FINANCIAL STABILITY BOARD

Reforming major interest rate benchmarks

Progress report

18 December 2019

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Contents **Page**

Abbreviations and Acronyms[1]

ABS	Association of Banks in Singapore
ABS Co	ABS Benchmark Administration Co Pte Ltd
ARRC	Alternative Reference Rates Committee (US)
ARM	Adjustable-rate mortgages
ASBJ	Accounting Standards Boards of Japan
ASIC	Australian Securities and Investments Commission
AONIA	AUD Overnight Index Average; also known as the Cash Rate
BBSW	Bank Bill Swap Rate (Australia)
BCB	Brazilian Central Bank
BCBS	Basel Committee on Banking Supervision
BISL	Bloomberg Index Services Ltd
BdM	Banco de México
BMR	EU Benchmarks Regulation
BoC	Bank of Canada
BoE	Bank of England
BoJ	Bank of Japan
Cash Rate	Interbank overnight cash rate (Australia)
CARR	Canadian Alternative Reference Rate Working Group
CDOR	Canadian Dollar Offered Rate
CORRA	Canadian Overnight Repo Rate Average
CSR	Canadian Securities Administrator
DI rate	Overnight interbank offered rate (Brazil)
ECB	European Central Bank
EIOPA	European Insurance and Occupational Pensions Authority
EMIR	European Market Infrastructure Regulation
EMMI	European Money Markets Institute
EONIA	Euro Overnight Index Average
ESMA	European Securities and Markets Authority
€STR	Euro Short-Term Rate
EURIBOR	Euro Interbank Offered Rate

[1] ISO currency codes (based on ISO 4217) are not separately listed here.

FASB	Financial Accounting Standards Board
FCA	Financial Conduct Authority (UK)
FINMA	Financial Markets Supervisory Authority (Switzerland)
FRB	Federal Reserve Board of Governors (US)
FRN	Floating rate note
FSB	Financial Stability Board
FSMA	Belgium Financial Services and Markets Authority
HIBOR	Hong Kong Interbank Offered Rate
HKMA	Hong Kong Monetary Authority
HONIA	Hong Kong Dollar Overnight Index Average
IASB	International Accounting Standards Board
IBA	ICE Benchmarks Administration Ltd
IBOR	Interbank Offered Rate – in particular, EURIBOR, LIBOR and TIBOR
IndONIA	Indonesian Rupiah unsecured Overnight Index Average
IOSCO	International Organization of Securities Commissions
IOSCO Principles	IOSCO *Principles for Financial Benchmarks*
ISDA	International Swaps and Derivatives Association
JBA	Japanese Bankers Association
JBATA	JBA TIBOR Administration
JFSA	Japan Financial Services Agency
JBOR	Jakarta Interbank Offered Rate
Jibar	Johannesburg Interbank Average Rate
LIBOR	London Interbank Offered Rate
MAS	Monetary Authority of Singapore
MPG	Market Practitioners Group (globally and for South Africa)
NWG	National Working Group on Swiss Franc Reference Rates (Switzerland)
OIS	Overnight Indexed Swap
OSSG	FSB Official Sector Steering Group
PAI	Price Alignment Interest
RBA	Reserve Bank of Australia
RFR	nearly risk-free reference rate
RFRWG	Working Group on Sterling Risk-Free Reference Rates (UK)
repo	Repurchase agreements

RMBS	Residential Mortgage-Backed Securities
Sabor	South African Benchmark Overnight Rate
SEC	Securities and exchange Commission (US)
SASFR	South African Secured Financing Rate
SARB	South African Reserve Bank
SARON	Swiss Average Rate Overnight
SC-STS	Steering Committee for SOR Transition to SORA (Singapore)
Selic	Average interest rate on overnight repurchase agreements (Brazil)
SFEMC	Singapore Foreign Exchange Market Committee
SIBOR	Singapore Interbank Offered Rate
SRR	Swiss Reference Rates
SOFR	Secured Overnight Financing Rate
SOIS curve	OIS curve based on the SARON
SONIA	Sterling Overnight Index Average
SOR	Singapore Dollar Swap Offer Rate
SORA	Singapore Overnight Rate Average
TIBOR	Tokyo Interbank Offered Rate
TIIE	Equilibrium Interbank Interest Rate (Mexico)
TMA	Treasury Markets Association (Hong Kong)
TOIS	Tomorrow/next Indexed Swaps (Switzerland)
TONA	Tokyo Overnight Average rate
TSRRs	Term SONIA Reference Rates
WGARR	Working Group on Alternative Reference Rates (Hong Kong)
ZARibor	South African Rand Interbank Overnight Rate

Executive Summary

This document reports on progress made in implementing the recommendations of the Financial Stability Board (FSB) report *Reforming Major Interest Rate Benchmarks* (the 2014 Report),[2] as well as in two additional streams of work launched by the FSB to improve contractual robustness to the risk of major interest rate benchmarks' discontinuation and to identify areas in which international coordination on potential accounting, tax and regulatory issues may be useful in order to avoid impediments to transition.

In the 2014 Report, the FSB set out a series of recommendations for strengthening key interbank offered rates (IBORs) in the unsecured lending markets, and for promoting the development and adoption of alternative nearly risk-free reference rates (RFRs), where appropriate. The FSB and member authorities, through the FSB Official Sector Steering Group (OSSG), are working to implement and monitor these recommendations.[3] Progress is reported since the last FSB report of November 2018 (the 2018 Progress Report).[4] The key messages of the 2019 report are summarised as follows.

Benchmark transition is a multi-year international effort that takes into account diverse circumstances prevailing in different markets. While some jurisdictions have been able to continue with a multiple rate approach (i.e. developing a new RFR alongside maintaining an IBOR), in others a multiple rate approach is not possible because the wholesale unsecured funding markets that underpin certain IBORs have become too thin to support robust IBOR reference rates. In particular, in the case of LIBOR, the lack of applicable wholesale unsecured funding markets is a fundamental problem and continues to exist, there is no likelihood of a change, and other measures which purport to measure bank credit risk in this way will suffer from the same problems. The continued reliance of global financial markets on LIBOR, therefore, poses risks to financial stability.

However, across all FSB jurisdictions covered by the report, whether moving away from one of the IBOR rates or still pursuing a multiple rate approach, there is a common view that the use of overnight risk-free rates (RFRs) should be encouraged across global interest rate markets where appropriate, and that contracts referencing IBORs should have robust fallbacks. The OSSG supports the International Swaps and Derivatives Association (ISDA)'s work to amend its *2006 ISDA Definitions* and to offer protocols that make compounded RFRs the fallbacks to IBOR-referencing derivatives and encourages market participants to adopt these solutions.

Transition away from LIBOR in particular requires significant commitment and sustained effort from both financial and non-financial firms across many jurisdictions to reduce risks to financial stability ahead of the end of 2021. Firms that have not begun this work in earnest, and do not have plans to complete it by end-2021, run significant financial and reputational risks. Firms need to end use of LIBOR in new contracts as soon as possible and, where possible, to accelerate their efforts to remove their reliance on LIBOR within legacy contracts. This does not only apply to firms in the UK, the US, Switzerland or Japan where

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2 Available at www.fsb.org/wp-content/uploads/r_140722.pdf. Acronyms are explained on pages iv - vi.

3 See Appendix B for a list of members of the OSSG.

4 FSB (2018), *Reforming Major Interest Rate Benchmarks: Progress report,* available at https://www.fsb.org/wp-content/uploads/P141118-1.pdf. See also the 2015, 2016 and 2017 Progress Reports, available at https://www.fsb.org/work-of-the-fsb/policy-development/additional-policy-areas/financial-benchmarks/

LIBOR has been a main interest rate benchmark, but also to firms in other jurisdictions who use LIBOR, either directly or indirectly, in their operations. An issue of increased concern and attention on the part of authorities is the global exposure to USD LIBOR. Alignment of private and public sector interest, together with increased communication and international cooperation, are vital to address issues related to non-US exposures and cross border transition issues.

There has been good progress in many derivative and securities markets, but transition in lending markets has been slower, and needs to accelerate. A wide range of new products based on RFRs has been developed during 2019, while volumes in existing products have continued to grow. Use of compounded RFRs has rapidly become the market standard for new issuance of floating rate securities in some markets, demonstrating how quickly these important changes can take place once the necessary conditions are established. Further foundational steps such as raising awareness of the need for transition across a wider range of cash market users are required to support transition in lending markets and will need to be prioritised in the coming year. It may also be necessary to upgrade systems to support use of compounded RFRs in these markets.

Firms undertaking their transition away from LIBOR should not delay their programmes until the emergence of possible forward-looking term versions of risk-free rates. The OSSG has noted that if future use of term rates is relatively narrow compared with current use of IBORs, for example if it is concentrated largely in a segment of the cash rather than derivative markets, this more limited use would be compatible with financial stability. Against this backdrop, overnight RFRs are a more suitable alternative than a term RFR in the bulk of the cases where an IBOR is currently used. Further, in some jurisdictions, including some emerging markets, where there are thin or non-existent established overnight indexed swaps (OIS) or futures markets from which to create a term rate, it may be difficult to implement the same approaches as those in economies with more developed RFR derivatives markets.

The parallel efforts on transition across multiple jurisdictions and currencies is an opportunity to align conventions and other practices across currencies and products. Interest rate derivatives markets are already benefitting from substantial alignment of conventions, and there is an opportunity for similar alignment for the cash markets. While some product features are bespoke for particular business reasons, alignment could offer longer-term benefits in terms of efficiency, reduction of basis risk and effectiveness of hedges, as well as simplify the process for incorporating these RFRs into various front-, middle- and back-office systems and processes. The OSSG has sought to promote harmonisation by issuing its *Overnight Risk-Free Rates: A User's Guide*.[5] Market-led working groups in various jurisdictions have also produced papers on conventions that could be of benefit to systems providers and market participants across jurisdictions.

Finally, transition requires significant commitment from the official sector. Progress on transition in each of the LIBOR currencies is at different stages. Nevertheless, there is agreement on the need to plan for the cessation of LIBOR. Therefore, market participants should step up efforts to transition working alongside the relevant authorities. As noted in this report, substantial progress on accounting, tax, and regulatory issues related to the transition

[5] https://www.fsb.org/2019/06/overnight-risk-free-rates-a-users-guide/

has already been made in many jurisdictions. The OSSG is working to identify areas in which international coordination on these issues may be useful in order to ensure a smooth transition.

Given the degree of risk arising from continued reliance on LIBOR in particular, regulated firms should expect increasing scrutiny of their transition efforts as the end of 2021 approaches. At a national level, supervisory authorities in a number of jurisdictions have already stepped up their efforts to increase awareness and preparedness across regulated financial institutions. Many authorities have begun reaching out to regulated firms and assessing the steps those firms have taken in addressing exposure to LIBOR and other IBOR transition issues, including in some cases by writing to CEOs and ensuring that risk governance and risk management processes are properly engaged.

1. International coordination and key cross-jurisdictional themes

1.1 Background

In 2014, in response both to cases of attempted manipulation in relation to key IBORs, and to the decline in liquidity in key interbank unsecured funding markets, the FSB made several recommendations relating to:

- strengthening of IBORs by anchoring them to a greater number of transactions, where possible, and improving the processes and controls around submissions;
- identifying alternative near-risk-free rates (RFRs) and, where suitable, encouraging market participants to transition new contracts to an appropriate RFR.[6]

Since 2014, the work has been coordinated at the international level by the FSB's Official Sector Steering Group (OSSG).

In July 2016 the OSSG formally launched a third major initiative, to improve contract robustness to address risks of discontinuation of widely-used interest rate benchmarks. The OSSG invited ISDA to lead this work as it pertained to derivative contracts, which are the largest source of exposure to the IBORs. ISDA welcomed that invitation and has undertaken a significant programme of work in response.[7]

Although all of the major IBORs have been strengthened since the OSSG was formed, FSB member authorities in certain jurisdictions have moved away from their original view that a "multiple-rate" approach, in which each IBOR could be made to be sustainable and potentially coexist with the RFR, was possible.

In particular, authorities have warned that there is an appreciable risk that LIBOR will end once official sector support for the benchmark ends at end-2021. There is also the risk that LIBOR could be found to no longer be representative of the underlying market it purports to measure, due to a lack of underlying transactions. This would have consequences for users covered by the EU Benchmarks Regulation (BMR). As the UK authorities have stated they will not compel panel banks to participate in LIBOR panels after end-2021, FSB member authorities consider that transition away from LIBOR is necessary, across the five LIBOR currencies (USD, EUR, JPY, GBP and CHF). Transition well before that date would greatly minimise risks to financial stability.

For certain other major IBORs, authorities are encouraging efforts to develop robust RFRs and to make derivatives and other contracts more robust to discontinuation, but it is recognised that transition to RFRs may take longer. For example, authorities in the euro area are promoting a robust RFR in euro short-term rate (€STR) produced by the ECB. As part of a transition path from EONIA to €STR, EONIA's methodology has been recalibrated as €STR plus a fixed

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6 FSB (2014), *Reforming Major Interest Rate Benchmarks,* 22 July, available at www.fsb.org/wp-content/uploads/r_140722.pdf.

7 ISDA (2018), *Consultation on Certain Aspects of Fallbacks for Derivatives Referencing GBP LIBOR, CHF LIBOR, JPY LIBOR, TIBOR, Euroyen TIBOR and BBSW*, available (together with other data including illustrate charts at https://www.isda.org/2018/07/12/interbank-offered-rate-ibor-fallbacks-for-2006-isda-definitions); and ISDA (2019) *ISDA Publishes two consultations on Benchmark Fallbacks* (https://www.isda.org/2019/05/16/isda-publishes-two-consultations-on-benchmark-fallbacks/). See further section 4.

spread of 8.5 basis points as of 2 October 2019. This step is intended to support a smooth transition away from EONIA to €STR until EONIA ceases to exist and is fully replaced by €STR on 3 January 2022. The Belgian FSMA granted EMMI authorisation for the provision and administration of EONIA pursuant to Article 34 of the EU BMR on 11 December 2019.[8] With respect to EURIBOR, its methodology has been reformed and its administrator received an authorisation under the BMR in July 2019, which allows its continued use for the foreseeable future[9].

In other currency areas, authorities do not at this time think that transition solely to RFRs is necessary and continue to support a multiple-rate approach. Examples include Australia, Canada and, with regard to TIBOR, Japan (see also Appendix A). However, even in some of these jurisdictions it is expected that the respective RFR will ultimately become the dominant interest rate benchmark.

1.2 Overview of progress

Over the last year, National Working Groups (NWGs) and OSSG members have made clear progress in promoting use of RFRs.

Importantly, the European Central Bank (ECB) launched the €STR on 2 October 2019, which had been identified as the RFR for the euro area. Authorities in the euro area and the working group on euro risk-free rates dedicated considerable efforts to organising the transition from EONIA to the €STR. On 31 May 2019, following a public consultation and on the basis of a recommendation from the euro working group, European Money Market Institute (EMMI) confirmed its intention to discontinue EONIA on 3 January 2022 and until then to maintain the index under an evolved methodology, so that EONIA each day is computed as the €STR plus a spread of 8.5 basis points until EONIA's discontinuation.

In Canada, the NWG finalised its enhancements to the calculation methodology for the Canadian Overnight Repo Rate Average (CORRA) and the BoC announced that that it would take over the administration of CORRA once the enhanced methodology goes into production in Q2-2020.

