A Guide to Changes in Interest Rate Benchmarks

September 2019
Introduction

The purpose of this guide is to inform you of recent (and possible future) developments in Interest Rate Benchmarks (IRBs), and to advise you of certain general risks relating to the reform of interest rate benchmarks. These risks may affect transactions you may enter into with Nomura Holding Inc. and/or its subsidiaries (“Nomura”) and/or financial products you may purchase from Nomura.

This guide is not intended to be, and should not be relied upon as, legal, financial, tax, accounting or other advice. Nomura is not providing you with any such advice and you should consult your own advisors for advice on risks relating to the reform of interest rate benchmarks.

This guide is not intended to be comprehensive. Material developments may have occurred since the issuance of the guide in September 2019.

In particular, this guide is not intended to address the financial and other risks that may arise in connection with interest rate benchmark reforms and/or transactions referencing affected benchmarks or otherwise impacted by changes to those benchmarks.

What is happening to interest rate benchmarks?

Interest rate benchmarks are being reformed and, in some cases, discontinued as part of a global benchmark reform process. Different interest rate benchmarks are being reformed or discontinued at different speeds and in different ways. You should consult your own advisors for further information on the benchmark reform process as it is a rapidly developing area.

The London Interbank Offered Rate is one of the most commonly used benchmarks and is published for US Dollar (USD), Pound Sterling (GBP), Euro (EUR), Swiss Franc (CHF) and Japanese Yen (JPY) in seven different maturities. USD LIBOR is also used as an input to the SGD SOR (Singapore) and THB THBFIX (Thailand) rates.

LIBOR based Interest Rate Swap term rates are also published for tenors from 1 year to 30 years for EUR, GBP and USD as the ICE Swap Rate. LIBOR Interest Rate Swap term rates are also published for JPY by Refinitiv as the Tokyo Swap Rate.

The UK Financial Conduct Authority (the FCA), as the regulator in the context of the London Interbank Offered Rates (LIBOR), has stated that (i) it may not compel banks to make LIBOR submissions post December 2021 and (ii) the base case assumption should be that there will be no LIBOR publication after December 2021.

Other rates may also be reformed or discontinued, including EONIA (the Euro OverNight Index Average).
Why are some interest rate benchmarks being reformed or discontinued?

Financial markets in some currencies and regions have changed significantly since the global financial crisis. Banks no longer fund themselves in the interbank market to the same extent as they used to, and regulators do not believe that these fundamental shifts are likely to be reversed in the near term. The decline in the liquidity of the underlying interbank markets is one of the key drivers for reform and transition away from LIBOR. The Chief Executive of the FCA has referred to LIBOR as “measuring the rate at which banks are not borrowing from one another” to highlight the growing risk of it no longer being representative.

LIBOR is now calculated on the basis of a reformed methodology, but it still requires the support of the submitting panel banks. The number of underlying transactions in the interbank market has fallen and so the calculation of LIBOR under the reformed methodology is still reliant on the expert judgment of the panel banks. This process gives rise to certain risks for the panel banks. The FCA has agreed with 20 panel banks that they will continue making submissions until the end of 2021, but some banks may then withdraw from the LIBOR panels and the FCA has stated that it does expect withdrawals from the LIBOR panels at the end of 2021. It is possible that so many banks will withdraw that it is simply not feasible to produce a LIBOR rate after that time.

All of this means there is uncertainty as to whether LIBOR will continue to be published after 2021. If and when it ceases to be published, LIBOR will not be able to continue to be the interest rate referenced by existing transactions (or to be referenced by new transactions going forward). If participants in financial markets do not implement a managed transition process (including replacing references to LIBOR in existing contracts), this could lead to a disorderly discontinuation of LIBOR, which could in turn result in significant market disruption. Some historical fallbacks, which involve a calculation agent sourcing quotations from reference banks for each transaction in order to synthesise LIBOR, are unlikely to function because those banks will not wish to provide quotations. Given the volume of LIBOR-linked financial products and transactions, this may even create financial stability risks. Transitioning to alternative rates will help to mitigate the possible market disruption.

