Eurobank
Research

Preparing for the Interest Rate Benchmark Reforms and the New Risk-Free Rates in the Euroarea

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1. Introduction on Reference / Benchmark Rates

Definition and variants

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- **According to the EU Benchmarks Regulation (2016) (BMR), the following definitions apply**:

  1. '**index**' means any figure: (a) that is published or made available to the public; (b) that is regularly determined: (i) entirely or partially by the application of a formula or any other method of calculation, or by an assessment; and (ii) on the basis of the value of one or more underlying assets or prices, including estimated prices, actual or estimated interest rates, quotes and committed quotes, or other values or surveys;

  2. '**index provider**' means a natural or legal person that has control over the provision of an index;

  3. '**benchmark**' means any index by reference to which the amount payable under a financial instrument or a financial contract, or the value of a financial instrument, is determined, or an index that is used to measure the performance of an investment fund with the purpose of tracking the return of such index or of defining the asset allocation of a portfolio or of computing the performance fees.

(https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R1011&from=EN)

- **Reference rates examples:**

  1. **LIBOR (London Interbank Offered Rate)**: the most common benchmark, originates from the 1980s. LIBOR is provided for five currencies (USD, GBP, EUR, CHF and JPY). Index Provider: ICE.
  2. **EURIBOR (Euro Interbank Offer Rate):** the benchmark indicating the interbank funding rates in the euro market. Its publication started back in 1999. Index Provider: EMMI.
  3. **€STR (Euro Short Term Rate)**: the euro short-term rate (€STR) reflects the wholesale euro unsecured overnight borrowing costs of banks located in the euro area. Index Provider: ECB.

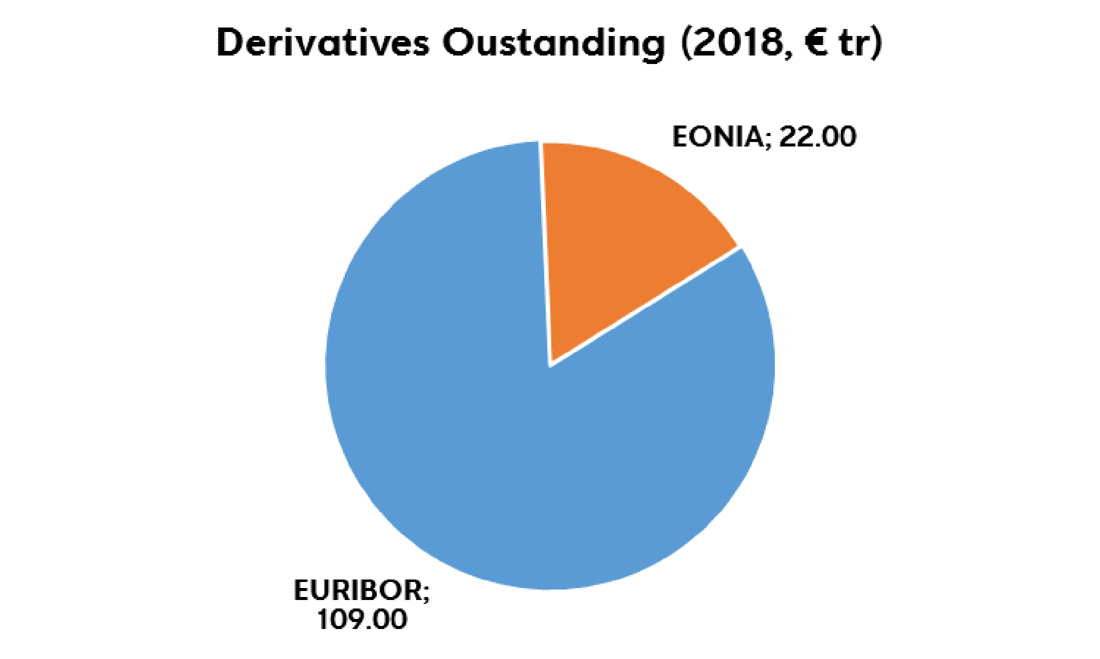
1. Introduction on Reference / Benchmark Rates

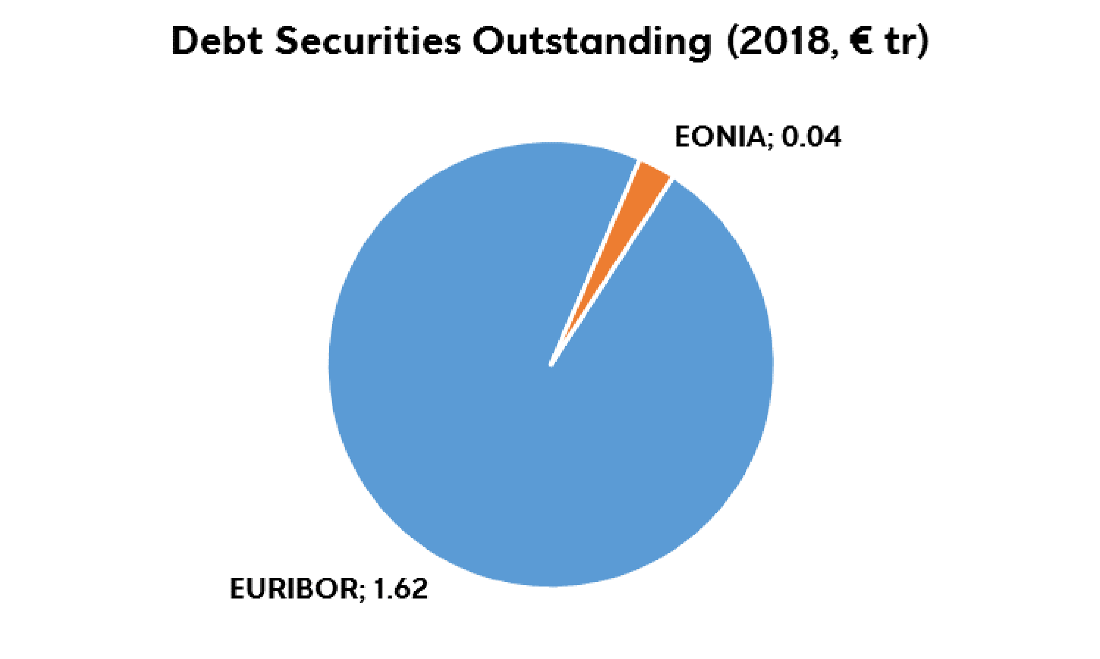
Use of reference rates

- According to the Working Group on Euro Risk Free Rates (2018):

  1. Derivatives Market: €109.0 tr and €22.0 tr of EURIBOR and EONIA linked interest rate derivatives outstanding.
  2. Debt securities: €1.62 tr and €4.4 bn of EURIBOR and EONIA linked interest debt securities outstanding.

  According to the ECB 2009 Survey, 43% of total Euroarea house purchase loans carried a variable rate (with EURIBOR being the most prominent choice among them). **The respective figure for Greece was at 28% (Monetary Transmission I)**.





Source: Working Group on Euro Risk Free Rates, ESMA
Note: The aforementioned figures refer to mid-2018.

