EUROPEAN CENTRAL BANK

EUROSYSTEM

First public consultation by the working group on euro risk-free rates on the assessment of candidate euro risk-free rates

June 2018

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1 Executive summary

Major reference interest rates play a pivotal role in the global financial system. Declining activity in the underlying markets and challenges to the sustainability of panels contributing to these rates pose potentially serious risks to individual users of the rates and to the financial system more broadly.

The Financial Stability Board (FSB) has asked key global central banks to work with the private sector to identify more appropriate near risk-free rates that could provide robust alternatives to existing interest rate benchmarks, with a view to mitigating known risks.

In September 2017 the European Central Bank (ECB), the Belgian Financial Services and Markets Authority (FSMA), the European Securities and Markets Authority (ESMA) and the European Commission announced the launch of the working group on euro risk-free rates (hereinafter “working group”). The working group was tasked with the identification and adoption of a “risk-free overnight rate” which can serve as a basis for an alternative to current benchmarks used in a variety of financial instruments and contracts in the euro area.

The working group developed key selection criteria for a robust alternative rate and assessed a number of candidate rates against these criteria. After careful consideration, the working group concluded that three rates had characteristics that could potentially qualify them to become the euro risk-free rate. The working group also agreed that a market-wide consultation to assess the potential advantages and disadvantages of these rates could provide valuable input into the decision-making process.

The candidates for the euro risk-free rate that are the focus of this public consultation are:

- the euro short-term rate (ESTER), the new wholesale unsecured overnight bank borrowing rate, which the ECB will produce before 2020;
- GC Pooling Deferred, a one-day secured, centrally cleared, general collateral repo rate, which is produced by STOXX, a wholly owned subsidiary of Deutsche Börse Group;
- RepoFunds Rate, a one-day secured, centrally cleared, combined general and specific collateral repo rate, which is produced by NEX Data Services Limited, a wholly owned subsidiary of NEX Group plc, soon to be acquired by CME Group.

2 Introduction

This is the first public consultation by the working group[1]. It seeks feedback from market participants on the assessment of candidate rates against the key selection criteria. Responses to this consultation should be sent to EuroRFR@ecb.europa.eu by 17:00 CET on 13 July 2018. The ECB provides the secretariat for the working group and is publishing the public consultation document in this capacity. The ECB will evaluate all the responses and prepare an anonymised summary of the feedback. This summary will be discussed by the working group and published on the ECB's website with other documents related to the meeting of the working group on 13 September 2018.

This public consultation document is structured in three major parts.

Section 3 provides the general context of this consultation and consists of three sub-sections that summarise the origins of the current interest rate benchmark reforms, initiatives to develop risk-free rates in other jurisdictions and the formation of the working group on euro risk-free rates.

Section 4 then describes the approach adopted by the working group, including the selection criteria for a euro risk-free rate, the description of the candidate risk-free rates – differentiating between ECB monetary policy rates, unsecured rates and secured rates – and the assessment of these rates against the selection criteria. Based on this assessment, the working group narrowed down the list of candidate rates to three rates, which are the main focus of this public consultation.

Finally, in Section 5, market participants are encouraged to express their views on whether it would be beneficial for the working group to consider assessing potential fallback rates to the euro risk-free rate.

1 "Composition of the Working Group on Euro Risk-Free Rates"

3 Context of this public consultation

3.1 Interest rate benchmark reform

Major reference interest rates play a pivotal role in the global financial system because of their usage in a broad range of financial instruments and contracts. In 2013 the G20 asked the Financial Stability Board (FSB) to undertake a fundamental review of major interest rate benchmarks and plans for their reform. In July 2014 the FSB published its recommendations on interest rate benchmark reform[2]:

- Strengthening existing interest rate benchmarks and other potential reference rates based on unsecured bank funding costs by underpinning them with transaction data as far as possible.

- Developing alternative, nearly risk-free, reference rates.

In line with the FSB's recommendations, the administrators of existing benchmarks are undertaking important and necessary reforms. However, due to potential litigation and compliance risks, banks have become more reluctant to participate voluntarily in benchmark panels. Together with the declining activity in the underlying market, this has undermined confidence in the reliability and robustness of the existing benchmarks. The resulting uncertainty about the integrity of reference rates represents a potentially serious source of vulnerability and systemic risk.

