REFINITIV TERM €STR

CONSULTATION

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Contents

1. Responding to this consultation

Introduction

Refinitiv is committed to transparency when reviewing benchmark methodologies or considering material changes to its benchmarks. To that end, Refinitiv is seeking feedback from interested parties on key features of the recently enhanced Refinitiv Term €STR prototype. Refinitiv invites comments on all proposals put forward in this paper and in particular on the specific questions summarised in the appendix. Please structure your comments to:

- Respond to the questions stated
- Contain a clear rationale that includes evidence to support the views expressed
- Describe any alternative choices that Refinitiv should consider

Submission of responses

Please email your comments to index_queries@refinitiv.com with 'Refinitiv Term €STR consultation' in the subject by no later than 18:00 CET on 21 July 2023. Please note that comments submitted after this deadline or submitted via other means may not be processed.

Handling of responses

All responses to this consultation will be treated as confidential and will not be made public. A summary of key points on an anonymised basis may be made available by Refinitiv as appropriate.

2. Introduction

Refinitiv, a London Stock Exchange Group business, is a leading calculator and administrator of benchmarks and indices. Refinitiv benchmark products include the WM/R FX benchmarks, convertible bond indices and commodity indices. Within the interest rate asset class, Refinitiv administers products such as the Canadian Dollar Offered Rate (CDOR) and the Saudi Arabian Interbank Offered Rate (SAIBOR). Recently Refinitiv introduced new benchmarks to support market participants with changes in market conventions. This includes the introduction of Refinitiv Term SONIA and Tokyo Swap Rate in January 2021 and October 2021 respectively as well as the selection by the Alternative Reference Rates Committee (ARRC) to produce fallbacks for legacy USD LIBOR cash products, Refinitiv USD IBOR Cash Fallbacks, in November 2021. Refinitiv administers benchmarks either directly under the IOSCO Principles for Financial Benchmarks or via its authorised subsidiary, Refinitiv Benchmark Services (UK) Limited (RBSL), under the UK Benchmark Regulation.

On 26 October 2022, Refinitiv commenced production of a Term €STR prototype using a two-level waterfall. The first level of the waterfall collected €STR Overnight Index Swap ("OIS") quote data from a dealer-to-client trading platform every 10 minutes between 09:00 and 16:00CET. If there was insufficient data the rate would have been calculated using the integrated fallback, which is composed of a spread adjusted compound €STR rate. The prototype comprised of five tenors: spot-week, 1-month, 3-months, 6-months and 12-months and was published on TARGET2 business days at or around 11:30am CET.

More recently, on 26 June 2023, the prototype methodology was enhanced and now incorporates an additional data source – LCH executed trade data – and a longer collection window. It is calculated using a combination of eligible spot starting €STR OIS executed trades and quotes collected between 09:00-18:00CET on the previous TARGET2 business day. If there is insufficient trade and / or quote data the rate will be calculated using the same integrated fallback, which is composed of a spread adjusted compound €STR rate. This enhanced prototype comprises the same five tenors and is published on TARGET2 business days at the same time as the original prototype.

Refinitiv has replaced the historical Term €STR data with rates generated using the new enhanced methodology[1].

The Refinitiv Term €STR prototype is provided for informational purposes only. It is not intended to be construed or used as a benchmark whether as a reference rate in financial instruments or financial contracts or for valuation and pricing activities until a production version is made available. The purpose of the prototype is to enable market participants to assess its behaviour.

Pending feedback from market participants during the prototype phase, Refinitiv will finalise the methodology and release Refinitiv Term €STR as a benchmark subject to relevant benchmark regulations. We anticipate the production version will be available in September 2023.

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[1] Historical Term €STR data may not initially be available at https://www.refinitiv.com/termestr

As per the May 2021 recommendations from the euro working group on risk free rates, forward-looking €STR term rate benchmarks are suitable for use as a fallback in some EURIBOR referencing cash products.