In other jurisdictions where recommended RFRs were already in production, further steps have been taken promoting their use. In the United States, futures and OIS based on the Secured Overnight Financing Rate (SOFR) have continued to grow, over $300 billion in SOFR debt has been issued, and work is underway to build adjustable rate mortgages based on SOFR. In the United Kingdom, the vast majority of new floating rate debt issuances now refer to SONIA rather than Sterling LIBOR and trading volumes in SONIA OIS are now broadly equal to trading in Sterling LIBOR swaps. A number of securitisations have used SONIA, and a SONIA loan market is also beginning to develop. In both Switzerland and Japan, market participants

8 See https://www.emmi-benchmarks.eu/assets/files/D0428A-2019-EMMI%20GRANTED%20AUTHORISATION%20BY%20BELGIAN%20FSMA%20FOR%20PROVISION%20AND%20ADMINISTRATION%20OF%20EONIA_final.pdf

9 See the speech of Steven Maijoor (European Securities Markets Authority) on 25 September and the statement by Valdis Dombrovskis (European Commission) in a communication to the European credit sector associations, dated 2 September 2019 (https://www.esma.europa.eu/sites/default/files/library/esma71-319-141_speech_esma_chair_roundtable_eur_rfr_25_09_19.pdf and https://www.ebf.eu/wp-content/uploads/2019/09/2019-09-03-VP-Dombrovskis-EACB_EBF_ESBG.pdf).

have been actively engaged in developing options for using RFRs in cash products.[10]

The parallel work on transition across multiple jurisdictions creates an opportunity to align conventions and other practices across currencies and products. Transition working groups in various jurisdictions have appropriately coordinated their efforts to inform the market on potential conventions, and the OSSG encourages this coordination to continue, including with non-LIBOR currencies. The OSSG has sought to promote harmonisation by issuing its *Overnight Risk-Free Rates: A User's Guide*.[11] The guide provides details on how RFRs are calculated to clarify how overnight RFRs can be used in cash products and to encourage adoption of these rates, where appropriate. The document builds upon work done in several NWGs, including a paper published by the Alternative Reference Rates Committee (ARRC) and work of the National Working Group on Swiss Franc Reference Rates (CHF NWG).[12]

Progress is also being made in making published compound average RFRs, compound RFR indexes and calculators available to market participants. These tools will help to reinforce the OSSG's message that floating-rate payments in financial contracts will reference compound averages of RFRs, which are much less volatile than a single day's reading of these rates, and will facilitate use of compound RFRs in cash products.

ISDA has made substantial progress in its efforts to incorporate robust fallback provisions into IBOR derivatives. This year, ISDA completed a consultation on USD LIBOR, CDOR, HIBOR, and certain aspects of derivatives referencing SOR as well as a consultation parametrisation of its spread adjustments and on pre-cessation triggers. ISDA expects to finalise its work on definition amendments for LIBOR, TIBOR, BBSW, CDOR and HIBOR and to offer a protocol that will allow market participants to incorporate these amendments into legacy transactions in due course.

1.3 Challenges

Although there has been good progress in derivative and securities markets, the transition away from LIBOR now needs to accelerate, particularly in lending and securitisation markets. While the work on derivatives is made easier by the global nature of the market, loan markets are more regional, so there are challenges in building awareness amongst a diverse range of market participants.

Work is in progress to raise awareness for a wider range of cash market users. Ongoing international engagement is seen as key to taking this forward. Awareness of the transition among those with global exposures to LIBOR, particularly USD LIBOR, are of concern to the OSSG. Based on estimates from the BIS locational banking statistics,[13] there may be $8 trillion in loans tied to USD LIBOR that are originated outside of the United States, and there are a number of other cross-border exposures to USD LIBOR through derivatives, including cross-currency basis swaps, and other securities. International coordination and communication to

[10] In addition to the ongoing work of the NWG, the SNB introduced at its monetary policy assessment in June 2019 the SNB policy rate, which replaces the previously used target range for the three-month CHF LIBOR.

[11] https://www.fsb.org/2019/06/overnight-risk-free-rates-a-users-guide/

[12] See ARRC (2019), A User's Guide to SOFR, April, and National Working Group on Swiss Franc Reference Rates (2019), minutes of February 2019 meeting, February.

[13] https://www.bis.org/statistics/bankstats.htm

help foster preparedness will help address issues related to these exposures and to the cross-border transition issues they may involve.

At a roundtable with trade associations held by the FSB in July 2019, private sector representatives noted the following challenges regarding transition to RFRs in cash products:

- A very high value of traded cash products, as well as non-financial contracts such as long-term supplier agreements and other commercial agreements, are based on or incorporate LIBOR. This greatly increases the magnitude of the transition necessary, as well as expanding the number of affected market participants. These issues should be considered when looking at use of RFRs in cash products.
- The large size of lending markets will require significant transition efforts. Both trade associations and banks need to communicate with clients, including to properly address potential conduct risk issues. Repapering of legacy contracts was believed to be a key challenge, whereas the ability to standardise new lending on a forward basis was seen as less problematic.
- Multinational non-financial firms face a challenge around multi-currency credit agreements, in which the firm can drawdown in any of the specified currencies with the rate being determined based on the currency's IBOR. Often the same spread applies for any currency and maturity, and this supports centralised liquidity operations. To the extent that different RFRs will prevail in each currency, a consistent global approach that establishes spread adjustments for each RFR that can be used in these credit agreements would help address this.
- Input from the official sector would be helpful to promote the adoption of a single set of conventions across countries and currencies. This would facilitate alignment and accelerate the work of system providers, who in many cases are not yet ready to offer solutions based on rates compound in arrears.

Authorities have recognised those challenges and will continue to work together with market participants to overcome them. IOSCO launched a comprehensive communication and outreach project to inform stakeholders about the primary transition steps planned in the benchmark reform and increase awareness among end-users and the financial services industry. The project particularly targets the jurisdictions, including many emerging markets, which use USD LIBOR heavily, but may not realise that it is likely to disappear. It sets out matters for market participants to consider if they have exposure to LIBOR, particularly USD LIBOR, in light of its expected cessation after the end of 2021. Among other things, the project includes the publication of a statement in July 2019, explaining how entities could use alternative rates and reiterating the need to include fall backs in existing contracts.[14]

[14] https://www.iosco.org/library/pubdocs/pdf/IOSCOPD636.pdf

2. Progress reports from LIBOR, EURIBOR, and TIBOR currency areas

2.1 Reforms to LIBOR, EURIBOR, and TIBOR

2.1.1 LIBOR

The future of LIBOR

Since the last progress report, authorities around the world have reiterated clearly that the industry needs to remove its reliance on LIBOR by the end of 2021. Although amendments being made to the EU Benchmarks Regulation (BMR) are extending the compulsion powers that national competent authorities have over administrators of, and contributors to, critical benchmarks from two to five years, the FCA has noted in the UK Risk Free Rate Working Group (RFRWG)'s minutes[15] that, notwithstanding this change, its position has not altered. The FCA has said clearly that firms should be prepared for an end date for LIBOR in 2021 and that the FCA does not intend to use its powers to compel panel banks to submit to LIBOR beyond 2021.

In July 2019, the Chief Executive Officer of the FCA, Andrew Bailey, said that transition to RFRs is happening.[16] Even if LIBOR does continue for a further period after end-2021there is a possibility that the rate will no longer pass regulatory tests of representativeness given the high likelihood of submitting banks leaving the LIBOR panels. This has consequences for users of LIBOR governed by the BMR, and should be of general concern to all users of LIBOR. The importance of transitioning away from LIBOR well in advance of end 2021 was also one of the key messages delivered on the same day in July by the President and Chief Executive Officer of the Federal Reserve Bank of New York (NY FED) John Williams. [17]

While LIBOR is regulated in the UK, its use is pervasive throughout the global financial system. The five currencies for which LIBOR are produced are among the most widely used in international financial transactions, so exposures to its cessation extend far beyond the jurisdictions directly responsible for those currencies. Authorities and firms in all jurisdictions will therefore need to ensure that those risks are identified and mitigated ahead of 2021.

Implementation of the LIBOR waterfall methodology and surveys of panel banks

In April 2019 the ICE Benchmark Administration (IBA) confirmed[18] that, after a gradual transition designed to minimise operational and technological risk, all the LIBOR panel banks

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[15] www.bankofengland.co.uk/-/media/boe/files/minutes/2019/rfr-march-2019.pdf

[16] https://www.fca.org.uk/news/speeches/LIBOR-preparing-end

[17] https://www.newyorkfed.org/newsevents/speeches/2019/wil190715

18 https://ir.theice.com/press/press-releases/all-categories/2019/04-01-2019-130225158

are submitting using the waterfall methodology[19] as set out in the LIBOR output statement.[20] As required by the BMR, IBA has also completed the first external assurance report.[21] This is a limited assurance report and no exceptions were identified.

Since the last progress report, ICE Benchmark Administration Ltd (IBA) has engaged with panel banks, other global banks and end-users of LIBOR regarding the future of LIBOR after 2021, when the FCA's voluntary agreement with the panel banks expires. IBA published a survey on the use of LIBOR[22] in December 2018, which was designed to identify the most widely used currency/tenor pairs and those for which users would like to see IBA work with global banks to potentially support publication after 2021. The survey received 109 responses[23] and, as expected, the two most used currencies US dollar and Sterling, received the highest preference. IBA has been clear that there is no guarantee that any LIBOR settings will continue to be published after year-end 2021 and that users should not rely on the continued publication LIBOR when developing transition or fallback plans.

2.1.2 EURIBOR

Since the 2018 progress report, the European Money Markets Institute (EMMI) has made significant progress in its efforts to implement the hybrid methodology for EURIBOR, which consists of a three-level waterfall prioritising the use of real transactions whenever available and appropriate, and relying on other related market pricing sources when necessary.

In February 2019, EMMI published a summary of stakeholder feedback to the second consultation on the hybrid methodology for EURIBOR, providing the market with the final design choices after the consultation in mid-to-late 2018.

In April 2019, EMMI started the phased implementation of the hybrid methodology for EURIBOR, whereby panel banks are being transitioned from the legacy quote-based methodology to the new methodology in a gradual manner. EMMI confirmed the full implementation of the hybrid methodology on 28 November 2019[24].

Meanwhile, on 2 July 2019, the Belgian Financial Services and Markets Authority (FSMA) authorised EMMI as administrator of EURIBOR, confirming that the requirements contained in the BMR are met.

2.1.3 TIBOR

Since its implementation in July 2017, JBA TIBOR Administration ("JBATA") continues its efforts to enhance the integrity and clarify the calculation and determination processes of the

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[19] The waterfall methodology standardises the submission process requiring that submitting banks utilise eligible transaction data where available, otherwise transaction-derived data if it is available, and if neither type of data is available, panel banks use expert judgement based on market and other transaction data, appropriately framed using the individual bank's internally developed procedure as approved by IBA.

[20] https://www.theice.com/publicdocs/ICE_LIBOR_Output_Statement.pdf

[21] https://www.theice.com/publicdocs/Statement_of_Compliance_with_the_EU_Benchmarks_Regulation.pdf

[22] https://ir.theice.com/press/press-releases/all-categories/2018/12-04-2018-102958784

[23] www.theice.com/iba/ice-benchmark-administration-survey-on-the-use-of-LIBOR

[24] https://www.emmi-benchmarks.eu/assets/files/D0417A-2019%20-%20EURIBOR_phase_in_completion.pdf

reformed JBA TIBOR. The results of the annual review of the JBA TIBOR operational framework[25] and the self-assessment of compliance with IOSCO Principles[26] were published on 7 March 2019.

On 30 May 2019, JBATA published the result of its first consultation (issued in October 2018) on the approach for integrating Japanese Yen TIBOR and Euroyen TIBOR.[27] In light of comments received, JBATA will contemplate further actions while deeming that retaining only Japanese Yen TIBOR appears to be the most likely option at this stage. It also plans to run the second consultation on the specifics of the reform and the timing of their implementation. A preparation period of approximately two years following the permanent cessation of LIBOR is currently envisioned. Meanwhile, JBATA will continue to pay attention to developments in the financial markets and ongoing domestic and international policy discussions including those on the cessation of LIBOR. Depending on these circumstances, JBATA will undertake an additional public consultation at an appropriate time to seek further comments.

2.2 US dollar (USD)

2.2.1 Progress in transitioning to SOFR

The Alternative Reference Rates Committee (ARRC) is charged with helping to ensure the successful implementation of its Paced Transition Plan promoting the use of the Secured Overnight Financing Rate (SOFR), the alternative to U.S. Dollar (USD) LIBOR recommended by the ARRC. The ARRC also serves as a forum to coordinate and track planning across cash and derivatives products as market participants transition away from USD LIBOR and to address risks in legacy contracts language where robust, economically appropriate fallbacks to LIBOR have not been incorporated. The volume of overnight Treasury repo transactions underlying SOFR now exceed $1 trillion on a daily basis.

Market development has remained ahead of the schedule the ARRC set out in the Paced Transition Plan since SOFR began production in April 2018. SOFR futures markets are offered by both CME Group and ICE, with open interest nearing $2 trillion, and SOFR swaps are cleared by CME Group and LCH. CME Group already uses SOFR price-alignment interest (PAI) and discounting for the SOFR-based derivatives it clears, and LCH and CME are moving to implement a "single step" that would move *all* new and legacy interest rate derivatives they clear to SOFR PAI and discounting in the second half of 2020. The single step is planned for October 2020, strengthening a key step of the Paced Transition Plan and bringing it forward by roughly a year. The two central counterparties are working to develop compensation schemes that would incorporate mixture of cash and basis swap remuneration

While the Paced Transition Plan is the primary mechanism aimed at creating a baseline level of liquidity in SOFR derivatives, the ARRC has also taken other steps to promote these markets. Members of the ARRC's Market Structures group have worked with other National Working Groups on a document consulting on the structure of the interdealer cross-currency swap market

[25] http://www.jbatibor.or.jp/english/news/periodical_review_2019.html

[26] http://www.jbatibor.or.jp/english/news/Compliance_with_IOSCO_19principles_2018.html

[27] http://www.jbatibor.or.jp/english/news/consultative%20document.html

using risk-free rates like SOFR.[28] Many non-financial corporations depend on the cross-currency swap market to shift payments and receipts across currencies, and development of RFR-based markets is seen as a key step in making RFRs more usable to them. The Market Structures group has also discussed auction-like compression mechanisms that could allow people to move their swaps book from LIBOR to SOFR in a more efficient manner.

Use of SOFR in cash markets will also help to build liquidity in SOFR derivatives markets. Although USD LIBOR remains the dominant rate, SOFR cash markets have begun to grow:

- A number of ARRC and non-ARRC members have issued SOFR-based floating rate notes (FRNs), with total issuance exceeding $300 billion. The Federal Home Loan Banking system has played a key role and now both regularly issues SOFR FRNs and offers SOFR advances to its member banks. Many issuers report obtaining better rates on SOFR FRNs than they would have paid for comparable LIBOR FRNs, and the investor base for these SOFR instruments has been wide.
- The first SOFR-based securitisation, a Real Estate Mortgage Investment Conduit (REMIC), was issued by Ginnie Mae in May 2019.
- The ARRC released in July 2019 a White Paper illustrating how SOFR could be used in new adjustable-rate mortgage (ARM) products.[29] In the United States, most ARMs are based on 1-year USD LIBOR, which has very few transactions underlying it, and there is a widespread perception that alternatives need to be adopted. Fannie Mae and Freddie Mac have indicated that they both intend to build systems that would allow them to accept versions of SOFR-based ARMs along the lines illustrated in the White Paper. Although these systems will take some time to build, their development should encourage both SOFR ARMs and issuance of agency RMBS based on SOFR.