The euro overnight index average (EONIA), a key overnight unsecured lending euro benchmark, exemplifies these risks[3]. More than €20 trillion of interest rate derivatives and securities are linked to EONIA[4]. However, underlying volumes have fallen substantially from approximately €35 billion per day before the financial crisis to €8 billion per day in recent years. In addition, EONIA has become increasingly determined by a minority of participants as the five largest lending banks contribute approximately 80% of the total volume, raising concerns about representativeness[5]. More recently in 2018, underlying volumes have averaged just below €5 billion per day and have fallen below €1 billion on five occasions, owing to local business holidays. These factors reflect prolonged structural change in the underlying interbank lending market. The European Money Markets Institute (EMMI), the administrator of EONIA, therefore concluded that under current market conditions,

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2 "Reforming Major Interest Rate Benchmarks", Financial Stability Board (FSB), 22 July 2014.

3 EONIA is the effective overnight reference rate for the euro. It is computed as a weighted average of all overnight unsecured lending transactions in the interbank market undertaken in the European Union (EU) and European Free Trade Association (EFTA) countries. It is based on the contributions of 28 panel banks.

4 "Update on quantitative mapping exercise", meeting of the working group on euro risk-free rates, 17 May 2018.

5 "Consultative paper on enhancements to the EONIA benchmark", European Money Markets Institute (EMMI), 8 August 2016.

EONIA's compliance with the EU Benchmarks Regulation[6] by January 2020 "cannot be warranted"[7].

3.2 Initiatives to develop risk-free rates in other jurisdictions

In parallel to the reforms of existing interest rate benchmarks, the central banks of the relevant currencies and associated regulators have been supporting efforts led by private sector to identify nearly risk-free rates. In all cases, working groups in other jurisdictions have focused on identifying appropriate overnight rates instead of term rates. Most transactions in the money markets have an overnight tenor, which presents minimal credit and liquidity risk.

Working groups in key jurisdictions outside the euro area have already recommended risk-free rates and, in some cases, have identified strategies to create liquidity in the newly introduced risk-free rates.

In the United States, the Alternative Reference Rates Committee (ARRC) selected a secured rate, the Secured Overnight Financing Rate (SOFR), as its recommended alternative to the USD London interbank offered rate (LIBOR). In Switzerland, the National Working Group on Swiss Franc Reference Rates (NWG) also recommended a secured rate, the Swiss Average Rate Overnight (SARON), as the risk-free rate alternative to the CHF LIBOR.

In the United Kingdom, the Working Group on Sterling Risk-Free Reference Rates recommended the reformed Sterling Overnight Index Average (SONIA), an unsecured overnight rate, as its preferred risk-free rate alternative to the GBP LIBOR. In Japan, the Study Group on Risk-Free Reference Rates identified the uncollateralised overnight call rate, the Tokyo Overnight Average Rate (TONAR), as the Japanese risk-free rate alternative to the JPY LIBOR.

3.3 Formation of the working group on euro risk-free rates

In September 2017 the ECB, the FSMA, the ESMA and the European Commission announced the launch of a new working group tasked with the identification and adoption of a euro risk-free rate to serve as a basis for an alternative to the current benchmarks used in a variety of financial instruments and contracts in the euro area[8].

At the inaugural meeting of the working group in February 2018, ECB Executive Board member Benoît Cœuré set out its key objectives: *"First and foremost, the*

[6] 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 (OJ L 171, 29.6.2016, p. 1).

[7] "State of play of the EONIA review", European Money Market Institute (EMMI), February 2018.

[8] "Joint press release FSMA, ESMA, ECB and EC: New working group on a risk-free reference rate for the euro area", 21 September 2017.

working group has a mandate to identify and develop an adoption plan for a risk-free overnight rate that can serve as a basis for an alternative to the benchmarks currently used in the euro area. As a second step, the working group should explore ways to ensure a smooth transition to the preferred new rate."[9]

[9] "The importance of euro interest rate benchmark reforms", welcome address by Benoît Cœuré at the first meeting of the working group on euro risk-free rates, 26 February 2018.