1. Introduction on Reference / Benchmark Rates

Monetary policy transmission mechanism and benchmark rates

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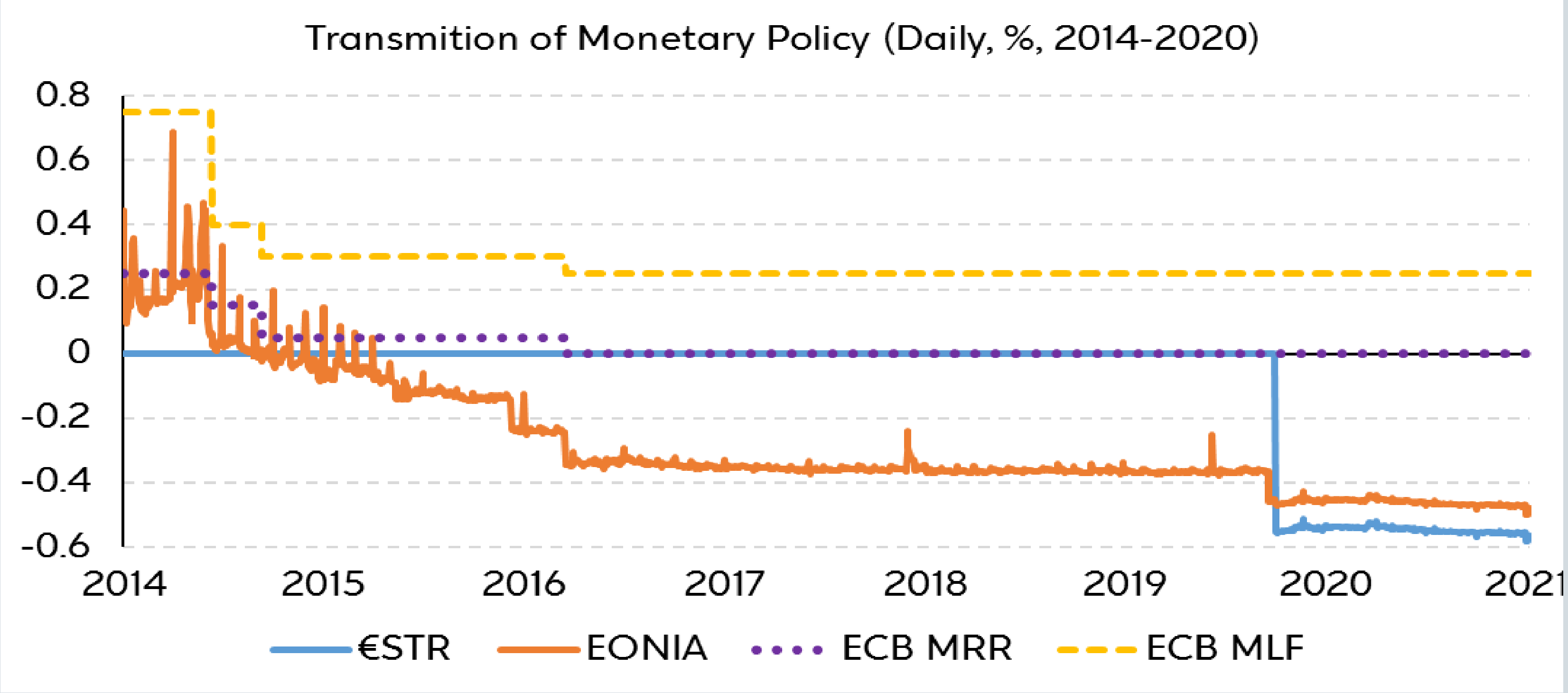
- Short-term interest rates in euro area money markets hold a crucial role in the monetary policy transmission process: the main reference points for commercial banks when pricing loans to firms and households (**Monetary Transmission II**)
- Effective monetary policy transmission therefore requires changes in the ECB's key interest rates to be closely followed by developments in money market rates.
- The market rates that matter most for the pricing of bank loans vary with unsecured overnight rates, such as the Euro Overnight Index Average (EONIA) or the Euro Short-Term Rate (€STR)



Source: ECB, Bloomberg

For a review of the literature on the benchmark rates reform as of 2019: https://www.bis.org/publ/qtrpdf/r_qt1903e.pdf

1. Introduction on Reference / Benchmark Rates

Problematic Areas of the post crisis IBORs / EURIBORs environment

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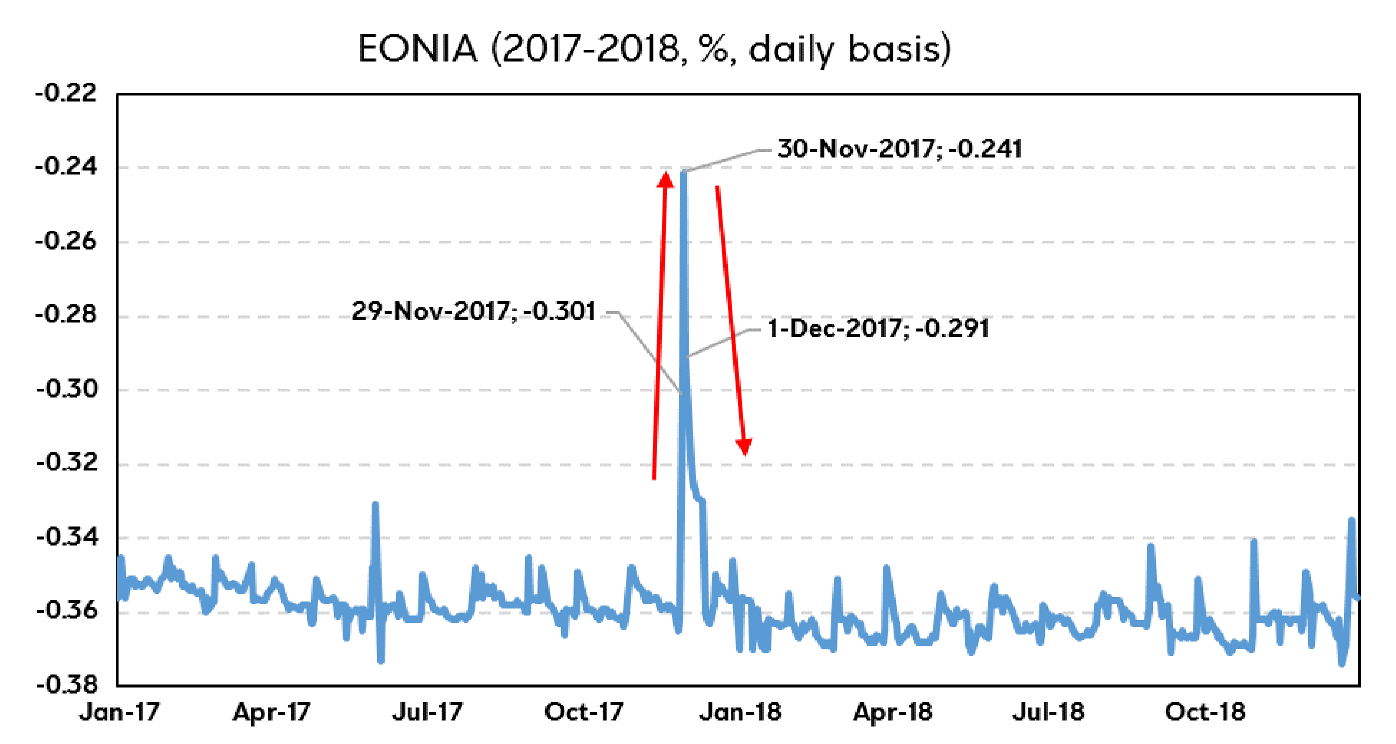
- **Market manipulation scandals** - LIBOR and EURIBOR. General idea: the financial intermediaries that participated in the benchmark panel colluded in order to profit from transactions in other segments of the market (for example derivatives) or to hide the situation that the bank was in.
- **Low liquidity events**: The 2017 (and 2018) EONIA mystery maximum or how the wages of the Greek public sector affected the word's money market.



