Derivatives Valuations in Practice

WATCHLIST: LIBOR Replacement

The efforts to reform LIBOR and propose alternative reference rates (ARR) make a clear case that significant changes are coming for derivatives market participants and it's time to start making plans. pasVal is committed to helping you meet these challenges and to making our powerful platform easily accessible for you and your clients.

Here's what we think you should be watching to stay on top of these changes to LIBOR (see overleaf for background and status updates):

☐ Market acceptance of ARR

In the US, UK and Japan, the relevant authorities have proposed replacements: SOFR, SONIA, and TONAR respectively. For now, SARON and EONIA are the most likely replacements in Switzerland and the EU but they have not been officially proposed. Of these, only SOFR and SARON are new rates.

The ICE is working to reform LIBOR, and it may be that replacement rates never overtake LIBOR's acceptance in the market.

- ? **Will the authorities maintain a paced rather than a big-bang transition?**
- ? **How long will parallel markets remain liquid?**

Current fallback provisions in ISDA contracts are not viewed as sufficient for a permanent discontinuation of LIBOR nor will they be satisfactory with an illiquid LIBOR market.

- ? **Will you have to amend agreements? (This includes ISDA masters and CSAs)**

ISDA Fallback Presentation
AARC FAQ

☐ Development of futures & swap markets

The success of the ARRs will depend on the development of sufficient liquidity in the futures and swaps markets referencing these new rates.

Both LCH and CME have committed to providing or extending such products.

- ? **What futures exchange products will be offered around new ARR?**
- ? **How will clearing houses adapt for existing ARRs?**
- ? **When will ARR OIS trading become eligible for central clearing?**
- ? **Has a basis market developed?**

What's Next for LIBOR and Eurodollar Futures?

☐ Tenor fixes

The ARR are by definition overnight rates (probably fixing daily in arrears), whereas LIBOR fixes for set tenors in advance. With sufficient liquidity in the swap OIS market, it might be possible to create such term fixings for these benchmark rates.

- ? **Do end-users of derivatives need ARR term fixings?**
- ? **Will tenor fixes based on the ARR evolve?**

☐ Risk-free rate and credit premiums

LIBOR is based on unsecured interbank borrowings, whereas the ARRs are near risk-free rates. The proposed alternatives SOFR, SARON are secured while SONIA, TONAR and EONIA are unsecured.

- ? **How will fall-back provisions account for this credit spread premium?**
- ? **Will new ARRs replace currently used discounting/risk-free rate (e.g. Effective Fund Funds rate in the US)?**
- ? **How quickly will CCP price alignment interest (PAI) transition to new ARR?**

☐ Development of options market

The lack of an options market will place limitations on the derivatives markets' ability to replace LIBOR fully. Without one, valuations of non-linear ARR-based OTC derivatives with embedded options, calls, puts or convexity will be very challenging.

- ? **How long will it take to establish an active option market?**
- ? **Will cap/floor and swaption ARR products develop?**

For example, CME has an active US Fed Funds futures and futures options exchange, which they have committed to extend to SOFR.

☐ Hedge accounting implications

End-users of derivatives may find the new rates are not as appropriate for hedging their obligations or may introduce ineffectiveness in the hedge relationship.

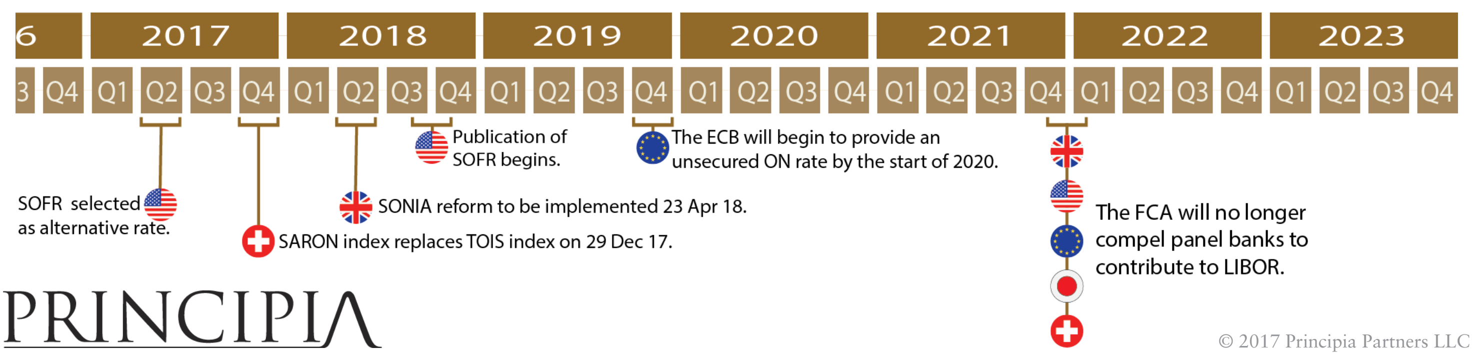
- ? **Will FASB accept these new ARR as eligible indices for hedging interest rate risk?**
- ? **Will contract amendments or LIBOR fall-back provisions require de-designation existing hedging relationship?**
- ? **How will the ARR change hedge effectiveness?**

FASB update 2017-12

☐ Valuation and system requirements

In the long term, a move from LIBOR to ARR will simplify certain aspects of derivative valuations, as the same curve is used for forecasting cash flows as well as the discount curve. However, the uncertainty and phased transition to ARR will add complexity in all aspects of derivatives processing.