4 Identifying and assessing potential euro risk-free rate candidates

4.1 Selection criteria

The working group identified specific selection criteria that it would use to recommend a robust euro risk-free rate. These included an index underpinned by a broad base of reliable transactions, a clearly understood underlying interest that the index intended to measure, and an index produced by a credible administrator in line with the requirements of the EU Benchmarks Regulation.

The selection criteria for identifying potential euro risk-free rate candidates outlined in **Box 1** were adopted by the working group in April 2018[10] and published on the ECB's website.[11]

Box 1
Criteria for a euro risk-free rate

1. Benchmark qualities
   - (a) Underpinned by broad-based and reliable market data
   - (b) Representative of competitive arm's-length near risk-free bank borrowing costs
2. Benchmark characteristics
   - (a) Sensitive and reactive to changes in policy rate and other market factors
   - (b) Underlying interest that the benchmark seeks to measure to be clear and transparent
3. Methodological qualities
   - (a) Market data to be transaction data where possible
   - (b) Market data clearly defined and understood
   - (c) Market data reliable and easily accessible to administrator
   - (d) Determination methodology clear and transparent

10 "Minutes", meeting of the working group on euro risk-free rates, 20 April 2018.

11 "EUR RFR – list of criteria for the selection", meeting of the working group on euro risk-free rates, 20 April 2018.

4. Governance and accountability

   (a) Administrator compliant with the International Organization of Securities Commissions (IOSCO) Principles* and expected to become compliant with the EU Benchmarks Regulation (authorised/registered/exempt)
   (b) Appropriate controls and oversight, including confidentiality of data

5. Other considerations

   (a) Potential for term market based on risk-free rate
   (b) Availability of historical risk-free rate data

Source: Working group on euro risk-free rates.
* "Principles for Financial Benchmarks", IOSCO, July 2013.

4.2 Assessing potential euro risk-free rate candidates

Once the criteria were agreed, the working group began to identify potential candidates, including ECB monetary policy rates and various secured[12] and unsecured[13] rates, and to assess them against the selection criteria. It decided that a number of the potential candidates did not possess certain requisite characteristics and those rates were given no further consideration.

In addition to the candidate rates identified by the working group, the ECB invited index providers who believed that they produced a relevant rate to present their rate to the working group for consideration[14]. To date, no additional candidate rates have been submitted to the working group.

[12] A secured rate is defined as the rate paid to borrow cash by posting government securities or Basel III liquidity coverage ratio (LCR) highly liquid assets as collateral. Also known as a repurchase agreement or "repo", the borrowing is short-term, usually overnight, after which the borrower repays the cash with interest in exchange for the return of collateral. A secured borrowing rate will generally be lower than an unsecured borrowing rate, representing the credit risk of the collateral instead of the borrower.

[13] An unsecured rate is defined as the rate paid to borrow cash based on the perceived credit-worthiness of the borrower and is not backed by any collateral.

[14] "Opportunity for index providers to present alternative risk-free rate candidates to the working group members", working group on euro risk-free rates.

4.2.1 ECB monetary policy rates

Table 1
Summary of attributes of ECB monetary policy candidate rates considered for the euro risk-free rate

Index	Description	Administrator	Methodology	Tenor
ECB deposit facility rate	The rate of interest that banks receive for depositing money in euro with the central bank overnight	ECB	Set by the ECB's Governing Council	Overnight
ECB main refinancing operations (MRO) rate	The rate at which banks can borrow money in euro from the central bank against ECB eligible assets for one week	ECB	Set by the ECB's Governing Council	One week

Sources: ECB and working group on euro risk-free rates.

The working group examined two ECB monetary policy rates: the ECB's deposit facility rate and the interest rate on main refinancing operations (MRO) (**Table 1**). Both were considered to be transparent and clearly understood. In addition, members believed that these rates were credible and reliable as they are produced by the ECB. However, the working group concluded that these rates did not meet the criteria for being underpinned by broad-based market data, as they are set by the ECB's Governing Council[15]. Therefore, there was no further consideration of these rates.

