



Public consultation by the working group on **euro risk-free rates**

on €STR-based EURIBOR fallback rates

23 November 2020

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1 Executive summary

In February 2018, the European Central Bank (ECB), the Financial Services and Markets Authority (FSMA), the European Securities and Markets Authority (ESMA) and the European Commission established the working group on euro risk-free rates (the working group)¹. The working group was tasked² with (i) identifying risk-free rates (RFRs) which could serve as the basis for an alternative to the current benchmarks used in a variety of financial instruments and contracts in the euro area, (ii) identifying best practices for contractual robustness, and (iii) developing adoption plans – and, if necessary, a transition plan – for legacy contracts which reference existing benchmarks.

A part of the working group’s mandate is to identify and recommend term structure and spread adjustment methodologies based on the euro short-term rate (€STR)³. These could serve as suitable EURIBOR fallback provisions for each financial product by taking into account a range of criteria set out in the document and, in addition, by considering the needs of end users. During this product-by-product assessment, the working group explored the feasibility of the various methodologies from an operational, accounting and valuation standpoint. These alternative €STR-based term structure and spread adjustment methodologies could function as robust and resilient EURIBOR fallback provisions. While there are no plans to discontinue EURIBOR, the fallback measures would cover a scenario in which the benchmark were to cease permanently, and would also make it possible for market participants to align with the International Organization of Securities Commissions (IOSCO) principles for financial benchmarks and comply with Article 28(2) of the EU Benchmarks Regulation (BMR).

The aim of this public consultation paper is to survey market participants, organisations representing market participants, and other interested stakeholders, with regard to the most appropriate EURIBOR fallback provisions for cash products. The paper covers:

- 1) the most appropriate EURIBOR fallback rate based on (a) a €STR-based term structure methodology for each financial product assessed against a list of key criteria, and (b) a spread adjustment methodology used to avoid potential value transfer if a fallback is triggered;
- 2) the market conventions which should be used to calculate the compounded term rate based on the €STR.

¹ [Joint press release from FSMA, ESMA, the ECB and the EC](#) announcing the launch of the working group on euro risk-free rates, 21 September 2017. The first meeting of the working group took place on 26 February 2018.

² See [Terms of reference for the working group on euro risk-free rates](#); [Composition of the working group on euro risk-free rates](#).

³ The working group on euro risk-free rates [selected the €STR as the euro risk-free rate in September 2018](#). The €STR will be used as the basis for constructing future EURIBOR fallback rates, and reflects the wholesale euro unsecured overnight borrowing costs of banks located in the euro area. It is calculated daily by the ECB and is based entirely on granular statistical information collected in compliance with the ECB’s Money Market Statistical Reporting (MMSR) Regulation.

Table 1. EURIBOR fallback measures for cash products surveyed in this consultation paper

Products	Corporate lending	Retail mortgages/ consumer loans/ SME loans	Current accounts	Trade finance products	Export and emerging markets finance products	Debt securities	Securitisations	Transfer pricing model		Investments funds (benchmarking)
Fallback methodology recommended for the first level of the waterfall	BWL lookback	FWL	BWL payment delay	FWL	FWL	BWL lookback	<i>Depending on the underlying assets</i>	For corporates and some financials: FWL	For most financials: BWL lookback	FWL? BWL lookback?
Fallback methodology recommended for the second level of the waterfall (if needed)	N/A	BWL last reset up to 3M or BWL lookback	N/A	BWL last reset	BWL Last reset up to 3M	N/A	<i>Depending on the underlying assets</i>	BWL last reset	N/A	BWL lookback
Spread adjustment	Historical mean/median methodology									

1) (a) €STR-based term structure methodology

The working group considered two types of **€STR-based term structure methodology** as a component of EURIBOR fallback measures.

- 1) Forward-looking term structures⁴ would be based on the derivatives markets referencing the €STR and reflect market expectations of the evolution of the €STR during the upcoming interest rate period. They would be known at the start of the interest rate period⁵.
- 2) Backward-looking term structures⁶ are based on simple mathematical calculations of the value of past realised daily fixings of the overnight risk-free rate over a given period of time. The working group analysed the **payment delay**, the **lookback period** and the **last reset** methodologies considered viable⁷ for specific asset classes, and its conclusions are subject to this public consultation.

Based on an analysis of various pre-set selection criteria, and by considering (1) the Financial Stability Board (FSB) guidance, (2) the EURIBOR fallback measures included by the International Swaps and Derivatives Association (ISDA) in its *2006 Definitions* and *IBOR Fallbacks Protocol*⁸ and (3) the recommendations of risk-free rates working groups in other jurisdictions, the working group acknowledges that **for more sophisticated, globally operating market participants the most appropriate EURIBOR fallback measure would be a backward-looking lookback period term structure methodology.**

However, the working group also acknowledges that there may be **some use cases for certain products or for less sophisticated, locally operating market participants where it is clearly necessary to know the interest rate in advance, therefore the forward-looking term structure methodology would be better suited** ensuring a higher client acceptance, or for which consistency with ISDA's proposals for derivative

⁴ Forward-looking rates rely on the €STR derivative markets and capture interest rate expectations.

⁵ See *Recommendations of the working group on euro risk-free rates on the transition path from EONIA to the €STR and on a €STR-based forward-looking term structure methodology*, 13 March 2019.

⁶ Backward-looking rates rely on compounding of the €STR.

⁷ See *Update by Subgroup 2 on term rate methodologies*, 29 August 2019.

⁸ See the ISDA *IBOR Fallbacks Protocol*, published on 23 October 2020 and effective on 25 January 2021.

products might be less relevant. The working group has identified a number of use cases which might require a forward-looking term structure methodology to be introduced on the first level of the waterfall fallback. However, either the backward-looking lookback period methodology or the last reset term structure methodology (or another robust alternative such as the central bank rate) would be included on the second level of the waterfall structure in case the forward-looking term structure methodology were not (yet) available when the EURIBOR fallback measure was triggered. The use cases are:

- mortgages, consumer loans and SME loans;
- trade finance products, where financing is granted on a discounted interest basis;
- export and emerging markets finance products, where the counterparties involved include export credit agencies (ECAs), multilateral agencies, state-owned companies, government ministries and sovereigns;
- transfer pricing models for some financial and non-financial companies.

Finally, the working group is seeking feedback from market participants as to which methodology – forward-looking or backward-looking *lookback period* – would be most appropriate for building a €STR-based term structure that could function as a EURIBOR fallback provision for benchmarking purposes for investment funds.

1) (b) Spread adjustment methodology

The working group considers that by **adding a spread adjustment to the €STR-based term structure methodology** market participants would establish a EURIBOR fallback that is economically equivalent, allowing a value-neutral transition to the extent possible if EURIBOR ceased to exist. The advantage of using the historical mean/median spread adjustment methodology is that it is easy to understand. It will also be consistent with the spread adjustment methodology that will be included in ISDA derivatives referencing EURIBOR and with USD and GBP-denominated cash products referencing LIBOR. This will facilitate ease of hedging and alignment between jurisdictions/across asset classes. **The working group therefore considers the historic mean/median spread adjustment to be the most appropriate methodology for calculating a spread adjustment to be included in a EURIBOR fallback measure.**

2) Market conventions to be used in the calculation of the compounded term rate based on the €STR

For those cash products for which it is proposing the use of a backward-looking term structure, **the working group recommends that market participants use the compounded average methodology, as described in the [public consultation on the publication by the ECB of compounded term rates using the €STR](#).**

With regard to **market conventions**, in this consultation paper the working group is seeking market feedback as to whether there is any appetite for using a spread adjustment and/or an all-in rate to (at least) facilitate a EURIBOR fallback measure consisting of (i) compounded €STR rates, as proposed, and (ii) a spread adjustment.

In addition, the working group recommends using the compounded average methodology without including a floor (e.g. a zero floor) on the daily €STR value but applying, instead, any floor only to the sum of the compounded term rate the spread adjustment.

Third, the working group discussed two ways of determining loan interest – either considering, or not considering, the principal outstanding to be a part of the compounded rate calculation (compounding the rate or compounding the balance). As a methodology, based on its simpler calculation and its consistency with the derivatives market, the working group recommends compounding the rate.

Finally, in respect of the backward-looking lookback period term structure methodology, there are generally two ways of applying a compounded rate in a contract – these differ in respect of the way the daily €STRs are weighted, depending on whether an observation shift is applied or not. The shift methodology is seen as a more natural measure of interest over the period and would be consistent with the convention adopted for the publication of the indices across jurisdictions and by ISDA. The working group therefore recommends use of the backward-looking lookback period with an observation shift, noting that the lag approach is a viable and robust alternative for market participants wishing to use that approach (e.g. to ensure consistency with the USD and GBP loan markets).

If the feedback received on the aspects included in this consultation paper points to market consensus, this will support the final recommendations from the working group. However, the working group would like to draw the attention of all market participants to the fact that application of the working group’s recommendations will be on a voluntary basis. All market participants will need to come to their own independent decision as to whether any suggested recommendations are adopted and used in their respective contracts and, if so, to what extent.

Responses to this consultation should be sent to eurorfr@ecb.europa.eu by 15 January 2021, 17:00 CET. The ECB provides the secretariat for the working group and is publishing the public consultation document in this capacity. The ECB does not, however, accept any responsibility or liability for the contents of the document, and the fact that the ECB provides the secretariat for the working group should not be taken as implying in any way that it shares the views expressed in the document. The ECB and the European Commission will evaluate all the responses and prepare an anonymised summary of the feedback. This summary will be published on the ECB’s website and will be considered by the working group at its meeting on 18 February 2021. Final recommendations on the EURIBOR fallback measures are expected shortly thereafter.

Disclaimer

This public consultation is not intended to provide operational, valuation, legal, regulatory or other advice, and should not be construed or relied on in any manner as such. The information (of a legal, factual or any other nature) included in the public consultation has not been independently verified. It is not comprehensive and may change. The members of the working group disclaim any obligation or undertaking to update of, correct, keep current or otherwise revise the content of this public consultation. The working group does not assume any responsibility for any use to which this document may be put, including any use of this document in connection with a privately negotiated transaction.

This public consultation discusses a variety of options relating to the introduction of €STR-based fallback clauses for new contracts and financial instruments referencing EURIBOR. Recipients of this public consultation are responsible for making their own assessments as to the suitability of the various options discussed in the document. Recipients must continue to operate in an independent and competitive manner and they should not use the content of this document to coordinate their activities in breach of applicable law.

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2 Background, objectives and scope

2.1 Background

In 2013, IOSCO published a set of principles⁹ that administrators of financial benchmarks should comply with. Among other things, the data used to construct a benchmark determination should be sufficient to accurately and reliably represent the interest measured by the benchmark. Data should be:

- based on prices, rates, indices or values that have been formed by the competitive forces of supply and demand, in order to provide confidence that the price discovery system is reliable;
- anchored by observable transactions entered into at arm's length between buyers and sellers in the market, for the interest the benchmark measures, so that the data can function as a credible indicator of prices, rates, indices or values.

By that time, the G20 had also mandated the FSB with conducting a global review of the main benchmarks and plans for their reform, in order to ensure that these were coherent and coordinated to the extent possible. To that end, the FSB established the Official Sector Steering Group (OSSG).

In its 2014 report "Reforming major interest rate benchmarks"¹⁰ the FSB recommended:

- strengthening existing reference rates by underpinning them, to the greatest extent possible, with transaction data;
- developing alternative, nearly risk-free reference rates.

In 2016, the OSSG formally launched a third major initiative to improve contract robustness and address the risks of widely-used interest rate benchmarks being discontinued. The OSSG invited ISDA to lead this work as it pertained to derivative contracts – the largest source of activity for the IBORs.

In the euro area, these reform efforts were accelerated by the adoption of the [EU Benchmarks Regulation \(BMR\)](#)¹¹ which codifies the IOSCO Principles into EU law.

In September 2017 the ECB, the FSMA, ESMA and the European Commission announced the launch of the working group on euro risk-free rates¹².

The working group was tasked¹³ with (i) identifying risk-free rates which could serve as the basis for an alternative to the current benchmarks used in a variety of financial instruments and contracts in

⁹ [Principles for Financial Benchmarks](#), IOSCO, July 2013.

¹⁰ [Reforming Major Interest Rate Benchmarks](#), FSB, July 2014; [FSB Progress report 2019](#).

¹¹ Regulation (EU) 2016/1011 of the European Parliament and of the Council of 8 June 2016 on indices used as benchmarks in financial instruments and financial contracts or to measure the performance of investment funds and amending Directives 2008/48/EC and 2014/17/EU and Regulation (EU) No 596/2014 (Text with EEA relevance), OJ L 171, 29.6.2016, p.1.

¹² See [Joint press release FSMA, ESMA, ECB and the EC](#), 21 September 2017.

¹³ See [Terms of Reference of the Working Group on euro risk-free rates](#).

the euro area, (ii) identifying best practices for contractual robustness, and (ii) developing adoption plans – and, if necessary – a transition plan for legacy contracts which reference existing benchmarks.

EURIBOR is the commonly used term rate for euro denominated financial contracts. EURIBOR reflects the rate at which wholesale funds in euro can be obtained by credit institutions in EU and EFTA countries in the unsecured money market, and seeks to measure banks' costs of borrowing in unsecured money markets. In 2016, EURIBOR was declared a critical benchmark by the European Commission. Its administrator, the Euro Money Markets Institute (EMMI), has conducted in-depth reforms in recent years in order to meet the BMR requirements, by strengthening its governance framework and developing a hybrid methodology in order to ground the calculation of EURIBOR, to the extent possible, in euro money market transactions.

In July 2019, the supervisor of EURIBOR, the FSMA, granted authorisation¹⁴ to EMMI for EURIBOR under the BMR. This authorisation provides confirmation that EMMI and the EURIBOR hybrid methodology meet the requirements laid down in the BMR and that EURIBOR may continue to be used in new and legacy contracts.

However, contracts and financial instruments which reference EURIBOR need to incorporate workable fallback provisions. This would reduce potential uncertainties in the event of any disruption to EURIBOR in the future and would be in line with the IOSCO principles for financial benchmarks¹⁵. For supervised entities, as well as financial instruments and contracts that fall within the scope of the BMR, introducing robust fallback provisions would also contribute to meeting the requirements laid down in Article 28(2) of the BMR.

A part of the working group's mandate is to identify and recommend term structure and spread adjustment methodologies based on the €STR RFR. These could serve as suitable EURIBOR fallback provisions for each financial product by taking the needs of end users into account. During this product-by-product assessment, the working group explored the feasibility of the various methodologies from an operational, accounting and valuation standpoint. These alternative €STR-based term structure and spread adjustment methodologies could function as robust and resilient EURIBOR fallback provisions. While there are no plans to discontinue EURIBOR, the fallback measures would cover a scenario in which the benchmark ceased permanently, and would also make it possible for market participants to align with the IOSCO principles for financial benchmarks and comply with Article 28(2) of the BMR.

Finally, it should be noted that on 24 July 2020, the European Commission published its [Proposal for a Regulation of the European Parliament and of the Council](#) amending the BMR as regards the exemption of certain third country foreign exchange benchmarks and the designation of replacement benchmarks for certain benchmarks in cessation¹⁶. It is expected that the EC Proposal will be the subject of interinstitutional negotiations between the European Parliament, the Council and the Commission during November/December 2020.

¹⁴ See FSMA press release: [FSMA authorises EMMI as administrator of the EURIBOR benchmark](#), 3 July 2019.

¹⁵ See [IOSCO principles for financial benchmarks](#), July 2013.

¹⁶ Proposal for a Regulation of the European Parliament and of the Council amending Regulation (EU) 2016/1011 as regards the exemption of certain third country foreign exchange benchmarks and the designation of replacement benchmarks for certain benchmarks in cessation, 24 July 2020.

According to the proposed legislation, the European Commission would be empowered to designate a statutory rate to replace references to a critical or otherwise systemically relevant benchmark that will no longer be published at a given moment in the future. In particular, the empowerment would ensure that statutory or mandated replacement rates published outside of the European Union could apply to all financial contracts, financial instruments and performance measurements tools entered into or used by a supervised entity subject to the BMR if fallbacks are not already stipulated. However, **this statutory solution would be a solution of last resort and should not be interpreted by market participants as replacing due compliance with Article 28(2) of the BMR.**

The legislative proposal, if endorsed by the European Parliament and Council, would require that, in exercising the new powers, the European Commission take into account the recommendations of the risk-free rate working groups convened by the public authorities of the relevant currency areas covered by the benchmark in cessation. As the designation powers are premised on relevant working groups on risk-free rates recommending a replacement rate, applicable spread adjustment to avoid unwanted value transfer and conforming contract changes, the European Commission invited the working group on euro risk-free rates to address these aspects in their final recommendations¹⁷.

2.2 Objectives and scope

Through this public consultation, the working group invites feedback from market participants with regard to the most appropriate EURIBOR fallback provisions for cash products, while taking into account the needs of end users. The aim is to ensure there would be a smooth transition if EURIBOR were discontinued.

The euro RFR, the €STR, which was recommended by the working group in September 2018¹⁸, forms the starting point for creating a EURIBOR fallback provision. The €STR reflects the wholesale euro unsecured overnight borrowing costs of banks located in the euro area¹⁹.

The next step for the working group will be to identify the most appropriate EURIBOR fallback methodology based on (i) a €STR-based term structure methodology for each financial product that has been assessed against a list of key criteria, and (ii) a spread adjustment methodology used to minimise potential value transfers once the fallback has been triggered. The working group acknowledges the EURIBOR fallback measures for derivatives products that ISDA included in (1) the *2006 ISDA Definitions*²⁰ for new transactions and (2) the *IBOR Fallbacks Protocol* for legacy contracts, if market participants choose to adhere to it²¹.

The working group considered two types of €STR-based term structure methodology as components of the EURIBOR fallback provisions:

¹⁷ See the [minutes](#) of the 10 September Working Group meeting.

¹⁸ See [Private sector working group on euro risk-free rates recommends ESTER as euro risk-free rate](#), September 2018.

¹⁹ The €STR is calculated daily by the ECB and is entirely based on granular statistical information collected in compliance with the ECB's Money Market Statistical Reporting (MMSR) Regulation.

²⁰ The *2006 ISDA Definitions* have been amended by several Supplements including the [IBOR Fallbacks Supplement](#), published on 23 October 2020 and becoming effective on 25 January 2021.

²¹ See the ISDA [IBOR Fallbacks Protocol](#), published on 23 October 2020 and effective on 25 January 2021. Further information on the methodology may be found in the [Rule Book](#) published by Bloomberg.

- 1) forward-looking term structures²², that could be based on the methodology recommended on 14 March 2019 by the working group²³;
- 2) backward-looking term structures²⁴, that could be based on methodologies presented during the working group's meeting on 29 August 2019²⁵.

The forward-looking term structure considered in this public consultation is based on €STR Overnight Index Swaps (OIS) committed quote-based methodology that was publicly examined by the working group in 2019^{26 27}. This methodology may become available once the OIS market based on the new €STR is sufficiently developed²⁸ to support the production of a robust benchmark by one or several administrator(s) that is compliant with the BMR and is accepted by the market. The main features of the forward-looking term structure are described in Chapter 3.

In order to assess the backward-looking term structures, the working group took note of the eight possible options described in the user guide published by the FSB in June 2019²⁹. After taking into account various criteria applicable for euro-denominated financial products, the working group views three backward-looking term structures based on a compounding of the €STR as feasible: payment delay, lookback period and last reset. The main features of the backward-looking term structures are detailed in Chapter 4.

In Chapter 5, based on a set of selection criteria, the working group outlines the pros and cons of each term structure methodology for each financial product, and asks market participants to provide feedback on the appropriate term structure methodology for each asset class. During this process, the working group took into account its general recommendations from a risk management and a financial accounting perspective, i.e. market participants are advised to ensure that the variability of fallback rates between different financial products (including derivatives) is kept to a minimum to reduce hedging mismatch risks, technical implementation challenges, and complexity³⁰. In addition, the working group considered the robustness/availability, operational ease, and client acceptance of the respective term structure methodologies. Finally, the working group also examined the consistency of the proposed approach for each asset class across jurisdictions.

²² Forward-looking rates rely on the €STR derivative markets and capture interest rate expectations.

²³ [Recommendations of the Working Group on euro risk-free rates on the transition path from EONIA to the €STR and on a €STR-based forward-looking term structure methodology](#), 13 March 2019.

²⁴ Backward-looking rates rely on a compounding of the €STR.

²⁵ See [Update by Subgroup 2 on term rate methodologies](#), 29 August 2019.

²⁶ See [Second public consultation by the Working Group on euro risk-free rates on determining an ESTER-based term structure methodology as a fallback for EURIBOR-linked contracts](#), 20 December 2018.

²⁷ See [Summary of responses to the second public consultation by the Working Group on euro risk-free rates on determining an ESTER-based term structure methodology as a fallback for EURIBOR-linked contracts](#), February 2019.

²⁸ On this specific topic, the Working Group has already published a [report](#) on the transfer of EONIA's cash and derivatives markets liquidity to the €STR, which identified the main drivers and key actions required to transition from EONIA to the new benchmark rate.

²⁹ [FSB overnight risk-free rates: A user's guide](#), 4 June 2019.

³⁰ See recommendation 13 of the [Report by the working group on euro risk-free rates on the risk management implications of the transition from EONIA to the €STR and the introduction of €STR-based fallbacks for EURIBOR](#), 17 October 2019 and recommendation 6 of the [Report by the working group on euro risk-free rates on the financial accounting impact of the transition from EONIA to the €STR and the introduction of €STR-based fallbacks for EURIBOR](#), 5 November 2019.

In Chapter 6, the working group seeks market feedback on the spread methodology to be applied to the EURIBOR fallback measures, and which should be included in EURIBOR-linked contracts in order to minimise potential value transfer if the EURIBOR fallback rate is triggered.

In Chapter 7, the working group invites and assesses feedback on the market conventions to be used to calculate the compounded term rates based on the €STR, using the compounded average methodology as described in the ECB's [public consultation](#) and in [the summary of responses to this public consultation](#).

In conjunction with this public consultation on EURIBOR fallback rates, the working group also launched a public consultation on [EURIBOR fallback trigger events](#). This is proposing a generic set of fallback trigger events that market participants could consider including in their contracts and in financial instruments referencing EURIBOR. Both consultations are launched in parallel to allow market participants to have a comprehensive view of the two essential elements applying to fallback measures, i.e. the EURIBOR fallback trigger event and the EURIBOR fallback rate.

It is essential for the working group to obtain feedback from market participants so it can ascertain whether the analysis performed and the EURIBOR fallback measures identified enjoy general support. The ECB and the European Commission will evaluate all responses and will prepare an anonymised summary of the feedback. This summary will be published on the ECB's website and will be reviewed by the working group at its meeting on 18 February 2021. Final recommendations on EURIBOR fallback measures are expected shortly thereafter.

While not legally binding, the working group's recommendations could support a more homogeneous and consistent development of robust fallback measures for EURIBOR-linked contracts across market participants and segments. The widespread adoption of uniform fallback measures, as well as the greater use of the €STR as the basis for EURIBOR fallback measures across cash and derivatives market products, is expected to enhance the workability of these fallbacks in the event of EURIBOR cessation.

The working group therefore strongly encourages interested stakeholders to respond to this public consultation, and would appreciate feedback from as broad a range of respondents as possible, including users of EURIBOR-linked products from different sectors and categories.

3 Forward-looking term methodology

Similar to EURIBOR, a future €STR-based forward-looking term rate would be available at the start of an interest period, based on the derivatives markets referencing the €STR, includes market expectations on the evolution of the €STR during that interest period. As they are derived via an *in advance* methodology, forward-looking rates make cash flow forecasting easier as the next interest payment is known at the start of the interest period. This may be important for some products and clients, as Chapter 5 explains. A liquid €STR derivatives market³¹ that provides sufficient price information in a reliable and transparent manner is a prerequisite for producing forward-looking term rates.

On 14 March 2019, as a part of its search for suitable EURIBOR fallback provisions, the working group suggested that an OIS tradable quotes-based methodology could be used to calculate a €STR-based forward-looking term structure. The working group had analysed four possible forward-looking approaches, building on the future €STR-based derivatives markets (OIS and futures markets) that could be used to derive a term rate³², and its recommendation took into account the feedback received in response to its second public consultation³³.

The OIS quotes-based methodology uses committed tradable quotes to construct a term rate which represents future market expectations for the overnight €STR. This methodology would use the mid-price for €STR OIS quotes obtained from regulated electronic trading venues (i.e. multilateral trading facilities (MTFs)). In the case of a tradable quote, the individual dealer showing this quote must be willing and able to transact at this specific price, for the specific volume, at exactly this point in time³⁴. The benchmark could be a point-in-time fixing (for example at 11:00 CET, as is the case for EURIBOR) with a short predefined period for collecting the quotes. To ensure the integrity of such a rate, the administrator(s) would apply protection measures, which would include using randomised snapshots during a given data collection window, and conducting liquidity checks. The OIS quotes-based method relies on several technical assumptions, specifically: (i) dealers providing liquidity in tradable quotes for specific tenors should construct a global order book with sufficiently high market depth (i.e. quoted volumes), and (ii) tight bid/offers in all market conditions are needed in order to minimise the risk of undue impacts and to increase the robustness of the term rate.

³¹ On this specific topic, the working group has already published a [report](#) on the transfer of EONIA's cash and derivatives market liquidity to the €STR. This report identifies the main drivers and key actions required to transition from EONIA to the new benchmark rate.

³² The three alternative methodologies were: (i) OIS transaction based; (ii) a composite methodology combining the quotes-based methodology with any available transaction data, according to certain weightings; (iii) a futures-based methodology, computing the term rate by bootstrapping between overlapping exchange-traded €STR futures in respect of a sequence of predefined intervals. For further background to the selection see [Second public consultation by the working group on euro risk-free rates on determining an ESTER-based term structure methodology as a fallback in EURIBOR-linked contracts](#).

³³ See the [Second public consultation by the working group on euro risk-free rates on determining an ESTER-based term structure methodology as a fallback in EURIBOR-linked contracts](#) and [The summary of responses to the second public consultation](#).

³⁴ This differs from an indicative quote, where the institution is not actually required to trade at this level.

The Working Group also acknowledged³⁵ that this forward-looking term structure methodology would necessitate:

- 1) a successful transition from EONIA to the €STR with a significant transfer of liquidity to €STR OIS markets;
- 2) a transparent and regulated underlying derivatives market, such as trading on MTFs;
- 3) sufficient sources of data to capture most market activity.