In order to ease adoption of SOFR in consumer and other cash products, the Federal Reserve Bank of New York has stated that it plans to publish 30-, 90-, and 180-day compound averages of SOFR in the first half of 2020 as well as a "SOFR Index" that would allow market participants to calculate compounded SOFR rates over any period of time.[30]

The ARRC also released a *User's Guide to SOFR*, to explain how market participants who may be unfamiliar with overnight rates can use SOFR in cash products.[31] The User's Guide discussed a number of conventions, including simple versus compound averaging; in arrears versus in advance payment structures; and lookback, payment delay, and lockout conventions for providing payment notice. SOFR FRNs have all been in arrears (paying averages of SOFR calculated over the current interest period), but have differed between simple or compound averaging and use of lookbacks, lockouts, or payment delays. The ARRC's FRNs Working Group has issued a follow-up to the User's Guide detailing some of the recent conventions used

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[28] https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2019/Preliminary_Recommendations_for_Interdealer_Cross-Currency_Swap_Market_Conventions.pdf

[29] https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2019/ARRC-Whitepaper-SOFR-ARM-announcement.pdf

[30] The concept of a SOFR Index is discussed briefly in slides accompanying the ARRC's Vendor Workshop https://www.newyorkfed.org/medialibrary/microsites/arrc/files/2019/Templates_for_Using_SOFR.pdf

[31] https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2019/Users_Guide_to_SOFR.pdf

in the FRN market. The ARRC's Business Loans Working Group is similarly establishing conventions for compounded SOFR in arrears loans.

While use of SOFR can require internal systems changes, there are also a number of external systems that need to be adapted to in order to allow a move away from LIBOR. The ARRC launched an Infrastructure and Operations working group and held a roundtable with key vendors across all markets in June 2019 in order to spur necessary internal and external systems changes.[32]

In September 2019 the ARRC released a practical implementation checklist to help market participants transition away from U.S. dollar (USD) LIBOR to using the SOFR.[33] The checklist covers 10 key areas where action is needed in order for impacted firms to prepare for the transition to SOFR. These include governance, communications, risk management, contract remediation, and operational readiness.

In July, the Securities and Exchange Commission (SEC) staff published a statement encouraging market participants to proactively manage their transition away from LIBOR.[34] The statement encourages market participants to identify existing contracts that extend past 2021 to determine their exposure to LIBOR and to consider whether contracts entered into in the future should reference an alternative rate to LIBOR or include effective fallback language.

2.2.2 Development of term RFRs

The ARRC has included the production of a forward-looking term rate based on SOFR futures and/or OIS transactions as the final step of its Paced Transition Plan. The ARRC's Second Report noted that production of this type of rate would not be intended for primary use in derivatives but to ease transition among some users in certain cash markets, such as corporate loans, whose systems are built around use of forward-looking term rates.

The ARRC has also made clear that while term rates can be a useful tool for some, their use also needs to be consistent with the functioning of the overall financial system and that those who are able to use SOFR should not wait for the term rates in order to transition, noting that it cannot guarantee that an administrator will be able to produce a robust, IOSCO-compliant forward-looking term rate before LIBOR stops publication.

Federal Reserve staff have produced a working paper and FEDS Note illustrating how forward-looking term rates could eventually be produced using transactions from SOFR futures and OIS markets. The staff members produced and are periodically updating "indicative" term rates based off of closing prices in the SOFR futures market; while these indicative rates are not IOSCO compliant and not meant for commercial use, they can provide some sense as to how an eventual IOSCO compliant set of term rates might behave.[35] These indicative rates move

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[32] Slides from the roundtable can be found at https://www.newyorkfed.org/medialibrary/microsites/arrc/files/2019/Templates_for_Using_SOFR.pdf

[33] https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2019/ARRC-SOFR-Checklist-Press-Release-20190919.pdf

[34] https://www.sec.gov/news/press-release/2019-129

[35] Heitfield and Park (2019), https://www.federalreserve.gov/econres/notes/feds-notes/indicative-forward-looking-sofr-term-rates-20190419.htm

closely with OIS rates based on the effective federal funds rate and with compound averages of SOFR.

2.2.3 Next steps

The ARRC has set five ongoing objectives:[36]

- Continuing to encourage the development of SOFR derivatives and cash markets, including the launch of a market for SOFR-based loans.
- Encouraging robust fallback language in securities issuances that continue to reference LIBOR
- Continuing work specifically focused on consumer products
- Continuing outreach and education
- Coordinating with other national working groups

As noted in its minutes, the ARRC is also evaluating whether to seek legislative relief for certain legacy contracts referencing USD LIBOR.

2.3 Euro (EUR)

2.3.1 Progress in creating and transitioning to €STR

The euro short-term rate (€STR) was recommended as the risk-free rate for the euro area by the working group on euro risk-free rates in September 2018, and the ECB launched the €STR on 2 October 2019.[37] The €STR reflects the daily wholesale euro unsecured overnight borrowing costs of euro area banks. It is calculated based entirely on actual individual transactions in euro that are reported by the 50 largest euro area banks reporting under the ECB's money market statistical reporting (MMSR).[38] The rate is calculated and published at 8:00 am Frankfurt time on each business day, reflecting the market activity of the previous business day.

EURIBOR will continue to exist along with €STR for the foreseeable future in view of the significant exposures, especially in the retail market. The transition efforts are thus focused on the replacement of EONIA with the €STR, while the working group is also looking into €STR-based term rates that may serve as fallbacks for EURIBOR for some products. Under this transition, EONIA will continue to be published for a limited period of time - until 3 January 2022 - on the basis of a methodology anchored to €STR to allow for a gradual and parallel adoption of €STR by market participants, as well as the promotion of the wider use of the new benchmark and the development of a liquid €STR derivatives market.

Considerable efforts were dedicated to organising the transition from EONIA to the €STR throughout the year.

First, a transition path from EONIA to €STR was recommended by the working group on euro

[36] https://www.newyorkfed.org/medialibrary/microsites/arrc/files/2019/Opening_Remarks.pdf

[37] https://www.ecb.europa.eu/press/pr/date/2018/html/ecb.pr180913.en.html

[38] https://www.ecb.europa.eu/stats/financial_markets_and_interest_rates/money_market/html/index.en.html

risk-free rates in March 2019.[39] The working group recommended that EONIA's administrator, EMMI, evolved the EONIA methodology to become the €STR plus a fixed spread until the end of 2021 in order to give market participants sufficient time to transition to the €STR. The working group also recommended a methodology for calculating the EONIA-€STR spread based on historical observations. This transition path received significant support from market participants with an approval rate of 97% of respondents during the public consultation.

Second, this transition path was implemented. On 31 May 2019, following a public consultation, EMMI confirmed its intention to recalibrate the EONIA methodology from the currently panel-based methodology to the €STR plus a spread. On the same day, the ECB announced the EONIA-€STR spread to be used in the recalibrated methodology was 8.5 basis points, based on the methodology and consistent with the timing recommended by the working group on euro risk-free rates.[40]

Finally, the working group on euro risk-free rates specified further recommendations relating to the implementation of the transition.

- In July 2019 the working group recommended that market participants implement a series of legal measures for legacy and new contracts referencing EONIA in different asset classes ("the EONIA to €STR Legal Action Plan")[41] (see also section 5).
- In August 2019 the working group issued a report on the impact of the transition from EONIA to the €STR on cash and derivatives products.[42] Among others, the working group put forward product- as well as model- specific recommendations on how address the transition. It also shed light on the practical issue relating to the switch of EONIA from a publication time at T every evening, to T+1 in the morning, as of 2 October 2019 (the date of the recalibration of the methodology as of which EONIA's publication was aligned with the €STR publication at T+1).
- Finally, the working group recommended that market participants reference directly €STR in new contracts, where operationally feasible, and gradually replace EONIA with the €STR for all products and contracts, making the €STR their standard reference rate and making certain adjustments to their IT systems. The working group also recommended EMMI to engage with the relevant authorities to ensure that EONIA, under its evolved methodology, complies with the EU Benchmarks Regulation.

In March 2019, the working group reorganised part of its structure, with a view towards supporting the broad market adoption of the working group's recommendations. Three new subgroups were launched, tasked with facilitating market adoption of the €STR in cash products and derivatives, analysing financial accounting and risk management issues, and addressing communication towards and education of market participants, respectively.

In July 2019, the ECB issued letters to CEOs of major banks asking for their preparation with

[39] https://www.ecb.europa.eu/press/pr/date/2019/html/ecb.pr190314_1~af10eb740e.en.html

[40] https://www.ecb.europa.eu/press/pr/date/2019/html/ecb.pr190531~a3788de8f8.en.html

[41] https://www.ecb.europa.eu/paym/pdf/cons/euro_risk-free_rates/ecb.eurostr_eonia_legal_action_plan_20190716.en.pdf

[42] https://www.ecb.europa.eu/pub/pdf/other/ecb.wgeurorfr_impacttransitioneoniaeurostrcashderivativesproducts~d917dffb84.en.pdf

regard to the interest rate benchmark reforms and the use of risk-free rates.[43]

2.3.2 Development of term RFRs

The working group on euro risk-free rates analysed the development of term RFR in the context of the fallbacks for EURIBOR.

- First, the working group recommended a methodology to calculate a "forward-looking" term structure based on the future €STR derivative market that could be used as fallback for EURIBOR. After a public consultation on its analysis of different methodologies, the working group recommended a methodology based on €STR OIS (tradable) quotes. In the absence of a €STR derivative markets, this recommendation relied on several assumptions such as (i) a significant transfer of liquidity to €STR OIS markets, (ii) transparent and regulated underlying derivatives markets such as trading on multilateral trading facilities (MTFs), (iii) sufficient sources of data.
- Second, the working group analysed the available backward looking methodologies based on the €STR. The working group is yet to reflect on (i) the methodology to calculate a credit spread adjustment; (ii) issues related to the potential availability/co-existence of both forward- and backward-looking fallbacks as well as (iii) the use cases for such fallbacks, taking into account product specificities and consistency across jurisdictions, to the extent possible.
- Finally, the working group focused on making the production of forward-looking term rates feasible, calling for potential administrators to declare their interest in producing these fallbacks.

2.3.3 Next steps

The transition from EONIA to €STR has to take place as soon as possible, for several reasons: (i) to support a liquid derivative market based on €STR, all the more in case this market is deemed relevant for constructing possible fallbacks for EURIBOR ("forward-looking methodologies"); (ii) to ensure a smooth transition before the discontinuation of EONIA on 3 January 2022 by reducing the outstanding amounts of EONIA contracts. In this regard the swift adoption of €STR as early as possible in replacement of EONIA is a key challenge for euro area market participants.

2.4 Japanese yen (JPY)

2.4.1 Progress in transitioning to TONA

The Cross-Industry Committee on Japanese Yen Interest Rate benchmarks (the Committee) has continued to work to implement a "multiple-rate approach" in Japan, promoting use of the uncollateralised overnight call rate (TONA) as the identified JPY RFR where appropriate while also recognising that the Japanese Bankers Association TIBOR Administration (JBATA) implemented TIBOR reforms should ensure that TIBOR can continue to be used.

[43] https://www.bankingsupervision.europa.eu/press/letterstobanks/shared/pdf/2019/ssm.benchmark_rate_reforms_201907.en.pdf?8f331a1bb36298a22adcb65e5c41bc8b

The Committee has worked to facilitate market participants' and interest rate benchmark users' choice and use of Japanese yen (JPY) interest rate benchmarks in ways suited to the characteristics of financial instruments and financial transactions. To seek feedbacks from a wide range of market participants regarding alternative rates for transition and replacement benchmarks for fallbacks for financial products and transactions referencing JPY LIBOR, the Committee held a public consultation from July to September.[44] Responses and comments of a significant number of market participants from a wide range of industries such as financial institutions, institutional investors, and non-financial corporates were provided, are summarised in the final report published in November.[45]

The public consultation covered a variety of topics including the five options of alternative benchmarks for transition and replacement benchmarks for fallbacks, evaluation of options for loans and bonds (cash products), approaches to fallbacks for cash products, accounting issues, and transition plans. The five options include term reference rates based on TONA (Option 1 to Option 4) as well as TIBOR (Option 5). Term reference rates based on TONA are broadly classified into two types; compounded actual TONA (in advance and in arrears, Option 1 and Option 2 respectively) and forward-looking term rates based on derivatives transactions such as JPY OIS and interest rate futures (Option 3 and Option 4 respectively).

In general, most respondents supported Option 3 or Option 4, highlighting their compatibility with the current business operations, systems and trading practices.

Since the development of Option 3 and Option 4 would take a certain time, for the development of Option 3,[46] a consensus was reached on the need to take initiatives toward enhancing its liquidity, aiming to ensure its robustness and reliability, by taking a phasing approach (details will be described in 2.4.2). The need for the temporary use of other options until its development was also shared.

Meanwhile, the Committee hosted a forum in August to raise the attention of market participants and interest rate benchmark users including non-financial corporates and trade associations to the public consultation and to raise awareness around interest rate benchmark reform.[47]

Moving on to the implementation phase, a market-wide action plan toward the development of forward-looking term RFR is required. Initiatives of each company in areas including client services, financing and accounting, system and operation, and risk management, are also important. The Committee will continue to examine the progress in such initiatives and facilitate awareness of interest rate benchmark reform by providing relevant information while taking into account the developments overseas.

2.4.2 Development of term RFRs

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44 See http://www.boj.or.jp/en/paym/market/jpy_cmte/index.htm/.

45 See http://www.boj.or.jp/en/announcements/release_2019/rel191129f.htm/

46 Trade in Over-Night Call Rate Futures, an underlying transaction for Option 4, is currently suspended. The working group of the Tokyo Financial Exchange is undertaking deliberation on the resumption of trade in Over Night Call Rate Futures in 2020.

47 See the following link for details. http://www.boj.or.jp/en/announcements/release_2019/rel190830f.htm/

As indicated above, the needs for Option 3 as an alternative benchmark for the cash products were confirmed. In order to correspond to the needs, a market-wide initiatives towards its publication are necessary.

In light of the current JPY OIS trading volume, the Committee deemed it appropriate that both executed transaction data and quote data are used to develop Option 3, using a waterfall method that prioritises executed transactions data and resorts to quote data if there are no such executed transactions.[48] The Committee also deemed it appropriate to take a phasing in approach by first calculating and publishing the "prototype" rate,[49] assessing its feasibility, and then calculating and publishing the "production" rate.[50] This is because it is expected that revitalising trading of JPY OIS takes some time and it is necessary to secure time for market participants and interest rate benchmark users to prepare for transition.

The "production" rate of Option 3 is planned to be developed by mid-2021. Based on the deliberations of the Committee, the "Task Force on Term Reference Rates" (referred to as "Task Force" hereinafter), composed of a small number of members from public and private sectors including non-financial benchmark user, was established in August 2019 to provide the calculating and publishing entities of term RFR (based on OIS) with practical support so that the entities could smoothly proceed with efforts for the calculation and publication of those rates.[51] Solicitation of the calculating and publishing entity of "prototype" rates (envisaged as the future administrators) is underway[52] and other practical arrangements including deliberation on the consistency with IOSCO *Principles for Financial Benchmarks* and compliance with the regulatory frameworks of Japan and other relevant regions are expected toward publication.

2.4.3 Next steps

As mentioned above, key milestones for the Committee and the Task Force are to support the possible administrators of term RFR so that they can smoothly proceed with efforts for the calculation and publication of term RFR. In light of this, the Task Force will deliberate on practical matters such as the overall scheme for the calculation and publication of term RFR, the flow of transaction data and quote data, and the detailed methodology for calculating those rates.

Also, while public awareness of the benchmark reform has been growing among market participants and end-users, increasing preparedness is key to ensure the success of the reform and smooth transition. At the forum hosted by the Committee in August, the JFSA stated that it will monitor actions taken by financial institutions through the review of their transition plans and encourage them to provide their customers with appropriate financial services in a timely manner.

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[48] It is assumed that deliberation on other methodologies including composite methodology will be conducted if deemed necessary, taking account of the future market environment and the result of data validation.

[49] The "prototype" rate is not intended to be referenced by actual contracts.

