type: none"> ▸ Unsecured, transaction-based benchmark for the robust uncollateralized overnight call rate market ▸ Rate calculated and published by the Bank of Japan on a daily basis using information provided by money market brokers known as Tanshi ▸ As an average, weighted by the volume of transactions corresponding to the rate



Is there a SARON market at the moment?

Moving to a new ARR requires market liquidity, new legal contract terms and general acceptance of the new state of affairs in the relevant market from buy- and sell-side firms. Therefore, it is likely that all current LIBORs will not transition at the same time for all products and markets. One of the practical challenges of the transition is liquidity in ARR instruments and the timing of the transition, in particular, for multi-currency products, such as cross-currency swaps. Similarly, the cash and derivatives markets are interconnected; one cannot transition without the other.

When it comes to liquidity, market participants are obviously in the driver's seat; the more market participants shift away from using IBORs to using new ARRs, the quicker the underlying liquidity in ARR instruments will build up.

General indicators for transition to SARON	
General	
Number of submitting panel banks (base)	11 (11)
ARR selected	SARON
Agreement on International Swaps and Derivatives Association (ISDA) protocols for ARR-based fallbacks	
Derivatives market	
Futures traded in ARR	
Swaps traded in ARR	
Volatility products traded in ARR (e.g., future options, caps, floors and swaptions)	
Price Alignment Interest (PAI) for variation margin interest and swap discounting at clearing houses	
Cash markets	
Floating rate notes (FRN) referencing ARR	
Syndicated loan referencing ARR	

■ Ready for transition
 ■ In progress
 ■ Not started or no information

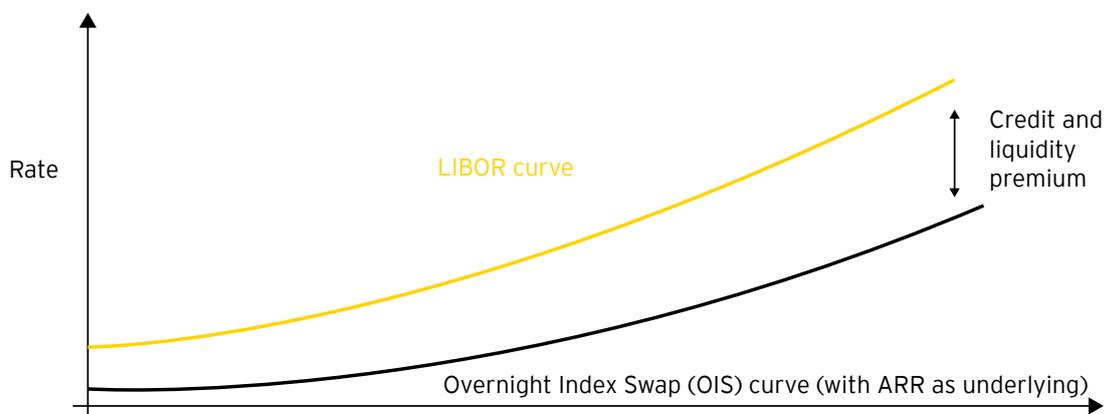
CHF LIBOR and SARON levels (as of 1 June 2018)		
SARON	Overnight	-0.733%
CHF LIBOR	Overnight	-0.773%
	1M	-0.793%
	3M	-0.734%
	6M	-0.648%
	12M	-0.528%

Source: CME Group, Rates Recap as of 1 June 2018



What is the difference between LIBOR and ARR's?

	LIBOR	ARRs
Term structure	Yes, in various maturities	No, overnight
Methodology	Quoted on the same basis for each LIBOR currency	Currency-specific
Publication time	11:00 BST across each currency	Specific time for each currency
Credit premium	Includes credit risk component to reflect the credit risk associated with unsecured interbank borrowing	Close to risk-free



Source: Bank of England

Absence of term rates

Among the greatest differences between LIBOR and other ARR's is that LIBOR is a forward-looking term rate, published for tenors up to 12 months (e.g., three-month or six-month LIBOR), while SARON, for example, is an overnight rate.

A term rate provides certainty of funding costs, as the interest payable will be known in advance. This is important for cash flow management, especially in the cash markets, and generally for pricing and risk management purposes.