In addition to this, the forward-looking methodology would also necessitate (i) at least one authorised administrator being able to produce such rates; (ii) a sufficiently diversified distribution of counterparties in order to obtain a representative and non-biased rate, and (iii) authorisation by its supervisor.

The current liquidity of the €STR OIS market remains modest³⁶. However, the liquidity of the €STR market is expected to deepen following the CCPs' discounting switch from EONIA to €STR on 27 July 2020, and is expected to increase towards the same level of liquidity observed in the current EONIA OIS market until such time as EONIA ceases to exist on 3 January 2022. It should be noted that since EONIA has changed its underlying methodology to become a tracker rate of €STR + 8.5 bps, the liquidity transfer from the EONIA OIS market to the €STR OIS market has already taken place in reality, with the two markets becoming fungible from both a risk and a liquidity point of view. However, the high level of concentration in the current OIS market remains a concern, and a more diversified distribution of counterparties would enhance the development of a representative forward-looking term rate. Other conditions relating to market data availability, as well as potential agreements with the MTFs with regard to sourcing these data, remain the responsibility of the future administrator(s).

Five administrators³⁷ have expressed an interest in providing an €STR forward-looking term rate in the future. Following the publication of a call for expressions of interest³⁸, in October 2019 the working group received feedback and methodology proposals from five interested benchmark administrators: EMMI, FTSE Russell, ICE Benchmark Administration, Refinitiv and IHS Markit. Their presentations and proposals are available on the working group's website³⁹.

In July 2020, the working group on euro risk-free rates received an update⁴⁰ from the above-mentioned administrators on their plans, allowing market participants to better assess whether these rates might be feasible and, if so, under what conditions and with what possible time horizon. Given the current lack of €STR-based transactions, the working group will re-assess the situation towards the end of 2020.

³⁵ See [Recommendations of the working group on euro risk-free rates on the transition path from EONIA to the €STR and on a €STR-based forward-looking term structure methodology](#), 14 March 2019.

³⁶ In September 2020, 1.2% of new euro OIS volumes were traded against €STR, according to [LCH data](#) publicly available.

³⁷ Note that there are now only three potential administrators as ICE Benchmark Administration and EMMI have submitted a joint proposal, and IHS Markit has suspended their work on developing forward-looking term structures.

³⁸ [Call for expressions of interest: looking for an administrator for a €STR-based forward-looking term structure as a fallback in EURIBOR-linked contracts](#).

³⁹ See [Working group on euro risk-free rates](#).

⁴⁰ [Survey replies on forward-looking rates production](#), 2 July 2020.

For reasons of competition law, it is important to mention that the working group will not be able to choose or recommend a particular benchmark administrator for these forward-looking term rates⁴¹. Instead, any preferred administrator and forward-looking term rate will be chosen by benchmark users.

⁴¹ See the [minutes](#) of the meeting of the working group on euro RFR rates on 16 October 2019.

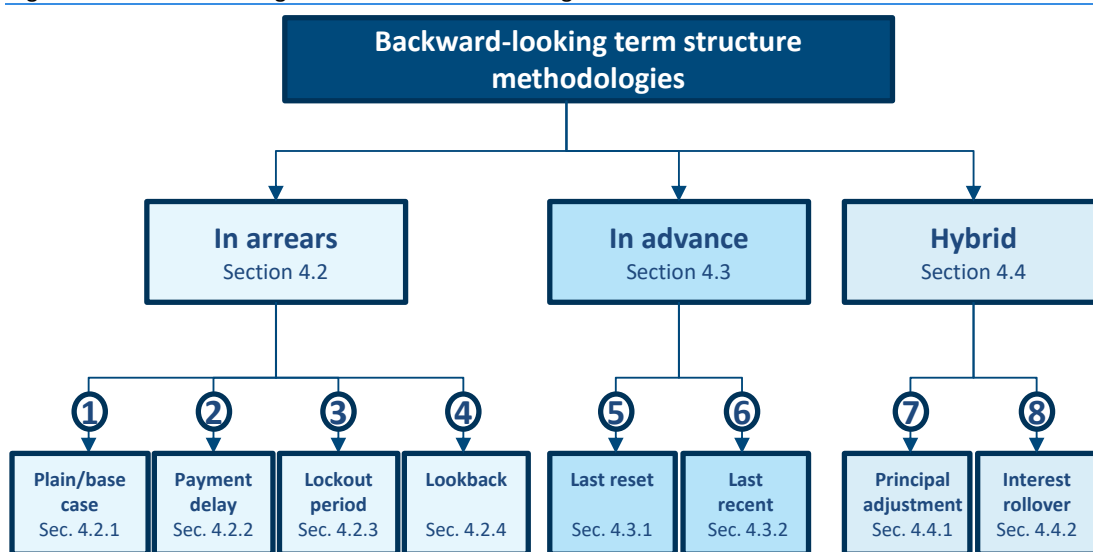
4 Backward-looking term methodologies

4.1 Introduction

The following section gives an overview of the various backward-looking methodologies currently under consideration. Much of the source material for this section is taken from the FSB's paper published in June 2019⁴². In all cases, the methodologies are based on actual overnight RFR fixings and do not incorporate forward-looking expectations. In all the various methodologies (apart from last recent) these overnight fixings are compounded to calculate an average rate. It is important to note that the working group has assumed that the use of simple averaging rather than compound averaging would not be appropriate as it ignores the fundamental principle of the time value of money. Although this difference may not be significant in a low-rate environment it could become material in a volatile or higher-rate environment.

The methodologies may be grouped into three main types: (1) *in arrears*, (2) *in advance*, and (3) a hybrid combination of *in advance* and *in arrears*.

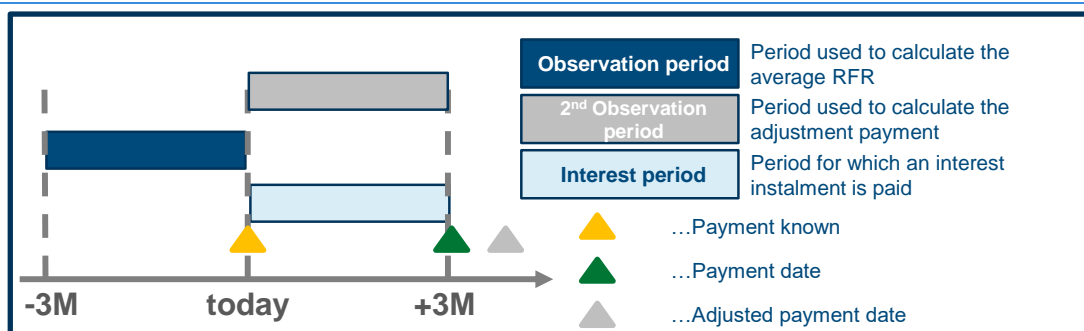
Figure 1. Backward-looking term structure methodologies



For each methodology there are two (or three in the case of the hybrid methodology) different periods to consider, as shown in the diagram below. The observation period is the period in which the overnight risk-free rates are observed and actually realised, while the interest period is the specific period over which the money is actually borrowed or lent.

⁴² *Overnight Risk Free Rates, A User's Guide*, June 2019.

Figure 2. Colour coding explanation for the calculation of the backward-looking methodologies



Based on the colour coding above, a diagram is shown below for each methodology.

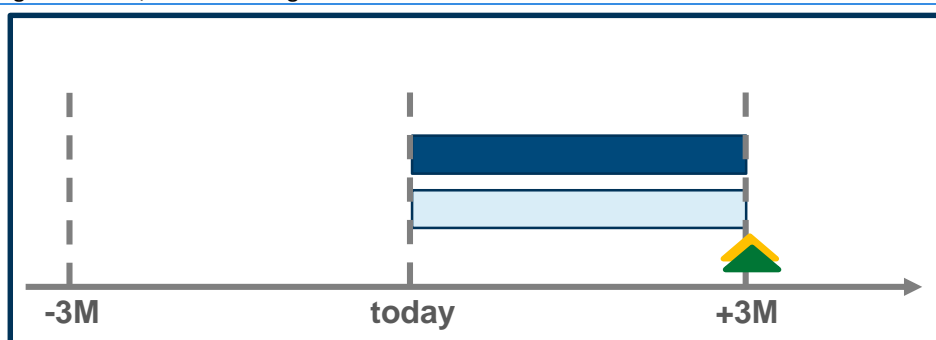
4.2 In arrears

4.2.1 Plain/base case

In the base case, the observation period is identical to the interest period. The notional is paid at the start of the period and is repaid, together with the last interest payment, on the last day of the contract period. A plain *in arrears* structure reflects the movement in interest rates over the full interest period, and payment is made on the day that it would naturally be due.

However, given the publication timing of the €STR on T+1, this option has the disadvantage of requiring payment on the same day that the final payment amount is known, which creates a number of challenges in terms of operational cash flow management.

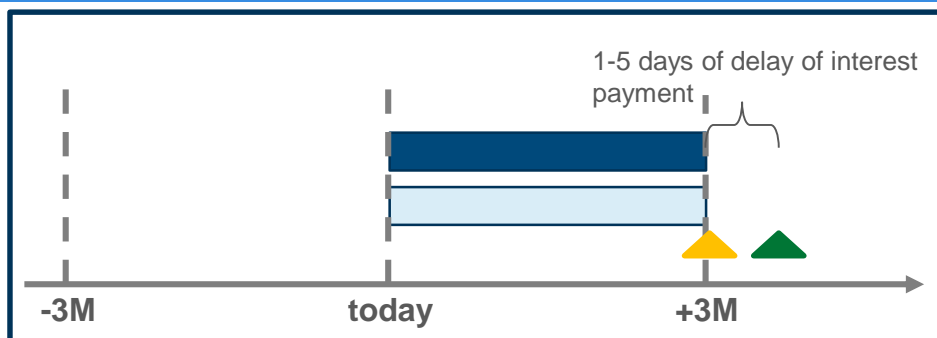
Figure 3. Plain/base case diagram



4.2.2 Payment delay

In contrast to the base case, the interest payments are delayed by a certain number of days and are, therefore, due the same number of days after the end of an interest period. The idea is to provide more time for operational cash flow management. In the last interest period, the interest payment is due after the repayment of the notional, which leads to a mismatch of cash flows and may be difficult to handle from both an operational and a credit risk perspective.

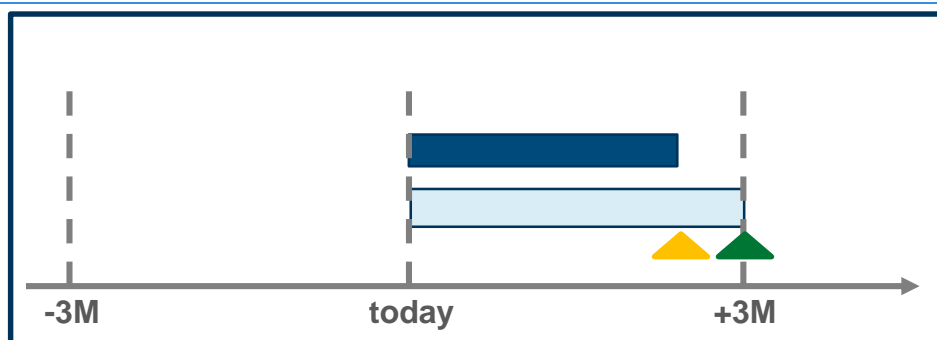
Figure 4. Payment delay diagram



4.2.3 Lockout or suspension period

In this option, the €STR is frozen (or “locked-out”) for a certain number of days prior to the end of an interest period (the “lockout period”). During this time, the €STR of the day prior to the start of the lockout period is applied for the remaining days of the interest period. As a result, the compounded €STR can be calculated a number of days before the end of the interest period. This option has been used by some USD floating rate notes (FRNs) referencing the Secured Overnight Financing Rate (SOFR) with a lockout period of typically four days. A consequence of the lockout period is that the calculation of the interest rate might be seen as less transparent for clients and more complicated for product providers to implement. In addition, the option involves interest rate risk that is difficult to hedge due to potential changes in the €STR during the lockout period.

Figure 5. Lockout or suspension period diagram



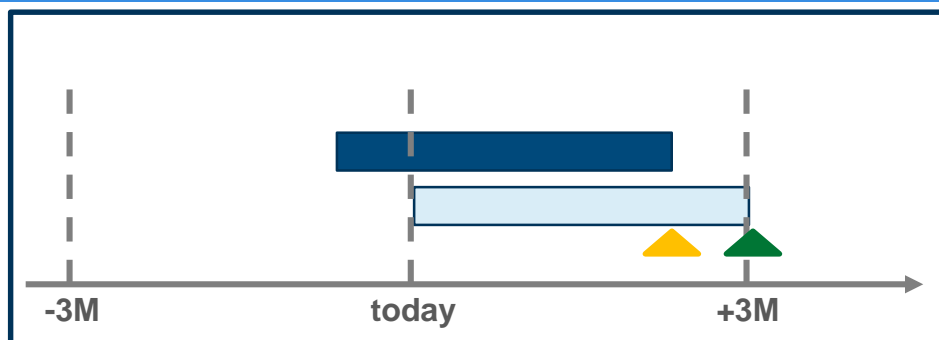
4.2.4 Lookback period

In contrast to the base case, the observation period for the interest rate calculation starts and ends a certain number of days prior to the interest period. As a result, the interest payment can be calculated prior to the end of the interest period. This option is used by ISDA in its 2006 Definitions and *IBOR Fallbacks Protocol*, where ISDA has included EURIBOR fallbacks based on the *compounded setting in arrears* rate with a two-day lookback period⁴³. In addition, the option is predominantly

⁴³ Please note that lookback can be used with or without an observation shift. The distinction between these two methodologies is discussed further in Section 7.4 of this paper.

used for FRNs referencing the Sterling Overnight Index Average (SONIA) with a five-day lookback period, and there has also been SONIA loan activity using this option. The option involves slightly increased interest rate risk due to changes in the yield curve over the lifetime of the product, although there are ways to hedge this risk, if necessary.

Figure 6. Lookback period diagram

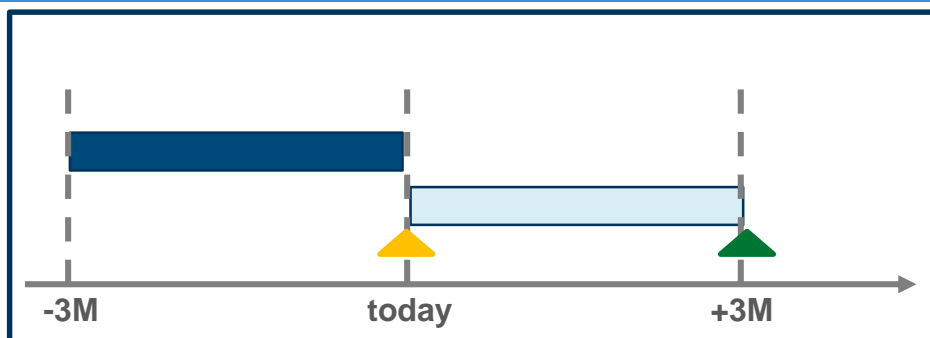


4.3 In advance

4.3.1 Last reset

The last reset methodology uses the same basic calculation as the base case/payment delay/lookback methodologies, where the observation and interest periods are of the same duration and the average RFR is calculated for the whole observation period. The fundamental difference in the case of the last reset methodology is that the observation period referenced is the period immediately preceding the interest period. The exact interest rate is therefore known at the start of the interest period, although it references rates observed in the market from the previous period. As the rate is known at the start of the interest period, the interest payment date can be at the end of the interest period. However, this option involves interest rate risk that is difficult to hedge due to potential changes to the €STR during the current interest period compared with the previous observation period.

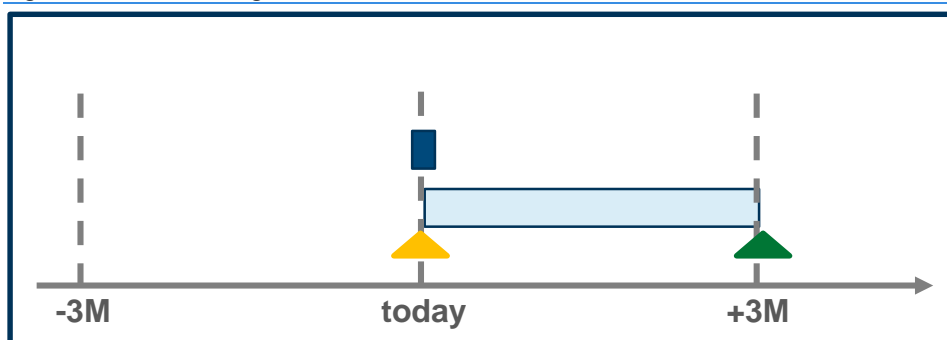
Figure 7. Last reset diagram



4.3.2 Last recent

In this option, a single €STR or an averaged €STR for a low number of days is applied for the entire interest period. Given the short observation period, the interest payment is already known in advance and is due on the last day of the interest period. In this option, the interest rate risk cannot be hedged using existing instruments.

Figure 8. Last recent diagram

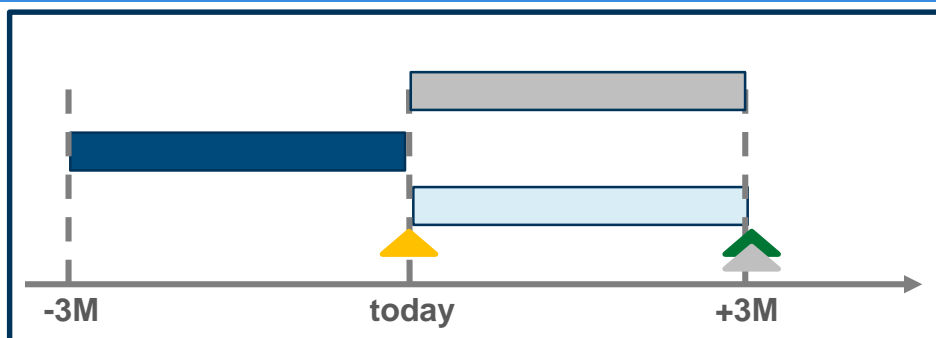


4.4 Hybrid combinations of in arrears and in advance

4.4.1 Principal adjustment

This option combines a first payment (instalment payment) known at the beginning of the interest period with an adjustment payment known at the end. The calculation of the instalment payment may be based on compounded €STR during the first observation period, which is the period immediately preceding the interest period. The calculation of the adjustment payment is based on the differential between the instalment payment and the compounded €STR during the interest period and is paid at the end of the interest period by either party (i.e. an additional payment made by the client or a repayment made by the product provider). As a result, a part of the interest payment is already known at the start of the period. End users would, however, find this option very difficult to understand given that they would be informed of an interest payment projection at the beginning of the interest period and the final payment at the end of the interest period. In addition, the option is difficult to hedge and is also operationally and computationally complex.

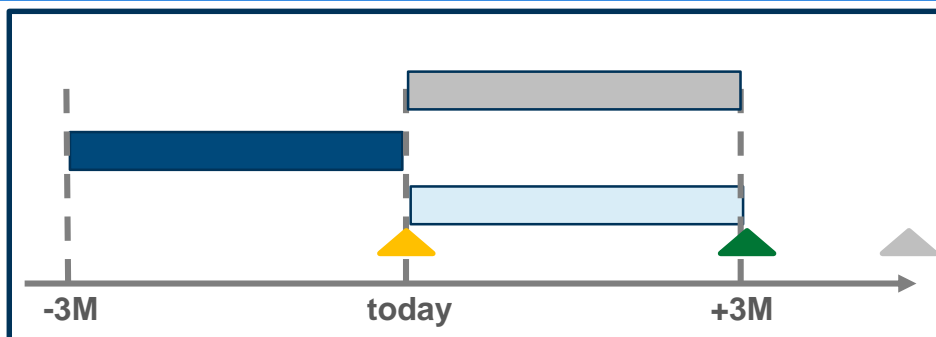
Figure 9. Principal adjustment diagram



4.4.2 Interest rollover

This option also combines a first payment (instalment payment) known at the beginning of the interest period with an adjustment payment known at the end of the interest period. The difference from the previous option is that the adjustment payment is delayed – it can be made a few days later or at the end of the next period. End users would, however, find this option very difficult to understand given that they would be informed of an interest payment projection at the beginning of the interest period and the final payment at the end of the interest period. In addition, the option is difficult to hedge and is also operationally and computationally complex.

Figure 10. Interest rollover diagram



4.5 Summary and conclusion

The working group considered the viability of all the above backward-looking methodologies based on operational and computational ease, client acceptance, hedging ease and period congruency⁴⁴. On the basis of these criteria, several methodologies were deemed non-viable and were therefore discarded from any further analysis of suitable EURIBOR fallback measures, for the reasons below.

- The plain/base case (see Section 4.2.1) methodology was discarded due to significant operational complexity, as fixing and payment take place on the same day. Given the publication timing of the

⁴⁴ See *Update by subgroup 2 on term rate methodologies*, 29 August 2019.

RFR €STR on T+1, this option creates a number of challenges in terms of operational cash flow management.

- The lockout period (see Section 4.2.3) methodology was viewed as more operationally complex than the lookback methodology and was also seen as exposed to the potentially extreme values of a single overnight fixing (although to a lesser extent than the last recent methodology).
- The last recent (see Section 4.3.2) methodology was viewed as too exposed to the potentially extreme values of a single overnight fixing or a short period of overnight fixings applied for the full interest period.
- Both hybrid methodologies (see Section 4.4.1 and Section 4.4.2) were deemed to be too operationally and computationally complex for widespread use across asset classes.

Although the **last reset** (see Section 4.3.1) methodology has the clear disadvantage of inconsistency between the observation period and the interest period, it was decided it should still be included on the shortlist of potential backward-looking term structure methodologies, given that it is the only backward-looking option retained for which the rate is known at the beginning of the interest period.

The working group therefore concluded that the options which may be considered potentially viable for specific asset classes and which should be subject to this public consultation are the **payment delay** (Section 4.2.2), the **lookback period** (See section 4.2.4) and the **last reset** (Section 4.3.1) methodologies. This is generally consistent with the practical examples already seen in the market and the conclusions of RFR working groups in other jurisdictions. Table 1 below provides a summary of the conclusions of the working group for each individual methodology.

Table 2. Overview of the backward-looking methodologies

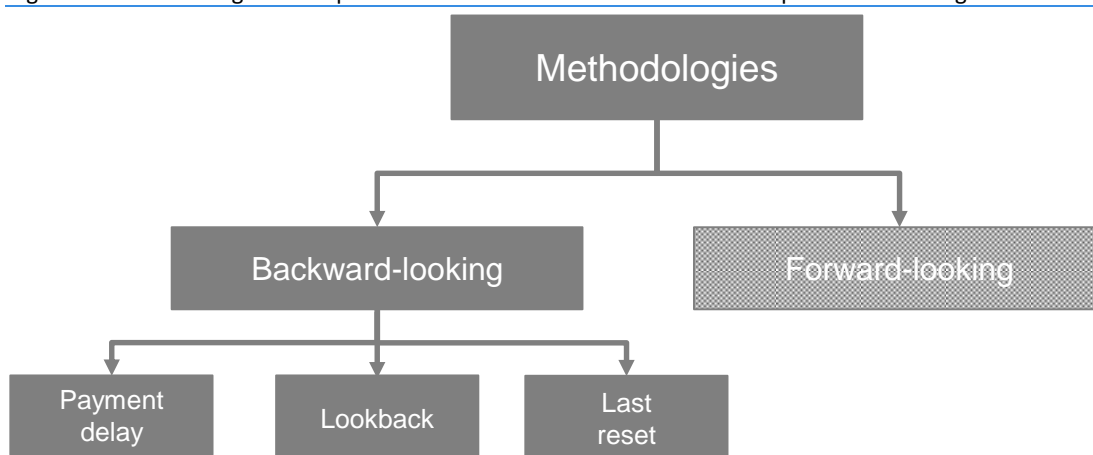
Methodology	Operational ease/cash flow mgmt.	Computational ease/mechanics	Hedging ease	Client acceptance	Period congruency	Examples of usage	Conclusion
Plain/base case (Section 4.2.1)	Significant operational complexity	Simple and transparent calculation	Limited hedging issues	Low	Consistent	Observed in some derivatives markets	●
Payment delay (Section 4.2.2)	Some operational complexity	Simple and transparent calculation	Limited hedging issues	High for specific asset classes	Consistent	OIS derivatives market	●
Lockout period (Section 4.2.3)	Significant operational complexity	Slightly higher complexity and lower transparency	Relevant hedging issues expected	Low	Small mismatch	SOFR FRN market	●
Lookback period (Section 4.2.4)	Some operational complexity	Simple and transparent calculation	Hedging ease expected	High for specific asset classes/users	Small mismatch	Derivatives SONIA FRNs, SONIA loans, SARON loans markets	●
Last reset (Section 4.3.1)	Operationally straightforward	Simple and transparent calculation	No hedging possibility	High for specific asset classes/users	Inconsistent	Proposed solution by other WGs for mortgages	●
Last recent (Section 4.3.2)	Operationally straightforward	Simple and transparent calculation	No hedging possibility	Low	Inconsistent	Not observed	●
Principal adjustment (Section 4.4.1)	Significant operational complexity	More complex and less transparent calculation	Relevant hedging issues expected	Potentially low	Becomes consistent with the incorporation of the adjustment rate	Not observed	●
Interest rollover (Section 4.4.2)	Significant operational complexity	More complex and less transparent calculation	Relevant hedging issues expected	Potentially low	Becomes consistent with the incorporation of the adjustment rate	Not observed	●

5 Fallback rates for EURIBOR: an analysis of possible alternatives

5.1 Introduction and general approach

As described in Chapter 3 and Chapter 4, Figure 2 below shows the methodologies identified by the working group to derive €STR-based term structures that could be used as EURIBOR fallback measures.

Figure 11. Methodologies in scope for the assessment of fallback rates for specific asset categories.



Note: When using the rates obtained through these methodologies as fallback provisions in legacy and new EURIBOR-based contracts, a spread adjustment should be added to mitigate any potential value transfer if the fallback is triggered (see Chapter 6).

As Chapter 3 explains, **forward-looking term structure methodologies** would be based on the derivatives markets referencing the €STR, reflecting market expectations on the evolution of the €STR during the upcoming interest rate period, and would be known at the start of the interest rate period.