15 "Key ECB interest rates", ECB.

4.2.2 Unsecured rates

Table 2
Summary of attributes of unsecured candidate rates considered for the euro risk-free rate

Index	Description	Administrator	Methodology	Tenor
One-week EURIBOR (reformed) **One-month EURIBOR (reformed)** **Three-month EURIBOR (reformed)**	The rate at which wholesale funds in euro could be obtained by panel banks in the EU and EFTA countries in the unsecured money market	European Money Market Institute (EMMI)	Unspecified average of submitted rates determined by a range of relevant transactions and expert judgment of submitters (following a specific waterfall)	One week One month Three months
Overnight EURIBOR (may be produced)	The rate at which wholesale funds in euro could be obtained by panel banks in the EU and EFTA countries in the unsecured money market	European Money Market Institute (EMMI)	Unspecified average of submitted rates determined by a range of relevant transactions and expert judgment of submitters (following a specific waterfall)	Overnight
Overnight euro LIBOR	An indication of the average rate at which panel banks could obtain unsecured funding	ICE Benchmark Administration (IBA)	Trimmed mean of submitted rates determined by a range of relevant transactions and expert judgment of submitters (following a specific waterfall)	Overnight
EURONIA	The average rate of unsecured overnight euro deposits arranged by eligible money brokers in London	Wholesale Markets Brokers' Association (WMBA)	Weighted average rate of eligible transactions	Overnight
ESTER	The rate which reflects the unsecured wholesale euro overnight borrowing costs of euro area banks	ECB	Volume-weighted average rate of transactions reported to the ECB in accordance with money market statistical reporting (MMSR) requirements	Overnight

Sources: ECB, EMMI, IBA, WMBA and working group on euro risk-free rates.

EURIBOR term rates (reformed)

The working group welcomed reforms proposed by the euro interbank offered rate (EURIBOR) administrator, the European Money Markets Institute (EMMI), to anchor their benchmark in transactions, and discussed the extent to which the one-week, one-month and three-month tenors, which were expected to be reformed, could fulfil the selection criteria. Although the working group agreed that the hybrid methodology proposed by the EMMI seemed credible, it concluded that the term nature of these rates did not fulfil the near risk-free requirement of the criteria, because of the credit and liquidity component included. As a result, these rates were not given further consideration.

Overnight EURIBOR (reformed)

In March 2018, the EMMI published a consultation which raised the prospect of producing a panel-based overnight EURIBOR tenor[16]. Many members of the working group questioned the sustainability of the EURIBOR panel, but some members believed that this potential development was worthy of consideration. The EMMI's consultation suggested that strong volumes could support the overnight tenor but the extent to which expert judgement would also be used to determine submissions was unclear.

The working group requested that the EMMI provide statistics on volumes and transactions that could underpin this index[17]. The results indicated that, if this index were to be produced, the underlying volume could be greater than EONIA.[18] Nevertheless, members of the working group were concerned about the low absolute level of volume and, considering this alongside the panel-based submission methodology, concluded that this index was unlikely to be robust enough to be the euro risk-free rate.

Overnight euro LIBOR

Many members of the working group were unconvinced about considering this panel-based index as a potential euro risk-free rate. In particular, several members noted that guidance from the relevant national competent authority suggested that this index was unlikely to be a reliable, strategic alternative.[19] Other members raised concerns about data reliability with respect to the methodology for contributions; analysis of publicly available data indicated that approximately 50% of submissions were based on expert judgement.[20]

Despite these reservations, some members suggested that it could be beneficial to understand the extent to which actual volumes supported the reformed index, based on the new "waterfall" methodology[21]. The working group requested that the LIBOR administrator, ICE Benchmark Administration (IBA), provide certain statistics on volumes and transactions underpinning the reformed index.[22] The results indicated that this index could have greater supporting volumes than EONIA, but members were concerned about the low absolute level of volume and the panel-based submission methodology. Additional information published by IBA revealed that the frequency of the use of expert judgement did not materially change under the new

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16 "Consultation on Hybrid Methodology for EURIBOR", EMMI, 26 March 2018.