- ? **Can you capture the new ARR and associated futures and swaps for curve construction?**
- ? **What model changes are needed for valuation of ARR based products?**
- ? **Are fall-back provisions able to be implemented for legacy products?**
- ? **How will this impact hedge effectiveness tests and risk measures?**
- ? **What is the impact on your overall operational and accounting process?**



PRINCIPIA

Derivatives Valuations in Practice

WATCHLIST: LIBOR Replacement

While there is still an effort to reform LIBOR to make it more transaction based, there is a lot of effort underway to offer alternative benchmarks which could also completely replace it. New benchmark rates will be introduced in all LIBOR jurisdictions. These changes will have far-reaching impacts for the market and pose very specific challenges for individual businesses. We want you to have our most up-to-date understanding of the situation, so you can minimize the risks and make the switch as effortlessly as possible.

What is involved?

London Interbank Offer Rate (LIBOR) is a benchmark rate based on the rates at which designated panel banks charge each other for short-term loans for ON, 1W, 1M, 2M, 3M, 6M and 1Y terms. In recent years, the manipulation of these rates by contributing banks has highlighted the urgent need for reform.

Originally offering 15 maturities and covering 10 jurisdictions, it was reformed in 2013 to apply to just the 7 maturities noted above and only 5 jurisdictions (the US, UK, EU zone, Japan, and Switzerland). Now, each of these has its own body dedicated to reviewing and proposing alternatives to LIBOR.

Who is responsible?

The United States of America (USD) has the Alternative Reference Rate Committee (ARRC) at the Federal Reserve.

The United Kingdom (GBP) has the Risk Free Rate Working Group at the Bank of England.

The European Union (EUR) has a joint working group.

Japan (JPY) has a study group on risk-free rates at the Bank of Japan.

Switzerland (CHF) has the National Working Group at the Swiss National Bank.

Intercontinental Exchange (ICE) is the current administrator of LIBOR.

UK Financial Conduct Authority (FCA) ensures panel banks contribute to LIBOR.

European Money Market Institute (EMMI) publishes EURIBOR which works similarly to LIBOR but specific to EU interbank loans. The EMMI also publishes EONIA.

Financial Stability Board (FSB) is the international body which originally recommended reform to LIBOR.

International Swaps and Derivatives Association (ISDA) will contribute critical guidance specific to derivatives markets.

What is *definitely* happening?

ICE is currently making a concerted effort to reform LIBOR so it is more transaction-based. Likewise, the EMMI is undertaking a reform of EURIBOR.

Alternative rates (not necessarily replacement rates) to LIBOR have been or will be proposed in all jurisdictions:

The ARRC has recommended a new Secured Overnight Financing Rate (SOFR) (Jun 2017) as the alternative benchmark.

The Bank of England announced (Apr 2017) that the Sterling Overnight Index Average (SONIA) is the preferred near risk-free interest rate benchmark for use in sterling.

The Bank of England announced (Oct 2017) that SONIA reforms will be implemented on 23 April 2018.

The BoJ has identified (Dec 2016) TONAR as its LIBOR alternative.

At the end of 2021, the FCA will no longer compel panel banks to contribute to LIBOR.

ISDA has established a working group which will provide a road map for the transition away from LIBOR.

What is still undecided?

It is still undecided if any of these alternative rates will *replace* LIBOR. That will depend on market adoption.

While all jurisdictions have working groups committed to proposing *alternate* rates, the ECB and SNB have *yet to make formal proposals*.

The ECB announced in September that it will start providing an overnight unsecured index before 2020. Also, EMMI are working on a new EU repo reference rate. These, along with EONIA are candidates for the replacement benchmark.

The SNB announced (Feb 2017) that SARON will replace the existing TOIS index in a "Big Bang" transition in December 2017. This is most likely to be proposed as the replacement benchmark.

Overleaf: what you should be watching and preparing for as these alternative rates evolve.

About Principia

A practical solution

Principia SFP provides clients with a multi-curve valuation and risk management environment to forecast using appropriate tenor LIBOR forward curves and to select the relevant discounting curves for accurate, independent valuations.

Beyond valuations, the system is an end-to-end operational platform for derivatives portfolios allowing users to perform detailed impact analysis, risk management and the full operational implementation of OIS discounting into daily mark-to-market and hedge effectiveness processes. Principia also provides and automates delivery of extensive daily market data and curves as standard, for precise valuations, proven to closely match the interdealer market.

In a world moving towards central clearing, Principia users have the tools to implement industry best practices in the analysis, trading and risk management of vanilla and complex derivatives. With this single coherent platform, clients can streamline derivatives operations from trade capture and risk, through to accounting and central clearing.

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About Principia Partners

Principia Partners LLC (Principia) provides a comprehensive single platform solution for the end-to-end management of structured finance and derivative investments. Global financial institutions and independent asset managers have used the award winning Principia Structured Finance Platform since 1995 to unify investment analysis, portfolio management, risk surveillance, accounting and operational control across the breadth of structured credit assets, fixed income investments and complex derivatives. In 2015, Principia launched its Analytic Service, pasVal, to make its award-winning pricing and analytics available to an even broader range of businesses.