As Chapter 4 explains, **backward-looking term structure methodologies** are based on simple mathematical calculations of the value of past realised daily fixings of the overnight RFR over a given period of time. Strictly speaking, these are not new methodologies, and are in fact agreed calculation methods that could become available and could be used with immediate effect. The working group analysed the **payment delay**, the **lookback period** and the **last reset** methodologies it considered to be potentially viable for specific asset classes, and its conclusions are subject to this public consultation. The payment delay and lookback period are known at the end of the interest rate period, whereas the last reset is known at the start of the interest rate period.

Following a list of key criteria, Chapter 5 analyses the suitability and appropriateness of these potentially viable term structure methodologies as EURIBOR fallbacks for different types of

products⁴⁵: corporate lending, mortgages, consumer and SME loans, current accounts, debt securities, securitisations and derivatives. It also includes some sector-specific analysis for trade finance, export and emerging markets finance and investment funds, as well as some model-specific analysis for the transfer pricing models.

The analysis of the term structure methodologies to be used as EURIBOR fallback rates takes into account two major developments which could influence the selection of the most appropriate choice: (i) the EURIBOR fallback rates developed by ISDA for derivative products in the *2006 ISDA Definitions*⁴⁶ and *IBOR Fallbacks Protocol*⁴⁷, and (ii) the guidance of public authorities, as expressed by the FSB.

(i) The [Results of the ISDA Supplemental Consultation on Spread and Term Adjustments, including Final Parameters thereof, for Fallbacks in Derivatives Referencing EUR LIBOR and EURIBOR, as well as other less widely used IBORs](#) show broad market support for ISDA's proposed fallbacks to be applied to EURIBOR and EUR LIBOR derivatives. The working group acknowledges the EURIBOR fallback measures for derivatives products that ISDA included in (1) the *2006 ISDA Definitions* for new transactions, and (2) the *IBOR Fallbacks Protocol* for legacy contracts, if market participants choose to adhere to it⁴⁸. These will therefore not form part of this public consultation.

(ii) The FSB highlighted in its [July 2018 report on interest benchmark reform](#) that the transition to risk-free rates will only reduce current vulnerabilities if it addresses the core weakness of the IBORs – the lack of deep and liquid underlying markets. To the extent that overnight RFRs are more strongly rooted in transactions than alternative measures, they represent the most robust options available to the market.

At the same time, the FSB has argued that the greater robustness of overnight RFRs means they are a better choice of reference rate when market participants do not need forward-looking term rates.

Finally, it should also be noted that in order to mitigate any potential value transfer if EURIBOR fallback provisions are triggered, a spread adjustment should be added to rates calculated using these term structure methodologies. An analysis of such a spread adjustment is included in Chapter 6.

5.2 Criteria used in the analysis

In order to support the analysis conducted in this chapter to identify the most appropriate €STR-based term structure methodology to be used as a EURIBOR fallback, the working group has identified a list of selection criteria. These criteria seek to represent the most common and important aspects to be considered by EURIBOR users when assessing the functionality and

⁴⁵ In order to propose a list of products, the working group analysed current EURIBOR-referenced products and grouped these according to their main characteristics from an operational and a market standpoint. This list is slightly more detailed than that included in the public consultation on trigger events published by the working group, as the introduction of fallbacks has a number of operational implications.

⁴⁶ The *2006 ISDA Definitions* have been amended by several Supplements including the [IBOR Fallbacks Supplement](#), published on 23 October 2020 and becoming effective on 25 January 2021.

⁴⁷ See the ISDA [IBOR Fallbacks Protocol](#), published on 23 October 2020 and effective on 25 January 2021.

⁴⁸ Further information on the methodology may be found in the [Rule Book](#) published by Bloomberg.

feasibility of €STR-based term structure methodologies that could function as EURIBOR fallback rates. The different methodologies might satisfy these criteria to different degrees, and the weight of each may also vary, depending on the market sector, business model and product category.

The working group emphasises that this list of criteria is not intended to be exhaustive, and other criteria could become important under different circumstances and for specific market sectors.

Criteria used in the analysis

- **Robustness/availability:** refers to representative rates anchored in active, deep and liquid underlying markets, as well as in more adverse market conditions. The criterion also refers to the methodology's immediate and daily availability to market participants.
- **Operational ease:** refers to the scale of operational implications and systems that need to be updated and integrated to accommodate the methodology analysed, e.g. IT systems, skills, knowledge and procedures.
- **Client acceptance:** evaluates the risk associated with the client's understanding and acceptance of the methodology analysed. The level of acceptance may vary, depending on client needs and whether the client is a sophisticated market participant or an end-user (e.g. retail, SMEs and municipalities may have different needs compared with large multinational corporates).
- **Hedging ease and hedge accounting impacts:** assesses whether the hedging of the corresponding cash product can be easily carried out for the methodology analysed, i.e. it evaluates the level of consistency between hedging instruments and hedged items, and whether the methodology itself could cause hedging inefficiencies. In parallel, this criterion also evaluates whether the methodology analysed could have any economic impact under IFRS9 or IAS39 due to potential hedge ineffectiveness or, even, the discontinuation of hedge relationships.
- **Other accounting impacts:** evaluates whether the methodology analysed could have any other economic impact under IFRS that has not already been addressed under the previous criterion.
- **Risk management impacts:** evaluates whether the methodology analysed has any impact on risk models, IT systems, procedures and other aspects affecting risk management activities.
- **Consistency with other jurisdictions and across asset classes:** evaluates the level of consistency between the methodology analysed and methodologies used for other asset classes or in other jurisdictions.

5.2.1 Evaluation of the €STR-based term structure methodologies on the basis of the selection criteria

Table 3. Evaluation of the €STR-based term structure methodologies on the basis of the selection criteria

Assessment	Forward-looking	Backward-looking		
		Payment delay	Lookback period	Last reset
Robustness/availability	●	●	●	●
Operational ease	●	●	●	●
Client acceptance				
<i>Professional market players</i>	●	●	●	●
<i>Corporates</i>	●	●	●	●
<i>SME/consumers</i>	●	●	●	●
Hedging ease and hedge accounting impacts	●	●	●	●
Other accounting impacts	●	●	●	●
Risk management impacts	●	●	●	●
Consistency with other jurisdictions/asset classes	●	●	●	●

Colour code	
<i>Feasible</i>	●
<i>Feasible with some minor changes/drawbacks</i>	●
<i>Feasible with some relevant changes/drawbacks</i>	●
<i>Questionable feasibility</i>	●

The above evaluation of €STR-based term structure methodologies on the basis of the selection criteria is explored further below.

1) **Robustness/availability**

This criterion refers to representative rates anchored in active, deep and liquid underlying markets, as well as in more adverse market conditions. The criterion also refers to its immediate and daily availability to market participants.

Backward-looking term structure methodologies

The €STR is an overnight fully transaction-based benchmark which represents the most active, deep and liquid bucket of the unsecured euro money market. It has been computed and published by its administrator, the ECB, on a daily basis since 2 October 2019.

The €STR's underlying methodology is transparent and includes a data sufficiency policy which ensures the rate is robust, even during the most adverse market conditions. It is governed by the €STR Guideline and its legal framework is in line with international best practices covering the provision of financial benchmarks, in particular the IOSCO Principles for financial benchmarks.

The backward-looking term structure methodologies under consideration can, therefore, be constructed and made available on a daily basis by compounding the published €STR. On 24 July 2020, the ECB announced that it is considering publishing daily compounded €STR rates for standard tenors, as well as a compounded index to be used for non-standard maturities, and it solicited the views of the public by launching a public consultation⁴⁹. Given that the backward-looking methodologies are the most robust options available in the market, their immediate availability, and the fact that the ECB would become their administrator, the working group assessed the three backward-looking methodologies as “feasible” with regard to this criterion.

Forward-looking term structure methodologies

The current liquidity of the €STR OIS market remains modest⁵⁰. However, the liquidity of the €STR market is expected to deepen following the CCPs’ discounting switch from EONIA to the €STR that took place on 27 July 2020, and is expected to increase towards the same level of liquidity observed in the current EONIA OIS market until such time as the EONIA ceases to exist on 3 January 2022. It should be noted that since EONIA has changed its underlying methodology to become a tracker rate of €STR + 8.5 bps, the liquidity transfer from the EONIA OIS market to the €STR OIS market has already taken place in reality, with the two markets becoming fungible from both a risk and a liquidity point of view. However, the high level of concentration in the current OIS market remains a concern, and a more diversified distribution of counterparties would enhance the development of a representative and non-biased forward-looking term rate. Other conditions that need to be in place for a forward-looking term structure methodology to become available⁵¹, relating to market data availability and potential agreements with the MTFs to source these data, remain the responsibility of the future administrator(s). The working group will therefore ask potential administrators for status updates, in order to monitor and assess the progress the administrators are making in developing a forward-looking term rate.

In addition, the working group notes the guidance provided by the FSB, as mentioned in Section 5.1, referring to the fact that the greater robustness of overnight RFRs makes them a better choice of reference rate for those cases in which market participants do not require forward-looking term rates. In addition, the public authorities acting as observers to the working group on euro risk-free rates have reiterated this guidance and emphasise that robust fallback provisions should include references to available alternatives which, in turn, should be representative of active, deep and liquid underlying markets.

For these reasons and given that the forward-looking term rates are not yet available, the working group assessed the forward-looking methodology according to this criterion as “feasible with some relevant changes/drawbacks”.

⁴⁹ [ECB announces public consultation on the publication of compounded €STR rates](#), July 2020.

⁵⁰ In September 2020, 1.2% of new euro OIS volumes were traded against €STR, according to LCH data publicly available.

⁵¹ Conditions for a forward-looking methodology to become available (See Chapter 3):

- 1) a significant transition from EONIA to the €STR, with a significant transfer of liquidity to €STR OIS markets,
- 2) a transparent and regulated underlying derivatives market, such as trading on MTFs,
- 3) sufficient sources of data to capture most market activity,
- 4) at least one authorised administrator able to produce such rates,
- 5) a sufficiently diversified distribution of counterparties in order to obtain representative and non-biased rates.

2) Operational ease

This criterion refers to the scale of operational implications and systems that need to be updated and integrated to accommodate the methodology analysed, i.e. IT systems, skills, knowledge and procedures.

All methodologies would require a certain element of adaptation in terms of IT systems, procedures and education. However, the scale of this adaptation varies according to the technical characteristics of each methodology.

In addition, the working group also takes also into account the analysis included in its [report on the risk management implications of the transition from EONIA to the €STR and the introduction of €STR-based fallbacks for EURIBOR](#), stating that “...the more diverse fallback rates across contracts are, the higher is the impact on systems in view of the implementation and maintenance costs for a multitude of scenarios”.

Backward-looking term structure methodologies

The compounded rates, in particular the applicable rates computed under the payment delay and the lookback period methodologies – given that these are *in arrears* methodologies – can only be calculated and made available at the end (or shortly before the end) of the interest period. For this reason, payments may be more difficult to manage from an operational standpoint and may have a greater impact on IT systems and operations. The required changes to IT systems and processes could create a temporary operational burden, especially for those market participants not used to operating with compounded rates (it should be noted that market participants with LIBOR exposures will have to go through changes of this nature in any case during the replacement of LIBOR). In addition, in the case of *payment delay*, the separation of principal and interest would further increase the operational burden in respect of cash products.

On the other hand, the *last reset* methodology would require less adaptation effort, given that it shares some characteristics with EURIBOR (both are rates calculated *in advance*).

Taking into account that the ECB, as the administrator of the €STR, has announced that it intends to publish (i) compounded values of the €STR for selected maturities⁵² as well as (ii) an index that will allow users to compute rates for non-standard dates, market participants may not be required to compute the backward-looking rates in their individual processes and systems, thereby also avoiding potential discrepancies in the calculations. This could ease operational implementation. It should be noted, however, that some markets may require systems which accommodate the calculation of daily interest accruals, or may have other features. This could mean that they may not be able to reference the compounded values or index.

Based on all these considerations, the working group has assessed the backward-looking *payment delay* and *lookback period* term structure methodologies as “feasible with some relevant

⁵² The compounded value of the €STR published by the ECB is applicable in a contract that uses the compounded rate with an observation period shift, where the average compounded rate is calculated by weighting the rates of the observation period by the number of calendar days in the observation period. The compounded value of the €STR published by the ECB is not applicable in a contract that uses the compounded rate without an observation period shift (a lag approach), in which case the average compounded rate is calculated by weighting the rates of the observation period by the number of calendar days in the interest rate period.

changes/drawbacks” and the backward-looking *last reset* term structure methodology as “feasible with some minor changes/drawbacks”.

Forward-looking term structure methodology

The advantage of a forward-looking term structure is that it allows users to know the applicable rate at the start of the interest rate period. For this reason, it is easier to manage payments from an operational standpoint and there is less impact on IT systems and operations. As this is the methodology that is most similar to EURIBOR, which is also a forward-looking rate, the working group considers its operational implementation to be “feasible”, with less impact than the backward-looking methodologies.

3) **Client acceptance**

This criterion evaluates the risk associated with the client’s understanding and acceptance of the methodology analysed. The level of acceptance may vary, depending on client needs and whether the client is a sophisticated market participant or an end-user client (e.g. retail, SMEs and municipalities may have different needs compared with large multinational corporates).

Backward-looking term structure methodologies

On 24 July 2020 the ECB announced that it was considering publishing compounded term rates, and that it was soliciting the views of the public through a public consultation⁵³. Through this process the ECB provided full transparency on the underlying methodology used to compute the backward-looking rates, thereby ensuring that compounded rates were better understood. Publication by the ECB would also free market participants from having to compute these rates themselves and explain the underlying methodology to their individual clients.

It should be noted that in some cases it may not be feasible to use published sources of this type, given the characteristics of specific products (e.g. syndicated loans which have daily floors due to the absence of a floor in the proposed index and compounded rates). In addition, in the opinion of the working group, although providing the €STR compounded by the ECB also enhances its acceptance by clients, the *in arrears* methodologies (*payment delay* and *lookback period*) still pose some acceptance challenges, especially in the case of less sophisticated clients. In general, clients prefer to know at the *start* of the interest period the interest amount due at the *end* of the interest period, so they can manage their cash positions. With the *in arrears* methodologies, this information can only be calculated a limited number of days before the interest payment date, impacting clients’ liquidity planning. Although it is still possible to carry out liquidity planning, this would be done with less precision than under any fixing-in-advance methodology such as the *last reset* backward-looking or forward-looking term structure methodologies.

In addition, the working group explored potential issues relating to the possible non-compliance of some backward-looking methodologies with civil law in some EU countries. This is because: (i) some consumer protection provisions make it mandatory for the retail party to know its interest rate payment in advance (i.e. *in arrears* methodologies may be problematic unless a sufficient payment delay applies), (ii) there is the risk that backward-looking methodologies, for which the RFR is

⁵³ [ECB announces public consultation on the publication of compounded €STR rates](#), July 2020.

calculated using a compounded average, may be interpreted as charging interest on interest, a practice that is restricted or even banned in some European jurisdictions (“anatocism”).

The latter issue applies to all compounded risk-free rates (including the SOFR and the SONIA). It could be argued that a compounded RFR does not impose “interest on interest”, but is instead a mathematical formula used to calculate the rate and the interest due for a predefined interest period. The backward-looking RFR compounded term rate represents the time value of money for transactions using an overnight RFR, where the interest amount is paid at the end of the interest period and not on a daily basis. Compounded rates are widely used in financial products, e.g. in the calculation of OIS rates. However, there is currently no case law in place to confirm this interpretation, so potential legal risk should not be completely disregarded in the relevant countries, even when compounded term rates are calculated and published by the ECB using a methodology which is a market standard and represents the time value of money for contracts and which pays the interest due at a predefined periodicity.

The working group noted that the issue might affect some EU Member States, so potential solutions should be sought within each country affected and addressed at the local level. For example, national authorities in the countries affected could provide legal certainty by clarifying the application of national legislation or, if necessary, making amendments to provisions in existing national legislation. It was also noted that, in the context of the syndicated loan market, the issue was not purely domestic in the sense that if the law applicable to the loan contract chosen by the parties does not recognise and enforce compounding (due to public order rules against anatocism), this could have an impact on all parties involved, even those based in a jurisdiction different from that in which the law is applicable, given that syndicated loans are often international in nature and have counterparties from multiple jurisdictions. In view of this wider impact, it may be helpful for European authorities to conduct education and outreach initiatives with local authorities in respect of the transition.

Taking all these aspects into account, the working group considers the backward-looking *payment delay* term structure methodology to be “feasible” when dealing with professional market players, “feasible with some relevant changes/drawbacks” when dealing with corporates, and as having “questionable feasibility” when dealing with retail/SME clients.

The working group considers the backward-looking *lookback period* term structure methodology to be “feasible” when dealing with professional market players and “feasible with some relevant changes/drawbacks” when dealing with corporates and retail/SME clients.

The working group considers the backward-looking *last reset* term structure methodology to be “feasible” for all types of clients.

Forward-looking term structure methodology

The advantage of a forward-looking term structure methodology is that the rate would be calculated and made publicly available by an administrator at the start of the interest rate period. Because the methodology is similar to that of EURIBOR, forward-looking rates would be, in the opinion of the working group, easy for all types of market participants to accept. For this reason, the working group considers this criterion to be “feasible” for the forward-looking term structure methodology.

4) Hedging ease and hedge accounting impacts

This criterion assesses whether the hedging of the corresponding cash product can be easily carried out for the methodology analysed, i.e. it evaluates the level of consistency between hedging instruments and hedged items, and whether the methodology itself could cause hedging inefficiencies. In parallel, the criterion also evaluates whether the methodology analysed could have any economic impact under IFRS9 or IAS39 due to potential hedge ineffectiveness or, even, the discontinuation of hedge relationships. It should be noted that hedging considerations are more important for some cash products than for others.

For hedging derivatives, it is important to note that ISDA included the following EURIBOR fallbacks in its *2006 ISDA Definitions* and *IBOR Fallbacks Protocol*: (1) a €STR-based backward-looking *lookback period* term structure methodology with a two-day backward shift adjustment, and (2) a five-year historical median approach for the spread adjustment.

As the working group explained in its report on the financial accounting implications of the introduction of €STR-based fallback measures for EURIBOR⁵⁴, for market participants to continue their hedge relationships as they were originally constructed based on EURIBOR, the EURIBOR fallback measures to be included in the hedged item and hedging instrument should, ideally, align. This will be the case if, for those hedged cash products where this is considered viable, market participants use the same backward-looking *lookback period* term structure methodology with a two-day backward shift adjustment and the same five-year historical median approach for the spread adjustment that ISDA included in the *2006 ISDA Definitions* for new derivatives contracts and in the *IBOR Fallbacks Protocol* for legacy derivatives contracts.

However, there could be several valid reasons for including alternatives in certain hedged cash products that may differ from the EURIBOR fallback measure used by ISDA. For hedged cash products where a forward-looking or backward-looking *last-reset* term structure methodology is considered to be the EURIBOR fallback measure, there will be differences compared with the ISDA hedging derivatives that will include the backward-looking *lookback period* term structure methodology, as both the underlying methodology and the timing of setting the interest rate payments are different. In particular for longer tenors (e.g. 1yr EURIBOR), this could result in unintended P&L volatility due to hedge ineffectiveness and, even, the discontinuation of hedge relationships under IAS39. This would have significant financial implications, in particular, for large EURIBOR-linked mortgage portfolios that are often cash flow hedged by the lender. In addition, there may also be implications for some borrowers such as corporates, SMEs and smaller financial institutions that often hedge loans for interest rate risk purposes. These discrepancies could result in P&L impacts that were not foreseen when borrowers constructed their hedge relationships based on EURIBOR.

As described in the letter sent by the working group to the International Accounting Standard Board (IASB) in July 2020⁵⁵, one solution could be to include a basis swap in the hedge relationship as soon as EURIBOR fallback measures in the hedged item and the hedging derivative are triggered. The purpose of including this basis swap would be to offset the unintended difference that would arise from using different types of EURIBOR fallback measures.

⁵⁴ [Report by the working group on the financial accounting implications of the transition from EONIA to the €STR and the introduction of €STR-based fallbacks to EURIBOR](#), November 2019.

⁵⁵ [Letter sent by the working group to the IASB on IFRS9 and IAS39](#), July 2020.

Responding to that letter, the IASB's technical staff clarified, based on [IASB IBOR reform phase 2](#), that as long as those who draw up the financial statements can demonstrate that the changes fulfil the following two conditions, no impact on hedge accounting should be expected.

- a) Direct consequence of the IBOR reform: entities should substantiate the necessity of the changes in respect of the IBOR reform (i.e. whether they are required by the reform).
- b) Economic equivalence basis: this condition will be met if the contractual cash flows before and after the changes introduced by the reform are economically equivalent.

The IASB's staff have underlined the principle that any change should meet both conditions (i.e. it should be required by the reform and should be economically equivalent) for it to be within the scope of relief in respect of the IASB IBOR reform phase 2 amendments. Following this principle, if the working group determines that the use cases for including a EURIBOR fallback in a hedged cash product that deviates from the EURIBOR fallback in hedging derivatives based on the ISDA's language meet both these conditions, then the inclusion of a basis swap in a hedge relationship would be within the scope of the amendments. In this case an entity would not have to de-designate and re-designate the hedge relationship⁵⁶.

Through this consultation paper, where a deep analysis of the most appropriate EURIBOR fallback measures is included, the working group is publicly consulting with market participants on its proposals. It expects to build an extensive market consensus, and to base its final recommendations on this consensus. As the purpose of the working group recommendations on EURIBOR fallback provisions is to give market participants an opportunity to comply with the IOSCO principles for financial benchmarks and Article 28(2) of the BMR, these recommendations may be considered to be a direct consequence of the IBOR reform. Market participants, however, should be mindful that adding any further modifications to existing contracts that are not directly related to embedding IBOR replacements (in relation, for example, to EONIA or LIBOR) or fallbacks (in relation, for example, to EURIBOR) are not considered to be direct consequence of the reform.

In addition, in this consultation paper the working group publicly invites feedback on recommendations for EURIBOR fallback measures, in order to make it possible for market participants to transition as smoothly as possible should EURIBOR cease to exist permanently. Here, the working group is striving to recommend EURIBOR fallback measures that may be viewed as economically equivalent. However, it remains the responsibility of market participants to analyse and substantiate that this is the case when they make business decisions and prepare financial statements.

Backward-looking term structure methodologies

For those hedged cash products for which market participants choose, in line with the working group's recommendation, to follow a backward-looking *lookback period* term structure methodology, the working group does not anticipate any material hedge-related issues, given the alignment with the EURIBOR fallbacks included in derivatives based on the *2006 ISDA Definitions* and *IBOR Fallbacks Protocol*. Market participants should be mindful of small differences relating to the number of days considered for the lookback period compared with the two-day lookback period followed by ISDA. For this reason, the lookback period methodology is assessed as "feasible" according to this criterion.

⁵⁶ See [Working group Euro RFR meeting minutes](#), 10 September 2020.

Hedged cash products using a backward-looking *payment delay* term structure methodology would not fully match ISDA's fallback provisions, as there would be a basis risk proportional to the backward shifting discrepancy between the hedged item and hedging derivative. However, as both methodologies would be based on *compounded in arrears*, these discrepancies would not be expected to be significant and the working group has also assessed this methodology as "feasible" with regard to hedging ease and hedge accounting impact.

For those hedged cash products that would require a backward-looking *last reset* term structure methodology (based on a recommended use case of the working group), a basis risk would arise between the *last reset* methodology in the hedge cash product and the *lookback* methodology in the hedging derivative. The working group does not expect a basis swap market to develop that could solve this basis risk due to convexity risks related to potential changes in the yield curve between the two different observation periods of the *last reset* and the *lookback period* methodologies. This might lead to hedge ineffectiveness or even the discontinuation of the hedge relationship. For this reason, the working group considers this criterion to be of "questionable feasibility" for the backward-looking *last reset* term structure methodology in the case of hedged cash products.

Forward-looking term structure methodology

For those hedged cash products that would require a *forward-looking* term structure methodology (based on a recommended use case of the working group), a basis risk would arise between the *forward-looking* methodology in the hedged cash product and the *lookback period* methodology in the hedging derivative. Market participants could mitigate this risk by including a basis swap in the hedge documentation without having to de-designate and re-designate the hedge relationship, in the event EURIBOR ceases to exist. However, it should be noted that even though the working group believes that this basis swap market could develop in the future if there is sufficient demand, it is likely to be a single-sided basis swap market that would come at a cost. The working group therefore considers this criterion to be "feasible with some minor changes/drawbacks" for the forward-looking term structure methodology.

5) **Other accounting impacts**

This criterion evaluates whether the methodology analysed could have any other economic impact under IFRS that has not already been addressed in paragraph 4 ("Hedging ease and hedge accounting impacts") above.

On 27 August 2020, the IASB issued the [IBOR reform phase 2 amendments](#), with the expectation that the final revisions to IFRS would be endorsed by the European Commission in Q4 2020. These amendments address the issues affecting financial statements when changes are made to contractual cash flows and hedging relationships as a result of interest rate benchmark reform. For modifications required by the IBOR reform, by including a fallback provision in a financial instrument contract a company will not have to derecognise the financial asset or financial liability. Instead, the reform will be accounted for by updating the effective interest rate to reflect, for example, the change in an interest rate benchmark from an IBOR to an alternative benchmark rate. This practical expedient can only be applied if those who prepare the financial statements can demonstrate that the changes fulfil the following two conditions.

- a) Direct consequence of the IBOR reform: entities should substantiate the necessity of the changes in respect of the IBOR reform (i.e. whether they are required by the reform).

- b) Economic equivalence basis: this condition will be met if the contractual cash flows before and after the changes introduced by the reform are economically equivalent.

It should be noted that the same considerations presented for the previous criterion also apply here⁵⁷.

Backward-looking term structure methodologies

Given that the observation period and the interest period are identical for a EURIBOR fallback measure based on the backward-looking *payment delay* term structure methodologies, the interest rate in a financial asset referencing EURIBOR still reflects the time value of money, even if the EURIBOR fallback measure is triggered. The working group therefore views this term structure methodology as a good basis for creating a EURIBOR fallback measure that is economically equivalent to EURIBOR, and therefore considers the backward-looking *payment delay* term structure methodology to be “feasible”, according to this criterion.