17 EMMI provided aggregated statistics from the September 2016 to February 2017 pre-live verification (PLV) exercise, which intended to assess the feasibility of a fully transaction-based methodology. In order to provide aggregated statistics, EMMI had to first seek permission from the panel banks; only 13 of 20 granted this approval.

18 EMMI expects to publish the results of its consultation by July 2018.

19 "The future of LIBOR", Andrew Bailey, 27 July 2018.

20 "Quarterly Volume Report - Q1 2018", ICE LIBOR.

21 "ICE LIBOR Evolution", ICE Benchmark Administration Limited ("IBA"), 25 April 2018.

22 IBA provided aggregated statistics for the period from September to December 2017, when IBA collected submissions "test" data using the new methodology.

methodology,[23] which led the working group to conclude that this index would not be an appropriate euro risk-free rate.

EURONIA

EURONIA is a London-brokered overnight unsecured rate administered by the Wholesale Markets Brokers' Association (WMBA). Members were receptive to the transactions-only methodology of the index, but all members were concerned about the low volumes registered; on several days in recent years the index had zero or near-zero underlying volume. The working group decided that the index was not sufficiently robust.

ESTER

In September 2017, the ECB announced its intention to publish a new unsecured overnight borrowing rate that would be based on daily money market statistical reporting (MMSR) data[24] provided by the 52 largest euro area banks[25]. The ECB subsequently announced that this rate would be called the euro short-term rate (ESTER) and would be produced before 2020.[26] The most recent description of the methodology and characteristics of this rate are presented in the second public consultation on the publication by the ECB of an unsecured overnight rate.[27] The final methodology is expected to be approved by the ECB's Governing Council by summer 2018.

The working group welcomed the initiative by the ECB to develop a new unsecured overnight borrowing rate. In particular, the transactions-only methodology supported by a large number of participants was considered to be robust and the non-panel-based methodology was considered to be reliable. ESTER registered average daily volume several times greater than EONIA, supported by a larger number of reporting agents.

However, some members highlighted potential operational challenges of the new rate. First, as the rate is expected to be published at 09:00 CET on the next business day (T+1), systems would need to be improved. Second, the rate was not expected to be published on a daily basis until the second half of 2019, which could limit the time available for market participants to study how the rate might perform under different market conditions.

23 See footnote 21.

24 "Reporting instructions and other information relating to MMSR data", ECB.

25 "ECB to publish new unsecured overnight interest rate", ECB, 21 September 2017.

26 "Decisions taken by the Governing Council of the ECB (in addition to decisions setting interest rates)", ECB, May 2018.

27 "Second public consultation on developing the publication by the ECB of an euro unsecured overnight interest rate", ECB, March 2018.

Despite these challenges, members agreed that the volume underlying this non-panel-based index was more robust and reliable than other unsecured alternatives. Furthermore, the ECB was considered to be a credible administrator of the rate. The ECB confirmed that it would not request license fees for the use ESTER. The working group recommended that ESTER be considered as a candidate for the euro risk-free rate.

Table 3

Summary of attributes of specific unsecured overnight rates

	EONIA	Overnight EURIBOR(proposed)	Overnight euro LIBOR (waterfall)	ESTER
Review period	1 August 2016 to 15 January 2018	1 September 2016 to 28 February 2017	15 September 2017 to 15 December 2017	1 August 2016 to 15 January 2018
Minimum allowed transaction size	None	None	€10 m	€1 m
Banks participating in analysis	All 28 panel banks	13 out of 20 panel banks*	All 15 panel banks	All 52 reporting agents
Average daily volume	€7.7 bn	€5.2 bn	€8.0 bn	€29.8 bn
Lowest daily volume	€0.8 bn	€2.8 bn	€2.9 bn	€6.8 bn
Average number of banks reporting daily volume	12	9	7	31
Lowest number of banks reporting daily volume	6	7	3	24
Average number of daily transactions	N/A	216	82	438
Lowest number of daily transactions	N/A	151	18	158

Source(s): EMMI, IBA, ECB and working group on euro risk-free rates.
Notes: (i) The administrator of EONIA does not require contributors to report individual transactions; (ii) overnight EURIBOR and overnight euro LIBOR review period data differ owing to administrator-determined test periods; (iii) the EURIBOR test data did not include a notional minimum threshold size, but the EMMI could set a minimum threshold size if the tenor is produced.
* The EMMI provided aggregated statistics from the September 2016 to February 2017 pre-live verification (PLV) exercise, which intended to assess the feasibility of a fully transaction-based methodology. In order to provide aggregated statistics, the EMMI had to first seek permission from the panel banks; only 13 of 20 granted this approval.