Source: Bloomberg

- EONIA rate changed -0.8% (28/11), -16.9% (29/11), -19.9% (30/11), 20.7% (01/12). **Rumors in the market: a major bank was low in liquidity , etc**
- A typical end of month day for a Greek bank (according to press reports): deposits from the salaries of public sector employees plus other end of month revenues created **excess liquidity**, that the bank lend to another Greek bank overnight.
- The agreed rate between the two banks was not unusual (Greece – increased credit risk).
- The **liquidity in the EONIA market was too low and the aforementioned transaction led to a 19-months max.**

1. Introduction on Reference / Benchmark Rates

Open issues with the IBORs /EURIBOR

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- In 2014, the Financial Stability Board (FSB) published its report “Reforming major interest rate benchmarks”, which sets out a series of recommendations to strengthen existing benchmarks by underpinning them, to the greatest extent possible, with real transaction data and to develop alternative, nearly risk-free reference rates.

  1. IBORs (Interbank offered rates) play a central role in financial markets; they act as reference rates for a broad range of financial instruments and are therefore key to financial stability.

  2. Declining activity in the underlying markets and challenges to the sustainability of the panels contributing to these rates pose potentially serious risks to individual users of the rates and to the financial system more broadly.

  3. The alternative nearly risk-free rates (RFRs) selected as replacements or fallbacks to IBOR in various jurisdictions will be based on robust, liquid underlying markets.

  4. Global regulators and the public/private sector have established RFRs working groups to identify RFRs and plan their use, as appropriate

1. Introduction on Reference / Benchmark Rates

Why markets need alternative benchmark rates?

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FSB recommendations on reforming major interest rate benchmarks:

- Strengthen existing benchmarks by underpinning them with transaction data to the greatest extent possible
- Develop alternative nearly risk-free rates as many products are better suited to reference rates that are closer to risk-free

Need for change: IBOR reform driven by the following factors:

- A lack of robustness, due to shrinking underlying markets coupled with the large volume of financial transactions that reference these rates has resulted in systemic risk concerns and manipulation risks.
- Reluctance by EONIA, LIBOR and EURIBOR panel banks to submit quotes.

Regulatory background:

- The International Organization of Securities Commissions (IOSCO) principles on financial benchmarks (2013)
- EU Benchmarks Regulation (BMR, effective 01/01/2018)
- The BMR will be phased in fully as of 01/01/2022 for critical benchmarks and third-country benchmarks, and as of 01/01/2020 for all other benchmarks
- The continuity of the Libor will not be guaranteed after 2021; hence, it needs to be replaced by alternative nearly risk-free rates (RFRs)

BMR sets additional requirements for:

Administrators	Contributors	Users
▪ Effective governance and control framework to ensure the integrity and reliability of the benchmark (methodology) ▪ Apply for and obtain registration or authorization from NCA	▪ Effective governance and control framework to ensure the integrity and reliability of all contributions of input data to the administrator	▪ Robust plans if benchmark ceases to exist, including fallbacks in contracts Art 28.2 BMR ▪ Only registered or authorized benchmarks can be used

2. The Role of the Working Group on Euro Risk-Free Rates

Context and deliverables

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European Central Bank (ECB), the Financial Services and Markets Authority (FSMA), the European Securities and Markets Authority (ESMA) and the European Commission set up a private sector working group with the task to identify and recommend alternative euro risk-free rates.

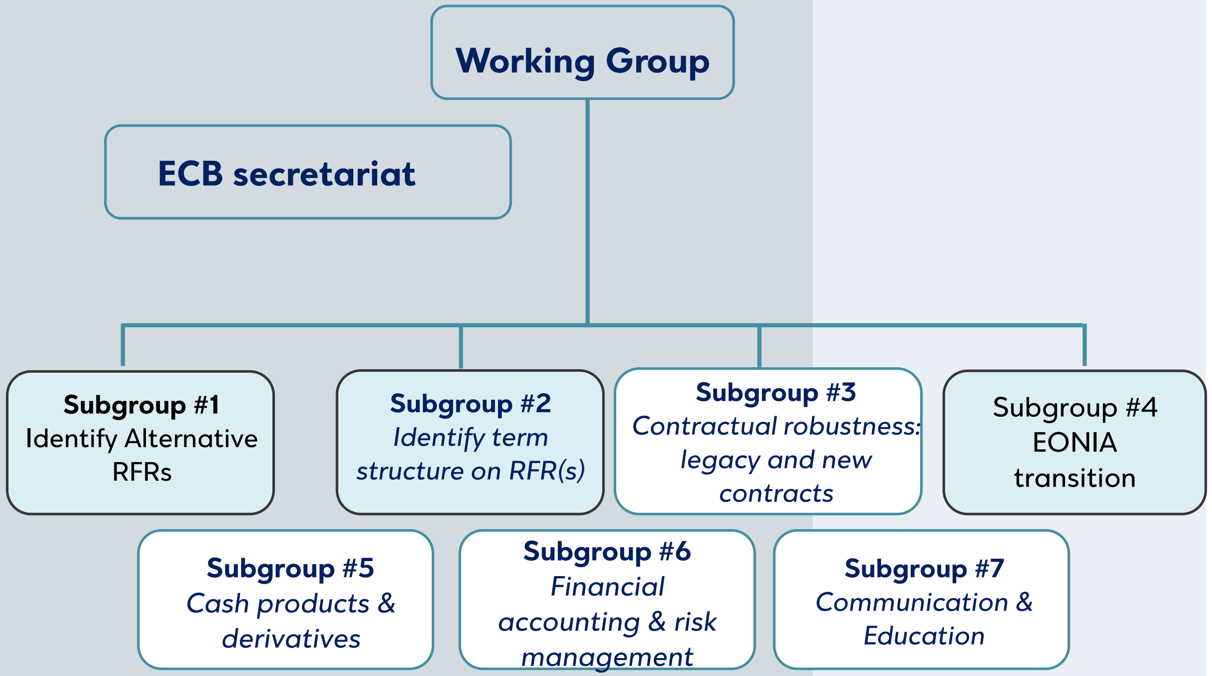
General Mandate

See Terms of Reference

- To identify and recommend alternative euro risk-free rates. Such rates serve as a basis for an alternative to current benchmarks used in a variety of financial instruments and contracts in the euro area.
- To work on a market adoption plan to ensure a smooth transition to these alternative euro risk-free rates by all market participants.
- Working group (chaired by the private sector: ING Chief Risk Officer):
  - Voting members: 21 credit institutions
  - Observers: ECB, ESMA, FSMA, EC
  - Secretariat: ECB
  - Non-voting members: EMMI, market associations, EIB, 1 insurance company...
- For voting and decision-making, each member firm will have one vote. Observers will not be eligible to vote. Decisions and recommendations of the working group should be reached by consensus, if possible, or otherwise by a two-thirds majority where necessary.
- Decisions or recommendations by the working group are not binding. It is up to financial market participants to prepare themselves for changes in benchmark rates, and the working group's recommendations are meant to help financial market participants in the transition.

Organizational Structure

Subgroups in Phase 1 only



2. The Role of the Working Group on Euro Risk-Free Rates
Context and deliverables

Eurobank Research

As part of its mandate, the working group published a set of recommendations and reports to provide guidance for:

- **A transition from EONIA to the euro risk-free rate (€STR); and**
- **Fallbacks for the euro risk-free rate and EURIBOR.**

2019 — **Reports and recommendations published by the working group**

- **March** — Recommendations on the Transition path from EONIA to the €STR and on a €STR-based forward-looking term structure methodology
- **July** — Recommendations on EONIA to €STR legal action plan
- **September** — Report on the impact of the transition from EONIA to the €STR on cash and derivatives products
- **October** — Report on risk management implications of the transition from EONIA to the €STR and the introduction of €STR-based fallbacks for EURIBOR
- **November** — Report on Financial accounting implications of the transition from EONIA to the €STR and the introduction of €STR-based fallbacks for EURIBOR
- Report on Fallback provisions in contracts for cash products and derivatives transactions referencing EURIBOR
- Report on €STR fallback arrangements
- **December** — Communication toolkit