For a EURIBOR fallback measure based on the backward-looking *lookback period* term structure methodology, both the observation and the interest period are of the same length. However, the start/end of the observation period is a few days prior to the start/end of the interest period. This difference allows counterparties sufficient time between the fixing and the settlement of the interest payment at the end of the interest period, and may be considered to be a non-significant difference in the contractual interest cash flows. The interest rate in a financial asset referencing EURIBOR therefore still reflects the time value of money, even if this EURIBOR fallback measure is triggered. For this reason, the working group views this term structure methodology as a good basis for creating a EURIBOR fallback measure that is economically equivalent to EURIBOR, and therefore considers this criterion to be “feasible with some minor drawbacks” for the backward-looking *lookback* term structure methodology.

For a EURIBOR fallback measure based on the backward-looking *last reset* term structure methodology, both the observation period and the interest period are of the same length. However, the observation period is in advance of the interest period – this difference allows counterparties to know the interest payment rate at the start of the interest period. Given that this term structure methodology compounds historic €STR data in arrears in order to set the interest rate to be used for the coming interest period, further consideration should be given to the time value of money of this EURIBOR fallback measure when performing an IFRS 9 solely payment of principal and interest (SPPI) test on the initial recognition of a new financial asset that includes such a EURIBOR fallback measure

⁵⁷ Through this consultation paper, where a deep analysis of the most appropriate EURIBOR fallback measures is included, the working group is publicly consulting with market participants on its proposals. It expects to build an extensive market consensus, and to base its final recommendations on this consensus. As the purpose of the working group recommendations on EURIBOR fallbacks is to give market participants the opportunity to comply with the IOSCO principles for financial benchmarks and Article 28(2) of the BMR, these recommendations may be considered to be a direct consequence of the IBOR reform. Market participants, however, should be mindful that adding any other modifications to existing contracts that are not directly related to embedding IBOR replacements (in relation, for example, to EONIA or LIBOR) or fallbacks (in relation, for example, to EURIBOR) are not considered to be direct consequences of the reform.

In addition, in this consultation paper the working group publicly invites feedback on recommendations for EURIBOR fallback measures, in order to make it possible for market participants to transition as smoothly as possible should EURIBOR cease to exist. Here, the working group is striving to recommend EURIBOR fallback measures that may be viewed as economically equivalent. However, it remains the responsibility of market participant to analyse and substantiate that this is the case when they make business decisions and prepare financial statements.

or, in the event EURIBOR ceases, a EURIBOR replacement measure^{58 59 60}. In particular, if this EURIBOR fallback measure is to be used as a fallback for longer EURIBOR tenors, such as six months or twelve months, there is a risk that the interest amount in a period could disconnect significantly from the interest period because of volatility in the market. Therefore, the Working Group considers this criterion as having “questionable feasibility” for the backward-looking *last reset* term structure methodology.

Forward-looking term structure methodology

Given that the observation period and the interest period are identical for a EURIBOR fallback measure based on a *forward-looking* term structure methodology, the interest rate for a financial asset referencing EURIBOR still reflects the time value of money, even if the EURIBOR fallback measure is triggered. The working group therefore considers this term structure methodology to be a good basis for creating a EURIBOR fallback measure that is economically equivalent to EURIBOR, and therefore views this criterion as “feasible” for the forward-looking term structure methodology.

6) Risk management impacts

This criterion evaluates whether the methodology analysed has any impact on risk models, IT systems, procedures and other aspects affecting risk management activities.

As the working group explains in its report on the risk management implications of the introduction of €STR-based fallbacks for EURIBOR⁶¹, when evaluating possible risk management impacts market participants should bear in mind the equivalence between EURIBOR and its proposed fallback measure, i.e. whether cash flows calculated under the methodology analysed have the same impact in terms of value, timing and period congruency as the current practice. In general terms, economic equivalence in terms of value may be achieved by constructing a EURIBOR fallback measure based on a €STR-based term structure (Chapter 5) and an adjustment spread (Chapter 6). The latter is put in place in order to minimise the value transfer when transitioning from EURIBOR to its fallback rate should EURIBOR cease to exist – with the aim of ensuring a smooth transition. However, to achieve equivalence in terms of timing and period congruency, risk management techniques might need to be applied.

In addition, market participants should try to keep the variability of fallback rates between different product classes (including derivatives) to a minimum. Differences in the timing of the triggering of

⁵⁸ When [assessing the modified time value of money in an IFRS 9 SPPI test](#), the objective is to determine how different the contractual (undiscounted) cash flows could be from the (undiscounted) cash flows that would arise if the time value of money element was not modified (the benchmark cash flows). To make this determination, the entity must consider the effect of the modified time value of money element in each reporting period, and also cumulatively, over the life of the financial instrument. The reason the interest rate is set in this way is not relevant to the analysis. If it is clear, from little or no qualitative analysis, whether the contractual (undiscounted) cash flows on the financial asset under assessment could (or could not) be significantly different from the (undiscounted) benchmark cash flows, an entity need not perform a detailed quantitative assessment. If the modified time value of money element could result in contractual (undiscounted) cash flows that are significantly different from the (undiscounted) benchmark cash flows, the financial asset does not meet the conditions of the IFRS 9 Hold-to-Collect or Hold-to-Collect&Sale business model. Going forward, the financial asset would then have to be measured at fair value through profit and loss.

⁵⁹ See [Letter from the working group to the IASB on IFRS9 and IAS39](#), July 2020.

⁶⁰ See [Working group on euro risk-free rates meeting minutes](#), 10 September 2020.

⁶¹ See [Report by the working group on the risk management implications of the transition from EONIA to the €STR and the introduction of €STR-based fallbacks for EURIBOR](#), October 2019.

EURIBOR fallback measures and the definition of these fallback measures can, potentially, create P&L volatility related to the “basis risks” arising between EURIBOR and the corresponding fallback rates. To avoid the risk of inconsistency in the timing of the triggering of EURIBOR fallback measures for different financial products, the working group is consulting on a generic set of EURIBOR fallback trigger events in parallel to this consultation⁶². Also, as discussed in paragraph 4 (“Hedging ease and hedge accounting impacts”), basis risk that could result from different types of fallback measures could be mitigated using basis swaps. However, market participants should be aware that the basis swaps market has not yet been developed and is expected to be a single-sided basis swap market that would come at a cost.

Finally, it is important to establish common market practices in order to reduce operational costs and simplify the implementation of the different fallback types in IT systems, to avoid operational risk.

Backward-looking term structure methodologies

The backward-looking *payment delay* and *lookback* term structure methodologies result in a rate that is known close to the end of an interest period (calculated in arrears) and not at the beginning of an interest period. Thus, a rate calculated based on these two methodologies will not be equivalent in terms of timing and period of congruency to the current EURIBOR methodology (where the rate is known at the start of an interest period). Because the rate fixed in arrears is not known until close to the end of an interest period, the result is a limited timeframe in which to fix the rate, calculate and reconcile the interest due, and arrange payment of the interest. *Payment delay* and *lookback* methodologies might therefore have risk management impacts such as credit risk and operational risk, and might introduce valuation and cash-flow forecasting difficulties.

- **Credit risk.** Only knowing the exact interest amount to be paid at the end of the interest period would introduce additional credit risk linked to uncertainty over the final payment amount. For this reason, market participants should carefully assess the backward-looking *payment delay* and *lookback* term structure methodologies when offering products, in particular to retail/SME consumers, from a consumer protection point of view. In addition, diverging dates for the notional repayment and the interest rate payment, in the case of the backward-looking *payment delay* term structure methodology, could be a potential source of credit risk.
- **Operational risk.** As the rate would only be known a few days before the payment date for both the *payment delay* and the *lookback* methodologies, this would only allow a short period of time for the calculation of payments, for billing, and for settlement. This is particularly relevant when it is necessary to obtain consent or comply with exchange controls.
- **Valuation and cash-flow forecasting.** The backward-looking *payment delay* or *lookback period* term structure methodologies are not compatible with the upfront discounting of interest which is an essential requirement for some products such as trade finance. In addition, and as included in paragraph 3 (“Client acceptance”), although cash flow forecasting is still possible with *in arrears* methodologies, it would be performed with less precision than under any *fixing in advance* methodology.

⁶² [Public consultation by the working group on euro risk-free rates on EURIBOR fallback trigger events](#), 23 November 2020.

The advantage of the backward-looking *last reset* term structure methodology is that interest payments are known at the start of the interest period. However, this approach raises a number of issues, including the fact that the observation period would not be reflective of the interest period. As a result, interest rate changes would not be captured during the interest period, introducing interest rate risk. In addition, as addressed in paragraph 4 (“Hedging ease and hedge accounting impacts”), it would be very difficult to mitigate the basis risk arising between a hedged cash product including a *last reset* and a hedging derivative including a *lookback period*. This could result in hedge-ineffectiveness and, even, the unwinding of existing hedge relationships.

Considering these observations in the context of risk management impacts, the working group considers the criterion to be “feasible with some relevant drawbacks” for the backward-looking *payment delay* and *lookback period* term structure methodologies, and of “questionable feasibility” for the backward-looking *last reset* term structure methodology.

Forward-looking term structure methodology

From a risk management perspective, the advantage of the forward-looking term structure methodology is that it is technically very similar to EURIBOR, i.e. available at the start of the interest rate period and reflecting expected movements over that interest period.

Also, as explained in paragraph 4 (“Hedging ease and hedge accounting impacts”), for those hedged cash products that require a forward-looking term structure methodology based on a recommended use case of the working group, market participants could include a basis swap in the hedge documentation without having to de-designate and re-designate the hedge relationship, should EURIBOR cease to exist. However, even though the working group believes that this basis swap market could develop if there were demand for it should EURIBOR cease to exist, it would be a single-sided basis swap market that would come at a cost. The working group therefore considers this criterion to be “feasible with some relevant drawbacks” for the forward-looking term structure methodology.

7) Consistency with other jurisdictions and across asset classes

This criterion evaluates the level of consistency between the methodology analysed and methodologies used for other asset classes or in other jurisdictions.

In its 2014 report⁶³, the FSB set out a series of recommendations aimed at strengthening key IBORs in the unsecured lending markets, and at promoting the development and adoption of alternative RFRs, where appropriate. In its 2019 progress report⁶⁴, the FSB reported that the use of RFRs should be encouraged across global interest rates, and that contracts referencing IBORs should have robust fallbacks, i.e. those based on compounded RFRs rather than forward-looking rates.

⁶³ [FSB report on reforming major interest rate benchmarks](#), July 2014.

⁶⁴ [FSB 2019 progress report on reforming major interest rate benchmarks](#), December 2019.

Since the 2014 FSB report, various RFR working groups⁶⁵ have been set up by the public sector to provide recommendations for developing and adopting robust alternative RFRs that could function either as an IBOR replacement (e.g. LIBOR and EONIA) or as an IBOR fallback (e.g. EURIBOR).

In addition, the FSB supports the work ISDA has done to select compounded RFRs as the fallbacks for IBOR-referencing derivatives and to encourage market participants to adopt these solutions for their derivative products. With the recent publication of the updated *2006 ISDA Definitions* and *IBOR Fallbacks Protocol*, ISDA has set a market standard for derivatives by including the following EURIBOR fallback: (1) a €STR-based backward-looking *lookback period* term structure methodology with a two-day backward shift adjustment, and (2) a five-year historical median approach for the spread adjustment.

For a market to be transparent, understandable and easy to operate, fragmentation risk in the interest rate benchmark landscape should be mitigated to the extent possible. It is therefore necessary to seek a certain level of consistency across jurisdictions, in particular for those products that are multi-currency (i.e. reference various IBORs) and/or are used for hedging purposes (e.g. cash products hedged with derivatives to reduce interest rate risk). However, there may be some uses cases for products or consumer groups where it is clearly necessary to apply a different methodology and where these criteria are less relevant.

Backward-looking term structure methodologies

Given that ISDA and various RFR working groups have recommended the use of the backward-looking *lookback period* term structure methodology for various product categories, the working group considers this criterion to be “feasible” for the backward-looking *lookback period* term structure methodology and “feasible with some relevant drawbacks” for the backward-looking *payment delay* and *last reset* term structure methodologies.

Forward-looking term structure methodology

Users have a strong preference for forward-looking term rates based on €STR, given the methodology’s technical similarities with EURIBOR, particularly for products involving retail/SME users⁶⁶. However, as discussed in paragraph 1 (“Robustness/availability”), the availability of a RFR-based forward-looking term structure methodology is not guaranteed. For this reason, RFR working groups in the various jurisdictions:

- envisage alternatives based on backward-looking term structure methodologies anchored on actual RFRs to the extent possible;
- suggest the use of forward-looking term structures for a set of products and users, although they also suggest other alternatives in such cases (e.g. central bank rates or fixed rates);
- provide waterfall structures in which a backward-looking term structure methodology functions as a fallback to a forward-looking term structure methodology.

⁶⁵ The [Alternative Reference Rate Committee](#), the [working group on sterling risk-free references rates](#), the [National Working Group on Swiss Franc Reference Rates](#), or the [Cross-Industry Committee on Japanese Yen Interest Rate Benchmarks](#), among others.

⁶⁶ See the [Summary feedback for the second public consultation by the working group on euro risk-free rates](#), February 2019.

The working group therefore considers this criterion to be “feasible with some relevant drawbacks” for the forward-looking term structure methodology.

5.2.2 Conclusions

Based on the outcome of the various selection criteria as shown in Table 2, and by considering (1) the FSB guidance, (2) the EURIBOR fallback measures that ISDA has included in the *2006 ISDA Definitions* and *IBOR Fallbacks Protocol*, and (3) the recommendations of risk-free rates working groups in other jurisdictions, the working group acknowledges that for more sophisticated and globally operating market participants the most appropriate EURIBOR fallback measure would be the backward-looking lookback period term structure methodology.

However, the working group also acknowledges that there may be some use cases for certain products or for less sophisticated and locally operating market participants where it is clearly necessary to know the interest rate in advance – so the forward-looking term structure methodology would be better suited to ensuring greater client acceptance – or where consistency with ISDA’s proposals for derivative products might be less relevant. For this reason, in the following sections the working group conducts a deeper analysis of the main products, sectors and models that use EURIBOR as a reference rate, in order to identify possible use cases.

For those use cases in which a forward-looking term structure methodology may be deemed necessary, the working group recommends introducing the forward-looking rate into contracts via a “waterfall structure”. This waterfall structure approach implies that any EURIBOR fallback relying on a forward-looking term structure methodology would also entail a backward-looking term structure methodology or another appropriate alternative as a second layer of fallback. The working group believes this would mitigate the risk of the forward-looking methodology not being available.

Finally, on top of the recommended term structure methodologies used to calculate the EURIBOR fallback rate, as proposed by the working group in Chapter 5, a spread should be added in order to mitigate possible value transfer if the EURIBOR fallback provision were activated. An analysis of this spread adjustment is included in Chapter 6.

5.3 Use cases analysis

5.3.1 Corporate lending

EURIBOR is used extensively by corporates as the interest rate benchmark for loans (both syndicated and bilateral). Interest on corporate loans is typically made up of a benchmark rate (traditionally one, three or six-month EURIBOR) plus a margin (a fixed spread over EURIBOR which depends on the creditworthiness of the borrower).

The structure of EURIBOR (a forward-looking term rate) drives a number of features of the corporate lending market, including those which provide flexibility to borrowers. EURIBOR fallbacks should be assessed in terms of their impact on the month-end processes, operations, systems and documentation of lenders and borrowers.

The loan market includes a wide range of lenders and borrowers, from the most complex global banking groups and the largest multinational corporates, to the smallest local lenders and businesses. As a result, a one-size-fits-all solution may not be possible, and some parts of the loan market may require alternative fallback rates to those applicable to most of the corporate loan market. In this section, the analysis only refers to the solution proposed for the majority, by value, of loans to corporates while some particular cases – i.e. mortgages, consumer loans and SME loans, trade finance, export finance and emerging market finance – are analysed further in Section 5.3.2 (“Mortgages, consumer loans and SME loans”), Section 5.3.4 (“Trade finance”) and Section 5.3.5 (“Export and emerging markets finance products”).

Would using the backward-looking lookback period methodology to build a €STR-based term structure be appropriate as a EURIBOR fallback for corporate lending and bilateral loans?

This is the preferred option for many loans given that (i) although it is an *in arrears* methodology, it would allow time for the calculation of payments, for billing, and for borrowers/lenders to challenge any calculations in advance of payments; (ii) the *lookback period* methodology is helpful in the loan market where there is a need to calculate interest accruing during an interest period (e.g. for prepayments or calculations related to secondary trading), because it provides certainty for a given number of days at any point in the interest period; (iii) it may be easier to adopt from a systems perspective than other methods, given that loan system providers have started working with this method for LIBOR transition; (iv) the method is consistent with fallback arrangements in derivatives documentation based on ISDA which would then facilitate hedging ease (although there may be a small mismatch in terms of the length of the lookback period); and (v) the approach is consistent with cash products in most other jurisdictions in the absence of a forward-looking term rate (e.g. SONIA syndicated loans, SONIA and SARON bilateral loans and SONIA FRNs).

The approach does, however, face a number of challenges which will need to be worked through to make it a workable option: (i) the observation period is not identical to the interest period; (ii) the operational implications in respect of prepayments and secondary trading need to be addressed; (iii) systems need to be updated and integrated to accommodate this method – this may take time and may also require users to ensure they are using the latest version of the system; and (iv) there may be some legal questions associated with compounding in certain civil law jurisdictions (see Section 5.2.1 under criterion 3 (“Client acceptance”).

In addition, the backward-looking *lookback period* term structure methodology may not be the number one alternative for certain users in (and segments of) the loan market, namely:

- smaller borrowers for whom simplicity and/or payment certainty is a key factor (see Section 5.3.2);
- borrowers who are unlikely to be able to adapt to the technology or process the changes required by the *lookback period* methodology. Small corporates and SMEs, in particular, may not have a dedicated treasury function and, as a result, may be less able to adapt to the technology or process the changes needed, or are more likely to be discouraged by the cost of adopting the *lookback period* methodology (see Section 5.3.2);
- specific products for which using the *lookback period* methodology may create operational difficulty regardless of the sophistication of the borrower, such as those identified in other areas

of this paper (e.g. trade finance and export and emerging markets finance products (see Section 5.3.4 and Section 5.3.5 respectively).

In terms of international consistency, it should be noted that in respect of replacing USD LIBOR in the US LIBOR syndicated and business loans markets, the ARRC has published its recommendations regarding the use of more robust fallback language for new originated LIBOR syndicated loans⁶⁷ and business loans⁶⁸. For these, the ARRC includes, as the first level of a waterfall structure, the forward-looking term SOFR plus a spread adjustment. A backward-looking methodology is included as the second step of the waterfall, in case the forward-looking term SOFR is not available. Although the ARRC intends to select a forward-looking term SOFR for use as a fallback rate in cash products that originally referenced LIBOR, assuming its members can agree that an IOSCO-compliant benchmark exists and meets the appropriate criteria set by the ARRC, it is not certain that such a benchmark will be produced prior to the discontinuation of LIBOR⁶⁹. In addition, because standard derivatives are not expected to reference a forward-looking term rate, the ARRC notes that those loan market participants who execute hedges may prefer to remove the forward-looking term SOFR and, instead, fall back on compounded SOFR in order to align with ISDA's standard definitions for derivatives.

Other backward-looking methodologies do not present major advantages for loans.

The backward-looking *last reset* term structure methodology would make it possible to know interest payments at the start of the interest period, providing payment certainty to small borrowers, although the option offers few advantages for loans apart from that. The approach raises a number of issues, including the fact that the observation period would not be reflective of the interest period. As a result, it would not capture interest rate changes during the interest period so its acceptability to market participants is questionable. Other issues include the fact that (i) it is not clear how easy it would be for systems to accommodate the approach; (ii) there would also be difficulties with hedging, as explained in Chapter 5.2.1 under criterion 4 ("Hedging ease and hedge accounting impacts"); (iii) it is inconsistent with fallback arrangements in other jurisdictions for corporate loans; and (iv) it is inconsistent with other wholesale products.

The backward-looking *payment delay* term structure methodology, despite being an *in arrears* methodology, would allow time for the calculation of payments, for billing, and for borrowers/lenders to challenge any calculations in advance of payments. The observation period would match the interest period and the approach would be in line with how the euro derivatives market currently works. However, the approach raises a number of concerns from a loans perspective: (i) if interest and principal payments are separated, this would effectively double the work of the facility agent (on a syndicated deal) or the lender (on a bilateral deal); (ii) from a risk perspective, a delay to the payment of interest adds to the lenders' credit risk in respect of the borrower; (iii) there are potential accounting and regulatory issues which would need to be considered, e.g. whether the delayed interest would be recognised as accrued or whether it would

⁶⁷ See [ARRC recommendations regarding more robust fallback language in new originations of LIBOR syndicated loans](#), June 2020.

⁶⁸ See [ARRC recommendations regarding more robust fallback language in new originations of LIBOR business loans](#), September 2020.

⁶⁹ The ARRC has set the objective of getting an ARRC-recommended forward-looking term SOFR rate published in the first half of 2021 if liquidity in SOFR derivatives markets has developed sufficiently. See [ARRC 2020 Objectives](#), April 2020.

be recognised as a credit risk; and (iv) changes to loan documentation would also be required (e.g. to ensure that the borrower is not seen as being in default if interest is paid with a delay). In addition, the method has not been suggested for corporate loans in any other jurisdiction and has not been suggested for other wholesale cash products. As a result, it is not one of the preferred options for loans.

Assuming its future availability, the forward-looking methodology might be appropriate for those users in (and segments of) the loan market for which the backward-looking *lookback period* methodology might not be as suitable, as noted above and covered in Section 5.3.2 (“Mortgages, consumer loans and SME loans”), Section 5.3.4 (“Trade finance”) and Section 5.3.5 (“Export and emerging markets finance products”).

5.3.2 Mortgages, consumer loans and SME loans

Retail mortgages, consumer loans and SME loans share similar characteristics. Borrowers of these products are usually unsophisticated parties for whom the corresponding interest payments represent a significant part of their overall finances. The contracts are normally bilateral, difficult and expensive to amend, and have long maturities (i.e. they may be viewed as tough legacy contracts), and are regulated by consumer protection legislation that varies by country. In addition, the significance of using EURIBOR for retail and SME clients across the euro area should not be underestimated. Although its use is not uniform – Spain, Italy, Austria, Portugal and Finland have a much greater share of floating rate mortgages – these products represent a significant exposure in almost all euro area countries.

Would using the backward-looking lookback period methodology to build a €STR-based term structure be appropriate as a EURIBOR fallback for mortgages, consumer loans and SME loans?

There are a number of factors that should be taken into account when considering the most appropriate fallback provision for these products, and which might favour the use of an *in advance* methodology instead of an *in arrears* methodology. However, based on the information gathered by the working group, no impediments have been identified to using *in arrears* methodologies in the majority of cases, and specific analysis should be conducted at the local level.

Notice period for the borrower in advance of payments being made

Legislation and standard market practice on this topic vary across the euro area.

In France, for any agreements entered into with a consumer, the index or reference rate used must be “clear, accessible, objective and verifiable” (Article L313-46 of the Consumer Code for mortgage loans to individuals and non-professional PMs). Consumers must be able to “clearly understand the extent of their commitment”. The borrower must be informed of changes to the index before these are effective (Article L313-46 on mortgage loans to consumers and Article L312-31 of the Consumer Code for consumer loans). According to Article L313-46 of the Consumer Code related to real estate loans to individuals and non-professional PMs: “In the event of a change in the borrowing rate, the lender provides this information to the borrower on paper or on another durable medium, before the change takes effect.” This information states the amount of the instalments after the entry into force of the new borrowing rate as well as, where applicable, any change to the number or frequency of the instalments.

In Spain there are several mandatory legal provisions (*Ley 16/2011, de 24 de junio, de contratos de crédito al consumo* and *Orden EHA/2899/2011, de 28 de octubre, de transparencia y protección del cliente de servicios bancarios*) requiring that the consumer debtor should be aware of the rate in advance of the payment day. In particular, for mortgage loans the lender must inform the borrower of any change to the payment rate at least 15 days before the change takes effect.

In Italy, fixing in arrears is feasible provided the client receives sufficient prior notice of the amount of the instalment to be paid on the due date. There is no law imposing a minimum notice period. However, according to standard market practice, reasonable notice is 10/15 working days before the payment date.

In the Netherlands/Belgium there is no specific legislation for the notice period. However, indications received from consumer groups in the region highlight the benefit to the borrower of knowing the rate at the start of the period.

There is also no specific legislation in Austria which prohibits applying *in arrears* fixing in loan contracts with consumers. Nevertheless, consumer protection laws set very high transparency standards so banks face severe legal challenges when applying *in arrears* fixing. The strict requirements that the judicature derives from the transparency requirement of § 6 (3) KSchG require contracts with consumers to describe all factors affecting the price transparently and in easily understandable language. It is highly doubtful that this condition can be met with *in arrears* fixing, especially in the case of contracts with annuity payments (the market standard in Austria), as such payments communicated at the beginning and made within a running interest period would only be provisional and would ultimately have to be corrected/balanced using the indicator values determined at the end of the interest period. Some uncertainties remain, as there is no case law from the Austrian Supreme Court pertaining to this matter.

In Germany, banks are obliged by law to calculate and indicate a concrete interest rate in the contractual information at the beginning of the interest period (Case ECJ C-290/19). For consumers, there are strict transparency requirements and the methodology used should adequately reflect the refinancing situation of the bank. No specific legislation or case law exists with regard to the *in arrears* fixing of the interest rate. Therefore it is – comparable to the situation in Austria – legally uncertain whether the *in arrears* fixing of future interest payments (after starting with a concrete rate) is feasible (e.g. according to determinable and transparent criteria). The issue of notice period then becomes secondary – there is no definition of a minimum notice period by law, although the period must be “reasonable”.

The critical issue remains how to determine a sufficient period of notice for the end user – this is of greater importance in the case of mortgage products, which are generally considered to be the most critical monthly outgoing for a retail customer. According to the logic underpinning the management of monthly finances, a reasonable notice period would be one month in advance of the payment being made. This argument is also relevant for any SMEs for which managing short-term cash flows is fundamental, and becomes even more relevant in relation to the fallback for EURIBOR-referencing contracts, where any change to the notice period should not be deemed to be detrimental to the borrower.