The purpose of this consultation paper is to collect feedback on the methodology and distribution of the prototype rate in order to identify any opportunities to more closely align the production rate with the needs of market participants. All feedback received in compliance with Section 1 will be evaluated and changes to the Refinitiv Term €STR may be made in response to the feedback received.

3. Original prototype

Between 26 October 2022 and 23 June 2023, Refinitiv published a Term €STR prototype using quote data in a two-level waterfall.

Input data for level 1 of the methodology was taken from the Tradeweb dealer-to-client trading platform. Input data comprised quotes from each dealer captured every 10 minutes over a collection window from 09:00 to 16:00CET for the previous TARGET2 business day. Quotes were captured up to 42 times over the collection window for each dealer.

To be valid, each bid rate to offer rate must have been less than or equal to a maximum spread, and the volume on the bid and offer rate must have been greater than or equal to a minimum notional amount. A mid-rate was calculated using each valid bid rate and offer rate pair. The prototype was then determined as the median rate of the mid-rates. The threshold for use of Level 1 in the determination of the prototype was that at least 100 valid mid-rates were available and that these rates comprised at least a minimum number of valid mid-rates from each of a minimum number of separate dealers.

If the thresholds for use of level 1 of the waterfall was not reached, the prototype was determined in accordance with the integrated fallback level. The spread between the prototype on the previous TARGET2 business day and overnight €STR compounded to the previous TARGET2 business day was applied to €STR compounded to the day of the prototype determination.

The prototype comprised of five tenors: spot-week, 1-month, 3-months, 6-months and 12-months and was published on TARGET2 business days at or around 11:30am CET.

4. Enhanced prototype: Input data

Evaluation of input data sources

As per EU BMR Chapter 2, Article 11, the selected input data should be sufficient to accurately and reliably represent the market that the benchmark intends to measure. The input data shall be transaction data, if available and appropriate. Where transaction data is not sufficient quotes and other values are used.

Refinitiv has reviewed the inclusion of €STR OIS and futures data as possible inputs into the prototype.

€STR index futures are not suitable due to the low volumes and low open interest. Furthermore, use of €STR index futures would result in a more complex methodology when compared with the use of €STR OIS.

It is more appropriate to use €STR OIS instruments as the primary input into the prototype. We have considered a range of €STR OIS executed trade and €STR OIS quote data sources as possible inputs. The most suitable source of executed trades is the Central Counter Party (CCP) where these products are cleared as this provides a large share of the market from a small number of sources. There are two CCPs that clear €STR OIS – LCH and EUREX. Public data shows the majority of €STR OIS contracts are cleared at LCH. We have therefore selected LCH data as an input into the prototype. We have considered two sources of €STR OIS quote data for inclusion into the benchmark - committed quotes from electronic dealer-to-dealer Central Limit Order Books (CLOBs) and streaming quotes from a dealer-to-client trading platform. Currently there is insufficient activity on the dealer-to-dealer €STR OIS CLOBs to provide robust pricing. However, there are many dealers pricing streaming €STR OIS quotes on the Tradeweb dealer-to-client electronic trading platform. We have therefore selected Tradeweb data as an input into the prototype.

Refinitiv continues to monitor changes in market structure and liquidity in the €STR OIS and futures markets and will evaluate inclusion of additional sources if and when conditions change.

Input data sources

The enhanced Refinitiv Term €STR prototype sources executed trades from LCH, streaming executable bid and offer quotes from the Tradeweb dealer-to-client electronic trading platform and overnight €STR from the European Central Bank (ECB).

Executed trade data is sourced from LCH for the previous TARGET2 business day. Eligible trades are centrally cleared, spot starting €STR OIS contracts with an execution time stamp of between 09:00 and 18:00 CET. Variable notional swaps and swaps that are one leg of a multi-leg trade such as those that are part of a swaption trade are excluded. The spot-week tenor uses instruments with a termination date of 7-days following the effective date. 1-, 3-, 6- and 12-month tenors use instruments with a termination date of 1, 3, 6 and 12-months following the effective date, subject to the appropriate termination date adjustment conventions. All other tenors are excluded from the calculation. For any executed trade to be included in the benchmark calculation it must have a volume which exceeds an undisclosed minimum threshold.