[50] The "production" rate is intended to be referenced by actual contracts.

[51] See http://www.boj.or.jp/en/announcements/release_2019/rel190828a.pdf

[52] See http://www.boj.or.jp/en/announcements/release_2019/rel191029b.pdf

2.5 British Pound (GBP)

2.5.1 Progress in transitioning to SONIA

The overall objective of the Working Group on Sterling Risk-Free Reference Rates (RFRWG) is to catalyse a broad-based transition to SONIA, the identified alternative reference rate for the British Pound, by end-2021 across sterling bond, loan and derivative markets, in order to reduce the financial stability risks arising from widespread reliance on sterling LIBOR. This is consistent with the message of the authorities in the UK, making it clear that market participants should prepare for a discontinuation of LIBOR post 2021. In June the RFRWG published its Roadmap for 2019-2021.[53]

A Senior Advisory Group has been established in order to provide a forum for senior engagement and sponsorship to support the work of the RFRWG. The advisory group provides strategic advice and support to the working group to progress transition efforts; provides a forum for senior market practitioners to consider progress with transition and validate delivery against the Working Group's adoption timeline; and facilitates broad market engagement.[54] Members of the group are invited as individuals based on their seniority and the contribution of the firms they represent in key markets, and will be able to speak for the institution they represent and have sufficient seniority to be able to commit resources.

The RFRWG initiated three priority task forces on SONIA to look at term rates, accounting treatment and regulatory dependencies. The latter two task forces are considering the issues related to sterling, as well as working with colleagues in other jurisdictions given the common themes. In July, letters were sent to International Accounting Standard Board (IASB)[55] and the European Insurance and Occupational Pensions (EIOPA)[56] to encourage progress, and IASB has already amended hedge accounting requirements to provide relief from potential effects of the uncertainty caused by the IBOR reform. In October, further letters were sent to the European Commission[57], the Basel Committee on Banking Supervision[58], the Prudential Regulation Authority[59] and the FCA[60] highlighting a range of other specific regulatory barriers to the transition and requesting their removal to support market progress.

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[53] www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/roadmap.pdf

[54] See https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/sterling-risk-free-rates-senior-advisory-group-terms-of-reference.pdf?la=en&hash=89720CF5B2E4562270128FE8C6A3A195E5E2AFBC

[55] Link to the letter: https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/letter-to-international-accounting-standards-board.pdf

[56] Link to the letter: https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/uk-rfr-working-group-letter-european-insurance-and-occupational-pensions-authority.pdf

[57] Link to the letter: https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/rfr/wgrfr-letter-to-european-commission.pdf?la=en&hash=2FF6D7E3D632E4C569325EA3292C1C3713E28510

[58] Link to the letter: https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/rfr/wgrfr-letter-to-basel-committee-on-banking-supervision.pdf?la=en&hash=57C2DBAA794DBFECFE5F5A77EC8ADD526E2C6A78

[59] Link to the letter: https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/rfr/wgrfr-letter-to-basel-committee-on-banking-supervision.pdf?la=en&hash=57C2DBAA794DBFECFE5F5A77EC8ADD526E2C6A78

[60] Link to the letter: https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/rfr/wgrfr-letter-to-financial-conduct-authority.pdf?la=en&hash=671353764364BCB708874A5728C4931AB1BEA2A1

Progress in financial markets

There has been good progress in establishing SONIA as the successor to sterling LIBOR. This is supported by a clear message to market participants to stop transacting in LIBOR wherever possible. There have been a number of positive developments in the sterling cash market.

- From close to a zero base in mid-2018, SONIA-linked FRN issuance now dominates sterling floating rate financials issuance and there is clear momentum towards using the compounded SONIA rate across bond markets more generally. Since the beginning of 2019, 33 different banks, sovereigns, and supranational agencies issued FRNs referencing compounded SONIA, with a total value of over £35 billion.
- Use of compounded SONIA has also become established as the market standard for sterling securitisations, with over £15 billion of publicly distributed issuance since the first example in April 2019.
- In June, the first outstanding LIBOR-linked security was switched to reference compounded SONIA through a consent solicitation process. This has established a model for others to follow, with consent now secured for conversion of over £4 billion of legacy securities, across FRNs, securitisations and covered bonds from a number of major issuers.
- The first loan product referencing compounded SONIA was also announced in June, and was followed in October by the first example of an existing LIBOR-linked loan product being converted to SONIA. Draft documentation for syndicated loans referencing compounded SONIA has been published for comment by the Loan Market Association.

In the derivative markets, the share of swaps traded using SONIA is already broadly equivalent to that linked to LIBOR, with SONIA starting to dominate at shorter maturities, though the overall proportion of SONIA trading has been relatively static through 2019. The share of futures referencing SONIA stands at around 7% of total sterling futures volumes.

Looking ahead, the next goal is to reduce reliance on LIBOR in other sterling cash markets, including loans. There is also a need for further progress in building required infrastructure, not just to issue, but to hold, value, and risk manage SONIA-based instruments. The ongoing engagement of the RFRWG's Infrastructure sub-group provides guidance for end users and system developers, with a priority to ensure that systems supporting use of compounding in arrears in loan transactions can be launched soon.

Given the development of liquidity in markets referencing overnight SONIA outlined above, and the strong case for using the same reference rate in both cash products and the derivatives that hedge them, the RFRWG anticipates that corporate borrowers will increasingly prefer contracts that reference compounded overnight SONIA, thereby reducing the risk of disorderly adjustment closer to end-2021 and helping to further develop liquidity in SONIA-referencing markets.

Market engagement

To ensure that transition is on the agenda of firms' senior governance committees, the Bank of England and FCA sent a "Dear CEO" letter to the UK's largest banks and insurers in September

2018 requesting sight of their Board-approved plans for managing the risks around LIBOR cessation.[61] Thematic findings from the exercise were published in July 2019.[62] More recently the Bank of England and FCA have broadened their supervisory focus on LIBOR transition to a wider set of firms and have issued a joint request for details on firms' LIBOR exposures. Regular dialogue will take place with all but the smallest firms.

The RFRWG published a discussion paper on SONIA market conventions and further considerations for referencing SONIA, followed by a summary of responses highlighting areas of alignment across markets.[63] The purpose of this was to raise awareness on these market conventions for a broad range of market participants that seek to reference SONIA in new contracts and to support the preparedness of infrastructure service providers for the continued growth of SONIA referencing products.

2.5.2 Development of term RFRs

The RFRWG supports work currently underway to develop a forward-looking term benchmark based on the sterling risk-free rate, known as a Term SONIA Reference Rate (TSRR). A consultation conducted by the RFRWG in 2018 identified demand for such a rate from some participants in cash markets where usage of forward-looking rates has historically been common, and potentially also to support transition of certain legacy contracts. Respondents to the consultation identified a number of potential bases for developing a TSRR, including current SONIA-referencing derivatives markets. The RFRWG nevertheless expects future use of forward risk-free term rates in cash markets to be more limited than the current use of LIBOR so has encouraged market participants not to delay preparations to conduct new business using compounded overnight rates while development of a TSRR takes place.

Four benchmark administrators (FTSE Russell, ICE Benchmark Administration, IHS Markit and Refinitiv) have confirmed they are working on the development of a TSRR. Each administrator has presented on its respective work to the RFRWG and these presentations have been made available on the RFRWG's webpage.[64] The RFRWG has set a target for 'beta' versions of these rates to be made available for testing from February 2020, with timing for live production to be kept under review.

The RFRWG has also established a new Term Rate task force to ensure this work remains on track and help provide market-wide input where appropriate to do so. It is also working to identify the market segments that are expected to be capable of using compounded SONIA, and those which may be appropriate use cases for alternatives such as a TSRR. Its findings are expected to be published by the end of 2019.

2.5.3 Next steps

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[61] www.bankofengland.co.uk/prudential-regulation/letter/2018/firms-preparations-for-transition-from-LIBOR-to-risk-free-rates

[62] https://www.fca.org.uk/publication/feedback/feedback-on-dear-ceo-letter-on-libor-transition.pdf

[63] See https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/discussion-paper-conventions-for-referencing-sonia-in-new-contracts.pdf and https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/statement-and-summary-of-responses-to-sonia-conventions-discussion-paper.pdf?la=en&hash=51875B0040FE48F97619E010B2C7F2A934A5DA05

[64] https://www.bankofengland.co.uk/markets/transition-to-sterling-risk-free-rates-from-libor

The main priorities for the RFRWG in the next year are: i) to cease new issuance of GBP LIBOR-linked cash products maturing beyond 2021 by Q3 2020, including through ensuring the availability of necessary infrastructure and supporting end-user education; ii) to maintain strong support for widespread adoption of compounded SONIA, while completing work to establish the feasibility of developing a robust TSRR; (iii) to establish clear frameworks to support the transition of legacy LIBOR transactions; and (iv) to provide market input on the extent to which some legacy LIBOR products may be more difficult to convert to SONIA and how those issues could be addressed.

2.6 Swiss franc (CHF)

2.6.1 Progress in transitioning to SARON

In October 2017, the National Working Group (NWG)[65] on Swiss Franc Reference Rates recommended the Swiss Average Rate Overnight (SARON) as the alternative to the Swiss franc LIBOR.[66] The NWG recommends a transition from CHF LIBOR to SARON for all financial products as the future of LIBOR is not guaranteed. Therefore, a "multiple-rate approach" is no longer considered. Two sub-working groups focus on the loan and deposit market[67] and the derivatives and capital market.[68]

In October 2018, the NWG recommended to use compounded SARON for term rates (see also the next section on term rates). Furthermore, a fallback template for new loans which continue to use CHF LIBOR as a reference rate was presented and discussed.[69]

In February 2019, the NWG proposed seven options for using compounded SARON in cash products.[70] Those options show how to mitigate or solve the issues related to interest payments when using a backward-looking term rate (processing time needed between determining and transferring the interest amount, cash flow uncertainty). The options are described in the minutes of the respective meeting.[71] In order to strengthen international coordination and enhance the knowledge of compounded term rate usage, the NWG contributed to the work of the OSSG that was published in the *Overnight Risk-Free Rates: A User's Guide*.[72] Also in February 2019 a webinar for infrastructure providers was held. The majority of participating

[65] The National Working Group (NWG) on Swiss Franc Reference Rates is the key forum to foster the transition to SARON and to discuss the latest international developments. The NWG is co-chaired by a representative of the private sector and a representative of the Swiss National Bank (SNB). The NWG publishes recommendations based on consensus. Recommendations are not legally binding. The SNB acts as a moderator and runs the NWG's technical secretariat, facilitates the organisation of the meetings and publishes on its webpage documents discussed by the NWG. The NWG will cease to exist once the transition to SARON is materially completed.

[66] SARON is calculated on the basis of data (transactions and binding quotes) posted on SIX Repo Ltd's electronic trading platform. SARON is administered by SIX. It is provided since 2009 and was developed in cooperation with the SNB. See https://www.six-group.com/exchanges/indices/data_centre/swiss_reference_rates/reference_rates_en.html

[67] See https://www.snb.ch/en/mmr/reference/tor_ld_subgroup/source/tor_ld_subgroup.en.pdf

[68] See https://www.snb.ch/en/mmr/reference/tor_dc_subgroup/source/tor_dc_subgroup.en.pdf

[69] See https://www.snb.ch/n/mmr/reference/minutes_20190613/source/minutes_20190613.n.pdf

[70] So far no legal obstacles under Swiss law to the implementation of any of these options have been identified. Rather, the compliance of using compounded SARON with existing Swiss law was supported by legal experts.

[71] See https://www.snb.ch/n/mmr/reference/minutes_20190205/source/minutes_20190205.n.pdf

[72] See https://www.fsb.org/2019/06/overnight-risk-free-rates-a-users-guide/

firms indicated that they are already engaged with their customers on this topic.[73]

In June 2019, the NWG discussed the progress made on the adoption and acceptance of compounded SARON. An overview of observable tendencies for using and implementing compounded SARON was discussed. At the time of writing this report, a tendency towards option 3 "Lookback" seems to emerge, which is preferred for SARON FRN and already used for FRN in other currencies. First anecdotal feedback from market participants states that this option could also be feasible for syndicated loans.

In this connection, the NWG gave further guidance at its November 2019 meeting regarding the use of compounded SARON in retail loans.[74] The working group refrained from recommending specific options for retail loans and stated that institutions should individually define their product strategy. However, it was stated that the options "plain", "lookback" and "last reset" are the most discussed. Having several options at hand is preferable for retail loans, as preferences can vary according to client segments. Furthermore, "in-arrears" options (e.g. "plain") for retail clients are not compliant with consumer protection directives in certain jurisdictions. However, there are no such restrictions under Swiss law for "in-arrears" options in retail loans. For syndicated loans, a single recommendation is expected for 2020. On SARON FRN, the NWG has expressed a preference for one option, i.e. "lookback". The NWG also recommended to transition CHF LIBOR exposures prior to end of 2021 wherever possible. Furthermore, it was recommended to align fallback language to the chosen transition strategy. In particular, the potential usage of a pre-cessation trigger should be considered.

In addition to the ongoing work of the NWG, the SNB introduced at its monetary policy assessment in June 2019 the SNB policy rate, which replaces the previously used target range for the three-month CHF LIBOR. The SNB policy rate signals the interest rate level for secured short-term money market rates, with a focus on SARON. The introduction of the SNB policy rate is also intended to foster an early transition to SARON.

2.6.2 Development of term RFRs

In October 2018, the NWG recommended the use of a compounded SARON as a term reference rate for new products wherever possible. According to the NWG's assessment, it is unlikely that a robust derivatives-based term fixing in CHF is feasible. Any term rate based on derivative markets will not be as robust as the reference rate itself.

Compounded SARON can be calculated by using the standard formula for compounding. In order to increase the visibility of compounded SARON and to calculate term rates easily, the administrator of SARON (SIX) provides SAION, which is an index that measures the cumulative impact of compounding SARON. SIX is also developing daily compounded

[73] Regarding the adjustments which are necessary to embed compounded interest rates, the feedback of webinar participants was more diverse. However, the majority stated that those adjustments should be implementable within one year; the vast majority stated to be ready within two years.

[74] During summer 2019, the NWG consulted the Secretariat of the Swiss Competition Commission (COMCO) in order to get an assessment of whether a recommendation for a reduced number of options remains in compliance with competition rules. The COMCO Secretariat presented their interpretation at the NWG meeting in November 2019. In their view, a recommendation for retail loans should include at least one "in-arrears" and one "in-advance" option. In total, at least three options should be recommended for retail loans. For syndicated loans and FRNs, a single option can be justified on grounds of economic efficiency.

SARON fixings for the 1, 3 and 6 month tenors.[75] Furthermore, the NWG invited index providers like SIX to implement a user friendly (e.g. web-based) and free-to-use calculator for compounded SARON.

2.6.3 Next steps

A key milestone will be that financial institutions start to offer SARON based cash products. For the Swiss market, the most important class of cash products are retail mortgages. It is expected that first SARON based mortgages will be offered in the course of 2020. Once SARON based cash products are utilised, the SARON based derivatives market is expected to become more liquid. Going forward, the NWG will continue to build on international coordination and will liaise again with infrastructure providers in order to quickly broaden the market's operational readiness to handle financial instruments based on compounded SARON. Furthermore, the NWG will undertake work to develop a standard for syndicated loans.

[75] See https://www.six-group.com/exchanges/indices/data_centre/swiss_reference_rates/compound_rates_en.html

3. Progress reports from other currency areas

3.1 Australia

The RFR for the Australian dollar is the interbank overnight cash rate (Cash Rate; also referred to as AONIA in the 2006 ISDA Definitions). The Reserve Bank of Australia (RBA) is the administrator of the Cash Rate and has reviewed the methodology to ensure alignment with the IOSCO *Principles for Financial Benchmarks*. The Cash Rate is calculated directly from market transactions data.