From the above, it follows logically that the backward-looking *last reset* or the forward-looking *term structure* methodologies would be more suitable as fallback provisions for EURIBOR-referencing contracts, although (i) there are some significant challenges related to the use of the

backward-looking *last reset* term structure methodology that need to be taken into account (see below) and (ii) the possibility should be considered of communicating in advance the known part of the overall rate applied to the loan (and, therefore, the main part of the total payment amount). This would facilitate cash flow management by end users if an *in arrears* backward-looking methodology is being considered.

Financing and credit risk

For SMEs, knowing the rate in advance is fundamental for invoice discounting/factoring, especially if it is without recourse (*pro soluto*). The amount disbursed is equal to the net present value (NPV) of the invoice, so without a rate determined in advance it would not be possible to calculate the NPV with any degree of certainty. If a backward-looking *in arrears* methodology were used, an additional payment at maturity would need to be introduced, impacting operational processes and potentially increasing credit risk. This additional payment could either be a credit or a debit, depending on the difference between the proxy rate at inception and the actual rate at maturity.

The client's understanding of the methodology

For any benchmark rate used by less sophisticated borrowers in the wider economy, it is important to have some degree of understanding of what the rate represents and how it is calculated. This becomes even more important when considering the history of these specific borrowing rates. Here the backward-looking *last reset* or *lookback period* approaches may be easier to conceptually understand than the calculation method pertaining to a forward-looking term structure methodology.

Compounding

The methodology used to determine the RFR rate could be legally challenged in the case of retail products and may be considered to be an unfair term, pursuant to Council Directive 93/13/EEC. The risk should be limited if the rate is produced by a trusted independent source such as the ECB using a methodology that is a market standard and represents the time value of money for a contract paying the interest due at a predefined, and not daily, periodicity.

Challenges faced by the backward-looking *last reset* term structure methodology

As outlined above, knowing the rate in advance offers significant advantages to both the borrower and the lender for these types of products. There are, however, several challenges related to the use of the backward-looking *last reset* term structure methodology, as explained below.

1) Tenors greater than three months

It is the clear view of the working group that for fixing periods longer than three months (which is, for example, the most common situation in Spain, where fixing periods vary from six to twelve months), the backward-looking *last reset* term structure methodology should be avoided for retail mortgages, consumer loans and SME loans. In these cases, the mismatch between the interest period and the observation period would be too great to provide an accurate enough reflection of the current interest rate environment. This creates additional complexity for legacy transactions referencing fixings longer than three months if no fallback rate has been defined in the contract. In the absence of a forward-looking rate, the only feasible *in advance* solution would be to reference either a one-month or a three-month fixing.

A component that is additional to the spread adjustment, as described in Chapter 6, would therefore need to be calculated in order to compensate the lending institution for the reduction in tenor. The asymmetric nature of this spread adjustment, i.e. the higher the margin is, the more detrimental it is to the borrower and the more beneficial it is to the lender, makes this calculation even more sensitive for retail/SME products. Therefore, unless this fallback measure with specific spread adjustments is defined in local law, there is a risk that the compensation payment, including the additional adjustment for tenor, could be challenged. It is also an open question as to which independent body could calculate this spread adjustment. Whilst the concept of a spread adjustment (as defined in Chapter 6) is applicable for all methodologies, this particular adjustment, fixing the tenor, would only be necessary for the *last reset* approach, increasing the legal risk if no additional *in advance* methodology were available.

2) Accounting Issues

As explained in Section 5.2.1 under criterion 5 (“Other accounting impacts”), the working group has concerns with regard to the backward-looking *last reset* methodology, specifically the time value of money of this fallback measure when performing an IFRS 9 SPPI test on the initial recognition of a new financial asset that includes such a EURIBOR fallback measure or, in the event EURIBOR ceases, a EURIBOR replacement measure. This risk is reduced when considering fixing periods of only one and three months, although it remains at the discretion of the individual reporting entity whether to accept this risk when introducing a rate based on the backward-looking *last reset* term structure into a financial asset. Additionally, hedge accounting could be a challenge for the *last reset* methodology, as outlined in Chapter 5.2.1 under criterion 4 (“Hedging ease and hedge accounting impacts”).

3) Legal Issues

In the case of legacy transactions it should also be considered whether any replacement rate is consistent with the terms and conditions defined in the current contract (assuming no fallback rate has been defined). With the backward-looking *last reset* term structure methodology there could be a conflict with some local consumer protection laws, such as the Austrian law (§ 6 (1) Z 5 KSchG) which requires there to be a sufficient factual relationship between the current interest rate and the current cost of refinancing (obviously this mismatch is reduced for shorter fixing periods).

4) System and model requirements

All the backward-looking term structure methodologies involve embedding a compounding calculation within the core banking systems of the retail/corporate banks. This is a fundamental change to the current approach of simply taking a fixing rate, and therefore requires significant IT development. Unfortunately, limited benefit may be derived from current system enhancements with regard to changes to LIBOR as these mostly impact a different system landscape in order to specifically cater for bulk amounts of homogenous retail/SME contracts.

In parallel, the shift towards a compounded overnight rate for retail and SME products would also impact the related risk management systems and modelling.

It should be noted that the system development required for a fixing in advance logic (last reset) is less than for any fixing in arrears logic (lookback period/payment delay). Estimates of development time and costs vary from institution to institution but would be classified as significant if any of the costs were ultimately borne by the borrower through higher margins.

5) Hedging costs and complexity

As outlined in Section 5.2.1 under criterion 4 (“Hedging ease and hedge accounting impacts”), the mismatch between the observation and the interest period for the backward-looking *last reset* term structure methodology creates additional challenges from a hedging perspective. Unfortunately, this type of product cannot be hedged through a simple swap based on *2006 ISDA Definitions* and an accompanying basis swap in derivative markets. The additional hedging costs would probably be transferred to the borrower through higher margins.

It should be noted that the use of forward-looking rates for loans would be somewhat inconsistent in certain jurisdictions, where the anticipated demise of LIBOR is already leading some loan market participants to adapt to the use of backward-looking methodologies. However, even in these jurisdictions use cases may be envisaged for forward-looking rates.

- In respect of the US dollar, the ARRC recommended, in its “hardwired fallback language” for business loans, a forward-looking rate as the first step of the fallback rate waterfall from USD LIBOR⁷⁰.
- A forward-looking rate has also been deemed to be acceptable by the working group on sterling risk-free rates for a very limited amount (by volume) of legacy SME contracts⁷¹.
- In Switzerland, the market has started the transition to *in arrears* rates – end users seem to accept them and are able to adapt to them. However, in the opinion of the working group members the Swiss market cannot be compared with the EU market because (1) the Swiss market is relatively small and is not able to create a forward-looking rate, given the absence of a Swiss Average Rate Overnight (SARON) OIS or futures market, and (2) take-up of backward-looking *in arrears* methodologies is primarily seen in new mortgage products but is not yet established for legacy mortgage products⁷².

Based on the above analysis, the working group recommends that for retail mortgages, consumer loans and SME loans the *forward-looking* term structure methodology would be the most suitable EURIBOR fallback measure as it enhances consumer acceptance, follows (local) market practice and limits (local) legal challenges. The working group believes that without a forward-looking rate option there could be a significant increase in credit, conduct and operational risks, system costs, and potential legal challenges and costs.

At the same time, in recommending the forward-looking term structure methodology the working group is mindful of the potential risk that such a methodology is not yet available and that the underlying market may not represent a deep and liquid market. The working group therefore recommends introducing the forward-looking term rate as the first layer of a waterfall structure in which a backward-looking *last reset* term structure methodology (for tenors of up to three months) or, alternatively, a backward-looking *lookback period* term structure methodology, functions as an alternative to the forward-looking *term structure* methodology.

⁷⁰ However, this may not be the case for the amendment approach and for the hedged loan approach. See [ARRC recommendations regarding more robust fallback language for new originations of LIBOR bilateral business loans](#), 27 August 2020.

⁷¹ See [Use Cases of Benchmark Rates: Compounded in Arrears, Term Rate and Further Alternatives](#), January 2020.

⁷² See the [Working group on euro risk-free rates meeting minutes](#), 10 September 2020.

5.3.3 Current accounts

This section focuses on current accounts using EURIBOR in interest calculations. EURIBOR is sometimes used in current accounts with retail clients and, more frequently, with small businesses and corporates. However, there are different practices across banks and across countries throughout the euro area, varying also in terms of (1) the frequency of (and thresholds for) adjusting the rate, and (2) the timing of interest rate payments. Consistency across countries within the euro area is therefore difficult to assess and must be determined on an individual basis by the user.

Would using the backward-looking lookback period methodology to build a €STR-based term structure be appropriate as a EURIBOR fallback for current accounts?

One feature of a current account is that the balance varies from day to day, implying that accrued interest cannot be calculated until the end of the interest rate period even when the interest rate is known at the beginning of the interest rate period, if EURIBOR is used.

Taking into account the fact that the forward-looking methodology would also allow the rate to be known at the beginning of the interest period, using this methodology would make cash flow forecasting easier. The choice of the forward-looking rate would lead to negligible legal and operational impacts compared with any other option. However, compared with all other use cases, the forward-looking rate may be considered to be preferable but not necessary for current accounts.

The backward-looking *payment delay* methodology would allow time for the calculation of payments, for billing, and for borrowers/lenders to challenge any calculations in advance of payments. In addition, it would reflect the time value of money as the observation period would match the interest period. The economic equivalence and the fact that backward-looking methodologies are transparent and easily understandable – especially when published by a public entity – facilitates customer acceptance, making them a highly appropriate alternative.

The *payment delay* option would be a better fit for the features of current accounts than the *lookback period* option as the balance on accounts can change every day and they do not have a predefined maturity. While *payment delay* could be managed through just one interest payment (e.g. a couple of days after the interest rate date), the *lookback period* option would require two different payments, i.e. one on the interest-end date and an adjustment payment a couple of days after if the balance changes between the fixing date (e.g. five business days before the interest-end date) and the interest-end date. The *lookback period* option would be more difficult and complex to implement and handle from an operational point of view.

5.3.4 Trade finance

Trade finance covers the financial products that banks and companies use to facilitate domestic or international trade and commerce. One of the financial instruments used in trade finance is factoring⁷³, whereby a company is paid based on a percentage of its accounts receivables. Trade finance transactions are typically small in value, short in tenor and self-liquidating. For this kind of

⁷³ Other examples are supply chain finance solutions (discounting receivables, payables finance, etc.), discounting of letters of credit, import/export loans, and export finance transactions supported by export credit agencies.

product, financing is granted on a discounted interest basis, whether it is extended on a recourse or a non-recourse basis. In other words, interest is deducted from the principal disbursed on the first day of the financing period, which is an essential condition for non-recourse transactions.

Would using the backward-looking lookback period methodology to build a €STR-based term structure be appropriate as a EURIBOR fallback for trade finance?

As most financing dedicated to trade is extended on a discounted interest basis, this typical trade finance feature prevents the usage of benchmark rates known in arrears – the interest chargeable must be known by the time the funds are disbursed. For this reason, neither the *lookback period* methodology nor the *payment delay* methodology would be appropriate for use as a EURIBOR fallback for this type of product.

Forward-looking term rates, such as EURIBOR at the present time, are well adapted to this product and banks and companies count on RFR-based *forward-looking* term rates to continue to facilitate domestic and international trade and commerce with limited disruption. The *forward-looking* methodology would be the preferred option if it were available because it is the only option that combines compatibility with the specific business cycle of trade financing with the possibility for the lender to source funding at this rate and for the client to hedge (on the assumption that a basis swaps market is developed, as explained in Section 5.2.1, under criterion 4 “Hedging ease and hedge accounting impacts”). This conclusion aligns with the views shared by the (i) working group on sterling risk-free reference rates in its *Use Cases of Benchmark Rates* published in January 2020⁷⁴, and (ii) the International Chamber of Commerce (ICC)⁷⁵ working group on *IBOR Demise and Transitioning to New Benchmarks*⁷⁶.

The working group on sterling risk-free reference rates identified trade and working capital (supply chain financing, receivables financing and documentary trade) as one of the product exceptions where using a backward-looking compounded *in arrears* rate would not be appropriate.

The ICC working group recommendation is that RFR-based forward-looking term rates should be available sufficiently early to avoid any major disruption to the financing of domestic and international trade. In addition, in the case of LIBOR currencies for which, unlike EURIBOR, market participants may be facing a period during which neither LIBOR nor RFR-based forward-looking term rates are available, the ICC workgroup is considering temporary alternatives to actual forward-looking term rates, including the following.

- The forward-looking term rate has been recommended by the ARRC as the first option of the waterfall fallback measures structure and includes the backward-looking *last reset* methodology as an alternative rate in case the forward-looking term rate is not available. The forward-looking term rate is also acknowledged by the UK’s working group on sterling risk-free reference rates as being required for trade finance.
- Using the O/N benchmark rate with a term premium. For some overnight rates, e.g. SOFR, a seven-day average is proposed to minimise basis risk and normalise the rate, although it may be

⁷⁴ See *Use Cases of Benchmark Rates: Compounded in Arrears, Term Rate and Further Alternatives*, January 2020.

⁷⁵ See [International Chamber of Commerce website](#).

⁷⁶ See *ICC recommendation paper on term reference rate*, March 2020.

necessary to use an historic average given the volatility of such rates, e.g. over a week or a longer period, especially for SOFR. This is an adaptation (simplification) of the *last reset* methodology.

- Using policy-rate-based pricing, e.g. the BoE base rate, Fed Funds, the US Prime Rate, etc.

Although most underlying transactions financed are short term in nature (e.g. typically 60 to 90 days for receivables but shorter than one year), legal contracts documenting the bank-client relationship (committed or not) are usually annual or without a defined maturity date, and use an interest rate benchmark such as LIBOR. In some countries a notice period must be granted to the client before terms can be modified. These contracts, although uncommitted, will need to be amended before the end of 2021.

The backward-looking *payment delay* and *lookback period* term structure methodologies are not compatible with pre-counted interest – a requirement for the vast majority of trade financing transactions and, even more so, for non-recourse transactions.

Based on the above, the working group recommends the €STR-based forward-looking *term structure* methodology for trade finance, given that trade financing market players have recognised the continuous need for RFR-based forward looking term rates for their industry. The methodology provides a workable solution for transactions requiring cost certainty and pricing transparency. To cover the scenario of the absence of a €STR-based forward-looking term rate, the working group is seeking market feedback as to whether the backward-looking *last reset* term structure methodology, or any simpler adaptation of it such as that envisaged by the ICC workgroup, might be considered as a second layer of the EURIBOR fallback waterfall structure. This would, however, only be on a temporary basis until a forward-looking rate becomes available as it would create a basis risk for both the lender who is funding and the borrower (who may want to hedge at micro or macro level), which is viewed as a major impediment.

5.3.5 Export and emerging markets finance products

EURIBOR is used in euro-denominated export finance and emerging markets transactions. There are different types of parties and products within these particular areas, including buyer-credit loans, loans guaranteed by export credit agencies (“ECAs”), interest make-up schemes, forfaiting/supplier credit⁷⁷ and project finance. Borrowers party to these transactions are varied and may include private companies, listed companies, special purpose vehicles (SPVs) and sovereigns. In addition, counterparties to such transactions may include export credit agencies (ECAs), multilateral agencies, state-owned companies, government ministries and sovereigns. As a result, there are a number of perspectives to consider in relation to selecting an appropriate fallback rate for such transactions.

Would using the backward-looking lookback period methodology to build a €STR-based term structure be appropriate as a EURIBOR fallback for export finance/emerging markets?

The backward-looking *lookback period* term structure methodology may be the preferred option for certain users in export finance and, possibly, emerging markets. Given that products such as corporate and bilateral loans are frequently used in this area, the same considerations that apply to

⁷⁷ See Section 5.4.4 on trade finance for a discussion of forfaiting.

these products apply here as well. However, it should be noted that for export finance and emerging market deals, borrowers typically require more than 30 days to make payments of interest and principal. In addition, for export finance deals ISDA's interest rate swaps are not used very frequently – bespoke agreements are used instead. This means that it is not so important to be consistent with the ISDA approach unless the parties use an ISDA interest rate swap for hedging.

In this sector, there are borrowers that are sizeable and sophisticated organisations and operate in developed markets. Such borrowers may find it easier to adapt to backward-looking term structure methodologies. However, this could be more challenging for other borrowers such as sovereigns and/or state owned companies, or in emerging market jurisdictions. In addition to this, some borrowers or guarantors party to these transactions may require local budgetary, central bank and/or parliamentary approval to agree fallback measures, before interest payments can be converted into hard currency and transferred to lenders outside the relevant jurisdiction. These processes may require the exact amount of interest to be known in advance and may take weeks to complete. It is also often a requirement for public/sovereign borrowers (under local law) to commence a payment procedure up to a minimum of four weeks before a payment falls due (e.g. to obtain all the required signatures and approvals). ECAs also need to consider any impact on their budgeting procedures (e.g. due to any move from a forward-looking rate to a backward-looking rate which would remove advance notice of the rate and impact on internal measures and accounting treatment).

In addition, when considering legal consistency, there are various laws which should be considered in the context of export finance and emerging market transactions, i.e. the lender's country law, the law of the contract and the law in the borrower's country.

Thus, it should be recognised that export finance and emerging markets are not one-size-fits-all markets.

An *in advance* methodology could provide certainty in terms of cash flow management for clients that use export finance and emerging markets products as these typically require more than 30 days to make payments of interest and principal. However, as explained in Section 5.3.2 under the heading “Challenges faced by the backward-looking last reset term structure methodology”, the backward-looking *last reset* term structure methodology raises a number of issues, and would only work for short interest periods (i.e. tenors of three months or less) given its disconnection with the interest period it represents. The challenges explained in Section 5.3.2 apply equally to the use of the backward-looking *last reset* term structure methodology in export and emerging markets finance.

Other currency working groups, such as the working group on sterling risk-free reference rates, have recognised that export finance and emerging markets are parts of the market for which an available *forward-looking* rate may be more suitable. However, to the extent that a forward-looking rate would be used for EURIBOR-referencing export finance/emerging markets transactions, then a second step in the waterfall would also need to be considered. It should also be considered whether this could be the backward-looking *last reset*, a central bank base rate (perhaps the central bank in the jurisdiction of the ECA) or a fixed rate. It should be noted that using a fixed rate could result in an inefficient allocation of capital, given that it could lock the borrower into accepting an interest rate risk which they may not be best placed to take on and, in terms of emerging markets, it should be noted that the base rate of the relevant emerging market's central bank may not be a suitable fallback.

Although the backward-looking *lookback period* term structure methodology could be used in export and emerging markets finance products for sizeable and sophisticated organisations that operate in developed markets, for their less sophisticated counterparties, sovereigns and/or state owned companies, or in emerging market jurisdictions, it is necessary to know the interest rate in advance. The working group therefore recommends using a forward-looking term structure methodology. In addition, if there is no forward-looking term rate, the backward-looking *last reset* term rate could be viewed as the only viable backward-looking option (in the absence of another robust alternative such as a central bank rate) as the second layer of the EURIBOR fallback waterfall structure, although only on a temporary basis until a forward-looking rate is available. The working group is therefore seeking market feedback as to whether, in the absence of a forward-looking term rate, the backward-looking *last reset* term rate could be considered to be the only viable backward-looking option (in the absence of another robust alternative such as a central bank rate), although only on a temporary basis until a forward-looking rate is available.

5.3.6 Debt securities

Euro-denominated FRNs are usually linked to 3M or 6M EURIBOR as the reference rate, and will need adequate fallbacks in the event of the discontinuation of EURIBOR.

Would using the backward-looking lookback period methodology to build a €STR-based term structure be appropriate as a EURIBOR fallback for debt securities?

In terms of international consistency, the following points should be noted.

- Even though the working group on sterling risk-free reference rates initially saw bond issuance as a potential use case for the SONIA-based forward-looking term rate, as a replacement for GBP LIBOR, it was concluded in the benchmark rates analysis use cases⁷⁸ that the GBP market has demonstrably adopted overnight SONIA compounded in arrears for all new GBP issuance over the last few years. In July 2018, the first FRN referencing compounded SONIA was launched and, since then, there have been over 140 GBP FRN issuances referencing compounded SONIA, with a total value of GBP 63 billion⁷⁹. According to the working group's intermediate update roadmap for 2020-21, GBP issuances of LIBOR-based products maturing beyond 2021 are scheduled to cease by Q1 2021⁸⁰. According to the working group, this demonstrates that SONIA compounding in arrears has become the market norm for GBP FRNs. For this reason, and also for legacy contracts, parties are encouraged to transition to overnight SONIA compounded in arrears, where possible. However, a forward-looking term rate may be useful in calculating fair replacement rates for legacy GBP LIBOR contracts that cannot easily be amended to overnight rates compounded in arrears, or for deals with a limited period to maturity where it would not be cost effective to transition from GBP LIBOR to SONIA compounded in arrears.

The market conventions used in new €STR-linked bonds issued to date are aligned with those typically used in the SONIA-linked bond market, i.e. €STR compounded in arrears with a five-day *lookback*

⁷⁸ The working group on sterling risk-free reference rates – *Use Cases of Benchmark Rates: Compounded in Arrears, Term Rate and Further Alternatives*, January 2020.

⁷⁹ See *The working group on sterling risk-free reference rates newsletter*, September 2020.

⁸⁰ See *The working group on sterling risk-free reference rates 2020-21 intermediate update roadmap*, July 2020.

period following the “lag convention”⁸¹. These €STR-linked bonds were, in general, oversubscribed, showing that not only the issuers but also investors could accept a backward-looking *lookback period* term structure methodology as a EURIBOR fallback measure for new contracts.

- For new issues in the USD FRN market, over USD 680 billion in SOFR-linked debt has been issued, driven by almost USD 300 billion in debt issued by the FHLBs⁸². With regard to replacing USD LIBOR in the USD FRN market, in 2019 the ARRC published its recommendations for more robust fallback language for new FRN issuances referencing USD LIBOR⁸³. In this fallback language, the ARRC includes, on the first level of a waterfall structure, the forward-looking term SOFR plus a spread adjustment. Although the ARRC intends to select a forward-looking term SOFR for use as a fallback rate in cash products that originally referenced LIBOR, assuming its members can agree that an IOSCO-compliant benchmark exists and meets appropriate criteria set by the ARRC, it is not certain that such a benchmark will be produced prior to the discontinuation of LIBOR. In addition, because standard derivatives are not expected to reference a forward-looking term rate, issuers in the cash market who execute hedges may prefer to remove the forward-looking term SOFR (and adjust all the corresponding cross references in the fallback language) in order to fall back on a compounded SOFR, with the rate expected to be the same rate that becomes operative under ISDA’s standard definitions for derivatives. For these reasons the ARRC adds a [simple average or] compounded average of daily SOFRs for an interest period in lieu of the forward-looking term SOFR as a second step in the waterfall structure. It should be noted that other conforming changes may also be required at the time a fallback is activated, in order to maintain alignment with hedges.
- In a discussion paper on SARON FRNs⁸⁴, the National Working Group on Swiss Franc Reference Rates concluded that the advantages of the backward-looking *lookback period* approach outweigh its small inherent economic drawbacks. A time lag of between three to five days is therefore deemed sufficient to deal with operational matters. In addition, such a time lag may achieve the greatest operational acceptance, as it is already applied in FRNs referencing other alternative risk-free rates.

The Federal Reserve Bank of New York publishes a SOFR index, and the Bank of England publishes a SONIA index. It is hoped that the availability of these indices will facilitate the standardisation and simplification of the calculation method used for FRNs, especially for cross-currency bonds containing multiple IBORs. It could also reduce operational risk by facilitating the reconciliation of interest amounts between market counterparties and, thereby, potentially enhance the scalability of the use of compounded RFR in debt securities. However, in contrast to the “lag convention” described above, for these indices the weighting of the daily realised rates during the observation period is obtained with reference to the number of business days in the observation period (known as the “shift convention”)⁸⁵, as this methodology is seen as a more natural measurement of the interest over the period⁸⁶. For this reason, if a compounded €STR index were to be published by the

⁸¹ The “lag convention” weights the daily realised rates during the observation period, according to the business days convention, to the interest period in order to derive the interest rate. For more details see Section 7.5.

⁸² See [ARRC summer SOFR series](#), July 2020.

⁸³ See [ARRC RECOMMENDATIONS REGARDING MORE ROBUST FALLBACK LANGUAGE FOR NEW ISSUANCES OF LIBOR FLOATING RATE NOTES](#), April 2019.

⁸⁴ [National Working Group on Swiss Franc Reference Rates - Discussion paper on SARON Floating Rate Notes](#), July 2019.

⁸⁵ Please note that with a five-business day lookback calculation, the differences in weighting between the observation shift and the observation lag solely occur only if there are bank holidays.

⁸⁶ For more detail see Section 7.5.

ECB, the backward-looking *lookback period* term structure methodology calculated according to the observational shift convention could be used.

For the *lookback period* term structure methodology, although the rate fixed *in arrears* is not known until close to the end of an interest period (usually five days before the end of the interest period), cash flows are known sufficiently early in order to fix the coupon rate, calculate and reconcile the interest due, and arrange payment of the interest on the interest payment date. It is, therefore, to be expected that risk management could be conducted adequately using the *lookback period* methodology.

Given that issued FRNs and investment portfolios containing FRNs are often hedged with ISDA derivatives, the use of the backward-looking *lookback period* term structure methodology as a EURIBOR fallback measure for a hedged FRN would come close to the EURIBOR fallback included in the hedging instrument based on ISDA language, where the only subtle difference may be found in the number of days of the lookback period. Therefore, from a hedging ease and hedge accounting perspective, the use of the lookback period in FRNs would significantly limit the risk of hedge ineffectiveness.

By contrast, other fallback methodologies seem less suitable for FRNs.

Although interest payments would be known at the start of the interest period through the backward-looking *last reset* term structure methodology, the methodology would not be desirable in the FRN market as (i) it would be overly complex to accommodate the systems, (ii) it would introduce obstacles to hedging, (iii) the rate produced would not be reflective of the interest period to which it relates, and (iv) it would be entirely inconsistent with the methodologies used in other jurisdictions and products.

The use of the backward-looking *payment delay* term structure methodology may lead to risk management impacts if the maturity of the FRN and the repayment of the nominal amount fall on different dates. This problem could be prevented by including an “x-day lockout” prior to maturity. Although this is common in the derivatives market, the payment delay convention has only been used on a small number of occasions in the US dollar FRN market.

A €STR-based *forward-looking* term structure would introduce hedging ease and hedge accounting impacts, as explained in Section 5.2.1, under criterion 4 “Hedging ease and hedge accounting impacts”.