Streaming quote data is sourced from the Tradeweb electronic dealer-to-client trading platform for the previous TARGET2 business day. Eligible quotes are in LCH and EUREX centrally cleared, spot starting €STR OIS contracts. Data is sourced during the same 09:00-18:00 CET collection window as used for the executed trade data. During this window the streaming quotes from each dealer are sampled every 10 minutes at undisclosed times. Each time the data is sampled (a "snap") the quotes are subject to the following checks:

- The volume must meet or exceed a minimum undisclosed volume
- The bid-offer spread must not exceed a maximum undisclosed bid-offer spread
- The bid or offer rates must not be blank

Each snap of the individual dealer quotes that does not pass these checks is disregarded and excluded from the calculation.

Input data for the integrated fallback level comprises overnight €STR published daily by the ECB and historical values of the Refinitiv Term €STR.

Questions

The prototype uses executed trade and streaming quote data collected between 09:00 and 18:00CET. On one hand a longer collection window supports the inclusion of more data. On the other hand, extending the collection window beyond typical trading hours can result in sampling the market when liquidity is low. This could result in the benchmark being influenced by a small number of dealers. The 09:00-18:00CET collection window accounted for 96% of the executed trades for the period between 20-September 2022 to 21-April 2023. Extending the collection window beyond 09:00-18:00CET will have little impact on the volume of executed trade data but risks including quote data from when the market is less active. Shortening the collection window would reduce the availability of executed trades – for example if the collection window was 08:30-10:30CET only 21% of the trades in this sample would be captured. The collection windows for trade and quote data should be the same to ensure both datasets are representative of the same market conditions and same period of time.

Q1: Do you agree with Refinitiv's choice of collection window?

5. Enhanced prototype: Calculation

Level 1

The number of trades between the same counterparty pair, for the same tenor at the same rate is capped at an undisclosed level to mitigate the risk of market participants attempting to influence the rate.

For the quote data, a mid-rate is calculated from each bid-offer pair. Where a dealer provides tiered pricing (i.e., multiple prices for a given tenor and CCP simultaneously) a single compressed mid-rate is calculated as the average across all tiers for a particular CCP. For each tenor at any of the individual snap times, the median of the compressed mid-rates across all dealers is calculated. This gives a single market mid-rate, which is a blend of EUREX and LCH cleared instruments, for each 10-minute snap. Each valid market mid-rate must be composed of a minimum number of dealers. This parameter is not disclosed. There can be up to 54 of these valid market mid-rates.

If there are sufficient valid executed trades and sufficient valid market mid-rates (based on quote data) then the published prototype is a combination of quote and trade data. If there is very limited or no quote data available a higher executed trade data threshold is used and any quote data is excluded. If there is very limited or no executed trade data a higher quote data threshold is used and any executed trade data is excluded.

The highest 20% of rates and lowest 20% of rates are trimmed. If the number of trimmed data points is a fraction it is rounded up to the nearest integer. The published rate is the mean of the remaining rates.

In all other scenarios the prototype is calculated using the integrated fallback.

Integrated Fallback

The spread between the prototype on the previous TARGET2 business day and overnight €STR compounded to the previous 10 TARGET2 business day is applied to €STR compounded to the day of the prototype determination. The full calculation of the integrated fallback is available in the methodology document, which is available at https://www.refinitiv.com/termestr.

Exercise of Expert Judgment by the Administrator

The administrator does not exercise expert judgment in the determination of Refinitiv Term €STR.