Even if some panel banks are willing to support LIBOR, it may not be possible to produce a LIBOR rate that is representative of the relevant underlying market(s) or economic reality. Under the EU Benchmark Regulation (Regulation (EU) 2016/1011) this criteria must be met for LIBOR to be used as the reference rate for new in-scope financial products. A prohibition on entering into new financial products referencing LIBOR would be likely to significantly reduce the liquidity of legacy LIBOR linked financial products. Furthermore, reducing the number of panel banks may change the properties of the LIBOR rate more generally – for example, by affecting the level or the volatility of the rate.

Some of these market dynamics are also present in other regions and other currencies and may drive the discontinuation of non-LIBOR benchmarks.

In addition, LIBOR embeds a bank credit risk premium into its rate which may not be appropriate for certain financial products - as liquidity has declined in the interbank market, this bank credit risk premium is being priced by reference to a less active market, and this may make such pricing more volatile, particularly in times of financial distress.

1 Speech by Andrew Bailey, Chief Executive of the FCA, at Bloomberg, London - on transitioning from LIBOR to alternative interest rate benchmarks - July 2018.
What are the replacement interest rate benchmarks?

Alternative reference rates or what the market has termed “risk-free rates” (RFRs) are being developed which are nearly risk-free and can be used in the financial markets in place of the existing key interbank offered rates. In some cases the existing IBORs may be discontinued and replaced with the RFRs whilst in other cases both rates may be available for the relevant currency at least for a period of time.

For some currencies, the selected RFR is already in use in the overnight market (e.g. SONIA for GBP) whilst for other currencies, a transition from the incumbent overnight rate to the new RFR will be required (e.g. for EUR from EONIA to €STR). The administrator of EONIA has announced that EONIA will also be discontinued after 2021.

Amongst others, industry working groups have identified overnight RFRs for the following currencies, although there are proposals to continue with both TIBOR and EURIBOR:

<table>
<thead>
<tr>
<th>Currency</th>
<th>Current IBOR Rate</th>
<th>RFR</th>
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</thead>
<tbody>
<tr>
<td>US Dollar (USD)</td>
<td>USD LIBOR</td>
<td>Secured Overnight Financing Rate (SOFR)</td>
</tr>
<tr>
<td>Pound Sterling (GBP)</td>
<td>GBP LIBOR</td>
<td>Sterling Overnight Index Average (SONIA)</td>
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<tr>
<td>Euro (EUR)</td>
<td>EURIBOR</td>
<td>Euro short-term rate (€STR)</td>
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<tr>
<td>Swiss Franc (CHF)</td>
<td>CHF LIBOR</td>
<td>Swiss Average Rate Overnight (SARON)</td>
</tr>
<tr>
<td>Japanese Yen (JPY)</td>
<td>JPY LIBOR and TIBOR (Japanese Yen TIBOR and Euroyen TIBOR)</td>
<td>TONA (Tokyo Overnight Average Rate)</td>
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</tbody>
</table>

What are some of the differences between the IBORs and the alternative reference rates?

Whilst IBORs are forward-looking term rates that embed bank credit risk, the RFRs identified to date are overnight rates and are intended to be nearly risk-free. To transition an existing financial product from an IBOR to an RFR will require adjustment spreads to be applied to the RFR.