In addition, current FRN markets show general acceptance of the backward-looking *lookback period* methodology by issuers and investors.

Based on these important market developments, client acceptance, and hedging ease, **the working group therefore concludes that for EURIBOR-linked FRNs it is advisable to fall back on a backward-looking *lookback period* term structure methodology.**

5.3.7 Securitisations

Securitisation is an area of debt securities where assets (e.g. bonds, mortgages or lending products) are pooled together, and transferred into a bankruptcy remote vehicle which then issues securities backed by those assets. The interest payments and principal repayment of these securities depend

on the interest payments and principal repayment from the underlying assets. As securitisation is an area of debt securities it has many characteristics it shares with other forms of debt issuance, although it also has its own unique character due to its interrelationship with the underlying assets, greater structural complexity, the higher number of parties involved and robust structural governance, and – in many cases – its interrelationship with derivative hedges which are generally used to mitigate interest rate and currency risks within the structures. Due to this interrelationship, there will be risk management benefits if these securitisations use the same EURIBOR fallback methodology as that included in the underlying assets and/or associated derivatives. Any difference between the fallback approach of the securitisation notes and the underlying assets and/or derivatives would introduce basis risks to the structures which would need to be considered and, potentially, mitigated, increasing the complexity and, potentially, the cost of the transition process.

Would using the backward-looking lookback period methodology to build a €STR-based term structure be appropriate as a EURIBOR fallback for securitisations?

Issuers of securitisations will naturally wish to seek consistency with the fallback language included in the underlying assets of the securitisation, given that securitisations rely on the cash flow from those underlying assets to support payments on the securities issued. In addition, where derivatives are used to mitigate interest rate and currency risks, issuers might also be mindful of the fallback language included in the hedging derivatives, based on ISDA's 2006 Definitions and *IBOR Fallbacks Protocol*. Therefore, as issuers may incorporate any fallback solution, it is important to coordinate that fallback language with the fallback language incorporated in the underlying assets and hedging derivatives, to the extent possible.

For those securitisations that will include underlying assets where the working group has identified the backward-looking *lookback period* term structure methodology as a suitable EURIBOR fallback measure (e.g. syndicated loans, business loans and debt securities), the inclusion of a similar EURIBOR fallback measure is recommended. Although this would imply that the bond holder will only be informed of the interest payments at the end of the interest period, the use of the backward-looking *lookback period* term structure methodology would enhance the transparency of the securitisation structure and would limit the need to mitigate any inherent basis risks when holding such a securitisation. Even though the working group on sterling risk-free reference rates initially saw bond issuance, including securitisation, as a potential use case for the SONIA-based forward-looking term rate as a replacement for GBP LIBOR, it was concluded in the use cases of benchmark rates analysis⁸⁷ that the GBP market has demonstrably adopted overnight SONIA compounded in arrears for all new GBP issuance over the last year. However, a forward-looking term rate may be useful in calculating fair replacement rates for legacy LIBOR contracts that cannot easily be amended to overnight rates compounded in arrears, or for deals with a limited period to maturity where it would not be cost effective to transition from GBP LIBOR to SONIA compounded in arrears.

For those securitisations that will include underlying assets where the working group has identified the forward-looking term structure methodology as the most suitable EURIBOR fallback measure (e.g. mortgages and SME loans), the working group believes it would be appropriate to include the same waterfall structure as a EURIBOR fallback measure. Given the forward-looking nature of both a EURIBOR and a €STR-based forward-looking term structure, the operational impacts

⁸⁷ See The working group on sterling risk-free reference rates – *Use Cases of Benchmark Rates: Compounded in Arrears, Term Rate and Further Alternatives*, January 2020.

of such a fallback would be minimal, as cash flows can be calculated at the start of each interest period. Using the same EURIBOR fallback measure in the securitisation and its underlying assets would, furthermore, enhance the transparency of the securitisation structure. It should, however, be noted that the hedging derivatives based on ISDA's EURIBOR fallback language may create a basis risk. However, as Section 5.1.2 shows under criterion 4 ("Hedging ease and hedge accounting impacts"), this risk could be mitigated using basis swaps – it should be noted that this basis swaps market would be single-sided and would come at a cost. The ARRC has recommended using a forward-looking term structure methodology as the first layer of the waterfall structure for the USD LIBOR fallback measure in securitisations, as market participants indicate they prefer consistency with the fallback language included in the underlying assets⁸⁸.

For the backward-looking *payment delay* term structure methodology, the working group believes that having interest settlement a few days after the end of the interest periods, and separately from the amortisation or repayment of notional amounts, would require major IT system changes as this approach is not used in the bond or the securitisation market. It would, generally, be inconsistent with the need to have reasonable advance notice of the rates for the purposes of processing often complex transaction cash flows and waterfalls, and therefore the operational practicality would be very low. It would also not allow accrued interest to be calculated for secondary transactions. This method is not used in other jurisdictions for securitisation and is generally only considered to be viable for simple products with non-complex cash flow structures, such as FIG senior.

The advantage of the backward-looking *last reset* term structure methodology is that it is operationally simple, as payments are determined in advance of the coupon period, although it still requires an IT system that can compound overnight rates. However, using the *last reset* method means that bondholders receive a rate of interest that is calculated over the previous interest period, which creates issues in terms of holding these bonds, in secondary trading, as well as in hedging via the derivatives market, where the introduction of the miss-alignment of interest creates convexity costs. This may also introduce a significant basis to transactions where other components (e.g. loans) cannot be amended according to a substantially similar methodology, which would have consequences for the rating analysis and, potentially, could significantly increase execution costs. The working group does not, therefore, consider this method to be viable.

5.3.8 Derivatives

The [Results of the ISDA Supplemental Consultation on Spread and Term Adjustments, including Final Parameters thereof, for Fallbacks in Derivatives Referencing EUR LIBOR and EURIBOR, as well as other less widely used IBORs](#) show broad market support for ISDA's proposed fallback provisions to be applied to EURIBOR and EUR LIBOR derivatives:

- (1) a €STR-based backward-looking lookback period term structure methodology with a two-day backward shift adjustment;
- (2) a five-year historical median approach for the spread adjustment.

⁸⁸ See [ARRC recommendations regarding more robust fallback language for new issuance of LIBOR securitizations](#), May 2019.

The working group acknowledges the EURIBOR fallback measures for derivatives products that ISDA included in (1) the *2006 ISDA Definitions* for new transactions, and (2) the *IBOR Fallbacks Protocol* for legacy contracts, if market participants choose to adhere to it⁸⁹. These will not, therefore, form part of this public consultation.

For the vast majority of derivatives for which a EURIBOR floating rate option is referenced, the proposed fallback provisions facilitate the continuation of the derivative following cessation of EURIBOR, with little to no economic impact.

However, there is a small set of products for which additional amendments may be required. These may broadly be categorised as:

- products for which the fallback provisions might have a material economic impact;
- products for which ISDA's fallback measure might require additional amendments.

Products for which the fallback provisions might have a material economic impact

The most obvious example is an option on EURIBOR (EURIBOR cap and floor).

A typical transaction involves the counterparty buying or selling the right to receive or pay the difference between the EURIBOR fixing for an agreed maturity and the contract strike rate (cap/floor rate). The EURIBOR fixing will occur at the beginning of the reference period – it is at this point that the payoff is calculated for payment at the end of the period. Once the payoff is known for that specific interest period, the cap(let)/floor(let) no longer has any time value, i.e. the cap(let)/floor(let) vega (the sensitivity to interest rate volatility) is zero.

If the EURIBOR fallback measure based on ISDA's backward-looking *lookback period* term structure methodology applies and is triggered, the fallback rate will not be known until the end of the reference period. The cap/floor would, as a consequence, retain its time value through to the end of the reference period. It should be noted that the time value would diminish with each €STR fixing, although it would still be retained for appreciably longer than prior to the triggering of such a fallback. In other words, if this EURIBOR fallback applies and is triggered, the cap(let)/floor(let) vega would generally no longer be zero, especially at the beginning of the interest period, and would converge towards zero as the caplet/floorlet reached its maturity date.

It is important to note that the same result would be obtained for any new caps or floors written on the basis of the €STR-based backward-looking *lookback period* term structure methodology.

Products for which ISDA's fallback measure might require additional amendments

This category includes products that, in general, show a mismatch between the tenor length of the accrual interest period and the tenor length/lengths of the underlying reference rate/rates. Just to give a few major examples (this list is not limited), the working group refers mainly to derivatives with the following four features:

- 1) coupons referencing a EURIBOR tenor which is longer than the accrual period (e.g. 1M EURIBOR paid weekly);

⁸⁹ Further information on the methodology may be found in the *Rule Book* published by Bloomberg.

- 2) coupons with so-called **Asian features**, i.e. the payment in respect of a given interest period is a function of several EURIBOR fixings (e.g. a simple average of daily fixings of the 1M EURIBOR over the last [X] days of the relevant interest period, paid monthly);
- 3) coupons containing a **range accrual feature** (a range accrual is typically a string of daily EURIBOR digits where each EURIBOR fixing above the strike is worth 1 (one) and each EURIBOR fixing below the strike is worth 0 (zero); at the end of the observation period the sum of the outcomes is multiplied by the notional to determine the payoff);
- 4) coupons for which the EURIBOR reset is at the end of the calculation period (e.g. EURIBOR **fixed in arrears**);
- 5) forward rate agreements.

As a consequence, over the last few months ISDA has continued to provide further guidance⁹⁰ to explain how IBOR fallbacks apply to different types of derivative products. This includes the default language to be used if market participants choose to voluntarily and bilaterally negotiate changes to certain terms in order to modify the impact of the fallbacks for certain products.

As this additional information is now available, the working group does not believe it is necessary to issue further recommendations for EURIBOR fallback measures for derivatives.

5.3.9 Transfer pricing model

Many medium and large financial and non-financial groups of companies opt to finance the group via a central entity, in order to increase efficiency and avoid structural subordination issues. The distribution of the funds from the financing entity to the operative/fund-consuming entities requires a consistent pricing approach (transfer pricing methodology) which deals with interest rates, liquidity costs, credit costs, margins etc. On the one hand this approach should be compliant with the relevant national and international tax regulation (e.g. OECD transfer pricing guidelines), while on the other it should support the efficient allocation of capital and funding within the organisation. While methods may differ substantially between groups of companies, benchmark interest rates are commonly used as the basis for determining the transfer price.

Although financial institutions adopt either EONIA/€STR-based or EURIBOR-based transfer pricing methodologies, most non-financial companies refer to EURIBOR as the main point of reference for their EUR transfer pricing. Even if the transfer price is only used for intercompany contracts, it is advisable to define fallback measures to apply following any permanent discontinuation of the EURIBOR, for the following reasons:

- compliance with the arm's length principle, which includes the mirroring of major contractual stipulations which would be used in contracts with external partners;
- operational stability should EURIBOR publication cease permanently;
- regulatory requirements (in the financial sector).

⁹⁰ See *ISDA RFR Conventions and IBOR Fallbacks – Product Table*, September 2020.

Would using the backward-looking lookback period methodology to build a €STR-based term structure be appropriate as a EURIBOR fallback for transfer pricing models?

Generally, the forward-looking term structure methodology is preferred as a permanent fallback, as it enables companies to maintain existing system setups and processes – a major concern for many market participants.

Such *in advance* fixing – comparable with the EURIBOR determination – is an important feature for most non-financial companies, as it eliminates potential accounting and handling issues which could arise from backward-looking approaches at critical reporting dates (such as the quarter end/financial year end). In particular, it takes into account the increasing trend towards faster closing of the books. Of course, this option requires the availability of a forward-looking term rate and – as a pre-condition for that – liquid and reliable OIS derivatives markets to underpin that forward-looking term rate.

Until a forward-looking term structure methodology becomes available, there could be three alternative approaches, depending on the preferences and requirements of the respective company.

- 1) In use cases in which **operational simplicity and an easy transition from EURIBOR** play a major role and, by contrast, risk management and hedging goals are less relevant, the backward-looking *last reset* term structure methodology could be a viable option. For corporates (non-financial companies) in particular, the advantages of advance fixing might outweigh the compromises relating to economic equivalence. The longer the interest period is, the more significant the economic non-equivalence becomes.
- 2) Even if many corporates (non-financial companies) do not hedge interest rate risk on inter-company positions (in contrast to foreign exchange risk), this could be of particular importance for financial companies. For these market participants, with a focus on **risk management and hedging**, the backward-looking *lookback period* term structure could be the preferred option due to its equivalent application in derivatives markets, according to ISDA's *2006 ISDA Definitions* and *IBOR Fallbacks Protocol*. Companies with this preference should generally be able to cope with the short period between rate determination and payment, as this is standard in many derivative market segments.
- 3) For financial institutions – but also for some corporates (non-financial companies) – alignment **with the practices in (debt) capital markets and external corporate lending** could be a major determinant in the selection of a fallback, as this would also ensure maximum compliance with the arm's lengths principle. In this case companies could select the fallback rate based on the descriptions in Sections 5.4.1 "Corporate Lending" and Section 5.4.3 "Debt Securities", the backward-looking *lookback period* term structure methodology.

5.3.10 Investment funds

One important group of benchmark users are asset managers. They apply benchmarks to passively managed funds and exchange traded funds (ETFs) – with benchmarks as a target for index-linked funds – as well as to the evaluation of an active manager's performance, when a fund's performance is measured against a selected index or a set of indices. Asset managers, as benchmark users, are not usually involved in the production of, calculation of and contribution to the data on which benchmarks are based. Their role is therefore mostly limited to the use of a benchmark, for which

they are required to pay high and multiple fees, and are subject to extensive regulatory requirements.

As entities supervised under the BMR, alternative investment fund managers (AIFMs) and undertakings for collective investment in transferable securities (UCITS) management companies that use a benchmark are required to produce and maintain robust written plans setting out the action they would take if a benchmark were to change materially or cease to be provided. Where feasible and appropriate, such plans should nominate one or several alternative benchmarks which could be referenced to substitute the benchmarks no longer provided, indicating why such benchmarks would be suitable alternatives. The supervised entities are obliged to provide, upon request, the relevant competent authority with these plans, and any updates, and are obliged to reflect these plans in their contractual relationships with clients.

EURIBOR is used by investment funds across all kinds of asset classes and financial instruments, including swaps, swaptions, other nonlinear derivatives, bonds, loans and asset backed securities. However, EURIBOR is also used by investment funds as a benchmark for calculating performance fees and as a discounting curve for certain products. With regard to the use of interest rates in investment funds, the European Fund and Asset Management Association – participating as a non-voting member in the working group – provided its input as to the footprint of such rates in the asset management industry on the basis of an empirical analysis and data gathered via an internal survey of its membership (please see the relevant extract of the report by the working group on the transition from EONIA to €STER⁹¹). Based on this informal mapping, money market and fixed income funds are the main EONIA users for benchmarking purposes, while the most commonly used instruments referencing EONIA are FRNs, repurchase agreements, interest rate derivatives and loan agreements. The ongoing effort to identify fallback rates for those contracts linked to EURIBOR is of particular relevance and importance to asset managers in terms of their contracts with investors and compliance with the BMR.

So far fallback rates for EURIBOR seem to vary across financial instruments and remain temporary in nature. Adopting a stable and permanent approach would ensure that the fallback clauses are more robust and would provide further transparency to investors. It is important to design fallback clauses that are already robust, in order to show the market is fully prepared in case EURIBOR is discontinued (unlike the situation for other LIBORs). The working group aims to support the market in this respect via this public consultation. If market consensus is reached based on the feedback received, this would support the working group's final recommendations, facilitating a stable and permanent approach.

Under the BMR and the definitions for benchmark use, any use of EURIBOR for measuring the performance of an investment fund, tracking its return, defining asset allocation or computing performance fees creates regulatory requirements for the manager of the fund. These include ensuring a continuity plan is in place in case EURIBOR ceases to exist or changes materially. It should be noted, however, that the selection of a fallback rate is required whenever this is feasible.

The industry would appreciate further guidance from European or national authorities as to how fallbacks are implemented in contracts – particularly in fund level documentation – and the requirements for EURIBOR fallbacks for fund/portfolio level benchmarks.

⁹¹ See [Report by the working group on euro risk-free rates on the transition from EONIA to €STR](#), page 14, December 2019.

Would using the backward-looking lookback period methodology to build a €STR-based term structure be appropriate as a EURIBOR fallback for benchmarking purposes for investment funds?

For any new rate to be relevant from an asset manager's perspective it should be as representative as possible of the activity and the market-based funding costs in the market segment it covers. In addition, ensuring there is clarity and concrete information regarding the key features of the rate is of paramount importance for users. In this respect, it remains critical that there is transparency in relation to the underlying methodology used in each step of the calculation of the fallback benchmark. Asset managers will need to have a clear understanding of both elements in order to be able to communicate a fallback rate as the best option to investors, and meet their own regulatory requirements in relation to how a rate is used for the purposes of the investment fund. Moreover, it is important that the fallback rate is easy to implement, broadly recognised by market participants and freely accessible (or at least accessible at a reasonable cost).

In terms of consistency between the fallback rate used for investments traded by investment funds and that used as a fund benchmark/for the performance calculation, given the significant reviews that a move towards a fallback rate would require of funds' accounting systems, a rate that is as consistent as possible would be most useful. In this respect, if a backward-looking term structure methodology were applied this would require amendments to pre-contractual documentation, e.g. the prospectus specifying the performance fee, and further assessments of the operational feasibility of implementing different methodologies and the potential legal risks to clients.

Deviating methodologies for asset classes would create operational difficulties, so asset class discrepancies within jurisdictions should be kept to a minimum to facilitate implementation. It should, however, be borne in mind that as methodologies across jurisdictions will probably differ, there are use cases in which having the same methodology is not an imperative, although it remains relevant for structured products.

In terms of backward-looking compounded *in arrears* rates, the *lookback period* term structure methodology would be preferable as it is used by ISDA for derivatives, which could be an advantage in terms of ensuring consistency. However, it would be important for the lag specified between the observation period and the interest rate period to be as short as possible. For example, in multicurrency loan markets the delay between the two periods could lead to arbitrage opportunities for borrowers, to the detriment of lenders. Short lags are also better for calculating the performance fee involving a benchmark.

In principle, a *forward-looking* terms structure would also seem to be an obvious choice, given that EURIBOR is also forward-looking. However, this could be inconsistent with the approach ISDA is recommending for the derivatives market through their *2006 ISDA Definitions* and *IBOR Fallbacks Protocol*. As mentioned above, consistency across asset classes remains a key consideration.

5.3.11 Conclusions

Based on the analysis conducted in Section 5.3, the working group has identified a number of use cases that might require a forward-looking term structure methodology to be introduced on the first level of the waterfall fallback, while including a backward-looking term structure methodology on the second level of the waterfall structure in case the forward-looking term structure methodology is not available when the EURIBOR fallback measure is triggered. The use cases are”

- mortgages, consumer loans and SME loans (Section 5.3.2);
- trade finance products, where financing is granted on a discounted interest basis (Section 5.3.4);
- export and emerging markets finance products, where the counterparties involved include export credit agencies (ECAs), multilateral agencies, state-owned companies, government ministries and sovereigns (Section 5.3.5);
- transfer pricing models for certain financial and non-financial companies (Section 5.3.9).

As explained in Section 5.3, the working group acknowledges that for these specific use cases for products, there is a clear necessity to know the interest rate in advance or applying a different methodology.

Finally, as detailed in Section 5.4.11, the working group is seeking feedback from market participants as to which methodology – forward-looking or backward-looking *lookback period* – would be most appropriate for building a €STR-based term structure that could function, for investment funds, as a EURIBOR fallback measure for benchmarking purposes.

Products	Corporate lending	Retail mortgages/ consumer loans/ SME loans	Current accounts	Trade finance products	Export and emerging markets finance products	Debt securities	Securitisations	Transfer pricing model		Investments funds (benchmarking)
Fallback methodology recommended for the first level of the waterfall	BWL lookback	FWL	BWL payment delay	FWL	FWL	BWL lookback	Depending on the underlying assets	For corporates and some financials: FWL	For most financials: BWL lookback	FWL? BWL lookback?
Fallback methodology recommended for the second level of the waterfall (if needed)	N/A	BWL last reset up to 3M or BWL lookback	N/A	BWL last reset	BWL Last reset up to 3M	N/A	Depending on the underlying assets	BWL last reset	N/A	BWL lookback
Spread adjustment	Historical mean/median methodology									

For all other financial products, also in view of the FSB guidance and the EURIBOR fallback measures that ISDA has included in the *2006 ISDA Definitions* and *IBOR Fallbacks Protocol*, the working group suggests that the most appropriate/robust EURIBOR fallback measure would be a backward-looking *lookback period* term structure methodology.

5.4 Questions on EURIBOR fallback rates

Criteria used in the analysis of EURIBOR fallbacks rates (see Section 5.2)

- Robustness/availability
- Operational ease
- Client acceptance

- Hedging ease and hedge accounting impacts
- Other accounting impacts
- Risk management impacts
- Consistency with other jurisdictions across asset classes

Question 1: Can you identify any additional criteria that should be taken into account? (Yes/No/No opinion)

Please elaborate on the reasons for your answer.

Question 2: Do you agree with the analysis conducted in Section 5.2.1 and the conclusions of the working group presented in Section 5.2.2 with regard to the evaluation of the €STR-based term structure methodologies on the basis of the selection criteria? (Yes/No/No opinion)

Please elaborate on the reasons for your answer.

Use cases analysis (see Section 5.3)

Products	Corporate lending	Retail mortgages/ consumer loans/ SME loans	Current accounts	Trade finance products	Export and emerging markets finance products	Debt securities	Securitisations	Transfer pricing model		Investments funds (benchmarking)
Fallback methodology recommended for the first level of the waterfall	BWL lookback	FWL	BWL payment delay	FWL	FWL	BWL lookback	Depending on the underlying assets	For corporates and some financials: FWL	For most financials: BWL lookback	FWL? BWL lookback?
Fallback methodology recommended for the second level of the waterfall (if needed)	N/A	BWL last reset up to 3M or BWL lookback	N/A	BWL last reset	BWL Last reset up to 3M	N/A	Depending on the underlying assets	BWL last reset	N/A	BWL lookback
Spread adjustment	Historical mean/median methodology									

Question 3: Corporate lending (Section 5.3.1)

Do you agree with the working group's conclusion that the backward-looking *lookback period* methodology would be the most appropriate methodology for building a €STR-based term structure that could function as a fallback for most, by value, of the corporate lending linked to EURIBOR? (Yes/No/No opinion)

If not, what alternative methodology would you propose? (Forward-looking/Backward-looking *payment delay*/Backward-looking *last reset*/Another alternative)

Please elaborate on the reasons for your answer, also taking into account the possible interactions between asset classes and related instruments.

Question 4: Mortgages, consumer loans and SME loans (Section 5.3.2)

4.1. Do you agree with the working group's conclusion that a forward-looking methodology would be the most appropriate methodology for building a €STR-based term structure that could function as a fallback for retail mortgages, consumer loans and SME loans linked to EURIBOR ? (Yes/No/No opinion)

If not, what alternative methodology would you propose? (Backward-looking *payment delay*/ Backward-looking *lookback period*/Backward-looking *last reset*/Another alternative)

Please elaborate on the reasons for your answer, also taking into account possible interactions between asset classes and related instruments.

4.2. If your reply to Question 4.1 was affirmative, would you agree with the proposal to include a term structure built using a forward-looking methodology on the first level of the waterfall structure and, on the second level of the waterfall structure, to include as a backstop, in case a forward-looking term structure methodology is not available, either:

- a) a term structure built using the backward-looking *last reset* methodology (up to three-month tenors) or, alternatively;
- b) a term structure built using the backward-looking *lookback period* methodology?

(a/b/Neither)

If neither, what alternative would you propose for the second level of the waterfall? (Backward-looking *payment delay*/Another alternative)

Please elaborate on the reasons for your answer, also taking into account possible interactions between asset classes and related instruments.

4.3. Would you expect your institution to have to cope with any impediments in the case of a rate calculated using the backward-looking *lookback period* methodology for retail mortgages, consumer loans and SME loans? (Yes/No/No opinion)

Please indicate whether you are (representing) a lender or a borrower. (Lender/borrower)

Please elaborate on the reasons for your answer and, if your reply was affirmative, please specify what those impediments could be, and whether/how these impediments could be addressed.

4.4. Would you expect your institution to have to cope with any impediments in the case of a rate calculated using the backward-looking *last reset* methodology for retail mortgages, consumer loans and SME loans? (Yes/No/No opinion)

Please indicate whether you are (representing) a lender or a borrower. (Lender/borrower)

Please elaborate on the reasons for your answer and, if your reply was affirmative, please specify what those impediments could be, and whether/how these impediments could be addressed.

Question 5: Current accounts (Section 5.3.3)

Do you agree that the backward-looking *payment delay* methodology would be the most appropriate methodology for building a €STR-based term structure that could function as a fallback

for EURIBOR for current accounts linked to EURIBOR? (Yes/No/No opinion)

If not, what alternative methodology would you propose? (Forward-looking/Backward-looking *lookback period*/Backward-looking *last reset*/Another alternative)

Question 6: Trade finance (Section 5.3.4)

6.1. Do you agree with the working group's conclusion that a forward-looking methodology would be the most appropriate methodology for building a €STR-based term structure that could function as a EURIBOR fallback for trade finance? (Yes/No/No opinion)

If not, what alternative methodology would you propose? (Backward-looking *payment delay*/Backward-looking *lookback period*/Backward-looking *last reset*/ *Please specify another alternative*)

Please elaborate on the reasons for your answer, also taking into account possible interactions between asset classes and related instruments.

6.2. If your reply to Question 6.1 was affirmative, would you agree with the proposal to include: (i) a term structure built using a forward-looking methodology on the first level of the waterfall structure and (ii) a term structure built using the backward-looking *last reset* methodology on the second level of the waterfall structure as a backstop, in case a forward-looking term structure methodology is not available? (Yes/No/No opinion)

If not, what alternative methodology would you propose for the second level of the waterfall? (Backward-looking *payment delay*/Backward-looking *lookback period*/Another alternative)

Please elaborate on the reasons for your answers, also taking into account possible interactions between asset classes and related instruments.

Question 7: Export and emerging markets finance products (Section 5.3.5)

7.1. Do you agree with the working group's conclusion that a forward-looking methodology would be the most appropriate methodology for building a €STR-based term structure that could function as a fallback for the majority of EURIBOR-linked products used for export and emerging markets finance products? (Yes/No/No opinion)

If not, what alternative methodology would you propose? (Backward-looking *lookback period*/Backward-looking *payment delay*/Backward-looking *last reset*/Another alternative)

Please elaborate on the reasons for your answer, also taking into account possible interactions between asset classes and related instruments.