2020 — **Reports and recommendations to be published by the working group**

- **February** — Report on the transfer of EONIA's cash and derivatives markets liquidity to the €STR
- **April** — Summary of responses to the public consultation on swaptions impacted by the CCP discount from EONIA to €STR

2021

- Recommendations SG 3 (EURIBOR specific fallbacks by product)
- Recommendations SG 5 (Term structure methodology)

3. The Transition from EONIA to €STR
EONIA definition

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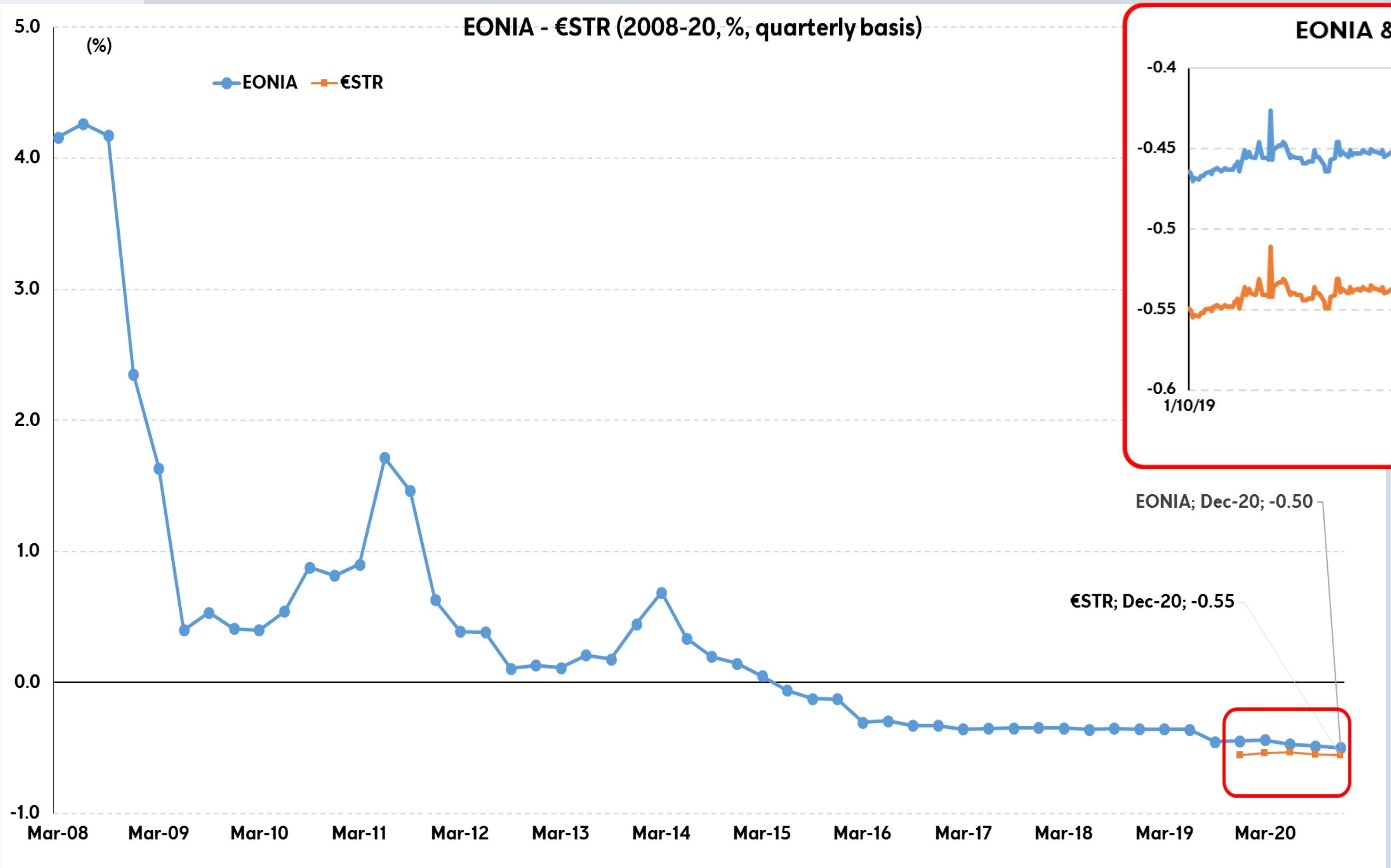
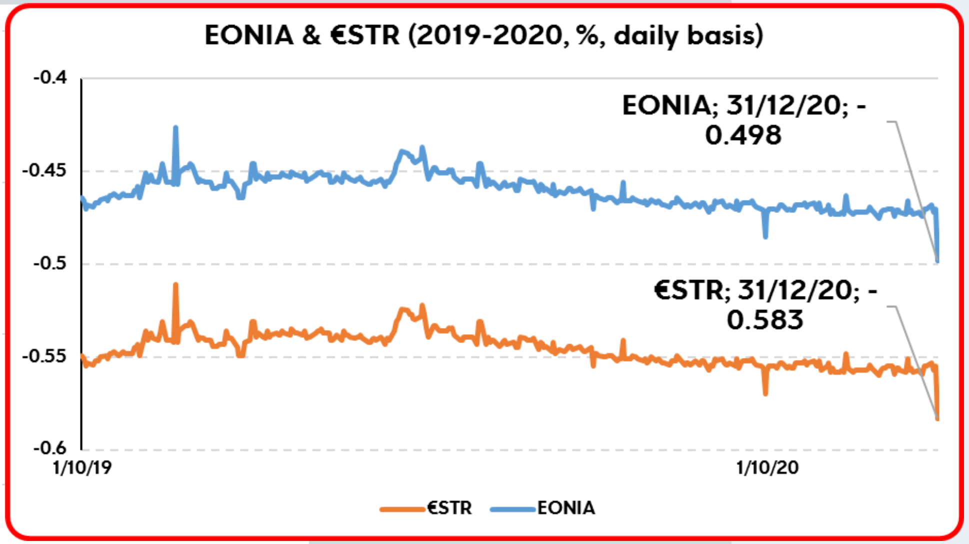
Up to 30/09/2019
EONIA: weighted average of overnight unsecured lending transactions in the EU and EFTA interbank market





From 01/10/2019
EONIA = €STR plus a spread of 8.5 bp

EONIA discontinuation: 03/01/2022

Source: Bloomberg

3. The Transition from EONIA to €STR

EONIA definition

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- **Euro short-term rate (€STR):** reflects the wholesale euro unsecured overnight borrowing costs of banks located in the euro area.
- The €STR is published on each TARGET2 business day based on transactions conducted and settled on the previous TARGET2 business day (the reporting date "T") with a maturity date of T+1 which are deemed to have been executed at arm's length and thus reflect market rates in an unbiased way.
- The ECB publishes the €STR at 08:00 CET on each TARGET2 business day. For example, the €STR published on 2 October 2019 – the start date – reflected trading activity on 1 October 2019.
- The €STR is published on the ECB's website, via the ECB's Market Information Dissemination (MID) platform and in the ECB's Statistical Data Warehouse (SDW). The MID platform is the main publication channel for the €STR.
- €STR methodology is calculated for each TARGET2 day as a volume weighted trimmed mean rounded to the third decimal. The volume-weighted trimmed mean is calculated by:
  1. ordering transactions from the lowest rate to the highest rate;
  2. aggregating the transactions occurring at each rate level;
  3. removing the top and bottom 25% in volume terms; and
  4. calculating the mean of the remaining 50% of the volume-weighted distribution of rates.