Therefore, the term rates will have to be derived from the overnight ARR's. Taking the example of SARON, the main solutions* being considered now are:

- ▶ Cash flow approach: compounded SARON backward-looking
- ▶ Cash flow approach: compounded SARON forward-looking
- ▶ Term rate approach: using data from SARON-based futures/swap/OIS/repo products

Both buy and sell sides will be consulted by the Swiss National Bank on the most appropriate methodology to be used in connection with SARON.

*Minutes from the meeting of the NWG on CHF Reference Interest Rates (4 June 2018)

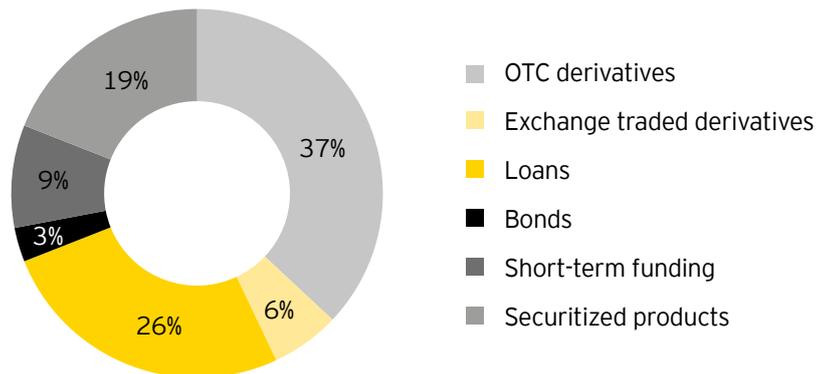


What is the impact on my organization?

How are my products impacted?

Swiss market participants expect that IBOR transition will impact multiple asset classes with attention focused on derivatives and loan instruments.

For which products do you expect the highest level of complexity with regard to changes necessary in the transition to ARR?



Source: Survey of leading Swiss industry experts and an audience of banks and insurance companies who participated in a panel event about the Swiss perspective on IBOR transition, hosted by EY on 29 May 2018 in Zurich

Indeed, OTC and Exchange Traded Derivatives represent more than US\$300 trillion (80%) of products referencing IBORs. The high-volume challenge in derivatives markets is slightly mitigated by the standardized nature of the industry documentation, the sophistication of the market participants and the availability of industry solutions being developed by the ISDA, such as backward-looking protocols.

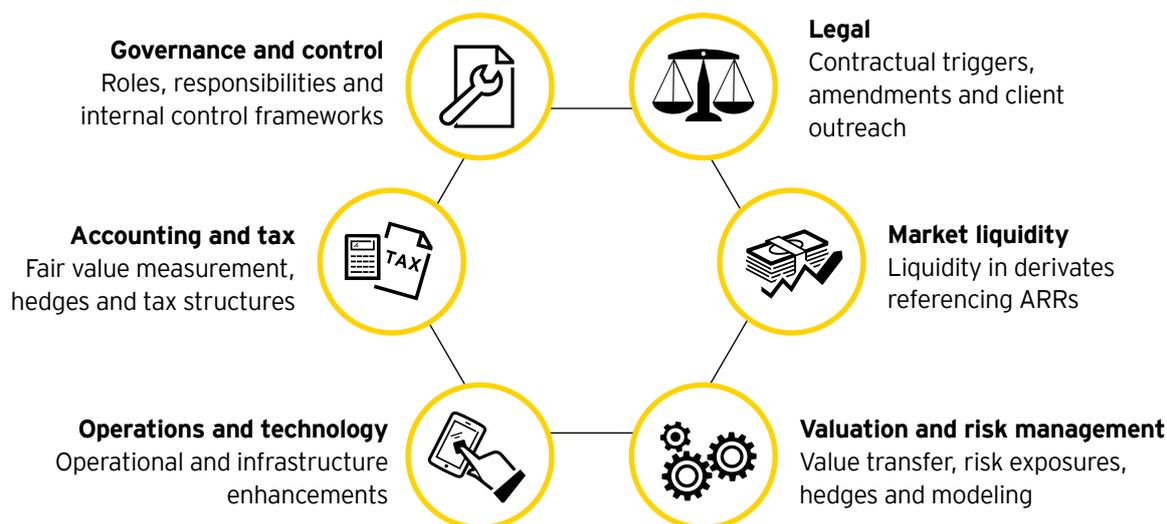
On the other hand, in the less-standardized cash markets, the transition will require bilateral treatment and client outreach and education. At present, it is

expected that the transition to ARR will cause significant operational disruption for the syndicated loan market.