7.2. Do you agree with the working group's conclusion that for some export and emerging markets finance products – those involving sophisticated counterparties and developed markets – an *in arrears* methodology might be preferable and, in that case, a backward-looking *lookback period* methodology would be the most appropriate methodology for building a €STR-based term structure that could function as a EURIBOR fallback for such export and emerging markets finance products? (Yes/No/No opinion)

If not, what alternative methodology would you propose? (Forward-looking/Backward-looking *payment delay*/Backward-looking *last reset*/Another alternative)

Please elaborate on the reasons for your answer, also taking into account possible interactions between asset classes and related instruments.

7.3. If your reply to Question 7.1 was affirmative (and/or your response to Question 7.2 was negative), would you agree with the proposal to include (i) a term structure built using a forward-looking methodology on the first level of the waterfall structure and (ii) a term structure built using the backward-looking *last reset* methodology (up to three-month tenors) on the second level of the waterfall structure as a backstop, in case a forward-looking term structure methodology is not available? (Yes/No/No opinion)

If not, what alternative methodology would you propose for the second level of the waterfall? (Backward-looking *payment delay*/Backward-looking *lookback period*/Another alternative)

Please elaborate on the reasons for your answers, also taking into account possible interactions between asset classes and related instruments.

Question 8: Debt securities (Section 5.3.6)

Do you agree that the backward-looking *lookback period* would be the most appropriate methodology for building a €STR-based term structure that could function as a fallback for EURIBOR-linked debt securities? (Yes/No/No opinion)

If not, what alternative methodology would you propose? (Forward-looking/Backward-looking *payment delay*/Backward-looking *last reset*/Another alternative)

Please elaborate on the reasons for your answer, also taking into account possible interactions between asset classes and related instruments.

Question 9: Securitisations (Section 5.4.7)

9.1. Do you agree that for those securitisations that will include underlying assets for which the working group has identified the backward-looking *lookback period* as the most appropriate methodology for building a €STR-based term structure that could function as a EURIBOR fallback (e.g. syndicated loans, business loans and debt securities), it would be advisable to include the same EURIBOR fallback measure?

If not, what alternative methodology would you propose? (Backward-looking *payment delay*/Backward-looking *lookback*/Backward-looking *last reset*/Another alternative)

Please elaborate on the reasons underlying your answer, also taking into account possible interactions among asset classes and related instruments.

9.2. Do you agree that for those securitisations that will include underlying assets for which the working group has identified the forward-looking methodology as the most appropriate methodology for building a €STR-based term structure that could function as a EURIBOR fallback (e.g. mortgages and SME loans), it would be advisable to include the same waterfall structure as a EURIBOR fallback measure?

If not, what alternative methodology would you propose? (Backward-looking *payment delay*/Backward-looking *lookback period*/Backward-looking *last reset*/Another alternative)

Please elaborate on the reasons for your answer, also taking into account possible interactions between asset classes and related instruments.

Question 10: Transfer pricing models (Section 5.3.9)

10.1. Do you agree with the working group's conclusions that a forward-looking methodology would be the most appropriate methodology for building a €STR-based term structure that could function as a EURIBOR fallback for transfer pricing models for non-financial companies? (Yes/No/No opinion)

If not, what alternative methodology would you propose? (Backward-looking *payment delay*/Backward-looking *lookback*/Backward-looking *last reset*/Another alternative)

Please elaborate on the reasons for your answer, also taking into account possible interactions between asset classes and related instruments.

10.2. Do you think that the backward-looking *lookback period* would be the most appropriate methodology for building a €STR-based term structure that could function as a EURIBOR fallback for transfer pricing models for financial companies? (Yes/No/No opinion)

If not, what alternative methodology would you propose? (Backward-looking *payment delay*/Backward-looking *last reset*/Another alternative)

Please elaborate on the reasons for your answer, also taking into account possible interactions between asset classes and related instruments.

10.3. If your reply to Question 10.1 was affirmative (and/or your response to Question 10.2 was negative), would you agree with the proposal to include (i) a forward-looking term structure methodology on the first level of the waterfall structure and (ii) the backward-looking *last reset* term structure methodology on the second level of the waterfall structure as a backstop, in case a forward-looking term structure methodology is not available? (Yes/No/No opinion)

If not, what alternative methodology would you propose for the second level of the waterfall? (Backward-looking *payment delay*/Backward-looking *lookback*/Another alternative)

Please elaborate on the reasons for your answers, also taking into account possible interactions between asset classes and related instruments.

Question 11: Investment funds (Section 5.3.10)

11.1. Which methodology – forward-looking or backward-looking *lookback period* – would be most appropriate for building a €STR-based term structure that could function as a EURIBOR fallback provision for benchmarking purposes for investment funds? (Forward-looking/Backward-looking *lookback period*/Another alternative).

Please elaborate on the reasons for your answers, also taking into account possible interactions between asset classes and related instruments.

11.2. If you indicated the forward-looking methodology in Question 11.1, would you agree with the proposal to include (i) a forward-looking term structure methodology on the first level of the waterfall structure and (ii) the backward-looking *lookback period* term structure methodology on

the second level of the waterfall structure as a backstop, in case a forward-looking term structure methodology is not available? (Yes/No/No opinion)

If not, what alternative methodology would you propose for the second level of the waterfall? (Backward-looking *payment delay*/Backward-looking *last reset*/Another alternative)

Please elaborate on the reasons for your answers, also taking into account possible interactions between asset classes and related instruments.

Question 12: Asset classes and use cases

Are there any other asset classes or use cases that have not been covered by this consultation paper that you think should be considered by the working group? (Yes/No/No opinion)

If the answer is “yes”, please elaborate on the reasons for your answer and what €STR-based term structure methodology you would recommend as a potential EURIBOR fallback measure.

6 Spread adjustment

6.1 Introduction

In order to construct a suitable EURIBOR fallback measure, based on the €STR, that would ensure a smooth transition for EURIBOR-linked contracts should EURIBOR cease to exist, it is important to (i) consider the economic difference between EURIBOR and the selected €STR-based term structure, and (ii) to identify a methodology which can be used to compute this difference in order to adjust the €STR-based term structure to limit potential value transfers, thereby guaranteeing economic equivalence between both reference rates if the fallback provision is activated.

- The €STR reflects the wholesale euro unsecured overnight borrowing costs of banks located in the euro area, and a €STR-based term structure built using the methodologies described in chapters 3, 4 and 5 of this public consultation seek to represent the term value of liquidity for the corresponding tenors.

Whereas:

- EURIBOR reflects a term rate at which wholesale funds in euro could be obtained by credit institutions in the EU and EFTA countries in the unsecured money market. EURIBOR therefore includes a term value of liquidity, as well as various premia reflecting a bank's credit risk and other factors that are unique for each tenor (from one week to one year) that are not included in the €STR-based term structure.

Therefore, for a €STR-based fallback measure to be economically equivalent to EURIBOR to the greatest extent possible, in order to limit potential value transfers at the time the fallback is triggered it is necessary to add a spread adjustment that reflects the value of a bank's credit risk and other premia embedded in EURIBOR.

This chapter discusses the working group's views on possible spread adjustment methodologies and consults on the recommended option.

In order to identify the most suitable spread adjustment methodology, the working group set the following criteria:

- the way the spread adjustment is calculated should allow, to the extent possible, for a value neutral transition, i.e. a transition in which either no party to a contract referencing EURIBOR suffers a loss once the fallback measure has been triggered, or any loss is minimised;
- the way the spread is determined must be understood and widely accepted by market participants.

6.2 Types of spread adjustment methodologies

The working group identified four types of spread adjustment methodologies:

- the dynamic spread adjustment methodology;

- the forward spread adjustment methodology;
- the historical mean/median spread adjustment methodology;
- the spot spread adjustment methodology.

6.2.1 The dynamic spread adjustment methodology

The dynamic spread adjustment would be based on the replication of the credit/liquidity risk in another index, and can be computed based on the transaction data of unsecured short-term bank yield products collected from the markets, including the primary and secondary market, by deducting the €STR-based term structure yield from the yield of the transactions in scope for each available maturity. If there is insufficient information to compute all the tenors, the dynamic spread can then be calculated by interpolating and averaging the single data points, discarding outliers.

In theory, a dynamic spread could be added to any €STR-based term structure to make it economically equivalent to EURIBOR. However, in practice it is not known whether a dynamic spread would become available at the time EURIBOR fallback measures are triggered, for the following reasons:

- a) a dynamic spread relies on the same premise as EURIBOR – an active unsecured money market between banks for the construction of term rates;
- b) the methodology that will need to be developed is very complex.

It is not, therefore, obvious whether it is possible to create a new dynamic spread that reflects the term value of a bank's credit risk and liquidity but is different from the existing EURIBOR/€STR spread.

Potential advantages of the dynamic spread adjustment methodology:

- it offers a key benefit to market participants hedging credit/liquidity risk from an asset and liability management perspective;
- in the case of a fallback scenario, changes in credit/liquidity spreads for the banking industry could be implemented over time;
- as the credit/liquidity spread changes neither quickly nor frequently, transaction data for more than one day could be used, e.g. a five or ten-day rolling average;
- by averaging daily transaction data for a rolling period, the volume and diversity of credit data could be improved compared with a daily calculation.

Potential disadvantages of the dynamic spread adjustment methodology:

- It requires underlying transaction data and, therefore, the methodology could face similar, or even greater, challenges than EURIBOR;
- the additional transaction data from the primary and secondary market might not be sufficient;
- it is difficult to source transaction data;

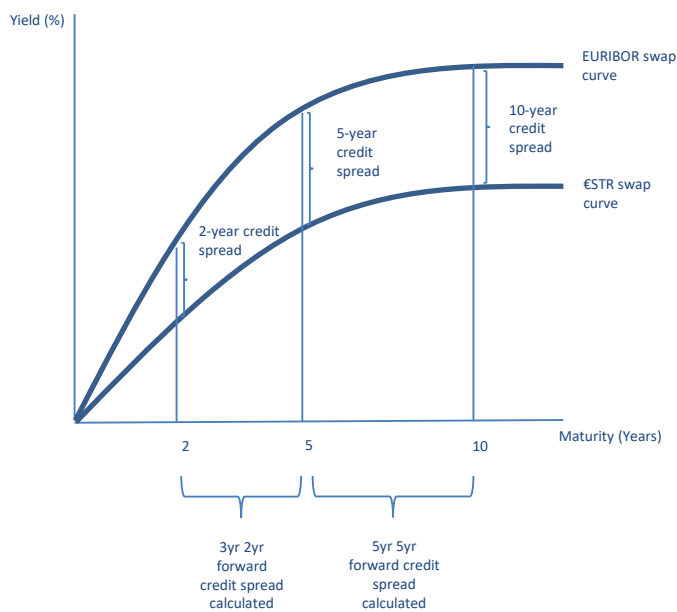
- there are administration and data access issues.

Based on this analysis, the working group disregarded the dynamic spread adjustment methodology and came to the view that a non-dynamic (i.e. a fixed) spread adjustment would need to be computed and applied.

6.2.2 Forward spread adjustment methodology

The forward spread adjustment is calculated using observed market prices for the forward spread between EURIBOR and the €STR-based term structure in the relevant tenor at the time the EURIBOR fallback is triggered.

Although the 2006 ISDA Definitions and *IBOR Fallbacks Protocol* specify the spread to be applied for every future date frozen at the point of the EURIBOR trigger event, the working group suggests specifying the spread just for the most liquid market data points, as explained in the example below, where the spread is defined for five points. For future dates beyond the length of the curve, the spread would remain static and equal to the spread of the last date of the curve.



t_0 = The first calibration date which is the date from which observations of the forward curves commence. It is defined as the date 1Y prior to the discontinuation date.

t_1 = The discontinuation date. The first day on which EURIBOR will not be published.

Next, there are the dates which define which credit spread should be applied after cessation. We define the following:

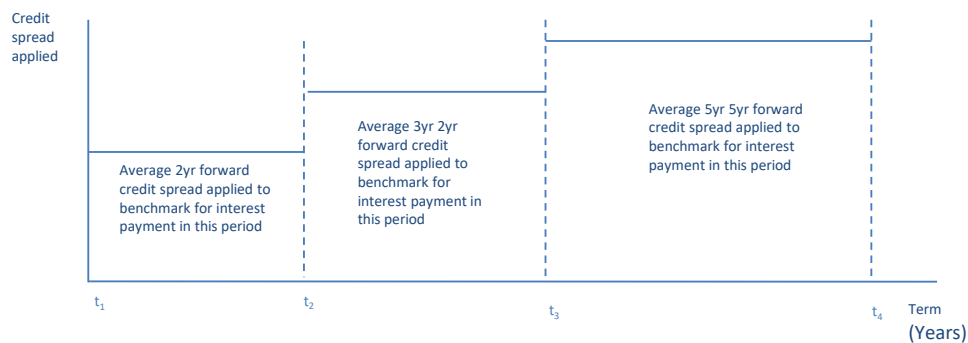
$t_2 = t_1 + 2$ years

$t_3 = t_1 + 5$ years

$t_4 = t_1 + 10$ years

$t_5 = t_1 + 20$ years

t_6 = Potential Final Replacement EURIBOR publication date ($t_1 + 60Y?$)



The replacement EURIBOR rate for any given day after cessation will then be obtained by taking the relevant term €STR rate and adding the credit spread according to the following map:

- For $t_1 \leq t < t_2$ Use 2Y average credit spread
- For $t_2 \leq t < t_3$ Use 2Y3Y average credit spread
- For $t_3 \leq t < t_4$ Use 5Y5Y average credit spread
- For $t_4 \leq t < t_5$ Use 10Y10Y average credit spread
- For $t_5 \leq t < t_6$ Use 20Y10Y average credit spread

The forward spread adjustment approach requires a forward EURIBOR curve and a forward €STR-based term structure discount curve, both of which would, ideally, extend out to 30-60 years.

Potential advantages of the adapted forward spread adjustment methodology:

- it prevents significant value transfers near the date the fallback is triggered because spread adjustments are in line with the expected market pricing as of the day before the fallback is triggered;
- the use of only liquid market data points enhances transparency and reliability.

Potential disadvantages of the adapted forward spread adjustment methodology:

- it requires functioning markets and extensive market data, which may not be readily available – any market data considered must be accurate, verifiable and accessible to market participants;

- the availability of the curves required to compute this approach would be dependent on a vendor continuing to receive data, and to calculate and publish the curves until the fallbacks are triggered – there is no guarantee that a vendor would do this;
- it may be vulnerable to undue impacts and distortions in the market;
- forward rates may not be observable close to the date of cessation.

6.2.3 Historical mean/median spread adjustment methodology

The historical mean/median spread adjustment could be based on the mean or median spot spread between the EURIBOR and the €STR-based term structure calculated over a significant, static lookback period (e.g. five years or ten years) prior to the relevant announcement or publication triggering the EURIBOR fallback provisions.

This spread adjustment could then be used from the end of a one-year transitional period after the EURIBOR fallback takes effect. During this transitional period, the spread to be used would be calculated using linear interpolation between the spot EURIBOR/€STR-based term structure spread at the time the fallback takes effect (i.e. the spot EURIBOR/€STR-based term structure spread on the last date that the relevant EURIBOR is published) and the spread that would apply after the end of the transitional period.

The one-year transitional period would mitigate against a “cliff effect” at the time the fallback takes effect if the spot EURIBOR/€STR-based term structure spread at that time differs from the historical mean/median. There will be a gradual progression during the one-year transitional period from that spot EURIBOR/€STR-based term structure spread to the spread adjustment that will apply going forward.

The historical mean/median approach requires historical spot EURIBOR fixings for each relevant tenor and historical spot €STR-based term structure fixings, in each case, over the relevant lookback period.

Potential advantages of the historical mean/median spread adjustment methodology:

- it reflects current market conditions at the time the fallback provision takes effect (and therefore could avoid a “cliff effect” at such a time) although it transitions to longer-term average market conditions over time;
- it captures the tendency of interest rates to fluctuate around a long-term mean;
- ultimately, it ameliorates the effect of market distortions and potential undue impacts at the time of triggering, because it is based on a transition to longer-term average market conditions;
- it is based on readily available information;
- ISDA adopted this spread adjustment methodology for EURIBOR fallback measures in the *IBOR Fallbacks Protocol* and would therefore ensure that hedge relationships are aligned.

Potential disadvantages of the historical mean/median spread adjustment methodology:

- it is unlikely to be present-value neutral on the calibration date because spot rates are unlikely to be consistent with forward rates and because the average historical market conditions may not match market expectations for future market conditions (including, for example, expected changes in monetary policy);
- it requires long histories of EURIBOR fixings and €STR-based term structure fixings.

6.2.4 Spot spread adjustment methodology

The spread adjustment could be based on the spot spread between EURIBOR and the €STR-based term structure on the day preceding the relevant announcement or publication triggering the EURIBOR fallback provisions. A variation would be to use the average of the daily spot spread between EURIBOR and the €STR-based term structure over a specified number of days (e.g. five trading days, ten trading days or one month). This approach is similar to the historic mean/median approach, albeit for a very short time and without the transitional period.

The spot-spread approach requires spot EURIBOR fixings for each relevant tenor and spot €STR-based term structure fixings.

The spot spread approach is not compatible with the compounded setting in arrears rate.

Potential advantages of the spot spread adjustment methodology:

- it is easy to implement and understand;
- it requires only EURIBOR fixings and €STR-based term structure fixings at the time of triggering.

Potential disadvantages of the spot spread adjustment methodology:

- it is unlikely to be present-value neutral on the calibration date because it only reflects spreads under market conditions at the time of calibration, which could differ from anticipated future market conditions (including, for example, expected changes in monetary policy) – this may be of particular concern if the EURIBOR fallback measure is triggered during a time of market stress.

6.3 Conclusions for spread adjustment

ISDA, the ARRC⁹² and the working group on sterling risk-free reference rates⁹³ have all held detailed consultations on the topic, and have all revealed that respondents have a clear preference for a five-year historical median spread adjustment methodology (with a one-year transition period specifically for US consumer products). While ISDA conducted its consultations on derivatives, the consultations of the ARRC and the working group on sterling risk-free reference rates also covered cash products. For cash products referencing EURIBOR, the historical mean/median spread adjustment methodology therefore has the advantage of being consistent with the spread

⁹² See *ARRC's recommendation on spread adjustment methodologies for cash products*, April 2020.

⁹³ See the *Summary of responses from the working group on sterling risk-free reference rates on the consultation paper on credit adjustment spread methodologies for fallbacks in cash products referencing GBP Libor*, March 2020.

adjustment methodology that will be included in ISDA derivatives referencing EURIBOR and with USD and GBP-denominated cash products referencing LIBOR. This will facilitate hedging ease and alignment between jurisdictions and across asset classes, as discussed in Section 5.2.

In addition, adding the historical mean/median spread adjustment to the €STR-based term structure methodology would ensure value neutral transition to the extent possible, establishing a EURIBOR fallback that is economically equivalent.

Finally, the historic mean/median spread adjustment methodology is easy to understand. Also, because this methodology has been widely adopted in other jurisdictions and across asset classes, the working group expects it to be broadly accepted by market participants.

6.4 Questions on spread adjustment

Question 13: Please indicate whether you agree with the conclusion of the working group that the historical mean/median spread adjustment methodology should be the preferred approach for cash products. (Yes/No/No opinion)

If not, please rank the approaches discussed in Section 6.2 (dynamic spread adjustment methodology/forward spread adjustment methodology/spot spread adjustment methodology).

Please explain why you prefer one methodology to another and what you think the main drawbacks are for the less preferred methodologies.

Question 14: Do you believe that having the same spread adjustment methodology for EURIBOR-linked cash products and other IBOR-linked cash products (the ISDA five-year historical median recommended by the ARRC and by the working group on sterling risk-free reference rates) is:

- c) essential;
- d) highly desirable;
- e) useful;
- f) unimportant.

Please give the reasons for your answer.

Question 15: Some cash products may fall back on backward-looking term rates fixing *in arrears*, while others may fall back on a forward-looking term rate or a backward-looking term rate fixing *in advance*.

Therefore, do you agree that the spread adjustment value for each tenor should be the same, irrespective of whether the products fall back on a forward-looking or a backward-looking rate? (Yes/No/No opinion)

Please elaborate on the reasons for your answer.

Question 16: With regard to whether the historical €STR market data are sufficient to compute any adjustment spread, do you agree that, even though there might not be sufficient €STR historical

market data, data can be obtained by using historical EONIA market data with a fixed spread of 8.5 bps between the two indices, given that EONIA has been recalibrated to €STR + 8.5 bps? (Yes/No/No opinion)

Please give the reasons for your answer.

Question 17: Do you think it is useful that for some cash products a one-year period would be applied for transition to the historic mean/median spread adjustment methodology?

Please give the reasons for your answer, and explain for which cash products the above might, or might not be, useful.

7 Calculation methodologies and conventions

7.1 Compounded average versus simple average

The working group recommends using the compounded average methodology, as described in the [public consultation on the publication by the ECB of compounded term rates using the €STR](#).

The working group believes that any use of simple averaging rather than compound averaging would not be deemed appropriate as it would ignore the fundamental principle of time value of money. It would also be inconsistent with the standards used in euro money markets and the derivatives market. In addition, the basis between a simple average and compounded average would be wider in higher interest rate environments and for longer tenors.

Although this is not envisaged for the euro area, market participants could use simple average rates⁹⁴ in addition to compounded €STR rates should this address specific market needs. For example, some market participants may consider the calculation of a simple rate to be more straightforward than it is for a compounded rate (e.g. when there are changes in the outstanding principal during the same interest rate period) and that this simplicity outweighs the principle of the time value of money. However, it should be noted that these issues could be addressed by using a non-cumulative compounded rate⁹⁵.

7.2 Including spread adjustment in the compounded rate

For new contracts referencing €STR backward-looking term rates, the working group recommends using the compounded average methodology, as described in Section 7.1. However, for legacy and new contracts referencing EURIBOR, which will require a EURIBOR fallback measure based on a backward-looking term structure methodology as proposed in Chapter 5, the inclusion of a spread adjustment is recommended to ensure that the fallback measure is economically equivalent, and also to avoid value transfer. In addition, market participants could decide to calculate compounded €STR rates that include a commercial margin alongside spread adjustments considering specific market needs. However, as the inclusion of a commercial margin is at the discretion of the individual market participant, the working group will not provide any recommendations in this regard.

The ECB has no intention of providing either the spread adjustment or an all-in rate consisting of (i) compounded €STR rates and (ii) a spread adjustment. The working group is therefore seeking market feedback in this consultation as to whether there is any appetite for using the spread adjustment and/or an all-in rate to at least facilitate a EURIBOR fallback measure that consists of (i) compounded €STR rates as proposed in Chapter 5, and (ii) a spread adjustment as proposed in Chapter 6.

⁹⁴ Compliant with the IOSCO principles for financial benchmarks and Article 28(2) of the BMR.

⁹⁵ See the [Recommendations for SONIA loan market conventions](#), September 2020.

Question 18: Do you agree with the working group’s conclusion that it would be useful for market participants to have access to a publication of the spread adjustment and/or an all-in rate that consists of (i) compounded €STR rates with an observation shift as proposed in Chapter 5, and (ii) a spread adjustment as proposed in Chapter 6?

Please elaborate.

7.3 Flooring

The working group recommends using the compounded average methodology, as described in Section 7.1.1, without including a floor (e.g. zero floor) on the daily €STR value but applying, instead, any floor only to the sum of the compounded term rate plus the spread adjustment. This approach seems to be the most efficient from an operational/IT perspective, given that market participants have now embedded potential floors to EURIBOR in their systems, so systems can continue to reference the compounded €STR rate and apply the same floor to it, should EURIBOR cease to exist. This methodology is aligned with the fallback formula used by ISDA on derivatives, where the floor is applied on the sum of the compounded term rate plus the spread adjustment and would, therefore, enhance ease of hedging. However, benchmark administrators other than the ECB or market participants could also decide to calculate compounded rates that include a floor on the daily €STR value, considering specific market needs. This has been recognised for the loan market by the sterling working group on risk-free reference rates in its [recommendations for SONIA loan market conventions](#) and the US ARRC in its [SOFR ‘In Arrears’ Conventions for Syndicated Loans](#). However, the working group believes that the use of such an alternative approach would be operationally complex and should, therefore, be left to the discretion of individual market participants, and for specific market segments as syndicated loans.

Question 19: Do you agree with the working group’s view that if a floor were included, it should be on the sum of the €STR compounded rate plus the spread adjustment?

Please elaborate.

7.4 Compounding the rate versus compounding the balance

Compounding the rate and compounding the balance are two ways of determining interest, depending on whether the principal outstanding is considered to be in the compounded rate calculation or not.

In **compounding the rate**, interest is determined by applying the compounded €STR rate to the principal outstanding. This method accurately compounds interest when the principal is unchanged within an interest period or, if the principal is paid out, when any accompanying interest is paid out at the same time. This is the method used by the ECB for its proposed compounded €STR rates and index. This formula is that applied by ISDA on derivatives where the outstanding notional is constant

during the interest rate period, and can also be applied on a daily basis as part of a non-cumulative compounding calculation.⁹⁶

By contrast, in **compounding the balance** the overnight €STR rate is multiplied by the daily outstanding principal and unpaid accrued interest (collectively the daily balance). Compounding is only applicable on business days and solely in respect of the €STR (not the margin). This approach accurately compounds interest when the loan is subject to intra-period principal fluctuations (whether through prepayments or the sale of the loan).

Based on its simpler calculation methodology and its consistency with the derivative market the working group recommends the *compounding the rate* methodology. However, the working group believes the usage of *compounding the balance* to be appropriate for certain specific market segments.

Question 20: Do you agree that, in general, compounding the rate is the best calculation methodology?

Please provide your reasoning.

7.5 Lookback with or without an observation shift

In respect of the backward-looking *lookback period* term structure methodology⁹⁷, there are generally two ways of applying a compounded rate in a contract. These differ in the way the daily €STRs are weighted, depending on whether an observation shift is applied or not.

Under the “shift approach” the weighting of both the rate and the day (the latter is required in order to account for weekends and public holidays) is shifted to the earlier observation period. This is the approach used by ISDA for derivatives and in the ECB’s index and compounded rates.