- For more information: https://www.ecb.europa.eu/paym/interest_rate_benchmarks/WG_euro_risk-free_rates/shared/pdf/ecb.ESTER_methodology_and_policies.en.pdf

3. The Transition from EONIA to €STR

Timeline

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EONIA to €STR Key Milestones

Sep 30 2019
Last publication date for EONIA based on current methodology, with publication on day T

Oct 2 2019
First publication date €STR and EONIA based on the changed methodology €STR+8.5*bps*, with publication on T+1

€STR Disc/PAI
July 27 2020

Jun 30 2021

Dec 31 2021

Jan 3 2022
EONIA publication discontinued

EONIA *status*

EONIA (T)

EONIA RECALIBRATED = €STR + 8,5*bp* (T+1)

EONIA to €STR Transition phases

Phase 1: change EONIA methodology

INITIAL TRANSITION FROM EONIA TO €STR + 8.5BPS IN LIGHT OF THE PLANNED CHANGE IN EONIA-CALCULATION METHODOLOGY

€STR (T+1)

Phase 2: Transition from recalibrated EONIA to the €STR

Transition from EONIA (€STR + 8.5bps) to the €STR between 2 October 2019 and 3 January 2022, when EONIA's publication will be discontinued.

WG euro RFR recommendations

WG euro RFR publishes recommendations for market participants to understand the EONIA to €STR transition issues from a **legal, products, accounting and risk management perspective** and encourage to **share best practices**

3. The Transition from EONIA to €STR

Basic elements of the transition process

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What was the problem with EONIA?

- EONIA in its previous form was going to become incompliant with the EU Benchmark regulation, given the lack of underlying transactions and high concentration of volumes among a small number of contributors. Therefore, its administrator, EMMI, announced that it would stop publishing it on 3 January 2022 and participants have to make sure that they do not engage in contracts with maturity beyond this date.
- As a result, after a public consultation, the working group on euro risk-free rates recommended the €STR as its replacement.

What is the EONIA - €STR transition?

- EONIA's methodology changed for a transitional period until its discontinuation in 2022.
- Since 2 October 2019, the current EONIA methodology has been modified to become €STR plus a fixed spread of 8.5 basis points.
- The recalibration of the EONIA methodology has taken place on the first day of the daily publication of the €STR, on 2 October 2019. The publication of EONIA moved from the timing every evening at "T" (by 7pm) to "T+1" (9.15 am), to be aligned with €STR publication (T+1 at 8:00 CET).
- NB: This methodology was suggested by the working group on euro risk-free rates to EMMI after a public consultation.

What is the €STR?

The €STR reflects the wholesale euro unsecured overnight borrowing costs of euro area banks.

The rate is published (first date of publication: 2 October 2019 at 8:00 CET) for each TARGET2 business day based on transactions conducted and settled on the previous day (reporting date T) with a maturity date of T+1.

The €STR is based exclusively on borrowing transactions in euro conducted with financial counterparties that banks report to the ECB in accordance with the MMSR Regulation. The €STR is calculated using overnight unsecured fixed-rate deposit transactions over € 1 million.

The ECB is publishing €STR data at the end of every maintenance period.

ALREADY COMPLETED

3. The Transition from EONIA to €STR

Necessary adjustments so as to use €STR as a benchmark rate

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To ensure a smooth transition, the switch from EONIA to the €STR takes place in two steps.

- First, the methodology for EONIA has been recalibrated to become "dependent" on the €STR, now that the €STR is available; this means that since 02/10/2019 (the date of the first €STR publication), the **EONIA methodology has changed from being based on the contributions of a panel of banks, to become equal to €STR plus a fixed spread of 8.5 basis points**.

- Second, the market will transition from this "€STR-dependent EONIA" to the €STR, knowing that **EONIA discontinuation will take place on 3 January 2022**

Until 3 Jan 2022, both rates will coexist so that users have time to move all their contracts, systems and valuation rules to the euro short-term rate. This transitional period should be used by market participants to transit to the €STR, its replacement.

This 'two-deadline' approach entails challenges that should be addressed by market participants and are being analysed by the WG euro RFR. Regarding the EONIA-€STR transition, the main milestones of the euro working group since February 2018 are:

- The choice of the €STR as the euro risk-free rate
- The choice of a transition path from EONIA to the €STR
- The publication of recommendations and guidance for market participants, covering:
  1. Legal changes to legacy and new contracts referencing EONIA (EONIA legal action plan);
  2. Practical implementation of the switch from EONIA to the €STR for cash and derivative products (IT impact, settlement issues, change in discounting regime, possible compensation mechanism…)
  3. Risk management and accounting implications of the transition to the €STR

3. The Transition from EONIA to €STR

Recommendations of the Working Group on Euro Risk Free Rates

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ALREADY COMPLETED

EONIA to €STR transition path

The working group recommended the **Recalibration approach:**

- Modify the current EONIA methodology to become €STR plus a fixed spread, for a limited period
- Recalibrated EONIA to be published on T+1 instead of T
- EMMI will submit recalibrated EONIA to FSMA for authorization
- EONIA to be discontinued on 3 January 2022.

EONIA to €STR Legal Action plan

- Working group recommended, whenever feasible and appropriate, no longer entering into new contracts referencing EONIA as from 2 October 2019.
- In existing contracts referencing EONIA and maturing after December 2021, market participants should replace EONIA as the primary rate as soon as possible or embed robust fallback clauses.
- For new contracts that still reference EONIA and mature after December 2021, or fall under the EU Benchmarks Regulation (BMR), robust fallback provisions should be included.
- The working group welcomes the work already done by market associations and encourages them to continue updating their standard documentation and recommends that market participants consider using the standard market documentation and/or protocols for their contractual arrangements on a voluntary basis.

EONIA to €STR transition impact on cash & derivatives products

- The working group has investigated the transition from an operational and valuation standpoint, taking into account the impact of
  - (1) The initial change in EONIA methodology to €STR + 8.5bps in October 2019
  - (2) the transition from EONIA, as €STR + 8.5bps, to €STR flat in view of the EONIA discontinuation after 2021
- For cleared trades, the working group notably recommends that central counterparties (CCPs) align their discounting switch dates as much as possible to transition from an EONIA discounting regime to a €STR discounting regime, which would represent a "big bang" approach for cleared markets. In addition, CCPs are recommended to set the discounting switch date as early as possible, preferably towards the end of the second quarter of 2020.

3. The Transition from EONIA to €STR

The Current State of Affairs

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- **Smooth transition from EONIA to €STR so far**
  - The Working Group on Euro Risk Free Rates published a detailed list with recommendations regarding the said transitions. These included:
    1. Impact on derivatives and cash products (mainly the switch of the CCPs from EONIA to €STR, already observed, etc.).
    2. Impact on models (no direct impact, until the €STR swap curve becomes directly observable, the fixed spread relation between EONIA and €STR fixings can be applied to derive a full-term structure for €STR from EONIA linked overnight index swaps).
    3. Risk Management implications (focus should be on valuation and market risks; variety of other risks might surface depending on the nature of business and technical circumstances).
    4. Accounting implications (From an accounting and financial reporting perspective, the implications of the transition from EONIA to €STR are wide-ranging, especially for the valuation of financial assets and liabilities)

(https://www.ecb.europa.eu/paym/interest_rate_benchmarks/WG_euro_risk-free_rates/shared/pdf/FactsheetTransitionEONIAtoEuroSTR.pdf)