Questions

Minimum volume thresholds

Refinitiv may use different minimum volume thresholds for each tenor. The minimum volume thresholds could be calibrated based on a single DV01 value, which means that longer tenors have a lower minimum volume threshold to be included in the calculation than shorter tenors. The minimum volume thresholds will be set to avoid small trades which aren't representative of the market having an impact on the published prototype. Setting the minimum volume thresholds too high may result in a significant proportion of executed trades or quotes being excluded from the calculation.

Q2: Do you think the minimum volume thresholds should be based on a consistent DV01 across all five tenors? Do you think the minimum volume thresholds should be the same for trade and quote data? Please provide a rationale for your answer.

Published rate

Benchmarks are often published using either a median or a mean calculation. A median rate typically reflects market conditions at a single point in time. For example, if there was a market move during the collection window the median would capture the prevailing rate either before or after the move. By contrast the mean would reflect a blend of both. Due to the long collection window Refinitiv believe it is most suitable to use the mean which is reflective of the whole day. Furthermore, a trimmed mean is used in both EURIBOR and €STR.

Q3: Do you agree that Refinitiv should trim the top 20% and bottom 20% of values before calculating the mean?

6. Enhanced prototype: Performance and impact

There is limited impact of the enhanced methodology on the published prototype rate. Visual inspection of Figure 1 (in Appendix B), a comparison of rates published under the original and enhanced methodologies, shows that the two rates are closely aligned. The absolute differences between the published rates under the two methodologies is summarised in Table 1 below.

Table 1: Absolute difference between original and enhanced prototype rates

	Spot-week	1-month	3-months	6-months	12-months
Average	0.001	0.001	0.001	0.003	0.006
Standard deviation	0.002	0.003	0.003	0.006	0.009
Max	0.023	0.026	0.026	0.061	0.056

Figure 2 (in Appendix B) shows three rates for the 1-month, 3-months, 6-months and 12-months tenors:

1. A median calculated exclusively using executed trades
2. A median calculated exclusively using quotes
3. The enhanced prototype methodology (which is a trimmed average of trades and quotes)

Visual inspection of the charts show trade and quote data is closely aligned. On a small number of days there are larger divergences between the two rates. This is primarily the result of the trade and quote rates capturing market conditions that are at different points in time. For example, trades could be disproportionately executed in the morning or afternoon, whilst quote data is likely to be relatively evenly distributed across the whole day.

Analysis of the spot-week tenor has not been included due to limited availability of executed trade data.

7. Enhanced prototype: Publication, distribution and refix policy

Publication tenors and identifiers

Refinitiv currently publish the prototype at approx. 11:30CET on each TARGET2 business day in five tenors on the below RICs identifiers:

- All tenors: <EURTRR=RFTB>
- Spot week: <EURTRRSW=RFTB>
- 1-month: <EURTRR1M=RFTB>
- 3-months: <EURTRR3M=RFTB>
- 6-months: <EURTRR6M=RFTB>
- 12-months: <EURTRR1Y=RFTB>

The prototype is available via Refinitiv products including Elektron, DataScope and Workspace. We plan to publish the production Refinitiv Term €STR benchmark on the same RIC identifiers and via the same products as the prototype. We plan to permit authorised redistributors to publish the benchmark (however, their choice of identifiers could differ to the above).

Q4: Would you prefer the prototype to be published shortly before 11:00CET (e.g., 10:45CET), at 11:00CET or shortly after 11:00CET (e.g., 11:30CET)?

Q5: Are there any other applications or delivery mechanisms (either Refinitiv or third party) that you would like to receive Refinitiv Term €STR through?

Q6: Do you agree with the publication of Refinitiv Term €STR in spot week, 1-month, 3-months, 6-months and 12-months tenors?

Decimal places

Refinitiv publish the prototype as percentages and to 3 decimal places i.e., to 0.1bps (e.g., 3.102% is published as "3.102"). Refinitiv intend to maintain this convention for the production benchmark.

Q7: Should we continue to publish the rate to 3 decimal places?