The industry templates facility agreements are based on LIBOR published at 11:00 London time for a forward-looking period, but loan systems are not set up to process and calculate interest based on different publication times (regarding currency) and overnight rates. Therefore, the industry considers that term rate structures of ARR are needed to enable the transition of cash markets.

What are the major transition impacts?

The transition to ARR's will have a widespread impact across business processes, functions and technology.



Valuation and risk management considerations

Pricing and risk models need to be adjusted to the ARR's. Entities will encounter several challenges in this process, the most critical being the lack of historical time series data, and absence of term structures and embedded credit risk components. The asymmetries between the benchmarks may ultimately lead to an increase of basis risk, as well as undesired transfer of value between parties and hedging mismatches.

Need for credit spread

A substantial difference between IBORs and ARR's is that the former includes the credit risk associated with bank borrowing, while the latter is virtually risk-free. The absence of a credit premium could lead to an adverse impact on the market if not appropriately considered when converting legacy contracts.

To minimize the financial impact of the transition on legacy trades, the credit spread must be added on top of ARR. An option could be the use of Credit Default Swap spreads as a proxy of the bank's default risk; however, this solution carries transparency and liquidity disadvantages. While ISDA will shortly release a market-wide consultation on the credit spread methodology and term-fixing adjustments that should apply for derivatives fallbacks, there is no industry consensus yet on credit spread methodology for broader market adoption.

Legal documentation considerations

Around US\$190 trillion of OTC and Exchange Traded Derivatives were linked to LIBOR at the end of 2016. Of these, approximately 65% will mature by the end of 2021, leaving roughly US\$66.5t of products that would need to be transitioned off LIBOR if the benchmark ceased immediately after that date.

For contracts maturing after 2021 and from 2020 in case of EURIBOR and EONIA, the volume and complexity of contractual amendments coupled with the client outreach efforts are anticipated to be among the main legal challenges. Further, the transition of legacy cash instruments to ARRs may turn out to be impracticable because of limited standardization and lack of industry protocols in cash market contracts.

In all markets, the current fallback language practice does not cover a permanent discontinuation of a benchmark. Finally, with contracts not being typically digitized in an easily searchable format, the assessment of legal risk will prove to be a lengthy and complex exercise.

Institutions need a well-coordinated plan across all asset classes and related functions. It is essential to start reducing the population of contracts at risk by introducing efficient fallback provisions immediately.

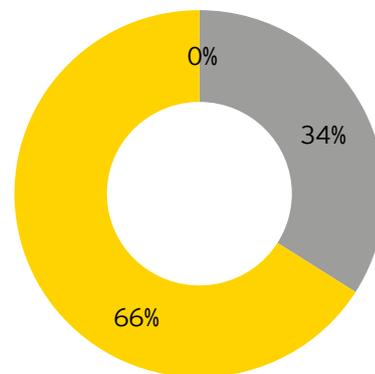
Derivatives documentation

In the derivatives markets, ISDA already published the definitions for SARON, reformed SONIA and SOFR, with further ARR definitions to follow. ISDA is working toward the inclusion of IBOR fallbacks triggered upon a public statement by the administrator or supervisor of the administrator announcing permanent discontinuation; this includes adjustment to reflect the lack of term structure and including the credit spread into the 2006 ISDA Definitions and other product Definitions. When published, the revised Definitions will apply to all new trades after that date referencing the amended

Definitions. An ISDA protocol shall be published to amend the legacy transactions' documentation between the adhering parties accordingly. The publication is planned by the end of 2018.

In parallel, to comply with the requirements of article 28(2) of the European Benchmark Regulation (BMR), the ISDA Benchmark Supplement is to be implemented for all relevant trades that reference benchmarks (including trades that reference IBORs) when the Supplement is ready. This is irrespective of whether any IBOR fallback amendments are then implemented into the 2006 ISDA Definitions. The BMR requires supervised users to plan for cessation or material change of any benchmark (large or small, across all products), reflect this in contracts and nominate alternative rates where feasible and appropriate. EONIA and EURIBOR in their current form do not satisfy the requirements of the Benchmark Regulation and will have to transition as a matter of regulatory compliance. Thus, they cannot be used as references in contracts beyond 2019.