Australia has adopted a multiple-rate approach and is maintaining the Bank Bill Swap Rate (BBSW) as the credit-based benchmark for the Australian dollar. The critical difference between BBSW and LIBOR is that there are enough transactions in the Australian bank bill market each day to calculate a robust benchmark. Australia has an active bank bill market, where the major banks issue bills as a regular source of funding, and a wide range of wholesale investors purchase bills as a liquid cash management product.

The RBA and the Australian Securities and Investments Commission (ASIC) have worked closely with the Australian Securities Exchange (ASX) (the BBSW administrator) and industry to strengthen the BBSW methodology. Since May 2018, it has been possible to calculate the key three month and six month BBSW rates directly from market transactions on most days. There has been around AUD 1.7 billion in transactions during the BBSW rate set each day, with a wide range of institutions participating.

Australia's credit-based benchmark, BBSW, is expected to continue to exist even if LIBOR is discontinued. Products issued by banks, such as FRNs and corporate loans, may continue to reference the BBSW, and there would still be a need for derivatives that reference BBSW to hedge interest rate exposures. As market participants transition from referencing LIBOR to RFRs, there may be some corresponding migration away from BBSW towards the Cash Rate. This will depend on how international markets for products such as derivatives and syndicated loans end up transitioning away from LIBOR.

The infrastructure is already in place for BBSW and the Cash Rate to coexist as the key interest rate benchmarks for the Australian dollar. The OIS market is linked to the Cash Rate and has been operating for almost 20 years. It already has good liquidity for tenors shorter than one year, and the infrastructure is there for longer term OIS. A functioning derivatives market for trading the basis between the benchmarks is important for BBSW and the Cash Rate to smoothly coexist. Such a basis swap market is also in place, allowing market participants to exchange the cash flows under these benchmarks. In June 2019, the first FRN referencing the cash rate (or AONIA, Australian Overnight Index Average Rate) was issued by the South Australian Government Financing Authority (SAFA).

Some Australian investors have expressed interest in term RFRs with similar tenors to LIBOR and BBSW. It could be possible to generate a term rate using transactions and executable prices from the OIS market, futures market or the repo market. The RBA has expressed support for efforts by the private sector to develop such term rates. However, there would need to be significant effort to develop the appropriate market infrastructure and practices before these could be considered robust benchmarks. Given this, the RBA has encouraged market participants to consider using the Cash Rate rather than waiting for the development of a term rate.

In July 2019, the European Commission granted equivalence to Australia's legal and supervisory framework for benchmarks which are deemed as significant in Australia, which includes the overnight cash rate and BBSW.[76]

In May 2019, the ASIC wrote to the CEOs of several major Australian financial institutions regarding their preparations for the end of LIBOR. This initiative was strongly supported by the Australian Prudential Regulation Authority (APRA) and the RBA. The Australian financial regulators are seeking assurance that the senior management in these private institutions fully appreciates the impact and risks and is taking appropriate action ahead of the end of 2021.

3.2 Brazil

The risk-free benchmark rate for the Brazilian financial system is the Selic rate, an overnight secured rate, based on repo transactions collateralised by Government debt securities. Central Bank of Brazil (BCB) is responsible for the Selic rate methodology and disclosure. The overnight secured repo market, based on repos collateralised by Government debt securities, comprises more than seven thousand daily transactions and more than BRL 1 trillion (around USD 250 billion) of financial volume traded daily. The Selic rate is currently used for referencing the floating rate government debt securities (LFTs) and central bank instruments (long-term repos and FX swaps).

The overnight unsecured interbank offered rate (DI rate) is the major reference rate applied for fixed income instruments issued by banks and corporations, as well as for derivative instruments in Brazilian financial markets. The DI rate is the average interest rate of overnight interbank unsecured transactions, calculated by the Brazilian securities exchange (B3). Despite being based on actual market transactions, the low level of trading activity in its underlying market has been challenging its use for referencing significant amounts of locally issued instruments. In the last years, however, there have been improvements on the DI rate methodology in order to consider a fallback mechanism based on the Selic rate. In October 2018, a fallback rule was implemented to set the DI rate equal to the Selic rate when the following conditions are not met simultaneously:

(i) The number of eligible unsecured interbank transactions is equal to or higher than 100; and
(ii) The total amount of eligible unsecured interbank transactions is equal to or higher than BRL 30 billion.

If both conditions are met, the DI rate is calculated based on actual transactions of the unsecured interbank market.

The BCB is continuing to support measures to improve and enhance local reference rates, in conjunction with the Brazilian Federation of Banks (FEBRABAN) and the Brazilian Financial and Capital Markets Association (ANBIMA). The improvement of local rates is considered in the BCB's official agenda ('*Agenda BC#*'), which includes the assessment of possible measures to improve the Selic rate's compliance with the Principles for Financial Benchmarks published by IOSCO.

In Brazil, LIBOR-linked instruments are basically interest rate swaps with maturity up to 2021. These swaps represent 10.8% of the total notional swap contracts in local market and only 1.4%

[76] https://ec.europa.eu/info/publications/190729-equivalence-decisions_en

of total derivatives market, meaning that LIBOR transition is not expected to affect local markets. In addition, there are no loans (business, syndicated, retail or mortgage), notes, deposits or securitised instruments indexed to LIBOR. As a rule, such contracts are used as a hedge of exposures in foreign currency debt. According to the B3, which provides trading services for these swaps, these contracts have fallback rules that specify an alternative rate in case LIBOR is unavailable.

3.3 Canada

The Canadian Alternative Reference Rate (CARR) Working Group,[77] established in 2018, continues to review Canadian dollar risk-free rates. In February 2019, CARR published a consultation paper for an enhanced methodology to calculate the Canadian Overnight Repo Rate Average (CORRA).[78] The results of the consultation and the final methodology were published in July 2019. The final rate will be computed as the daily trimmed volume-weighted median of eligible transactions, which includes all repo transactions that:

- are between any two unaffiliated counterparties where data can be sourced;
- are for an overnight term for same-day settlement; and
- involve only Government of Canada bond or treasury bill collateral and are settled in Canadian dollars.

The Bank of Canada (BoC) also announced its intention to become the administrator of CORRA in the second quarter of 2020 once the enhanced calculation methodology is implemented. The Bank also announced that CORRA will be calculated from repo transactions that have been into reported into the Investment Industry Regulatory Organization of Canada's Market Trade Reporting System.[79]

CARR has also established a "Term risk-free rate" subgroup to assess the need for a term risk-free rate benchmark in the Canadian dollar cash market through soliciting feedback from a broad range of market participants, including end-users of term benchmark rates. Based on feedback and analysis, CARR will potentially develop a methodology and specifications for the Canadian term risk-free rate benchmark, including how to ensure that it is IOSCO-compliant and which maturities should be published.

While Canada operates under a multi-rate approach, with both the Canadian Dollar Offered Rate (CDOR), and CORRA co-existing as interest rate benchmarks, it is expected that over time CORRA will become the predominant Canadian interest-rate benchmark. CARR has established a "Transition" subgroup to provide the underlying framework to help transition toward the widespread use of CORRA in Canadian dollar financial products. This subgroup is also reviewing conventions for cash products, futures products, and swap markets.

Currently, the Canadian financial system does not have any specific benchmark regulation. However, in March 2019, the Canadian Securities Administrators (CSA) published proposed

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[77] https://www.bankofcanada.ca/markets/canadian-alternative-reference-rate-working-group/

[78] https://www.bankofcanada.ca/2019/02/bank-canada-publishes-canadian-alternative-reference-rate-working-groups-consultation-paper/

[79] https://www.bankofcanada.ca/2019/07/bank-canada-become-administrator-key-interest/

draft rules intended to implement a comprehensive regime for the designation and regulation of benchmarks and those that administer them. [80]

The proposed new rule would provide a comprehensive regime for:

- the designation and regulation of benchmarks,
- the designation and regulation of persons or companies that administer designated benchmarks,
- the regulation of persons or companies that contribute certain data used to determine a designated benchmark,
- the regulation of certain users of designated benchmarks.

Subject to necessary approvals, it is anticipated that the final Canadian rule on financial benchmarks will be published in 2020.

3.4 Hong Kong

The Treasury Markets Association (TMA), which is the administrator for Hong Kong Interbank Offered Rate (HIBOR), has identified Hong Kong Dollar Overnight Index Average (HONIA) as an alternative RFR for the Hong Kong dollar (HKD). Similar to the RFRs chosen in other currency areas, HONIA is an overnight interbank funding rate based solely on transaction data.

HIBOR is widely recognised by market participants in Hong Kong as a credible and reliable benchmark. While HONIA serves as an alternative to HIBOR, Hong Kong will adopt a multiple-rate approach, whereby HIBOR and HONIA will co-exist and market participants are free to choose between them.

The Hong Kong Monetary Authority (HKMA) continues to work with the TMA to ensure that HIBOR follows better the IOSCO *Principles for Financial Benchmarks*, having regard to local market conditions. The TMA is planning to conduct its regular review on the tenor structure and calculation methodology of HIBOR in due course. In doing so, the TMA will gather industry feedback and take into account other jurisdictions' experience. On HONIA, the TMA completed an industry consultation in May 2019 on some technical refinements to HONIA. This was part of its ongoing initiative to enhance the robustness of the benchmark. Taking into account feedback from the consultation, the TMA will consider how best to put in place the relevant refinements and publish the consultation conclusions in the second half of 2019. It will further engage market participants in Hong Kong to explore means of encouraging the adoption of HONIA in their business activities. The TMA is also exploring other possible means of developing term rates for HKD, such as an OIS market for HONIA-based transactions. It will draw reference from other jurisdictions' experience in promoting the development of OIS market in Hong Kong.

The HKMA and the TMA are working together to engage different stakeholders on various IBOR transition issues, in particular with respect to LIBOR. In this regard, the HKMA issued a circular to banks in March 2019, reminding them to undertake risk assessment and make necessary preparation for the potential transition ahead.

At the same time, the TMA has intensified its outreach to non-bank sectors with a view to raising market awareness of and readiness for the transition. In particular, a Working Group on

[80] https://www.osc.gov.on.ca/en/SecuritiesLaw_ni_20190314_25-102_designated-benchmarks.htm

Alternative Reference Rates (WGARR) has been formed under the TMA to engage a wider spectrum of stakeholders (including representatives from the audit, legal and corporate sectors) with a view to raising their awareness of the critical issues that may arise from the LIBOR transition, including the implications on accounting and tax treatments, and encourage relevant parties to get prepared for the transition.

3.5 Indonesia

On 1 August 2018, Bank Indonesia introduced a new transaction-based index called IndONIA. IndONIA is an index of interest rate for unsecured overnight interbank rupiah lending transactions, determined based on the average interest rate for unsecured overnight rupiah lending based on market transactions and reported by all banks to Bank Indonesia. Bank Indonesia will publish IndONIA on Bank Indonesia's website at 19.30 Western Indonesia Time each business day.

IndONIA is replacing the overnight Jakarta interbank offer rate (JIBOR) as an overnight interest rate benchmark. As of 2 January 2019, Bank Indonesia no longer publishes overnight JIBOR and financial contracts which use overnight JIBOR have to shift to IndONIA as reference rate for overnight tenor instead.

To increase the credibility of JIBOR as a money market reference rate, as of 2 January 2019 contributor banks have to quote rates by underpinning it to the greatest extent possible with transaction data in order to better reflect market rates and the process of JIBOR quotations should be conducted with good governance.

Credibility of interest rate benchmarks will support interest rate derivatives transactions such as the OIS. With enough transaction volume, Bank Indonesia hopes that OIS can replace term JIBOR.

3.6 Mexico

Since last year, Banco de Mexico (BdM) had identified as potential RFR three existing rates based on wholesale overnight repurchase agreement (repo) transactions denominated in Mexican pesos, settled by banks and brokerage firms. Among these rates, BdM chose the Fondeo Gubernamental Ampliado as the starting point to develop a new RFR. The Fondeo Gubernamental Ampliado represents a broad definition of the Mexican Money Market as it covers a significantly large daily volume. In addition, this rate also covers a broad variety of repo transactions secured by debt securities issued by the Federal Government, the Mexican Bank Savings Protection Institute (IPAB) and the Central Bank. To some extent, the market represented by this rate is similar to the market represented by the Federal Reserve's SOFR.

Based on the repo transactions used to calculate the Fondeo Gubernamental Ampliado rate, BdM has developed a new a RFR. The rate will be named Overnight Interbank Equilibrium Interest Rate (Overnight TIIE). The new Overnight TIIE is defined as the volume weighted median (the 50^{th} percentile of the volume-weighted distribution of interest rates registered) of repo transactions.

The new Overnight TIIE has received the final approval by the BdM board. During the last months, BdM has been preparing to officially launch the Overnight TIIE. This preparation consists of three fronts. The first one is the benchmark documentation, in which BdM has drafted related technical and legal documentation that will be published once the rate is officially launched. The second one is related to the IT requirements for the daily production of this rate. Finally, BdM is working on reviewing the definition, integrity and quality of this new benchmark rate in order to ensure that the new Overnight TIIE fully complies with the IOSCO principles.

During the development of the new Overnight TIIE, BdM held methodological discussions with a group of commercial banks' specialists and traders in the market, regarding the pros and cons of different implementation strategies. The discussions focused on methodological issues of the new rate, publication procedures and how widespread would be the use of the new Overnight TIIE once it is launched. BdM is in the process of formalising this discussion group as an official Working Group of Benchmark Rates.

Mexico's TIIEs, are the main benchmark rates in the Mexican markets. TIIE rates face similar problems of the main IBORs. However, BdM considers that these rates are more robust, since they are calculated by the BdM and not by a private institution. The bids received can end up being an actual transaction, thus the participant banks have the incentive to report a rate that does not deviate much from market levels.

The existing TIIE rates comply with most of the IOSCO principles. However, BdM is actively working on completing some changes in the statutory documents in order to achieve a complete full compliance with the principles. Among these changes, significant progress has been made in creating a TIIE submitters Code of Conduct. This document has been drafted and it is in a revision phase, this in order to comply with IOSCO principle 14 Submitter Code of Conduct. Similarly, BdM has drafted the terms of reference of the Oversight Committee. The Committee will strengthen the existing control framework of the rates and will conduct periodic revisions to the benchmark rates design, quality and integrity. The Oversight Committee will also supervise the new Overnight TIIE. Once this draft is approved, the TIIE rates will also fulfil IOSCO Principle 5 Internal Oversight.

BdM has been clear in discussions that there will be a multiple-rate approach. This implies that the existing TIIE for tenors of 28, 91 and 182 days will not be discontinued and they will coexist with the new Overnight TIIE. This option was chosen considering BdM own analysis and active consultation of market participants. The multiple-rate approach will allow to carefully analyse whether it is convenient to keep the methodology of the existing TIIEs or to change it without creating any market disruption. The official launch of the new Overnight TIIE is planned to take place during the following weeks.

Since there are no intentions to discontinue the existing TIIE rates, there is no plan to develop new term RFRs in the next months. However, this does not imply that BdM has not discussed term structure issues with market participants, such as methodological issues regarding the integration of the new Overnight TIIE with the rest of the TIIE tenors. Analysis is ongoing of the existing spread between the existing TIIE at longer tenors (mainly 28 days) and the new Overnight TIIE.

BdM has been working with major stakeholders in the money market regarding some issues in the derivatives and cash markets. Regarding derivative markets, the main issue will be to promote the migration of widely used contracts from the existing TIIE 28 days to the new Overnight TIIE, particularly for IRS contracts. So far BdM has talked to the main market participants and in principle they think it will be possible to start developing the OIS market with the new Overnight TIIE. BdM has been also in talks with domestic and global exchanges about the development of new derivatives linked to the new reference rate.