Question 1

Do you agree with the working group's analysis of the ECB monetary policy candidate rates and the unsecured candidate rates? (Yes/no/no opinion)
Please elaborate.

Question 2

Do you support the working group's conclusion that ESTER is the most reliable and robust unsecured candidate euro risk-free rate? (Yes/no/no opinion)
Please elaborate.

4.2.3 Secured rates

The characteristics of a number of secured overnight rates were discussed and publicly available data covering a period of up to five years were reviewed.

Table 4

Summary of attributes of secured candidate rates considered for the euro risk-free rate

Index	Description	Administrator	Methodology	Tenor
Pan-European Repo Index (subject to production)	The average rate of return of secured wholesale transactions in euro with a maturity of one business day	EMMI	Volume-weighted mean of eligible secured wholesale transactions aggregated from certain trading venues	One day
GC Pooling	The effective secured interbank rate of all euro overnight transactions in the GC Pooling ECB basket (3,000 bonds)	STOXX	Volume-weighted average rate of eligible general collateral transactions aggregated from a trading venue	Overnight
GC Pooling Extended	The effective secured interbank rate of all euro overnight transactions in the GC Pooling ECB Extended basket (14,000 bonds)	STOXX	Volume-weighted average rate of eligible general collateral transactions aggregated from a trading venue	Overnight
GC Pooling Deferred	The effective secured interbank rate of all Euro one-day transactions in the GC Pooling ECB and ECB Extended baskets	STOXX	Volume-weighted average rate of eligible general collateral transactions aggregated from a trading venue	One day
RepoFunds Rate	The effective cost of one-day funding of general and specific (filtered) sovereign government bonds in the euro area	NEX Data Services	Volume-weighted average rate of eligible collateral transactions aggregated from certain trading venues	One day

Sources: EMMI, STOXX, NEX Data Services and working group on euro risk-free rates.
Notes: The one day tenor aggregates overnight, tomorrow/next and spot/next transactions which refer to the same trading period.

Pan-European Repo Index

In 2017 the EMMI considered producing a new pan-European repo index. It published a consultation paper in June 2017[28] and a summary of stakeholder feedback in August 2017.[29] Although members of the working group were encouraged by the EMMI's intention, the EMMI could not confirm whether it would be able to produce such an index in a timeframe that allowed the working group to carry out an appropriate assessment. As a result, there was no further consideration of the index.

[28] "Consultation paper on a new reference index for the euro repo market", EMMI, 15 June 2017.

[29] "Summary of stakeholder feedback", EMMI, 29 August 2017.

General Collateral Pooling indices

STOXX, a wholly owned subsidiary of Deutsche Börse, produces a family of indices based on effective interest rates in the euro secured money market[30]. These indices are made up of eligible asset database[31] repo transactions cleared through Eurex[32]. The working group assessed three indices: GC Pooling, GC Pooling Extended and GC Pooling Deferred. On the basis of the eligible asset database, these general collateral indices represent distinct baskets of securities. All three indices have overnight tenors, although the GC Pooling Deferred basket also includes one-day tenors with forward start dates: those starting on the next business day after today ("tomorrow/next"), and those starting two business days after today ("spot/next").

Members of the working group supported the transactions-only methodology of these indices, but expressed concerns about the low volumes of GC Pooling and GC Pooling Extended as neither index averaged an underlying volume greater than EONIA. Therefore, the working group concluded that these indices were not appropriate candidate euro risk-free rates.