Forward looking RFRs do not yet exist but may be developed in the future. However, there is no certainty that a forward looking RFR will be available in respect of any currency or any particular product. See “Developments in Interest Rate Benchmarks – Term Overnight Index Swap (OIS)” on page 6.
Developments in Interest Rate Benchmarks

EONIA to €STR (also known as EuroSTR)
- €STR will launch as a new IRB on 1 October 2019.
- €STR is an Overnight Deposit IRB that looks at a wider cross-section of transactions than EONIA. Most of these new €STR transactions tend to have a lower interest rate than the EONIA pool of transaction.
- EONIA will be subject to a change of methodology from 1 October 2019, and will be calculated on the basis of €STR plus a spread of 8.5bps from that date.
- The daily reset for €STR will be published at 08:00 Frankfurt time on T+1 – the day after the underlying Overnight Deposits were traded. EONIA will then be calculated as €STR + 8.5bps and also published at the same time as €STR. This contrasts with the current publication time for EONIA which is 18:00 Frankfurt time on T+0 – the day that the underlying Overnight Deposits were traded.
- EONIA based products will continue to be traded after 1 October 2019 and they will be largely unaffected by the change in methodology and publication date and time.
- EONIA Overnight Index Swaps (OIS) typically settle one day after the End Date of the trade. This should still allow for timely settlement of coupons as €STR will be published at 08:00 Frankfurt time on the End Date.
- EONIA Repos typically settle early in the morning on trade End Date. The later publication time for €STR makes this difficult to achieve. One possible solution could be for EONIA Repos to settle their coupon on the End Date using an estimate of the final day’s reset with a ‘true-up’ adjustment for the difference between the estimate and the actual rate one day later.
- EONIA may cease to be published after 31 December 2021. To avoid disruption, EONIA contracts will need to have been amended by that date to reflect a change from EONIA to either
  - €STR + 8.5 bps (with no valuation change); or
  - €STR (with a valuation change – any such change could be offset by bilaterally agreed fees).
- Clearing houses are likely to start to clear Interest Rate Swaps that reference €STR soon after launch of €STR in October 2019.
- It is expected that clearing houses may adjust the Price Alignment Interest (PAI) for interest paid on EUR variation margin collateral from EONIA to €STR during the first half of 2020. This would lead to a discounting value and risk change, which could in principle be calculated by the clearing houses, and then passed on to their members by means of offsetting fees and risk hedges.
- Any change in PAI could also create a change in the value and risk of bilateral Swaption trades that settle with cleared swaps. How this value and risk change will be handled by the bilateral market is uncertain at the date of this guide.
- If the clearing houses change their PAI then the bilateral OTC derivative market may then see a renegotiation of existing Credit Support Annexes (CSAs) which typically calculate interest on EUR cash collateral based on EONIA, from EONIA to €STR. This could also create a value and risk change which would need to be addressed bilaterally by the parties to the CSA.
Developments in Interest Rate Benchmarks

Term Overnight Index Swap (OIS) Rates

- These currently exist with IRBs such as ILS-TELBOR (the Israeli Shekel IBOR-type rate). Past examples include EUR-EONIA-SWAPINDEX.
- Three administrators – ICE BA, FTSE Russell and Refinitiv, are working on Term SONIA Reference Rates. These can in principle be calculated from looking at firm bids and offers in the OIS market on electronic trading venues. Term SONIA may be launched later in Q1 2020 with possible trading of Term SONIA financial products in the second half of 2020.
- Should Term SONIA be successful then Term OIS Rates in other currencies may then be developed.
- Term OIS Rates would be useful in any transition away from LIBOR, and would be particularly suitable for cash products, hedging derivatives, some complex derivatives and legacy trades that currently used term LIBOR rates. However, regulators have stated that the market should not assume that term rates will be developed or available.
- It should be noted that Term OIS Rates for LIBOR transition have not yet arrived and they may not succeed or be widely used in the market.