For BdM, one major risk is that it is possible that those institutions that currently contribute to the calculation of the IBORs in major jurisdictions will decide to stop contributing to the calculation of the currently existing TIIEs. In Mexico, most of the local banks are subsidiaries of foreign banks that currently participate in the calculation of the main IBORs. In this context, a methodology to determine RFRs for longer tenors in Mexico will be needed, so analysis on these issues is ongoing.

The next steps in the process of reforming benchmark rates in Mexico are the official launch of the new Overnight TIIE, the full compliance with the IOSCO principles, and the promotion of the new rate.

3.7 Singapore

Unlike other jurisdictions where IBOR rates are used in derivatives, Singapore Dollar (SGD) derivatives do not reference SIBOR but reference the SGD Swap Offer Rate (SOR) instead. SOR is an FX swap implied interest rate, computed from actual transactions in the USD/SGD FX swap market, and utilising USD LIBOR as an input. As SOR relies on USD LIBOR in its computation methodology, the outlook for USD LIBOR beyond end-2021 has implications on the long-term viability of SOR.

On 30 August 2019, the ABS Benchmarks Administration Co Pte Ltd and the Singapore Foreign Exchange Market Committee (ABS-SFEMC) issued a public consultation on SOR transition. This identified Singapore Overnight Rate Average (SORA) as the most suitable and robust alternative benchmark to SOR, particularly for interest rate derivatives, and sought feedback on a proposed transition roadmap. The consultation closed on 31 October 2019. Concurrently, the Monetary Authority of Singapore announced the formation of a Steering Committee for SOR Transition to SORA (SC-STS). The SC-STS will provide strategic direction to develop new products and markets based on SORA, recommend measures to transition SOR-based legacy financial contracts, and serve as a coordinating platform to engage relevant stakeholders on the transition from SOR to SORA. This industry-led committee will comprise senior representatives from key banks in Singapore, relevant industry associations, and MAS.

ABS-SFEMC previously issued a public consultation in December 2017 to seek feedback on proposals to enhance the SIBOR.[81] Following this public consultation, ABS-SFEMC finalised proposals to enhance SIBOR in July 2018. The key recommendations aim to increase reliance on market transactions by using the following waterfall methodology: (a) transactions in the underlying wholesale funding markets, (b) transactions in related markets, and (c) expert judgement. The inclusion of other wholesale funding transactions reflected the structural shifts in banks' key sources of funding. Following from this, transitional testing for enhanced SIBOR

[81] SIBOR is administered by the ABS Benchmark Administration Co Pte Ltd, with Thomson Reuters as the calculation agent. SIBOR is currently calculated from a survey of a panel of 20 banks and is available in four tenors – 1-month, 3-months, 6-months and 12-months.

commenced on 1 July 2019. ABS-SFEMC is expected to provide an update in Q2 2020 on the proposed enhancements to SIBOR.

Separately, MAS introduced a financial benchmarks regulatory regime which commenced on 8 October 2018. The regulatory framework [82] subjects the manipulation of any financial benchmark in Singapore to criminal and civil sanctions, and administrators of and submitters to key financial benchmarks (as designated by MAS)[83] to regulation.

In July 2019 the European Commission adopted equivalence decisions for financial benchmarks administrators in Singapore.[84]

3.8 South Africa

The South African Reserve Bank (SARB) initially proposed the adoption of a multiple rate approach, under which both risk-based and risk-free rates would co-exists. Risk-based reference rates would be used for the pricing of unsecured on-balance sheet items, while risk-free rates would be used for collateralised transactions and derivative contracts. However, users of reference rates in South Africa expressed a preference to align with the approach of other jurisdictions opting to transition away from existing IBORs to RFRs. Users raised concerns about the possibility of introducing complexities in pricing and risk management models and unmanageable basis risk. Accordingly, they preferred that South Africa does not adopt a multiple rate approach.

The SARB proposed two options for RFRs:

i. a risk-free rate based on overnight funding in the government bond repo market and supplementary repos conducted with the central bank in its end-of-day square-off operations (called the South African Secured Financing Rate, SASFR); and
ii. a near-risk-free rate based solely on overnight interbank funding (called the South African Rand Interbank Overnight Rate, ZARibor).

Following consultations with stakeholders in the South African financial markets, it became evident that the adoption of the proposed SASFR is not desirable due to vulnerabilities and structural biases in the South African repo market. The designation of ZARibor as a near-risk-free rate was widely supported, subject to the application of specific eligibility criteria that allows ZARibor to exhibit the desired attributes of a risk-free rate. The ultimate decision lies with the Market Practitioners Group on Interest Rate Reforms in South Africa (MPG), which has been entrusted with the task of managing the reform of reference interest rates and the mandate to make final decisions on the choice of alternative reference rates.

The MPG established a Risk-free Reference Rate Work Stream to make final recommendations on the choice and design of a risk-free reference rate. The work stream has met to discuss next steps, with a commitment to provide a position paper to the MPG in due course.

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[82] See https://sso.agc.gov.sg/Act/SFA2001; https://sso.agc.gov.sg/SL/SFA2001-S642-2018?DocDate=20181002. See https://sso.agc.gov.sg/Act/SFA2001; https://sso.agc.gov.sg/SL/SFA2001-S642-2018?DocDate=20181002 .

[83] See https://sso.agc.gov.sg/SL/SFA2001-S644-2018?DocDate=20181002. See https://sso.agc.gov.sg/SL/SFA2001-S644-2018?DocDate=20181002.

[84] https://ec.europa.eu/info/publications/190729-equivalence-decisions_en

Furthermore, the MPG formed a Transition Work Stream, which is chaired by the private sector and is made up of bank treasury officials, risk officers, legal counsels as well as other practitioners from the official sector and industry bodies representing asset managers and corporate treasuries. It is envisaged that membership of the work stream will be broadened to include tax, accounting and insurance practitioners. The main aim of the Transition Work Stream is to examine options for transitioning from legacy reference interest rates to the new alternatives and make recommendations to the MPG on the timelines and steps for transition.

There are no new developments regarding term RFRs in South Africa. The SARB's current proposal is that term RFRs be derived from trading activity in Treasury bills, but there are liquidity constraints. To address these liquidity constraints, there is an ongoing initiative looking at potentially including Treasury bills in an electronic trading platform.

A major IBOR reform proposal in South Africa concerns a change in the composition of the Johannesburg Interbank Average Rate (Jibar). The initial proposal was for the current quote-based Jibar to be replaced with a transaction-based rate, comprising negotiable certificates of deposit (NCDs) and non-bank financial corporate (NBFC) deposits. Following consultations with stakeholders in the South African financial markets, it became apparent that the proposal to reform Jibar into a hybrid is not well supported. Users expressed concern about the opaqueness of pricing of NBFC deposits relative to NCDs; regulatory distortions due to Basel III pricing differential of deposit categories that hold different regulatory value; and issues of dislocation from monetary policy.

Subsequent to this consultation and in response to the concerns raised, the SARB recommended that the MPG should consider the option of replacing Jibar with a transaction-based rate comprising of NBFC deposits only. The MPG is also encouraged to consider other alternative proposals, as long as those proposals are IOSCO compliant. The Unsecured Reference Rate Work Stream was formed under the auspices of the MPG to consider alternatives.

In terms of next steps:

- The SARB has prioritised to publish a technical specification paper on benchmark interest rates by March 2020. The outcome of the engagements with market participants, via the MPG, will contribute towards the production of the technical specification paper by the SARB, which is envisaged to provide the final suite of benchmarks that will be calculated by the SARB, and to serve as a technical reference for the development of benchmarks.
- Parallel to this process, the MPG work streams will make their recommendations to the MPG in terms of their preferred choice of an alternative reference rate. The work streams will also advise on transition and other implementation issues that need to be considered by the MPG. The work streams have begun their work.
- With regard to Jibar, the SARB has recommended that the current Jibar methodology be phased out and be replaced as soon as reasonably practicable, especially given all the challenges. The SARB expects the MPG and its work streams to prioritise the reform of Jibar and to come up with an interim solution, which will become effective from a date that will be announced by the SARB.

3.9 Turkey

The short-term reference rate for the Turkish lira (TL) is the TLREF. TLREF is a rate at which Turkish banks and other financial institutions lend and borrow from each other, collateralized by the government bonds issued in TL by the Ministry of Treasury and Finance. Since the transactions are strongly collateralized, the counterparty risk of the transactions is at minimal level. Besides, since the coverage of the market contains both banks and other financial institutions, mostly mutual funds and pension funds, the rates are quite representative, which also leads to high transaction volume for each day, nearly around 80 billion TL.

In calculating the TLREF, overnight repo transactions are used, which are cleared by CCP Takasbank to maintain maximum reliability and realized on Borsa Istanbul Repo-Reverse Repo Market as of 15:30, with the value date of the same day. The TLREF is calculated as the volume-weighted mean rate, based on the central 70% of the volume-weighted distribution of rates.

The Banks Association of Turkey has been publishing TRLIBOR as a reference interest rate every day since 2002 in eight different maturities; overnight, 1-week, 1-month, 2-month, 3-month, 6-month, 9-month, 12-month. The fact that the TRLIBOR has not been used effectively by banks as well as cessation of LIBOR by the end of 2021 provided incentives for authorities in Turkey to design the TLREF. Moreover, transition from IBORs might actually lay the ground for opportunities to deepen the local capital markets. Therefore, the TLREF is created in order to meet the need of TL short-term reference rate that can be used as an underlying or a benchmark in loans debt instruments and financial derivative contracts.

TLREF is overseen by the TLREF Committee (Committee), which comprises representatives of Ministry of Treasury and Finance, Central Bank of the Republic of Turkey (CBRT), Borsa Istanbul (BIST), The Banks Association of Turkey, İstanbul Settlement and Custody Bank (Takasbank) and Turkish Capital Markets Association. The Committee is established in order to oversee the activities regarding the calculation and dissemination of TLREF rate and BIST TLREF Index and undertakes studies to make necessary changes in the rules based on market developments, along with the needs and requirements of the market participants. The Committee reviews the current methodology at least annually.

BIST started to publish TLREF on 17 June 2019 and launched 1-month TLREF futures at the beginning of August 2019. The first TLREF linked corporate bond was issued at the end of August 2019. TLREF indexed bond issuances attracted strong demand both from institutional and high-net-worth investors, so far. Currently, the TLREF is among top tier risk free rates (RFRs) such as SOFR, SONIA, ESTER with respect to its overnight volume as a percentage of GDP. As of October 2019, the overnight volume of TLREF has been 1.57 percent of GDP. In addition, banks issued 33 new TLREF indexed instruments; the total issuance size has been around 14 billion TL (approximately 2.5 billion USD) as of 15 November 2019. Banks also started to extend TLREF based loans. In November 2019, banks started to bid and offer quotes for TLREF based-OIS (overnight indexed swaps) products, and eventually the development of this market will help banks manage their interest rate risks more effectively. In fact, the first TLREF based-OIS transaction was conducted between two foreign banks.

The instruments indexed to TLREF is expected to increase the usage of TLREF in various aspects. Since its launch, TLREF followed a path close to the CBRT weighted average cost of funding which indicates its representativeness as a benchmark rate. With the widespread use of TLREF over time, liquidity of TLREF indexed instruments is expected to increase in financial markets. In addition, TLREF indexed derivative contracts are likely to expand the investment universe of investors where they can hedge or speculate against the changes in interest rate risks, which can increase the liquidity in other financial markets such as bonds and contribute to financial deepening. Last, but not least, TLREF is expected to have a positive contribution on de-dollarization process through the channel that the banks can use TL sources to hedge their interest rate risks rather than using cross-currency swaps where they use their FX liquidity for interest rate risk management. Besides, this will decrease the dependence on FX deposits and foreign borrowing. TLREF might arise investor appetite because the investors would benefit from TLREF-indexed instruments by holding long-term TL fixed income positions.

4. Enhancing contractual robustness

4.1 ISDA's Definition Amendments and Protocols for Derivatives

The OSSG has engaged regularly with the International Swaps and Derivatives Association (ISDA) and with other stakeholders with a view to their taking action to enhance contractual robustness in derivatives products.

Since July 2016, ISDA has undertaken work, at the request of the OSSG, to strengthen the robustness of derivatives markets to the discontinuation of widely-used interest rate benchmarks. Following consultation with industry participants, regulators and the FSB OSSG, ISDA determined that the fallbacks for derivatives will be the RFRs identified by the relevant public-/private-sector working groups as an alternative to the IBORs. A spread adjustment will be added to these RFRs when a fallback is triggered to ensure legacy derivatives contracts referenced to an IBOR continue to function as close as possible to what was intended. The adjustments reflect the fact that the IBORs are available in multiple tenors and incorporate bank credit premiums and other factors that the overnight RFRs do not.

The ISDA fallbacks will be included in the 2006 ISDA Definitions[85] for interest rate derivatives and will apply to new IBOR trades. ISDA will also publish a protocol to allow participants to include the fallbacks within legacy IBOR contracts, if they choose to.

Following an earlier consultation in 2018 that focused on GBP LIBOR, CHF LIBOR, JPY LIBOR, TIBOR, Euroyen TIBOR, and the BBSW rate, in May 2019 ISDA issued a second consultation setting out options for adjustments that will apply to the relevant RFRs if fallbacks are triggered for derivatives referencing US dollar LIBOR, Hong Kong's HIBOR and Canada's CDOR.[86] As US dollar LIBOR is an input for Singapore's SOR, the consultation also asked questions about fallbacks for SOR if US dollar LIBOR is discontinued.[87] Respondents to this second consultation again clearly supported falling back to a compound average of each RFR in arrears and to using a historical mean or median of the spread between IBORs and RFRs as the basis for a long-run spread adjustment to be incorporated in to the fallbacks.

In March 2019 the FSB wrote to ISDA setting out the arguments in favour of including a "pre-cessation trigger," a clause that would cause LIBOR derivatives to move to RFRs in the event that the UK FCA judged that LIBOR was no longer representative of the underlying market, and stated its support for ISDA to consult on the events that should trigger a move to the spread-adjusted fallback rate.[88] ISDA issued a consultation exploring how derivatives market participants would address a determination that LIBOR and certain other IBORs are no longer capable of representing an underlying market.[89] A majority of respondents indicated that they

[85] The 2006 ISDA Definitions (the "2006 Definitions") are intended for use in confirmations of individual transactions governed by ISDA Master Agreements. The 2006 Definitions are an update of the 2000 ISDA Definitions (the "2000 Definitions"). The purpose of the 2006 Definitions is to provide the basic framework for the documentation of privately negotiated interest rate and currency derivative transactions. (see https://www.isda.org/book/2006-isda-definitions/)

[86] https://www.isda.org/2019/05/16/may-2019-benchmark-fallbacks-consultations/

[87] Specifically, the proposal was to compute a fallback rate for SGD SOR by using the fallback rate for USD LIBOR.

[88] https://www.fsb.org/2019/03/fsb-letter-to-isda-about-derivative-contract-robustness-to-risks-of-interest-rate-benchmark-discontinuation/

[89] https://www.isda.org/a/md6ME/FINAL-Pre-cessation-issues-Consultation.pdf

would prefer not to continue referencing LIBOR in either legacy or new derivatives if the UK FCA had found LIBOR to no longer be representative and supported the inclusion of some form of pre-cessation trigger into ISDA's documentation, but opinions were split as to how best to achieve this.[90]

ISDA also announced that Bloomberg Index Services Limited (BISL) was selected to calculate and publish adjustments related to fallbacks that ISDA intends to implement for certain interest rate benchmarks in its 2006 ISDA Definitions.[91]

ISDA, in September, issued a consultation on final parameters of the adjustments that would be incorporated into its fallbacks[92] and published a report summarising the responses it received.[93] The report shows that a majority of participants supported a historical median approach over a five-year lookback period for the spread adjustment. For the compounded setting in arrears rate, a clear majority favoured a two banking day backward shift adjustment for operational and payment purposes.