4. The EURIBOR Reform Process

EURIBOR definition

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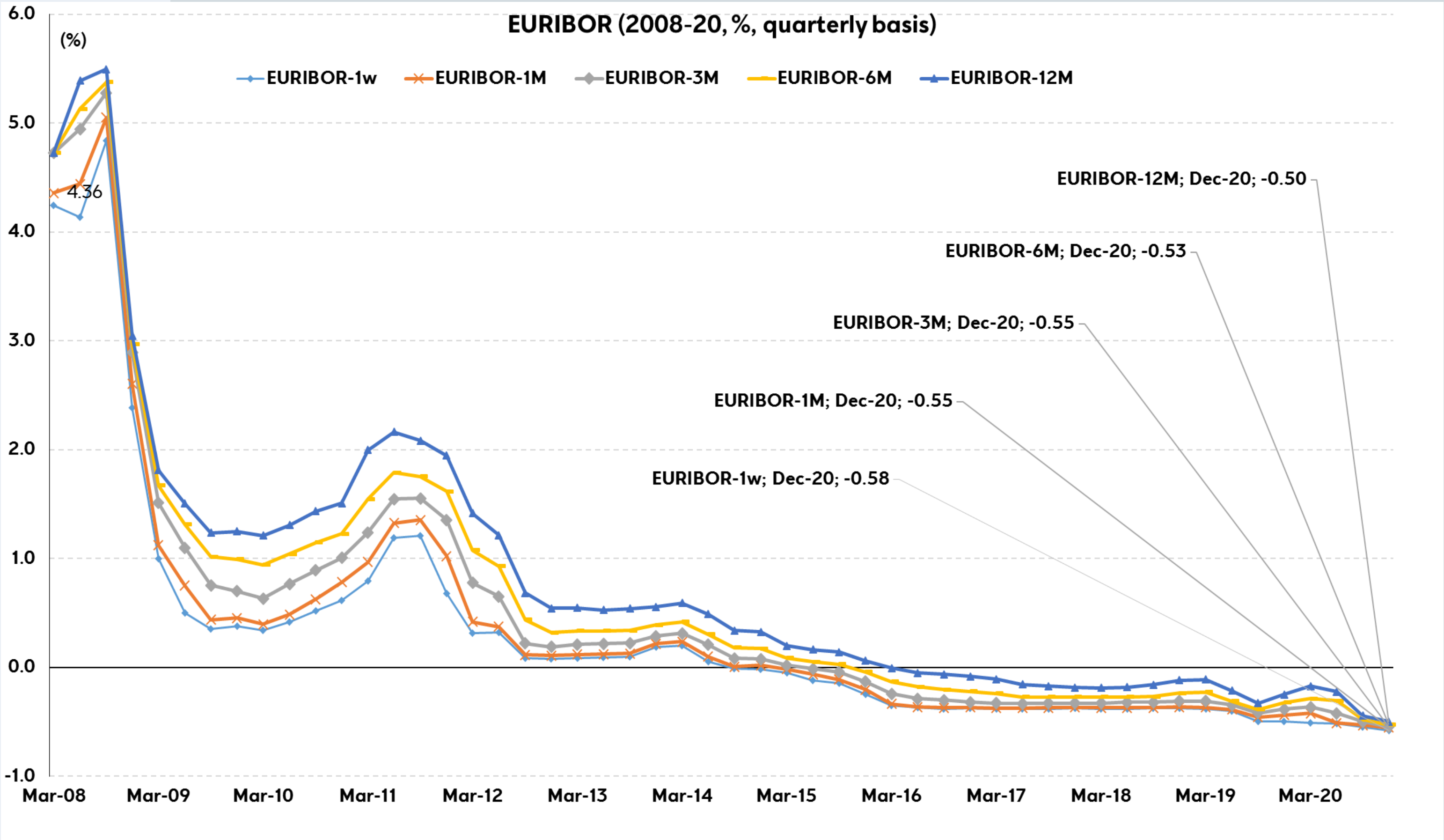
UP TO MID-2019

EURIBOR: A representative panel of banks provide daily quotes of the rate, rounded to three decimal places, that each panel bank believes one prime bank is quoting to another prime bank for interbank term deposits within the euro zone



Source: Bloomberg

From mid-2019 onwards

EURIBOR HYBRID METHODOLOGY

- EURIBOR is grounded, to the extent possible, in euro money market transactions that reflect the underlying interest rate. Determination based on a three levels hierarchical approach:

1. **Level 1**: contributions based solely on transactions in the Underlying Interest at the Defined Tenor from the prior TARGET1 day.
2. **Level 2**: contributions based on transactions in the Underlying Interest across the money market maturity spectrum and from recent TARGET days.
3. **Level 3**: contributions based on transactions in the Underlying Interest and/or other data from a range of markets closely related to the unsecured euro money market, using a combination of modelling techniques and/or the Panel Bank's judgment.

4. The EURIBOR Reform Process
EURIBOR will continue to exist post 2020

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EURIBOR is a BMR-compliant index and is not scheduled to be discontinued.

- The FSMA announced on 2 July 2019 that it has granted authorization to EMMI for EURIBOR. This follows the implementation by EMMI of a new "hybrid methodology" to better anchor the EURIBOR methodology in real transactions.
- This authorization confirms that EMMI and the EURIBOR hybrid methodology meet the requirements contained in the BMR and that EURIBOR can continue to be used in new and legacy contracts, which allows market participants to continue using EURIBOR for the foreseeable future.
- On 28th November 2019 – The European Money Markets Institute (EMMI), administrator of the EURIBOR® benchmark, confirmed that it had successfully completed the phase-in of all Panel Banks to the EURIBOR® hybrid methodology.

The situation for EURIBOR is different from EONIA,

- As a consequence, **contracts and financial instruments referencing EURIBOR do not need to transition to a new rate**, but **need to incorporate new or improved fallback provisions**. This would reduce potential uncertainties in the event of the potential EURIBOR cessation.
- For supervised entities and financial instruments and contracts that fall within the scope of the BMR, **introducing robust fallbacks would also contribute to meeting the requirements laid down in the BMR**.

4. The EURIBOR Reform Process

The need for a fallback provision

- **According to the BMR supervised entities are required to:**
  1. Produce and maintain robust written plans setting out the actions they would take in the event that a benchmark they are using materially changes or ceases to be provided. This includes the nomination of alternative benchmark(s) that could be referenced to substitute the benchmark no longer provided, where feasible and appropriate.
  2. Provide their written plans, upon request, to the relevant competent authority
  3. Reflect the written plans in their contractual relationships with clients

Robust fallback provisions reduce contract uncertainty and the risk of legal disputes in the event that the initially agreed upon benchmark rate is no longer available

4. The EURIBOR Reform Process

Why fallbacks are necessary?

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- Before BMR, the market practice did not generally contemplate the permanent cessation of a benchmark
- The use of current (historical) legacy fallback language may not produce a commercially fair result, as it may affect the pricing and performance of the product in the event of permanent cessation of EURIBOR.

EURIBOR fallback provisions are not new

→

However past practice generally only contemplated the temporary unavailability of EURIBOR

→

Permanent Cessation Scenarios and replacement of EURIBOR were not contemplated

4. The EURIBOR Reform Process
Fallback provisions main elements

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- **What is a fallback provision?**
  1. A fallback provision is a clause in a contract that determines what rate parties should use in the event that the initially agreed upon benchmark rate (such as EURIBOR) is not available.
  2. Without a fallback, a party tied to a contract could potentially dispute actions taken in response to the unavailability of the referenced benchmark rate.

- **Fallback provisions are defined by three key elements which determine the application of, and the conditions applicable to, the provision:**
  1. Trigger event: defines events and the future date the fallback will be applied on
  2. Fallback rate: identifies the alternative reference rate
  3. Spread adjustment: if the new fallback rate provides an economically different outcome to the original rate, a spread is included to avoid or minimize the transfer of value.

4. The EURIBOR Reform Process

Public consultation on EURIBOR fallback trigger events – objective/scope

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- **(Objective):** Identify a generic set of potential events that would trigger the activation of EURIBOR fallbacks that market participants could consider including in their contracts and financial instruments referencing EURIBOR. Market participants are invited to provide feedback on the proposed EURIBOR fallback trigger events.