Refix Policy

Following migration of the prototype to production we plan to adopt the following refix policy:

If following publication, a material error is identified in the input data or the determination of the rate before 12:30 CET, the administrator shall endeavour to refix the rate as soon as possible. No refix will be issued after 23:59CET on the day of publication.

A material error is one that results in a change of + or – 0.1 basis points to the published value of the benchmark.

Q8: Do you agree with the proposed refix policy?

Delayed publication

The current policy for delayed publication is "Refinitiv may at its discretion delay publication of the Prototype in the event that technical difficulties are preventing receipt of input data or if Refinitiv has reason to believe that either the input data or the determination of the Prototype includes a potential error. In such cases, all reasonable efforts will be made to publish the Prototype at the earliest opportunity."

Following the transition from prototype to production, Refinitiv intends to retain the policy (but amend "Prototype" to "Benchmark").

Q9: Do you agree with the proposed delayed publication policy?

Appendix A: Summary of questions

Q1: Do you agree with Refinitiv's choice of collection window?

Q2: Do you think the minimum volume thresholds should be based on a consistent DV01 across all five tenors? Do you think the minimum volume thresholds should be the same for trade and quote data? Please provide a rationale for your answer.

Q3: Do you agree that Refinitiv should trim the top 20% and bottom 20% of values before calculating the mean?

Q4: Would you prefer the prototype to be published shortly before 11:00CET (e.g., 10:45CET), at 11:00CET or shortly after 11:00CET (e.g., 11:30CET)?

Q5: Are there any other applications or delivery mechanisms (either Refinitiv or third party) that you would like to receive Refinitiv Term €STR through?

Q6: Do you agree with the publication of Refinitiv Term €STR in spot week, 1-month, 3-months, 6-months and 12-months tenors?

Q7: Should we continue to publish the rate to 3 decimal places?

Q8: Do you agree with the proposed refix policy?

Q9: Do you agree with the proposed delayed publication policy?
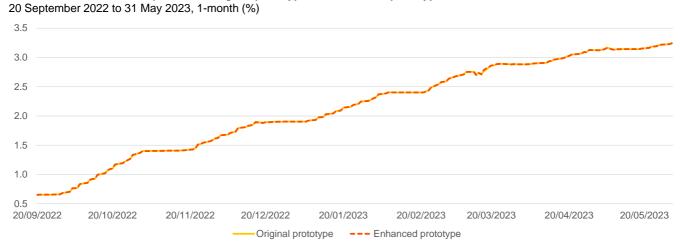
Appendix B: Historical prototype rates

Figure 1: Comparison of prototypes calculated using original and enhanced methodologies
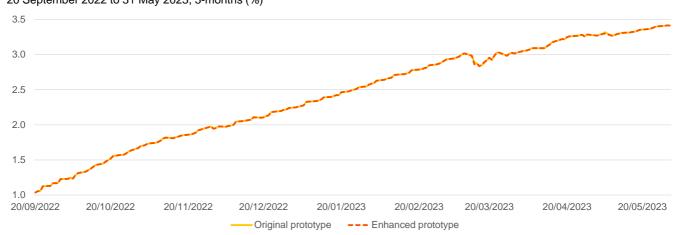
Refinitiv Term €STR – comparison of original prototype and enhanced prototype
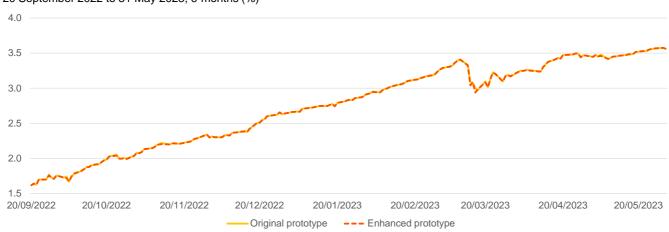20 September 2022 to 31 May 2023, spot-week (%)