Where feasible, will you take steps to ensure new assets have adequate new fallback language to cover IBOR disruption?



- Yes, we will include fallback language
- We are waiting for industry working groups to develop the interim language
- No, we will not include fallback language

Source: Survey of leading Swiss industry experts and an audience of banks and insurance companies who participated in a panel event about the Swiss perspective on IBOR transition, hosted by EY on 29 May 2018 in Zurich



Loan documentation

In the syndicated loan documents recommended by the Loan Market Association (LMA), the existing fallbacks are not designed to be used long-term or where LIBOR has been permanently replaced by a different rate with a different methodology for calculation. The ultimate fallback is to cost of funds; however, administering loans on this basis for any significant period of time is unworkable (as shown when certain LIBOR currencies and tenors were discontinued in 2014).

A longer-term solution was included in the LMA documentation in 2014 in the form of a "Replacement of Screen Rate" clause (42.5). However, it only applies where a Screen Rate is unavailable and to provide for a substitute benchmark (an earlier transition to a new rate and/or changing the margin would need all lender consent). It may not be commercially accepted on all deals (where all lender consent may be required), and raises practical difficulties with obtaining consent of the requisite lender and borrower groups.

Bond documentation

Current fallback provisions in the majority of bond documentation could cause a market disruption for issuers and investors by converting the floating rate to the fixed one (last available IBOR rate) in case of IBOR discontinuation.

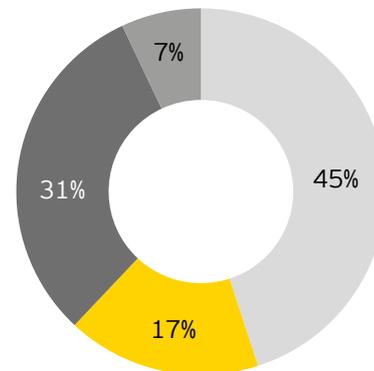
Firms need to understand the extent of their existing exposure to IBORs and need to act now to prevent an increase in exposure. Addressing new contracts now will be easier than solving the problems of the past.

While the trustee does not have the legal authority to change the terms, obtaining consent of all or a majority of bondholders may prove impracticable, especially when the bonds are held in bearer form.

Careful consideration should also be given to interdependencies between structured products and embedded derivatives.

Repapering of legacy contracts, especially with retail clients, bears significant conduct and litigation risk. Indeed, the outcome of the transition may not be favorable for the consumer, even when the terms were negotiated on an arm's-length basis.

Has your organization considered repapering the legacy trades into ARR's?



- No, have not considered this
- Yes, the analysis is in progress
- Yes, if supported by industry standards
- Yes, even if manual effort is required

Source: Survey of leading Swiss industry experts and an audience of banks and insurance companies who participated in a panel event about the Swiss perspective on IBOR transition, hosted by EY on 29 May 2018 in Zurich

Regulatory considerations

Institutions should consider potential regulatory implications associated with the transition, including any cross-dependencies with current regulatory requirements. Indeed, moving from IBORs to ARR's or adding a fallback rate may trigger the applicability of certain regulations on legacy contracts if such change is considered a material amendment assimilated to a new trade, for example:

- ▶ Margin requirements on legacy non-cleared OTC derivatives

- Temporary waiver of early termination rights upon a resolution stay exercised by FINMA under the amended Banking Ordinance (art. 12 para 2bis)

Further, contract amendments potentially trigger other consequences, such as realizing tax revenue and hedge accounting.

While the authorities in the US and UK are considering how clarification can be provided to ensure that the amendment of a benchmark does not, in itself, trigger application requirements on legacy trades, the status of a Swiss regulatory safe harbor is yet unclear.

Operations and technology considerations

From a financial risk management perspective, hedging strategies will be impacted, and it is important to reconsider and update pricing and valuation models of financial instruments linked to IBOR. Moreover, a broad range of impacted systems are going to require technology changes, e.g., to support implementation of ARR-based curves and valuation methodologies.