- **(Scope):** Four main considerations regarding the scope of the public consultation on EURIBOR trigger events:

  1. Covers all asset classes and proposes the use of the same trigger events for all to ensure as much consistency as possible
  2. Covers the permanent discontinuation of EURIBOR, but does not cover any potential temporary unavailability of EURIBOR
  3. Covers the permanent discontinuation of all EURIBOR tenors. The discontinuation of some tenors, but not all, is out of the scope of both consultations.
  4. Acknowledges recommendations made by market associations (e.g. ISDA, LMA, AFME)

- **(EU Legislative Framework):** The consultation paper is based on the current legislative framework in the EU. It should be noted that on 24 July 2020, the European Commission published a 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 cessation (LIBOR). The proposal is currently being discussed by the Member States in the EU Council and the European Parliament and is expected to be published at the end of 2020.

For more information on the public consultation: https://www.ecb.europa.eu/pub/pdf/other/ecb.pubcon_EURIBORfallbacktriggerevents.202011~e3e84e2b02.en.pdf

4. The EURIBOR Reform Process

Public consultation on EURIBOR fallback trigger events – questions

Eurobank Research

#	Description of events	Question
1	**A public statement or publication of information by or on behalf of the regulatory supervisor of the administrator of EURIBOR** stating that the said administrator has ceased or will cease to provide EURIBOR permanently or indefinitely	Do you agree with the inclusion of "Event 1" as a trigger event in EURIBOR fallback provisions?
2	**A public statement or publication of information by or on behalf of the administrator of EURIBOR** stating that the said administrator has ceased or will cease to provide EURIBOR permanently or indefinitely	Do you agree with the inclusion of "Event 2" as a trigger event in EURIBOR fallback provisions? (yes / no / no opinion)
3	**A public statement by the supervisor of the EURIBOR administrator that, in its view, EURIBOR is no longer representative**, or will no longer be representative	Do you agree with the inclusion of "Event 3" as a trigger event in EURIBOR fallback provisions? (yes / no / no opinion)
4	The administrator of EURIBOR determines that EURIBOR should be calculated in accordance with its **reduced submissions or other contingency or fallback policies**	Do you agree with the proposal of not including "Event 4" as a trigger event in the EURIBOR fallback provisions? (yes / no / no opinion) Please elaborate.
5	It has become, for any reason, **unlawful** under any applicable law and regulation for relevant parties to the agreement to use EURIBOR	Do you agree with the inclusion of "Event 5" as a trigger event in EURIBOR fallback provisions? (yes / no / no opinion)
6	EURIBOR is **permanently no longer published** without a previous official announcement by the competent authority or the administrator	Do you agree with the inclusion of "Event 6" as a trigger event in EURIBOR fallback provisions? (yes / no / no opinion)
7	**Material change** of EURIBOR methodology	Do you agree that the inclusion of a material change in EURIBOR methodology (as defined by EMMI) should not result in an automatic trigger event and parties are free to agree when entering into the contract that either **(i) references in contracts to EURIBOR shall be understood to be references to EURIBOR as changed, or (ii) discuss between parties to continue the contract with the materially changed EURIBOR or to fall back to the EURIBOR fallback rates included in the contract**? (yes / no / no opinion)

4. The EURIBOR Reform Process

Public consultation on EURIBOR fallback rates for cash products – objective/scope

Eurobank Research

- **(Objective):**

  Identify the most appropriate EURIBOR fallback rate for each financial product based on:

  a) an €STR-based term structure methodology assessed against a list of key criteria;

  b) a spread-adjustment methodology to mitigate potential value transfers in case the fallback is triggered.

  Propose market conventions to use for the calculation of compounded term rates based on the €STR.

- **(Scope):** Three main considerations regarding the scope of the public consultation on EURIBOR fallback measures:

  a) All EURIBOR fallback rates are based on the euro risk-free rate, the €STR.

  b) Only covers cash products, acknowledging ISDA's EURIBOR fallback measures for derivatives products included in (1) Supplement 70 to the 2006 ISDA Definitions for new transactions; and (2) the IBOR Fallbacks Protocol for legacy contracts.

  c) Acknowledges (i) the work done by market associations, (ii) the recommendations of other RFR WGs in other jurisdictions, and (iii) the FSB recommendations.

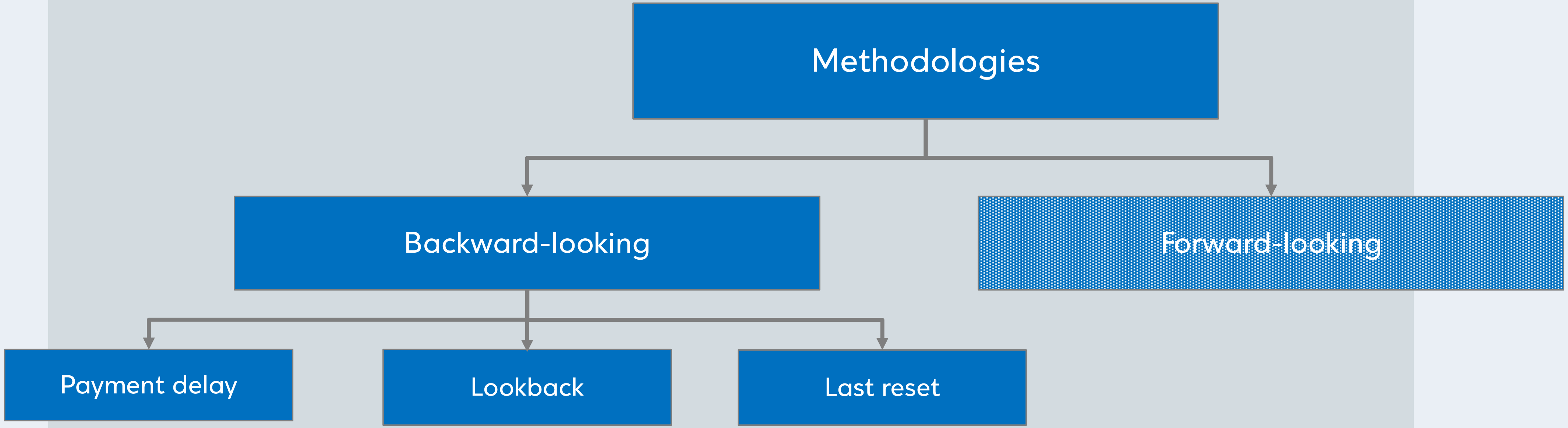
- **(EU Legislative Framework):** The consultation paper is based on the current legislative framework in the EU. It should be noted that on 24 July 2020 the European Commission published a proposal for a Regulation of the European Parliament and of the Council amending the BMR as regards the exemption of certain third country foreign exchange benchmarks and the designation of replacement benchmarks for certain benchmarks in cessation (LIBOR). The proposal is currently being discussed by the Member States in the EU Council and the European Parliament and is expected to be published at the end of 2020

For more information on the said public consultation: https://www.ecb.europa.eu/pub/pdf/other/ecb.pubcon_ESTRbasedEURIBORfallbackrates.202011~d7b62f129e.en.pdf

4. The EURIBOR Reform Process

€STR-based term structure methodologies – suitable options

Eurobank Research



- Backward-looking term structures: based on simple mathematical calculations on the value of past realized daily fixings of the €STR over a given period of time. The payment delay and lookback period will only be known at the end of the interest rate period, while the last reset will be known at the start of the interest rate period.
- Forward-looking term structures: based on the €STR derivatives markets, reflecting market expectations on the evolution of the €STR during the upcoming interest rate period. Will be known at the start of the interest rate period.

4. The EURIBOR Reform Process

€STR-based term structure methodologies – selection criteria

Eurobank Research

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

Colour code	
Feasible	🟢
Feasible with some minor changes/drawbacks	🟡
Feasible with some relevant changes/drawbacks	🟠
Questionable feasibility	🔴

4. The EURIBOR Reform Process

€STR-based term structure methodologies – proposals

Eurobank Research

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		Investment 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

- 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, for some use cases for certain products or for less sophisticated and locally operating market participants, where there is a clear necessity to know the interest rate in advance, the forward-looking term structure methodology would be more suitable.