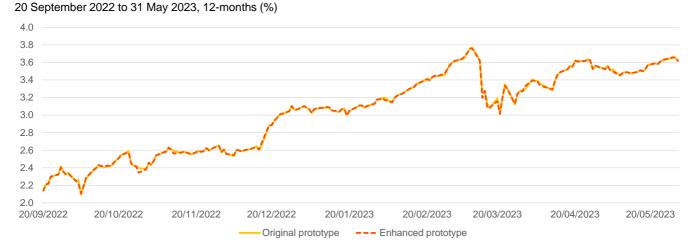**Refinitiv Term €STR – comparison of original prototype and enhanced prototype**
20 September 2022 to 31 May 2023, 1-month (%)

Refinitiv Term €STR – comparison of original prototype and enhanced prototype
20 September 2022 to 31 May 2023, 3-months (%)

Refinitiv Term €STR – comparison of original prototype and enhanced prototype
20 September 2022 to 31 May 2023, 6-months (%)

Refinitiv Term €STR – comparison of original prototype and enhanced prototype
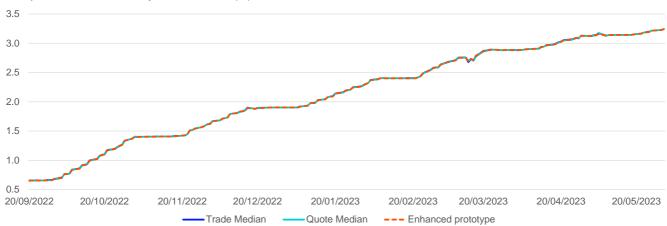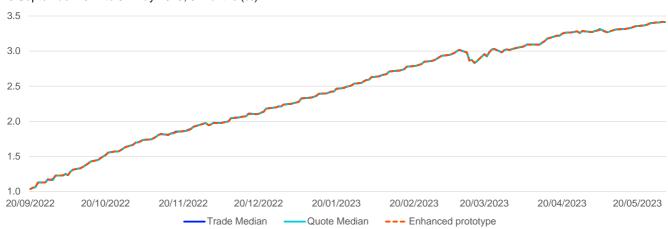20 September 2022 to 31 May 2023, 12-months (%)

Figure 2: Comparison of prototype calculated using quote data, trade data and blended rate for each tenor

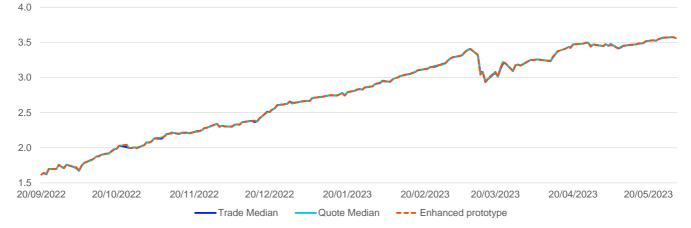**Refinitiv Term €STR – comparison of enhanced prototype to trade and quote medians**
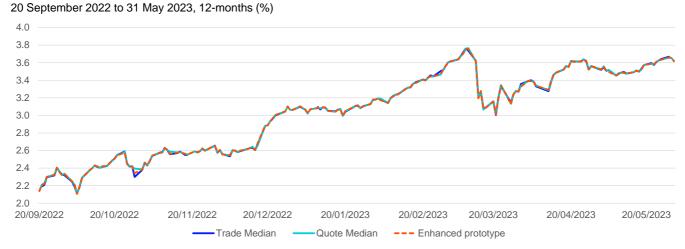20 September 2022 to 31 May 2023, 1-month (%)

Refinitiv Term €STR – comparison of enhanced prototype to trade and quote medians
20 September 2022 to 31 May 2023, 3-months (%)

Refinitiv Term €STR – comparison of enhanced prototype to trade and quote medians
20 September 2022 to 31 May 2023, 6-months (%)

Refinitiv Term €STR – comparison of enhanced prototype to trade and quote medians
20 September 2022 to 31 May 2023, 12-months (%)

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