Under the “without shift approach” (also known as the “lag” or “observational lag”) the relevant observation period lags the interest period by a fixed number of days (typically five business days), although the day weighting is not shifted.

For instance, for a two-business day lookback period, the rate that would be used to calculate the interest owed today would be that of two days ago. So, if today is Friday, the input used for the calculation would be Wednesday’s rate:

- if using an observation lag, the weighting applied to Wednesday’s rate would, then, be Friday’s weighting, i.e. three, since Friday covers three calendar days until the next business day, i.e. Monday.

⁹⁶ See the *SONIA Loan Conventions and ARRC Conventions for Compounded SOFR in Arrears*.

⁹⁷ This issue does not apply in the case of *payment delay*, given that the observation period and the interest period are the same. It does not apply either to *last reset*, which shifts the entire observation period.

- if using an observation shift, the weighting applied to Wednesday's rate would only be one, as Wednesday covers just one calendar day until the next business day, i.e. Thursday.

Applying the shift approach with a two-business day lookback period will match OIS contracts, while the lag approach will result in some basis.

Note that for a five-business day lookback calculation, the differences in weighting between observation shift and observation lag only occur in the case of bank holidays.

The example below shows the impact of the observation shift versus the impact of the observation lag in the calculation of compounded rates, assuming a five-day lookback period and considering the period from 15 April to 15 May, which includes public holidays and a weekend.

Interest period		Weighting		Observation period	Rate	
Start	End	Lag	Shift	Rate fixing	Pre €STR	Comment
15/04/19	16/04/19	1	1	Monday 08/04/19	-0.450	
16/04/19	17/04/19	1	1	Tuesday 09/04/19	-0.448	
17/04/19	18/04/19	1	1	Wednesday 10/04/19	-0.447	
18/04/19	23/04/19	5	1	Thursday 11/04/19	-0.447	Easter weekend in interest period!!
23/04/19	24/04/19	1	3	Friday 12/04/19	-0.444	Weekend in observation period
24/04/19	25/04/19	1	1	Monday 15/04/19	-0.446	
25/04/19	26/04/19	1	1	Tuesday 16/04/19	-0.446	
26/04/19	29/04/19	3	1	Wednesday 17/04/19	-0.449	
29/04/19	30/04/19	1	5	Thursday 18/04/19	-0.446	Easter weekend in observation period!!
30/04/19	02/05/19	2	1	Tuesday 23/04/19	-0.447	Labour Day target Holiday
02/05/19	03/05/19	1	1	Wednesday 24/04/19	-0.449	
03/05/19	06/05/19	3	1	Thursday 25/04/19	-0.446	

The observation lag approach weights the rates on the basis of the interest period itself, regardless of how long those rates have been “live”. This means the Thursday 18-23 April input would reference the Thursday 11 April rate and would be given a weighting of five. This is to cover the Easter holidays, which included public holidays on 19 April and 22 April and a weekend in the interest period.

The shift method weights the rates on the basis of the number of days they apply during the observation period. This means the 18-23 April input would still reference the April 11 rate, although it would be given a weighting of just one as this rate was only “live” for a single day. The 18 April rate, which prevails for the period 18–23 April, would be given a weighting of five when it is referenced five days later, during the rate from the 29-30 April period.

The shift methodology is seen as a more natural measure of interest over the period and would be consistent with the convention adopted for the publication of the indices across jurisdictions, including the euro area. Taking into account that the proposed ECB index measures the cumulative impact of compounding the €STR on a given day, the weights that are given to the input rates correspond to the days where those rates were indeed applicable (i.e. “live”).

Using *lookback period with observation shift* is also consistent with the derivatives market, which seeks to apply a two-day lookback with an observation shift. The use of *lookback period without observation shift* would result in some hedging basis risk, and the use of the observation shift is also in line with the ARRC recommendations in respect of FRNs. There have also been SONIA-referencing syndicated loans using *lookback with observation shift*.

The *lookback period without observation shift* has been used in the SONIA-referencing FRN market and as well as in some SONIA-referencing bilateral loans. The ARRC conventions for syndicated loans suggest using *lookback period without observation shift*, given the characteristics of the US domestic loans market, as do the sterling working group conventions for SONIA loans (although observation shift is recognised as a valid and robust alternative). Using this methodology would currently require the parties to calculate the interest themselves, assuming no calculation tools have been developed.

Loan system providers have included the methodology in respect of LIBOR transition, whereas observation shift has been developed but still requires further work (e.g. to account for differences that may arise between the number of days in the interest period and the observation period).

Given the above, the working group therefore recommends applying the shift rather than the lag methodology to the compound rate. The working group notes that the lag approach is a viable and robust alternative for market participants wishing to use that approach (e.g. for consistency with the USD and the GBP loan markets).

Question 21: Do you agree that the backward-looking *lookback period* term structure methodology with an observational shift is the preferable calculation methodology?

Do you agree that the lag approach is a viable and robust alternative to the observation shift?

Please elaborate on the reasons for your answer.

7.6 Lookback period

In respect of the backward-looking *lookback period* term methodology, the parties will need to consider the appropriate length of the lookback period. In SONIA-referencing FRNs and loans, a five-business day lookback period has commonly been used. This has also been seen in €STR bonds issued to date.

The length of the lookback period would depend on user needs:

- a lookback period longer than five business days may be required for some borrowers to accommodate the interest calculation, as well as practical considerations such as approvals and sign-off, e.g. in emerging markets;
- a shorter lookback period, e.g. three days, may be preferable for hedging purposes, in order to reduce the basis versus €STR OIS;
- the length of the interest period may also be indicative for the selection of the length of the lookback period, raising the question of whether a five-business day lookback, for instance, would be appropriate for each of the standardised interest periods (one week, one month, three months, six months and twelve months);

- if the observation shift convention is used in contracts, then parties can use the ECB index, irrespective of the length of the lookback period.

The working group concludes that different lookback periods would be possible depending on the specific needs of certain markets and, therefore, does not believe it is necessary to make any recommendations for a specific lookback period.

8 Conclusion and consultation questions

8.1 Conclusion

The aim of this public consultation paper is to survey market participants, organisations representing market participants, and other interested stakeholders, with regard to the most appropriate EURIBOR fallback provisions for cash products and derivatives products which are not based on *ISDA's 2006 Definitions*. The consultation covers:

- 1) the most appropriate EURIBOR fallback rate based on (a) a €STR-based term structure methodology for each financial product assessed against a list of key criteria, and (b) a spread adjustment methodology used to avoid potential value transfer if the fallback provision is triggered;
- 2) the market conventions used to calculate the compounded term rate based on the €STR.

Table 1. EURIBOR fallback measures for cash products surveyed in this consultation paper:

Products	Corporate lending	Retail mortgages/ consumer loans/ SME loans	Current accounts	Trade finance products	Export and emerging markets finance products	Debt securities	Securitisations	Transfer pricing model		Investments funds (benchmarking)
								For corporates and some financials:	For most financials:	
Fallback methodology recommended for the first level of the waterfall	BWL lookback	FWL	BWL payment delay	FWL	FWL	BWL lookback	<i>Depending on the underlying assets</i>	FWL	BWL lookback	FWL? BWL lookback?
Fallback methodology recommended for the second level of the waterfall (if needed)	N/A	BWL last reset up to 3M or BWL lookback	N/A	BWL last reset	BWL Last reset up to 3M	N/A	<i>Depending on the underlying assets</i>	BWL last reset	N/A	BWL lookback
Spread adjustment	Historical mean/median methodology									

1) (a) €STR-based term structure methodology

The working group considered two types of **€STR-based term structure methodology** as a component of EURIBOR fallback measures.

- 3) Forward-looking term structures⁹⁸ would be based on the derivatives markets referencing the €STR and reflect market expectations of the evolution of the €STR during the upcoming interest rate period. They would be known at the start of the interest rate period⁹⁹.

⁹⁸ Forward-looking rates rely on the €STR derivative markets and capture interest rate expectations.

⁹⁹ See *Recommendations of the working group on euro risk-free rates on the transition path from EONIA to the €STR and on a €STR-based forward-looking term structure methodology*, 13 March 2019.

- 4) Backward-looking term structures¹⁰⁰ are based on simple mathematical calculations of the value of past realised daily fixings of the overnight risk-free rate over a given period of time. The working group analysed the **payment delay**, the **lookback period** and the **last reset** methodologies considered viable¹⁰¹ for specific asset classes, and its conclusions are subject to this public consultation.

Based on the analysis of various pre-set selection criteria, and by considering (1) the FSB guidance, (2) the EURIBOR fallback measures that ISDA has included in the *2006 ISDA Definitions* and *IBOR Fallbacks Protocol* and (3) the recommendations of risk-free rates working groups in other jurisdictions, the working group acknowledges that **for more sophisticated and globally operating market participants the most appropriate EURIBOR fallback measure would be the backward-looking lookback period term structure methodology.**

However, the working group also acknowledges that there may be **some uses cases for certain products or for less sophisticated and locally operating market participants for whom there is a clear necessity to know the interest rate in advance, which would mean the forward-looking term structure methodology would be better suited**, ensuring greater client acceptance, or for whom consistency with ISDA's proposals for derivative products might be less relevant. The working group has identified a number of use cases which might require a forward-looking term structure methodology to be introduced on the first level of the waterfall fallback, while including either the backward-looking *lookback period* or *last reset* term structure methodology (or another robust alternative such as the central bank rate) on the second level of the waterfall structure, in case the forward-looking term structure methodology is not (yet) available at the time the EURIBOR fallback measure is triggered:

- mortgages, consumer loans and SME loans;
- trade finance products, where financing is granted on a discounted interest basis;
- export and emerging markets finance products, where the counterparties involved include export credit agencies (ECAs), multilateral agencies, state-owned companies, government ministries and sovereigns;
- transfer pricing models for some financial and non-financial companies.

Finally, the working group invites feedback from market participants as to which methodology – forward-looking or backward-looking *lookback period* – would be most appropriate for building a €STR-based term structure that could function as a EURIBOR fallback provision for benchmarking purposes for investment funds.

1) (b) Spread adjustment methodology

The working group considers that by **adding a spread adjustment to the €STR-based term structure methodology** market participants could establish a EURIBOR fallback that is economically equivalent, allowing for a value neutral transition to the extent possible should EURIBOR cease to exist. Using the historical mean/median spread adjustment methodology has the advantage that it is easy to understand and would be consistent with the spread adjustment methodology to be included in ISDA derivatives referencing EURIBOR and USD and GBP-denominated cash products referencing

¹⁰⁰ Backward-looking rates rely on compounding of the €STR.

¹⁰¹ See [Update by Subgroup 2 on term rate methodologies](#), 29 August 2019.

LIBOR. This would facilitate hedging ease and alignment between jurisdictions/across asset classes. **The working group therefore considers the historic mean/median spread adjustment to be the most appropriate methodology for calculating a spread adjustment to be included in a EURIBOR fallback measure.**

2) Market conventions to be used to calculate the compounded term rate based on the €STR

For those cash products for which the working group suggests using a backward-looking term structure, **the working group advises market participants to use the compounded average methodology, as described in the [public consultation on the publication by the ECB of compounded term rates using the €STR](#).**

With regard to **market conventions**, in this consultation paper the working group invites market feedback as to whether there is any appetite for using a spread adjustment and/or an all-in rate to at least facilitate a EURIBOR fallback measure consisting of (i) compounded €STR rates (as suggested), and (ii) a spread adjustment.

In addition, the working group recommends using the compounded average methodology without including a floor (e.g. a zero floor) on the daily €STR value, but applying, instead, any floor only to the sum of the compounded term rate plus spread adjustment.

Thirdly, the working group discussed two ways of determining a loan's interest, i.e. considering or not considering the principal outstanding to be a part of the compounded rate calculation – compounding the rate and compounding the balance. Based on the simpler calculation methodology and consistency with the derivative market, the working group recommends the *compounding the rate* methodology.

Finally, in respect of the backward-looking *lookback period* term structure methodology, there are generally two ways of applying a compounded rate in a contract. These differ in respect of the way the daily €STRs are weighted, and depend on whether an observation shift is applied or not. The shift methodology is seen as a more natural measure of interest over the period and would be consistent with the convention adopted for the publication of the indices across jurisdictions and by ISDA. The working group therefore recommends using the backward-looking *lookback period* with an observation shift, and notes that the lag approach is a viable and robust alternative for market participants wishing to use that approach (e.g. for consistency with the USD and GBP loan markets).

8.2 Questions for the consultation

Criteria used in the analysis of EURIBOR fallbacks rates (see Section 5.2)

- Robustness/availability
- Operational ease
- Client acceptance
- Hedging ease and hedge accounting impacts
- Other accounting impacts

- Risk management impacts
- Consistency with other jurisdictions across asset classes

Question 1: Can you identify any additional criteria that should be taken into account? (Yes/No/No opinion)

Please elaborate on the reasons for your answer.

Question 2: Do you agree with the analysis conducted in Section 5.2.1 and the conclusions of the working group presented in Section 5.2.2 with regard to the evaluation of the €STR-based term structure methodologies on the basis of the selection criteria? (Yes/No/No opinion)

Please elaborate on the reasons for your answer.

Use cases analysis (see Section 5.3)

Products	Corporate lending	Retail mortgages/ consumer loans/ SME loans	Current accounts	Trade finance products	Export and emerging markets finance products	Debt securities	Securitisations	Transfer pricing model		Investments funds (benchmarking)
Fallback methodology recommended for the first level of the waterfall	BWL lookback	FWL	BWL payment delay	FWL	FWL	BWL lookback	Depending on the underlying assets	For corporates and some financials: FWL	For most financials: BWL lookback	FWL? BWL lookback?
Fallback methodology recommended for the second level of the waterfall (if needed)	N/A	BWL last reset up to 3M or BWL lookback	N/A	BWL last reset	BWL Last reset up to 3M	N/A	Depending on the underlying assets	BWL last reset	N/A	BWL lookback
Spread adjustment	Historical mean/median methodology									

Question 3: Corporate lending (Section 5.3.1)

Do you agree with the working group's conclusion that the backward-looking *lookback period* methodology would be the most appropriate methodology for building a €STR-based term structure that could function as a fallback for most, by value, of the corporate lending linked to EURIBOR? (Yes/No/No opinion)

If not, what alternative methodology would you propose? (Forward-looking/Backward-looking *payment delay*/Backward-looking *last reset*/Another alternative)

Please elaborate on the reasons for your answer, also taking into account the possible interactions between asset classes and related instruments.

Question 4: Mortgages, consumer loans and SME loans (Section 5.3.2)

4.1. Do you agree with the working group's conclusion that a forward-looking methodology would be the most appropriate methodology for building a €STR-based term structure that could function as a fallback for retail mortgages, consumer loans and SME loans linked to EURIBOR? (Yes/No/No opinion)

opinion)

If not, what alternative methodology would you propose? (Backward-looking *payment delay*/ Backward-looking *lookback period*/Backward-looking *last reset*/Another alternative)

Please elaborate on the reasons for your answer, also taking into account possible interactions between asset classes and related instruments.

4.2. If your reply to Question 4.1 was affirmative, would you agree with the proposal to include a term structure built using a forward-looking methodology on the first level of the waterfall structure and, on the second level of the waterfall structure, to include as a backstop, in case a forward-looking term structure methodology is not available, either:

- a) a term structure built using the backward-looking *last reset* methodology (up to three-month tenors) or, alternatively;
- b) a term structure built using the backward-looking *lookback period* methodology?

(a/b/Neither)

If neither, what alternative would you propose for the second level of the waterfall? (Backward-looking *payment delay*/Another alternative)

Please elaborate on the reasons for your answer, also taking into account possible interactions between asset classes and related instruments.

4.3. Would you expect your institution to have to cope with any impediments in the case of a rate calculated using the backward-looking *lookback period* methodology for retail mortgages, consumer loans and SME loans? (Yes/No/No opinion)

Please indicate whether you are (representing) a lender or a borrower. (Lender/borrower)

Please elaborate on the reasons for your answer and, if your reply was affirmative, please specify what those impediments could be, and whether/how these impediments could be addressed.

4.4. Would you expect your institution to have to cope with any impediments in the case of a rate calculated using the backward-looking *last reset* methodology for retail mortgages, consumer loans and SME loans? (Yes/No/No opinion)

Please indicate whether you are (representing) a lender or a borrower. (Lender/borrower)

Please elaborate on the reasons for your answer and, if your reply was affirmative, please specify what those impediments could be, and whether/how these impediments could be addressed.

Question 5: Current accounts (Section 5.3.3)

Do you agree that the backward-looking *payment delay* methodology would be the most appropriate methodology for building a €STR-based term structure that could function as a fallback for EURIBOR for current accounts linked to EURIBOR? (Yes/No/No opinion)

If not, what alternative methodology would you propose? (Forward-looking/Backward-looking *lookback period*/Backward-looking *last reset*/Another alternative)

Question 6: Trade finance (Section 5.3.4)

6.1. Do you agree with the working group's conclusion that a forward-looking methodology would be the most appropriate methodology for building a €STR-based term structure that could function as a EURIBOR fallback for trade finance? (Yes/No/No opinion)

If not, what alternative methodology would you propose? (*Backward-looking payment delay/Backward-looking lookback period/Backward-looking last reset/ Please specify another alternative*)

Please elaborate on the reasons for your answer, also taking into account possible interactions between asset classes and related instruments.

6.2. If your reply to Question 6.1 was affirmative, would you agree with the proposal to include: (i) a term structure built using a forward-looking methodology on the first level of the waterfall structure and (ii) a term structure built using the backward-looking *last reset* methodology on the second level of the waterfall structure as a backstop, in case a forward-looking term structure methodology is not available? (Yes/No/No opinion)

If not, what alternative methodology would you propose for the second level of the waterfall? (*Backward-looking payment delay/Backward-looking lookback period/Another alternative*)

Please elaborate on the reasons for your answers, also taking into account possible interactions between asset classes and related instruments.

Question 7: Export and emerging markets finance products (Section 5.3.5)

7.1. Do you agree with the working group's conclusion that a forward-looking methodology would be the most appropriate methodology for building a €STR-based term structure that could function as a fallback for the majority of EURIBOR-linked products used for export and emerging markets finance products? (Yes/No/No opinion)

If not, what alternative methodology would you propose? (*Backward-looking lookback period/Backward-looking payment delay/Backward-looking last reset/Another alternative*)

Please elaborate on the reasons for your answer, also taking into account possible interactions between asset classes and related instruments.

7.2. Do you agree with the working group's conclusion that for some export and emerging markets finance products – those involving sophisticated counterparties and developed markets – an *in arrears* methodology might be preferable and, in that case, a backward-looking *lookback period* methodology would be the most appropriate methodology for building a €STR-based term structure that could function as a EURIBOR fallback for such export and emerging markets finance products? (Yes/No/No opinion)

If not, what alternative methodology would you propose? (*Forward-looking/Backward-looking payment delay/Backward-looking last reset/Another alternative*)

Please elaborate on the reasons for your answer, also taking into account possible interactions between asset classes and related instruments.

7.3. If your reply to Question 7.1 was affirmative (and/or your response to Question 7.2 was

negative), would you agree with the proposal to include (i) a term structure built using a forward-looking methodology on the first level of the waterfall structure and (ii) a term structure built using the backward-looking *last reset* methodology (up to three-month tenors) on the second level of the waterfall structure as a backstop, in case a forward-looking term structure methodology is not available? (Yes/No/No opinion)

If not, what alternative methodology would you propose for the second level of the waterfall? (Backward-looking *payment delay*/Backward-looking *lookback period*/Another alternative)

Please elaborate on the reasons for your answers, also taking into account possible interactions between asset classes and related instruments.

Question 8: Debt securities (Section 5.3.6)

Do you agree that the backward-looking *lookback period* would be the most appropriate methodology for building a €STR-based term structure that could function as a fallback for EURIBOR-linked debt securities? (Yes/No/No opinion)

If not, what alternative methodology would you propose? (Forward-looking/Backward-looking *payment delay*/Backward-looking *last reset*/Another alternative)

Please elaborate on the reasons for your answer, also taking into account possible interactions between asset classes and related instruments.

Question 9: Securitisations (Section 5.4.7)

9.1. Do you agree that for those securitisations that will include underlying assets for which the working group has identified the backward-looking *lookback period* as the most appropriate methodology for building a €STR-based term structure that could function as a EURIBOR fallback (e.g. syndicated loans, business loans and debt securities), it would be advisable to include the same EURIBOR fallback measure?

If not, what alternative methodology would you propose? (Backward-looking *payment delay*/Backward-looking *lookback*/Backward-looking *last reset*/Another alternative)

Please elaborate on the reasons underlying your answer, also taking into account possible interactions among asset classes and related instruments.

9.2. Do you agree that for those securitisations that will include underlying assets for which the working group has identified the forward-looking methodology as the most appropriate methodology for building a €STR-based term structure that could function as a EURIBOR fallback (e.g. mortgages and SME loans), it would be advisable to include the same waterfall structure as a EURIBOR fallback measure?

If not, what alternative methodology would you propose? (Backward-looking *payment delay*/Backward-looking *lookback period*/Backward-looking *last reset*/Another alternative)

Please elaborate on the reasons for your answer, also taking into account possible interactions between asset classes and related instruments.

Question 10: Transfer pricing models (Section 5.3.9)

10.1. Do you agree with the working group's conclusions that a forward-looking methodology would be the most appropriate methodology for building a €STR-based term structure that could function as a EURIBOR fallback for transfer pricing models for non-financial companies? (Yes/No/No opinion)

If not, what alternative methodology would you propose? (Backward-looking *payment delay*/Backward-looking *lookback*/Backward-looking *last reset*/Another alternative)

Please elaborate on the reasons for your answer, also taking into account possible interactions between asset classes and related instruments.

10.2. Do you think that the backward-looking *lookback period* would be the most appropriate methodology for building a €STR-based term structure that could function as a EURIBOR fallback for transfer pricing models for financial companies? (Yes/No/No opinion)

If not, what alternative methodology would you propose? (Backward-looking *payment delay*/Backward-looking *last reset*/Another alternative)

Please elaborate on the reasons for your answer, also taking into account possible interactions between asset classes and related instruments.

10.3. If your reply to Question 10.1 was affirmative (and/or your response to Question 10.2 was negative), would you agree with the proposal to include (i) a forward-looking term structure methodology on the first level of the waterfall structure and (ii) the backward-looking *last reset* term structure methodology on the second level of the waterfall structure as a backstop, in case a forward-looking term structure methodology is not available? (Yes/No/No opinion)

If not, what alternative methodology would you propose for the second level of the waterfall? (Backward-looking *payment delay*/Backward-looking *lookback*/Another alternative)

Please elaborate on the reasons for your answers, also taking into account possible interactions between asset classes and related instruments.

Question 11: Investment funds (Section 5.3.10)

11.1. Which methodology – forward-looking or backward-looking *lookback period* – would be most appropriate for building a €STR-based term structure that could function as a EURIBOR fallback provision for benchmarking purposes for investment funds? (Forward-looking/Backward-looking *lookback period*/Another alternative).

Please elaborate on the reasons for your answers, also taking into account possible interactions between asset classes and related instruments.

11.2. If you indicated the forward-looking methodology in Question 11.1, would you agree with the proposal to include (i) a forward-looking term structure methodology on the first level of the waterfall structure and (ii) the backward-looking *lookback period* term structure methodology on the second level of the waterfall structure as a backstop, in case a forward-looking term structure methodology is not available? (Yes/No/No opinion)

If not, what alternative methodology would you propose for the second level of the waterfall?

(Backward-looking *payment delay*/Backward-looking *last reset*/Another alternative)

Please elaborate on the reasons for your answers, also taking into account possible interactions between asset classes and related instruments.

Question 12: Asset classes and use cases

Are there any other asset classes or use cases that have not been covered by this consultation paper that you think should be considered by the working group? (Yes/No/No opinion)

If the answer is “yes”, please elaborate on the reasons for your answer and what €STR-based term structure methodology you would recommend as a potential EURIBOR fallback measure.

Question 13: Please indicate whether you agree with the conclusion of the working group that the historical mean/median spread adjustment methodology should be the preferred approach for cash products. (Yes/No/No opinion)

If not, please rank the approaches discussed in Section 6.2 (dynamic spread adjustment methodology/forward spread adjustment methodology/spot spread adjustment methodology).

Please explain why you prefer one methodology to another and what you think the main drawbacks are for the less preferred methodologies.

Question 14: Do you believe that having the same spread adjustment methodology for EURIBOR-linked cash products and other IBOR-linked cash products (the ISDA five-year historical median recommended by the ARRC and by the working group on sterling risk-free reference rates) is:

- c) essential;
- d) highly desirable;
- e) useful;
- f) unimportant.

Please give the reasons for your answer.

Question 15: Some cash products may fall back on backward-looking term rates fixing *in arrears*, while others may fall back on a forward-looking term rate or a backward-looking term rate fixing *in advance*.

Therefore, do you agree that the spread adjustment value for each tenor should be the same, irrespective of whether the products fall back on a forward-looking or a backward-looking rate? (Yes/No/No opinion)

Please elaborate on the reasons for your answer.

Question 16: With regard to whether the historical €STR market data are sufficient to compute any adjustment spread, do you agree that, even though there might not be sufficient €STR historical market data, data can be obtained by using historical EONIA market data with a fixed spread of 8.5 bps between the two indices, given that EONIA has been recalibrated to €STR + 8.5 bps? (Yes/No/No

opinion)

Please give the reasons for your answer.

Question 17: Do you think it is useful that for some cash products a one-year period would be applied for transition to the historic mean/median spread adjustment methodology?

Please give the reasons for your answer, and explain for which cash products the above might, or might not be, useful.

Question 18: Do you agree with the working group's conclusion that it would be useful for market participants to have access to a publication of the spread adjustment and/or an all-in rate that consists of (i) compounded €STR rates with an observation shift as proposed in Chapter 5, and (ii) a spread adjustment as proposed in Chapter 6?

Please elaborate.

Question 19: Do you agree with the working group's view that if a floor were included, it should be on the sum of the €STR compounded rate plus the spread adjustment?

Please elaborate.

Question 20: Do you agree that, in general, compounding the rate is the best calculation methodology?

Please provide your reasoning.

Question 21: Do you agree that the backward-looking *lookback period* term structure methodology with an observational shift is the preferable calculation methodology?

Do you agree that the lag approach is a viable and robust alternative to the observation shift?

Please elaborate on the reasons for your answer.

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