Accounting and tax considerations

The main consequences of the transition away from IBORs in the tax area arise from the interaction of valuation models and financial products, repricing of financial instruments, and mismatches of products that are interconnected. Consequently, the respective legal and financial documentation has to be adjusted and aligned with the new ARRs. Therefore, it is important to assess the end-to-end process of rate transition and ensure that all is properly reviewed, analyzed and documented in order to minimize the tax risks.

Categories	Challenges (illustrative)
Operational taxes	<ul style="list-style-type: none"> ▸ Acceleration of payments upon amendment of contract terms to reference ARRs ▸ Potential withholding tax miscalculation upon transition to ARRs
Hedging	<ul style="list-style-type: none"> ▸ Tax impacts arising from hedging mismatches upon phased product transition
Transfer pricing	<ul style="list-style-type: none"> ▸ Transfer pricing documentation to be reviewed and updated to ensure all policies, benchmarks and supporting documents are aligned with the new ARRs ▸ Tax and transfer pricing impact arising from changes in the determination of the cost of liquidity buffers and its reallocation ▸ Pricing of cash-pooling, guarantee fees and other intragroup financing tools to be re-thought and re-expressed
Tax impacts of valuation	<ul style="list-style-type: none"> ▸ Tax impact arising from changes in the asset valuations ▸ Residual tax risk from deemed taxable events

Similar challenges exist in the accounting area where changes in valuation and contract terms may have a direct impact on profit and loss. The most pressing concern in the market currently surrounds hedge accounting and whether hedges that reference IBOR risk and run beyond 2020/2021 will be able to continue or whether a hedge de-designation will be required, with the resulting operational and potential profit and loss volatility that entails. In recognition of the urgency of this matter, the International Accounting Standards Board (IASB) discussed this at their recent June board meeting and decided to add a research project on this topic to their agenda.



What actions do I need to take now?

What did we hear at the IBOR transition industry panel discussion?



Ensure clear governance



Perform an impact assessment



IBOR transition takes time

This is not a 3-month exercise, but rather one that may take 18 months or more. It is important to start now to be prepared in 2021.

Key market participants feel the pressure to react to the transition from IBORs. The actions they consider the most urgent can be summarized in three points:

1

The key to an effective transition will be a **robust governance structure**

that oversees the design and implementation of IBOR transition efforts.

2

This topic cuts **across the organization**, and any transition plan needs **senior sponsorship**, clear objectives

and appropriate resources. Therefore, it is important that there is discussion and education at the executive board level.

3

Firms need to understand the extent of their existing exposure to IBORs and take action now to **prevent a increase in exposure**. This means initiating an **impact analysis** of contracts and IT systems, and including fallback language in new contracts as a first step.

With IBOR transition impacting organizations across a large number of market segments, products and jurisdictions, there is no standard transition plan that can be adopted. It is imperative that organizations begin assessing cross-functional organizational impacts to minimize transition risk and the level of market disruption.

Your contacts



John Alton

Partner, Ernst & Young AG
Financial Services,
Assurance

Tel: +41 58 286 42 69
Mobile: +41 79 642 22 54
Email: john.alton@ch.ey.com



Kelly Ching

Manager, Ernst & Young AG
Financial Services,
Legal

Tel: +41 58 286 38 86
Mobile: +41 79 611 28 10
Email: kelly.ching@ch.ey.com



Silvia Devulder

Senior Manager, Ernst & Young AG
Financial Services,
Legal

Tel: +41 58 286 38 03
Mobile: +41 79 443 13 52
Email: silvia.devulder@ch.ey.com



Christian Röthlin

Partner, Ernst & Young AG
Financial Services,
Legal

Tel: +41 58 286 35 38
Mobile: +41 79 444 78 85
Email: christian.roethlin@ch.ey.com



Eveline Wenger

Senior Manager, Ernst & Young AG
Financial Services,
Assurance

Tel: +41 58 286 43 91
Mobile: +41 79 249 74 33
Email: eveline.wenger@ch.ey.com



Simon Woods

Partner, Ernst & Young AG
Financial Services

Tel: +41 58 286 38 79
Mobile: +41 79 701 03 59
Email: simon.woods@ch.ey.com



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EYG no. 010536-18Gbl

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