4. The EURIBOR Reform Process

Spread adjustment proposal – proposals

Eurobank Research

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		Investment 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	*Depending on the underlying assets*	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	*Depending on the underlying assets*	BWL last reset	N/A	BWL lookback
Spread adjustment	Historical mean/median methodology									

- The working group recommends adding the historical mean/median spread adjustment to the €STR-based term structure methodology to establish a EURIBOR fallback that is economically equivalent, to allow for a value neutral transition to the extent possible in the event EURIBOR ceases to exist.

4. The EURIBOR Reform Process
Market conventions - recommendations

Eurobank Research

- For those cash products where the working group proposes 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.
- The working group seeks market feedback on whether there is an appetite to use a 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, and (ii) a spread adjustment.
- The working group proposes using the compounded average methodology without the inclusion of a floor on the daily €STR value, but only to apply any floor on the sum of the compounded term rate plus spread adjustment.
- Based on its simpler calculation methodology and consistency with the derivatives market, the working group proposes using the compounding-the-rate methodology rather than the compounding-the-balance methodology.
- The working group proposes the use of the backward-looking lookback period with an observation shift, where the working group notes that the lag approach is a viable and robust alternative for market participants wishing to use that approach.

5. The LIBOR Reform Process

Summary of LIBOR reform

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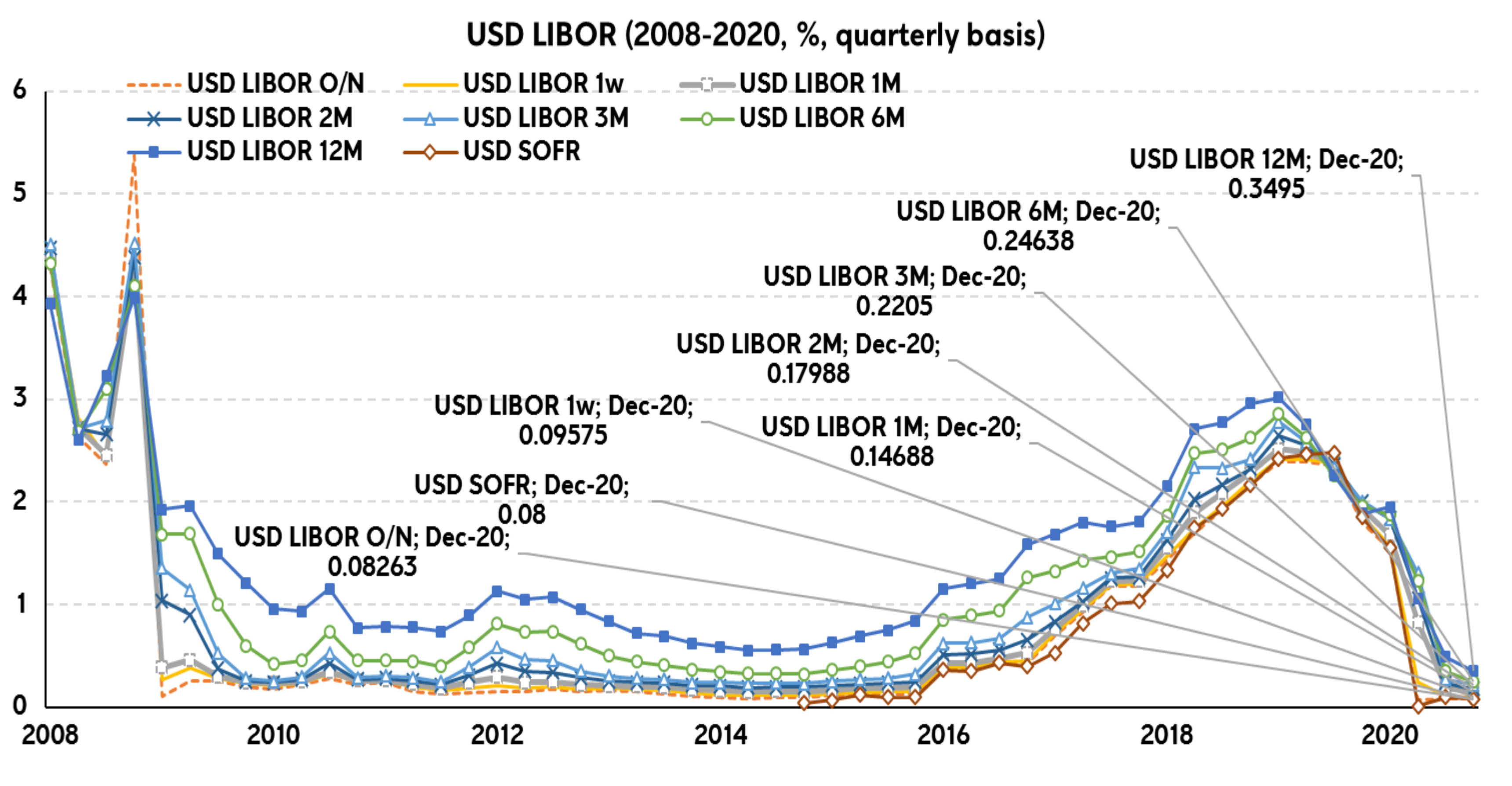
- **LIBOR:** average rate that is representative of the rates at which large, leading, internationally active banks with access to the wholesale, unsecured funding market could fund themselves in such market in particular currencies for certain tenors
- **LIBOR:** calculated for five currencies (EUR, CHF, JPY, GBP and USD) and for seven tenors in respect of each currency; 3-layer methodology similar to the one discussed for EURIBOR above.



Source: Bloomberg

- **Initial plan**: Panel banks expected to participate in the LIBOR panels until the end of 2021 => END of LIBOR
- **New plan**: Due to various constraints, the ICE, announced that it intends (public consultation) to:
  1. Cease publication of EUR LIBOR, CHF LIBOR, JPY LIBOR, GBP, LIBOR and USD LIBOR (1w, 2M) on 31/12/2021
  2. Cease publication of the remaining USD LIBOR tenors (O/N, 1M, 3M, 6M, 12M) on 30/06/2023

https://www.theice.com/publicdocs/ICE_LIBOR_Consultation_on_Potential_Cessation.pdf

5. The LIBOR Reform Process
Summary of LIBOR reform

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Summary of the Benchmarck Reform Process					
Jurisdiction	**Working Group**	**Reference Rate**	**Alternative Reference Rate**	**Rate Admin**	**Comments**
US	Alternative Reference Rates Committee	USD LIBOR	Secured Overnight Financing Rate (SOFR)	Federal Reserve Bank of New York	Secured rate; Different tenors to be supported in the future.
UK	Working Group on Sterling Risk-Free Reference rates	GBP LIBOR	Sterling Overnight Indec Average (SONIA)	Bank of England	Unsecured rate
Euro Area	Working Group on Euro Risk Free Rates	EONIA	Euro Short Term Rate (€STR)	European Central Bank	Unsecured rate
Switzerland	The National Working Group on Swiss Fran Reference Rates	CHF LIBOR	Swiss Average Rate Overnight (SARON)	SIX Swiss Exchange	Secured rate; Different tenors to be supported in the future.
Japan	Cross-Industry Committee on Japanese Yen Interest Rate Benchmarks	JPY LIBOR	Tokyo Overnight Average Rate (TONA)	Bank nof Japan	Unsecured rate

Source: ARRC, WGSRFR, WGERFR, NWGSFRR, CICJYIR

EURIBOR PUBLIC CONSULTATIONS DETAILS

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For more information and participation on the ongoing EURIBOR Public Consultations:
https://www.ecb.europa.eu/paym/interest_rate_benchmarks/WG_euro_risk-free_rates/html/index.en.html

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