ISDA expects to publish a supplemental consultation on the adjustments for fallbacks in derivatives referencing euro rates, i.e. euro LIBOR and EURIBOR. If the consultation results are consistent with prior consultations, ISDA expects to implement fallbacks for those rates in line with fallbacks for nine other currencies covered by the earlier consultations.

Further, the OSSG has asked ISDA to include a pre-cessation trigger alongside the cessation triggers as standard language in the definitions for new derivatives and in a single protocol, without embedded optionality, for outstanding derivative contracts.[94] ISDA potentially may launch a further consultation on this approach.

ISDA will make the relevant adjustments to the 2006 ISDA Definitions to incorporate fallbacks for new IBOR trades. A protocol will also be published to enable market participants to include fallbacks within legacy IBOR contracts if they choose to. Both the amended Definitions and the protocol are expected to be finalised by Q1 2020, with implementation soon after.

4.2 Currency-specific work on contractual fallbacks

In the United States, the ARRC has issued recommendations for fallback language in new issuances of FRNs, syndicated and bilateral business loans, securitisations, and closed-end retail adjustable-rate mortgages (ARMs).[95] These recommendations were crafted to yield consistent outcomes across asset classes in most instances and, where possible, to be consistent with ISDA's upcoming protocols. The recommendations are also drafted to enable clear fallbacks to LIBOR and for any successor rates to LIBOR.

The ARRC's fallbacks would be triggered if LIBOR or a successor rate has either permanently or indefinitely stopped publication, as announced by the benchmark administrator or an official

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[90] https://www.isda.org/2019/10/21/isda-publishes-report-summarizing-results-of-benchmark-fallbacks-consultation-on-pre-cessation-issues/

[91] https://www.isda.org/2019/07/31/bloomberg-selected-as-fallback-adjustment-vendor/

[92] https://www.isda.org/2019/09/18/isda-publishes-consultation-on-final-parameters-for-benchmark-fallback-adjustments/

[93] https://www.isda.org/2019/11/15/isda-publishes-results-of-consultation-on-final-parameters-for-benchmark-fallback-adjustments/

[94] https://www.fsb.org/2019/11/fsb-letter-to-isda-on-pre-cessation-triggers/

[95] See https://www.newyorkfed.org/arrc/fallbacks-contract-language

body with oversight over the benchmark, or if regulator of the benchmark were to find that it was no longer representative. The latter trigger had wide support in the ARRC's consultations as a viable way to control for the potential of a material degradation in LIBOR's quality (often popularly referred to as the "zombie LIBOR" problem).

The recommended FRNs and securitisations fallback languages set out "hardwired" waterfalls for the benchmark replacement and a benchmark replacement spread adjustment. The ARRC's consultations showed a clear preference among most respondents for replacing USD LIBOR with a forward-looking term rate version of SOFR. Accordingly, the ARRC's benchmark replacement would fallback to a forward-looking term rate if the ARRC has recommended a term-rate of this kind at the time that LIBOR has ceased or been disrupted. If there is no forward-looking term rate recommended by the ARRC, the benchmark replacement would instead be a compound average of SOFR. Other levels of the waterfall were designed to provide fallbacks in the unlikely case that SOFR itself were to stop: referring first to the recommended replacement of a group like the ARRC if such a group has been formed, then to ISDA's fallback for SOFR. Lower levels of the waterfall are meant to provide further safeguards if all of the higher levels were to fail and allow a designated party to select the replacement. The replacement spread adjustment would be an adjustment recommended by the ARRC, or if the ARRC has not recommended an adjustment, the adjustment used by ISDA for derivatives if the benchmark replacement is the same as ISDA's, or, finally, an adjustment selected by a designated party if the other levels of the waterfall should fail. The language also allows for conforming changes to adapt details of the contract to the successor rate.

The ARRC recommended similar "hardwired" fallbacks for syndicated and bilateral business loans, but has also offered a different set of fallback languages that recognise the business loans often have mechanisms to amend contract terms based on negotiating processes between the borrower and lenders. These "amendment approach" recommendations set out clear processes that would allow the parties to the loan to determine a successor rate and spread adjustment, rather than setting out pre-specified waterfalls of replacement benchmarks and adjustments.

The ARRC has committed to recommending spread adjustments for cash products, and to seeing that any rates it recommends (SOFR, and potentially a forward-looking term rate based on SOFR derivatives) and recommended spread adjustments are published and made publicly available. Rates and spreads would be published separately and also combined as a "spread-adjusted" rate. The ARRC's consultation on recommended language for new closed-end, residential ARM products allows for much simpler fallback language that is still consistent with recommendations for other cash products by proposing falling back to a recommended spread adjusted rate.

While the ARRC's recommendations are meant for new issuances, some legacy cash products will not be able to be amended to incorporate better fallback language and will not mature and cannot be closed out before LIBOR is expected to stop or be found non-representative. The ARRC has been convened to minimise the impacts of a transition to SOFR wherever it can, but has warned that market participants need to be aware that there are risks to using LIBOR and that the ARRC cannot guarantee a solution for every legacy contract. However, as noted in the ARRC's minutes, the ARRC is discussing whether it would make sense to pursue some form of legislative relief for legacy contracts in New York and perhaps other states. The ARRC is hoping to decide if seeking legislative relief is appropriate over the next several months.

In the EURO area, in July 2019, the working group on euro risk-free rates adopted the EONIA to €STR Legal Action Plan with recommendations as regards the legal measures necessary for the EONIA transition to the €STR. The EONIA to €STR Legal Action Plan addresses two critical events: (i) the modification of the methodology for EONIA on 2 October 2019 to become €STR plus a spread of 8.5 basis points; and (ii) the cessation of publication of EONIA at the beginning of 2022. The plan proposes a range of recommendations addressed to market participants with regard to new and legacy contracts in all asset classes (derivatives, collateral agreements and cash products),[96] including the following general recommendations:

(i) Market participants should consider avoiding entering into any new contracts referencing EONIA whenever feasible and appropriate, in particular new contracts maturing after 31 December 2021.

(ii) In those cases where new contracts still reference EONIA and mature after December 2021 or fall within the scope of the EU Benchmarks Regulation, market participants should include robust fallback provisions.

(iii) For the purpose of enhancing transparency, though not strictly necessary for ensuring a smooth transition, new contracts signed before October 2019 may include clarification that references to EONIA should be understood to be references to EONIA as modified after the change to its methodology on 2 October 2019.

(iv) For legacy contracts referencing EONIA and maturing after 31 December 2021, market participants should consider replacing EONIA as a primary rate as soon as possible or embedding robust fallback clauses referencing the recommended fallback rate for EONIA.

(v) The working group also recommended that the €STR plus a spread of 8.5 basis points, which is the one-off computation of the difference between €STR and EONIA in the context of the recalibrated EONIA methodology, should be the EONIA fallback rate.

The working group on euro risk-free rates is also working on a legal action plan covering the need to embed fallbacks for EURIBOR in compliance with the requirements of the EU Benchmarks Regulation.

In Japan, as a part of its public consultation, the Committee outlined approaches to fallbacks for the cash products (these were discussed and reported to the Committee by the Sub-Group on Loans and the Sub-Group on Bonds). The direction of the approaches for each product was decided centring on three issues which were deemed important when adopting a fallback provision, namely issues regarding trigger events, replacement rate, and procedures. While alignment with derivatives governed by ISDA's standard documentation was emphasised for bonds, the need for flexible approach and forward-looking replacement rates was stressed for loans. As a result of the public consultation, the directions of the approach outlined by the Committee were supported by a majority of market participants. Some market participants also indicated that initiatives led by industry groups and other relevant bodies to establish, for example, transparent guidelines are required so that robust fallback provisions are appropriately adopted.

[96] https://www.ecb.europa.eu/press/pr/date/2019/html/ecb.pr190716~0383b60ab0.en.html

In the UK, a paper on new and legacy loans was addressed to market participants who continue to reference LIBOR in new and legacy syndicated loan transactions, in particular where those loans mature beyond the end of 2021 when LIBOR may cease to be available.[97] Its aim is to help market participants increase their level of preparedness and forward planning in conjunction with a revised "Replacement of Screen Rate" clause published by the Loan Market Association.[98]

In Switzerland, at the NWG meeting of October 2018 a law firm presented a fallback template for retail loans which continue to use CHF LIBOR as a reference rate under Swiss law. Market participants have to decide whether and how to implement a fallback clause into retail loan contracts.

In June 2019, the NWG published a fallback template for SARON FRN. The fallback template comprises a waterfall with two levels. On the first level, a relevant committee including key stakeholders of the relevant market would recommend an alternative benchmark and spread. On the second level, e.g. in case no alternative benchmark is identified, the SNB policy rate and a spread based on the historic median of the last two years would apply. The fallback would also be triggered in case of a statement by a competent authority that the benchmark may no longer be used, i.e. loss of representativeness.

In November 2019, the NWG recommended in general to transition CHF LIBOR exposures prior to end of 2021 wherever possible. Furthermore, it was recommended to align fallback language to the chosen transition strategy. In particular, the potential usage of a pre-cessation trigger should be considered.

In Australia, the Australian financial regulators have been working with ISDA to strengthen the contractual fall backs for BBSW at the same time as LIBOR. This culminated in BBSW being included in ISDA's Consultation on Benchmark Fallbacks, with the Cash Rate identified as the fallback rate. Once ISDA has finalised the fall-back provisions, the Australian financial regulators expect all users of BBSW to adopt them where possible. For new securities referencing BBSW, the RBA will make it a requirement that these fallback provisions be adopted before the securities can be eligible in the RBA's market operations. This would affect FRNs issued by banks, securitisation trusts and governments.

In **Canada**, CARR proposed in April 2019 draft fallback language for cash products that reference CDOR. This language will be finalised and published after the results of ISDA's consultation on fallbacks for derivatives that reference CDOR is finalised.

In Brazil, the adoption of appropriately revised fallbacks, in the Brazilian overnight market, has been strengthening contracts in derivatives and cash market products. Currently, the interest rate derivatives market in Brazil is based on the DI rate.

In Hong Kong, the ISDA consultation on HIBOR could benefit local market participants by enhancing the robustness of the fallback language in derivatives contracts, and help to establish a fall-back calculation methodology for HONIA. For the cash markets, the Working Group on Alternative Reference Rate (WGARR) notes that the development of transition plans is

[97] https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/new-and-legacy-loan-transactions-referencing-sterling-LIBOR.pdf?la=en&hash=6D299ED6DA45ADFB308CEEA2AE1EDE3F96C380BB

[98] https://www.lma.eu.com/application/files/3815/4540/4296/LMA_Recommended_Revised_Form_of_Replacement_Screen_Rate_Clause_and_Users_Guide_-_MARKUP.pdf

gathering pace globally. The WGARR will further engage with local market participants to discuss and address issues related to the transition of cash products.

In Indonesia, local authorities have discussed with banks and most of the contracts for derivative transaction have fallback clause that allow banks to change the interest rate reference in case of IBOR discontinuance.

In Singapore, the SC-STS, which is the national working group that is overseeing the industry-wide transition from SOR, is reviewing the results of ISDA's May 2019 Supplemental Consultation concerning fallbacks for derivatives contracts that reference SOR. The SC-STS is expected to work with ISDA to incorporate contractual fallbacks for SOR, at the same time as for LIBOR, in the amended definitions and protocol.

5. Accounting, tax, and regulatory issues

Work is ongoing to uncover and address potential unintended hurdles to transition away from LIBOR (and potentially other IBORs) in the international regulatory, tax, and accounting environment. While many of these issues will need to be addressed at a national or regional level, the OSSG has established a subgroup to identify areas where global coordination on accounting, tax, or regulatory issues may be particularly beneficial in ensuring smooth transitions to RFRs as appropriate.

5.1 Private-sector views on global coordination

The FSB OSSG held a roundtable with trade associations in July 2019 to discuss a variety of issues, including to identify areas in which the private sector felt that international coordination on accounting, tax, or regulatory issues was needed. Subsequent input received from trade associations is also reported here.

At the FSB roundtable, there was general agreement on the importance of urgently finalising any actions related to changes in accounting standards aimed at reducing potential adverse accounting impacts that could occur in the period leading up to transition ("pre-replacement issues"), in order to focus on the longer-term implications. Private-sector participants expressed concerns about differing timelines for the relevant standard-setters considering accounting issues, and encouraged incorporation of more robust fallback language in order to overcome concerns such as the risk of de-designation of hedge accounting relationships simply as a result of documentation adjustments. Participants noted that particularly for multinational firms, coordination on accounting issues across jurisdictions is important. It is also important that organisations and bodies involved in defining the standards and oversight for the audit profession – such as the International Auditing and Assurance Standards Board (IAASB), the US Public Company Accounting Oversight Board (PCAOB) or the International Forum of Independent Audit Regulators (IFIAR) – are engaged and aware of benchmark transition issues.

Market participants also noted that certainty on tax outcomes is a key area where jurisdictional alignment is desired. Where parties to a transaction are in different jurisdictions, transition efforts may be held back if tax clarification has been made in one jurisdiction but not the other. It was noted that in some jurisdictions, depending on local tax law, tax rules are closely tied to accounting treatment, so that addressing accounting issues could then alleviative many tax issues.

At the request of the OSSG, the private sector collectively identified a range of regulatory hurdles for official sector consideration, drawing heavily on the work being progressed in individual jurisdictions. This includes issues that, while not truly global in nature, require regional solutions – and ideally timelines - to be aligned, particularly for those firms operating cross-border. Feedback from the private sector also noted that the visibility of efforts to consider regulatory issues is not consistent across jurisdictions.

The specific regulatory barriers identified can be broadly categorised as follows:

- **Prudential: risks and issues relating to prudential regulation and requirements**

  Prudential barriers were noted as a key issue. It was felt that the transition to RFRs could have a number of adverse impacts on prudential requirements, for example causing complications for risk models. In some cases, there may be a lack of historical data for 'new' RFRs. The solutions suggested were generally forbearance/regulatory relief rather than regulatory changes, to allow for a smooth transition.

- **Contract: risks and issues relating to language or structure of contracts involving reference rates**

  Another theme was whether amendments made to various instruments in the context of RFR transition – whether it be conversion of an IBOR-referencing contract to an RFR, or the insertion of a fallback – would be considered as creating a 'new' contract. This could have an impact on instruments currently subject to grandfathering arrangements, such as certain derivatives in respect of clearing or margining requirements, or securities in relation to US tax law or the new EU securitisation framework.

  In respect of derivatives, BCBS-IOSCO has released a statement that in principle, amendments to legacy derivative contracts pursued solely for the purpose of addressing interest rate benchmark reforms should not trigger the application of uncleared margining requirements. Market participants encouraged further confirmation of this at the jurisdictional level.

- **Conduct: risks and issues relating to the conduct of market participants**

  In some cases, uncertainty around managing the conduct risks arising from the transition to RFRs was seen as creating a regulatory hurdle. For example, how to ensure fair treatment of a borrower, including calculating a fair replacement interest rate, and communicating that change where the customer may be less sophisticated than wholesale market participants (i.e. in the retail market). The private sector noted that it would be helpful for global best practice/guidelines to be developed to support firms in developing appropriate conduct frameworks to support their transition efforts.

- **Market disruption: risks and issues which may cause disruption to the normal functioning of the market**

  The general comments around the importance of international coordination on timing and approach to benchmark reform and transition fall within this category of issues. In addition, the transition may cause some specific practical challenges for market participants, such as the need to update existing transaction reports for large volumes of derivative contracts at once.