FedFunds to SOFR

- SOFR launched as a new IRB on 2 April 2018. It is an Overnight US Treasury Repo IRB that looks at a larger section of transactions than FedFunds (which is an overnight deposit rate)
- SOFR tends to have a slightly higher rate than FedFunds on most days. SOFR can be volatile and has often increased at period end dates.
- FedFunds will continue to be published as an independent IRB to SOFR for the foreseeable future.
- The daily reset for SOFR is published at 08:00 New York time on T+1 – the day after the underlying Overnight Repos were traded. This is the same time as FedFunds is published.
- SOFR Overnight Index Rate Swaps (OIS) currently settle two days day after the End Date of the trade. This gives two days to settle the coupons as the final SOFR rate is published at 08:00 on the trade End Date.
- Clearing houses already clear Interest Rate Swaps that reference SOFR. However liquidity for long dated SOFR derivatives is thinner than for FedFunds.
- It is expected that clearing houses may adjust the PAI for interest paid on USD variation margin Collateral from FedFunds to SOFR during second half of 2020. This may create a discounting and risk change, which could in principle be calculated by the clearing houses and then passed on to their members by means of offsetting fees and risk hedges.
- Any change in PAI could also create a change in the value and risk of bilateral Swaption trades that settle with cleared swaps. How this value and risk change will be handled by the bilateral market is uncertain at the date of this guide.
- If the clearing houses change their PAI to SOFR then the bilateral OTC derivative market may then see a renegotiation of existing Credit Support Annexes (CSAs), which typically calculate interest on USD cash collateral based on FedFunds, from FedFunds to SOFR. This could also create value and risk changes which would need to be addressed bilaterally by counterparties.
Developments in Interest Rate Benchmarks

LIBOR transition to Risk Free Rates

As noted above, it is possible (although not certain) that LIBOR will not be published after 31 December 2021, and the Bank of England and FCA have both indicated that they would like users to begin to move away from using LIBOR to alternative IBRs.

There are five currencies impacted – CHF, EUR, GBP, JPY and USD. Some possible outcomes are shown below but it is possible that some other solution could be found and it is not yet clear what alternatives will be most prevalent in particular currencies and/or product areas:

- **CHF-LIBOR** could move to some combination of:
  - SARON – an Overnight Repo Rate using a Compounded in Arrears methodology.
  - SARON Term OIS Rates – although these have not yet been developed. Liquidity is thin in the SARON OIS market and Term OIS Rates for CHF may never be launched.

- **EUR-LIBOR** could move to some combination of:
  - EURIBOR (in the same way that AUD-LIBOR moved to AUD BBSW).
  - €STR – an Overnight Deposit Rate using a Compounded in Arrears methodology.
  - €STR Term OIS Rates – although these have not yet been developed.

- **GBP-LIBOR** could move to some combination of:
  - SONIA – an Overnight Deposit Rate using a Compounded in Arrears methodology.
  - SONIA Term OIS Rates – these are being developed (see above).

- **JPY-LIBOR** could move to some combination of:
  - ZTIBOR-DTIBOR – in the same way that AUD-LIBOR moved to AUD BBSW.
  - TONA – an Overnight Deposit Rate using a Compounded in Arrears methodology.
  - TONA Term OIS Rates – although these have not yet been developed.

- **USD-LIBOR** could move to some combination of:
  - SOFR – an Overnight Repo Rate using a Compounded in Arrears methodology.
  - SOFR Term OIS Rates – although these have not yet been developed.
  - USD ICE Bank Yield Index – a Term Rate being developed by ICE BA.
Useful Links

Some useful links where you can find more information on the upcoming changes are set out below:

UK Financial Conduct Authority

International Swaps and Derivatives Association:
https://www.isda.org/category/legal/benchmarks/

JBATA:
http://www.jbatibor.or.jp/english/about/

Cross-Industry Committee on JPY Interest Rate Benchmarks:
https://www.boj.or.jp/en/paym/market/jpy_cmte/index.htm/

European Money Markets Institute:

European Central Bank:

New York Fed:

SIFMA:
https://www.sifma.org/resources/general/rip-libor-how-to-prepare-for-sofr/

LMA:
https://www.lma.eu.com/libor

LCH:

ARRC:

CME GROUP:

SFIG:
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