The official sector will continue to consider the regulatory hurdles identified and seek to address these where appropriate.

5.2 Progress on international accounting standards

Progress is well underway in designing effective relief to alleviate potentially adverse accounting consequences arising both from "pre-replacement" issues and the effects of the actual transition to alternative benchmarks or RFRs. In several jurisdictions, the relevant accounting standard setting organisations are considering potential amendments to standards or interpretations necessary to achieve this relief.

Many of the reporting implications assessed so far relate to the effect of IBOR replacement on hedge accounting, which is an optional presentation treatment to recognise in the same accounting period the gains and losses of hedging instruments and hedged items that are part of a particular risk management strategy.

In May 2019 the International Accounting Standards Board (IASB) issued an exposure draft ("the ED"), proposing to disregard a potential transition to RFRs in the context of prospectively assessing whether a hedged forecast transaction is "highly probable", or whether a hedge is expected to remain effective. In a similar way, the ED proposed that assessment of whether non-contractually specified components of interest rate risk are separately identifiable takes place only at inception of the hedging relationship.[99] Following the consultation period and after considering the comments received, in September 2019 the IASB published amendments to its financial instruments Standards to address the pre-replacement effects.

Based on the input gathered from research activities and feedback from the ED, in August 2019 the IASB launched the second phase of the project to address the implications of IBOR reforms, aimed at considering the potential issues arising from actual replacement of the benchmark rates.[100] These include hedge accounting considerations as well as other aspects such as classification and measurement issues related to contract modifications, or the assessment of whether a financial instrument meets the criteria to be measured at amortised cost. A related ED is likely be released during Q1 2020.

5.3 Currency-area specific work

In the United States, the ARRC's Regulatory Issues and Accounting and Tax working groups have issued a number of documents identifying key areas of requested relief to make sure that market participants are not penalised either for signing the ISDA protocol or for closing out from LIBOR positions.[101] The Financial Accounting Standards Board (FASB) added SOFR to its list of hedge accounting benchmarks in 2018, and has created a project to facilitate the migration away from LIBOR and potentially other IBORs.

In November 2019, the FASB approved an Accounting Standards Update (ASU) that will provide guidance intended to ease the impacts of LIBOR transition; the final ASU is expected to be issued in early 2020.[102] The ASU will provide relief connected to hedge accounting requirements that will be affected by transition, but also regarding the effects of contract modifications. In particular, for modifications affecting debt instruments prospective recognition would be allowed, and those affecting other contracts meeting certain criteria would not require subsequent reassessment or re-measurement. This means that a change in a

[99] Full information on the IASB project related to pre-replacement issues can be found at https://www.ifrs.org/projects/2019/ibor-reform-and-its-effects-on-financial-reporting-phase-1

[100] More information on the IASB project related to replacement issues connected to IBOR transition can be found at https://www.ifrs.org/projects/work-plan/ibor-reform-and-its-effects-on-financial-reporting-phase-2

[101] See https://www.newyorkfed.org/arrc/publications

[102] The ASU and other information on the FASB's project can be found at https://www.fasb.org/referenceratereform.

contract's reference interest rate would be treated as a continuation of that contract –rather than the creation of a new contract – for accounting purposes.

The ARRC has issued two letters to the US Treasury requesting guidance on a number of tax issues related to the transition away from LIBOR and potentially other IBORs. The letters request guidance that modifying a financial instruments from referencing an IBOR to an RFR not be treated as a taxable event, that spread-adjusted fallback rates from an IBOR be treated as a qualified floating rate, and that a change in discount rate from an IBOR to another rate would not constitute a change in accounting method.

Subsequently, the United States Department of the Treasury and the Internal Revenue Service (IRS) issued in October proposed regulations allowing taxpayers to avoid adverse tax consequences from changing the terms of debt, derivatives, and other financial contracts to replace reference rates based on interbank offered rates (IBORs) with certain alternative reference rates.[103]

The ARRC has also issued letters to US regulators requesting certain relief from regulatory requirements. The letters requested inclusion of new fallback provisions via the ISDA protocol or amending a contract to move from referencing an IBOR to an RFR would not cause new margin, clearing, reporting, documentation or conduct requirements for legacy contracts currently exempt from such requirements. U.S. prudential regulators have now proposed relief from margin and clearing requirements associated with the LIBOR transition.

In the EURO area, the working group on euro risk-free rates set up a dedicated subgroup on hedge accounting and risk management issues. This subgroup addresses issues specific to the euro area, and both arising from the EONIA-€STR transition as well as the impact of triggering the fallbacks of EURIBOR. A related report was issued in November, focusing on the IFRS implications, and setting out recommendations regarding the modification of contracts and hedge accounting, directed to preparers and market participants.[104]

Regarding risk management issues, the group analysed the implications on IT systems and valuation infrastructure to identify the adjustments necessary in the risk management systems, especially in the context of EONIA to €STR transition. The group is working on developing a roadmap on necessary adjustments and specify the implications of regulatory requirements. The group also focuses on implications of EONIA transition for the ALM function and possible changes of the processes and in interest rate risks management. Subsequently, the group will analyse the issues related to the possible trigger of the Euribor fallbacks, and notably the consequences in case of inconsistencies of the fallbacks between the cash and derivative products.

The working group also published in July the summary of responses to a public consultation related to the legal aspect of the transition away from EONIA to the €STR.[105] Market participants flagged some regulatory issues that may impede the transition, such as the uncertainty on the application of margin and clearing requirements under the European Market

[103] See https://home.treasury.gov/index.php/news/press-releases/sm788

[104] The report can be accessed at: https://www.ecb.europa.eu/pub/pdf/other/ecb.wgeurofr_financialaccountingimplicationstransitioneoniaeurostrfallbackseuribor~6e1bb63340.en.pdf.

[105] https://www.ecb.europa.eu/paym/pdf/cons/euro_risk-free_rates/ecb.summaryofresponses01_201906.en.pdf

Infrastructure Regulation () for contracts amended with the objective of introducing fallbacks or replacing the rates. The Chair of the euro working group sent a letter to the EU Commission and European Securities and Markets Authority (ESMA) asking for clarifications to be provided on this issue. In addition to the EMIR requirements, market participants also shared concerns regarding the investment funds documentations and the need to replace the key information documents (KIDs) under the PRIIPs (Packaged retail and insurance-based investment products) regulation.

In Japan, in light of developments overseas, at the board meeting of the Accounting Standards Board of Japan (ASBJ) in March, the Chair of the Standards Advisory Council proposed to comprehensively address accounting issues arising from interest rate benchmark reform as a new agenda item. In response to this, the ASBJ decided to consider how to deal with the accounting issues arising from interest rate benchmark reform, including the necessity of standard development in a timely manner, and in accordance with the developments regarding the international accounting standards and the revision of relevant rules.

In the UK, the RFRWG established a Regulatory Dependencies Taskforce dedicated to identifying regulatory barriers to LIBOR transition. The Taskforce was chaired by the FCA with members drawn from a broad cross section of UK-industry. The Bank of England also attended in an ex officio capacity. The Taskforce identified several conduct and prudential issues, which were highlighted through letters sent by the RFR WG Chair to relevant authorities in October 2019; the FCA, Prudential Regulation Authority, Basel Committee and the EU Commission.[106] The RFR WG has requested authorities consider these barriers domestically but also encourages international coordination and alignment in the regulatory treatment of transition across relevant jurisdictions and different benchmarks.

Separately, the RFR WG also sent a letter to EIOPA in July 2019 welcoming further details on potential changes to the Solvency II risk-free rate.[107]

In response to RFRWG's letter and wider industry feedback, the FCA has published a statement intended to provide firms with greater clarity on the FCA's conduct expectations during LIBOR transition.[108]

In Switzerland, in June 2019, the NWG published a paper *IBOR to RFR transition: effects on financial reporting*.[109] It gives an overview of open issues with respect to the effects on financial reporting, mainly related to the optional "hedge accounting" treatment, and the current financial reporting environment (IFRS, US GAAP, SWISS GAAP FER). In November 2019, the NWG gave an update on those issues taking into account the recent announcements by IASB and FASB (see above). The main findings were that entities can assume that the hedged cash flows, hedged items, hedged risks, and corresponding hedging instruments are not altered as a result of the reform although the critical terms of these hedging relationships have changed (i.e., the interest rate). Hence, as there is likely no de-designation of hedge accounting, the

[106] Letter to the Financial Conduct Authority; Letter to the Prudential Regulation Authority; Letter to the Basel Committee on Banking; Letter to the EU Commission

[107] https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/uk-rfr-working-group-letter-european-insurance-and-occupational-pensions-authority.pdf?la=en&hash=B581CD6A956826409BAC3AD3C2FCF188FA08DBE4

[108] https://www.fca.org.uk/news/statements/conduct-risk-during-libor-transition-questions-and-answers

[109] The report can be accessed at: https://www.snb.ch/n/mmr/reference/SARON_hedgeacc_20190702/source/SARON_hedgeacc_20190702.n.pdf.

earnings volatility is not affected by the transition from IBOR to new reference rates. Additionally, the NWG elaborated on the potential effects of the LIBOR transition on insurance solvency models. The technical commission of the Swiss Insurance Association will discuss the topic further. Moreover, a summary of open issues was sent to the Financial Markets Supervisory Authority.

In Canada, CARR has established a new subgroup to monitor and assess the interactions between benchmark reforms and relevant domestic accounting, tax and regulatory frameworks.

In Hong Kong, the HKMA issued two circulars to banks in March 2019. One of the circulars reminded banks to make preparations for the transition to the new RFRs which include the identification, evaluation and management of key risks arising from the reform under different scenarios. The other circular clarified that genuine amendments to existing derivatives contracts which are made to give effect to interest rate benchmark reform will not be considered new contracts from the perspective of the HKMA's margin requirements. This could help address the uncertainty that local market participants are facing when transitioning their derivative contracts to the new RFRs. Recently in October 2019, the HKMA issued another circular to banks, informing them that the HKMA will start conducting a regular survey shortly to collect information on authorised institutions' exposures referencing IBORs and the progress of their preparatory work for the transition. At the same time, the WGARR continues to reach out to different stakeholders with a view to raising their awareness of the critical issues that may arise from the LIBOR transition, including the implications on accounting and tax treatments.

In Mexico, the BdM has been in close communication with the Mexican Financial Reporting Standard Board (CINIF) regarding the discussion and consultations made by the International Accounting Standard Board related to the impact that the IBOR benchmark reform will have on hedging accounting standards.

In Singapore, the MAS has reached out to local industry bodies and trade associations to initiate dialogue on accounting and tax related impediments to benchmark transition. MAS has also required major banks and insurers to assess and quantify key risks faced in relation to the LIBOR transition, including accounting, tax and regulatory issues, and provide associated governance arrangements and transition plans. In addition, MAS has issued a circular and clarified in its *Guidelines on Margin Requirements for Non-Centrally Cleared Derivatives Contracts* that genuine amendments to existing derivatives contracts for the sole purpose of addressing benchmark reforms would not qualify as new contracts in applying margin requirements. MAS will continue to monitor global developments in determining the appropriate next steps to address the impediments identified.

Appendix A – Mapping of major interest rate benchmarks to alternative reference rates

Currency	IBOR benchmark	Alternative reference rate	Type of alternative reference rate	Remarks
AUD	BBSW	RBA Cash Rate (AONIA)	Unsecured	Multiple-rate approach has been adopted
BRL	DI rate	Selic	Secured	Multiple-rate approach has been adopted
CAD	CDOR	CORRA	Secured	Multiple-rate approach has been adopted Need for a term RFR under consideration
CHF	LIBOR	SARON	Secured	Transition is necessary. A forward-looking term rate seems not feasible.[110]
EUR	LIBOR	€STR	Unsecured	EUR LIBOR is not in scope of the working group on euro RFR owing to its limited market usage as compared to EURIBOR.
EUR	EONIA	€STR	Unsecured	EONIA to be computed each day as the €STR plus a spread of 8.5 basis points until EONIA's discontinuation on 3 January 2022
EUR	Euribor	€STR	Unsecured	Term RFRs as fallbacks under consideration, meanwhile EURIBOR has been reformed to meet BMR requirements, which allows its continued use

[110] See minutes of the 20th NWG meeting, available at https://www.snb.ch/en/ifor/finmkt/fnmkt_benchm/id/finmkt_NWG_documents.

Currency	IBOR benchmark	Alternative reference rate	Type of alternative reference rate	Remarks
GBP	LIBOR	SONIA	Unsecured	Transition is necessary Proposals for a forward-looking term rate under development.
HKD	HIBOR	HONIA	Unsecured	Multiple-rate approach has been adopted
JPY	LIBOR	TONA or TIBOR	Unsecured	Transition is necessary Term RFR under development
JPY	TIBOR	TONA	Unsecured	Multiple-rate approach has been adopted
JPY	Euroyen TIBOR	TONA	Unsecured	Multiple-rate approach has been adopted
SGD	SIBOR	N/A	N/A	Rate not used in SGD derivatives
SGD	SOR	SORA	Unsecured	Derivatives will transition to SORA, while a multiple-rate approach will be adopted for cash markets
USD	LIBOR	SOFR	Secured	Transition is necessary Aiming to create a forward-looking term reference rate based on futures, OIS
ZAR	Jibar	To be determined (Reformed Jibar for existing derivative contracts. Choice of ZARibor and SASFR for new derivative contracts.)	Reformed Jibar : unsecured ZARibor: unsecured SASFR: secured	Multiple-rate approach recommended Treasury bill curve and GC repo market potential platforms for term RFRs

Appendix B – Members of the FSB OSSG Benchmark Group

Co-Chairs	**Andrew Bailey** Chief Executive Officer UK Financial Conduct Authority
	John Williams President and CEO US Federal Reserve Bank of New York
Australia	**Christopher Kent** Assistant Governor, Financial Markets Reserve Bank of Australia
Brazil	**Claudio Henrique da Silveira Barbedo** Deputy Advisor, Open Market Operations Department Central Bank of Brazil
Canada	**Harri Vikstedt** Senior Director, Financial Markets Department Bank of Canada
Hong Kong	**Clement Lau** Executive Director, Monetary Management Department Hong Kong Monetary Authority
Indonesia	**Priyanto B. Nugroho** Director, Financial Market Development Department Bank Indonesia
Japan	**Hiroki Ootake** Director, Head of Market Infrastructure Division, Financial Markets Department Bank of Japan
	Minoru Aosaki Director for International Banking Regulations Financial Services Agency
Mexico	**Rodrigo Cano** Director of Operations Support Bank of Mexico
Saudi Arabia	**Moath A. Alyousef** Head of Monetary Policy Section Saudi Arabian Monetary Authority
Singapore	**Cindy Mok** Executive Director, Monetary and Domestic Markets Management Department Monetary Authority of Singapore

South Africa	**Zafar Parker** Acting Head, Financial Markets Department South African Reserve Bank
Switzerland	**Marcel Zimmermann** Head, Money Market and Foreign Exchange Swiss National Bank
UK	**Andrew Hauser** Executive Director, Markets Bank of England
US	**David Bowman** Senior Advisor Federal Reserve Board of Governors
	Heath Tarbert Chairman Commodity Futures Trading Commission
EU	**Cornelia Holthausen** Deputy Director General Directorate General Market Operations ECB
EU	**Tilman Lueder** Head of Unit, Securities Markets European Commission
EU	**Anna Gardella** Banking Markets, Innovation and Products Unit EBA
EU	**Fabrizio Planta** Head, Markets Division ESMA
IOSCO	**Jean-Paul Servais** Vice Chairman of the Board (Belgium Financial Services and Markets Authority)
FSB Secretariat	**Simonetta Iannotti** **Pablo Perez** Members of Secretariat