Members were relatively more encouraged by GC Pooling Deferred volumes, which were modestly greater and more reliable than EONIA. However, some members were uncertain about the extent to which the transactions were sufficiently broad-based. Other members were concerned about the tendency for index volatility to increase measurably at quarter-ends and year-ends, and about whether this reflected bank funding conditions at these times.

To gain a better understanding of the GC Pooling Deferred index, the working group requested that STOXX share any additional relevant data on collateral granularity or concentrations of client transactions. STOXX presented to the working group on 17 May 2018[33].

Among other things, the working group observed that while potential participation in the index was broad, underlying volume was generally provided by a narrower range of participants. Furthermore, while average volumes over the review period were favourable when compared to EONIA, they had declined materially in recent years.

With regard to secured benchmarks more generally, some members observed that despite the systemic risk-reduction benefits from central clearing of repos, clearing firms exercising legitimate risk-reduction measures could potentially have indirect pricing influence over the index during times of stress. This outcome could occur if the relevant clearing firm decided to increase the "haircut" on particular collateral perceived to have increased in riskiness.[34]

30 "STOXX® GC Pooling Indices", STOXX.

31 "Collateral", European Central Bank.

32 A general collateral repo transaction could refer to any security in a range or basket of high-quality liquid securities. There would not be a requirement for using a specific security as collateral. The eligible securities would be considered close substitutes. See "GC Pooling Baskets", EUREX.

33 "STOXX GC Pooling EUR Deferred Funding Rate as Euro RFR Benchmark", working group on euro risk-free rates meeting, 17 May 2018.

34 "What is a haircut?", International Capital Market Association.

STOXX, the GC Pooling Deferred private sector administrator, confirmed that it had published a statement of compliance with the IOSCO principles on its website. It also confirmed that it would apply to become an authorised administrator of indices for use in the EU – as required by the EU Benchmarks Regulation – during the transitional window ending in 2019, or possibly by the end of 2018. STOXX does not currently apply license fees for market participants to use data.

In short, members believed the transactions-only non-panel-based methodology of GC Pooling Deferred, combined with the generally higher and more reliable volumes than EONIA, made this secured index worthy of further consideration.

RepoFunds Rate

NEX Data Services, a wholly owned subsidiary of NEX Group, produces a variety of euro repo indices based on secured and centrally cleared one-day interest rates[35]. NEX publishes six country-specific indices and a combined euro RepoFunds Rate index. Only the combined index was considered to be a potential euro risk-free rate candidate. The RepoFunds Rate index incorporates general collateral overnight, “tomorrow/next” and “spot/next” tenors and also includes specific collateral transactions sometimes referred to as “specials” under certain conditions[36] as these transactions add substantially to overall volumes. Owing to supply and demand dynamics, some specific collateral transactions trade at premium levels and NEX applies a filtering process to try to reduce the influence of certain outliers.

Members of the working group supported the transactions-only methodology of this index and agreed the underlying volumes were substantial. It was noted that this index had the highest volumes of any of the candidate rates. However, many members were concerned about material, and in some cases significant, increases in quarter-end and year-end volatility, and queried whether index rates at these times accurately reflected where member institutions could borrow cash. Other members suggested that regulatory factors, such as balance sheet targets, seemed more dominant than economic factors on these occasions.

To gain a better understanding of the geographic distribution of the participating institutions and the extent to which general collateral and special transactions contributed to the overall index, the working group requested that NEX share any additional relevant details about the composition of the RepoFunds Rate index. NEX presented to the working group on 17 May 2018[37].

NEX indicated that the majority of underlying volume came from the collateral of a small number of countries, although participants were spread out more widely across the EU. NEX also stated that a broad range of counterparties were already

35 “Euro Repo Index”, RepoFunds Rate.

36 To distinguish from general collateral, a specific repo transaction is when there is demand for a specific security. If this demand is particularly high, the specific repo rate may drop below the general collateral rate, indicating the security is “special”.

37 “NEX Data RepoFunds Rate”, working group on euro risk-free rates meeting, 17 May 2018.

registered users of the RepoFunds Rate Index. With regard to the underlying collateral's composition, NEX clarified that a large majority of the transactions underlying the index were against specific, as opposed to general, collateral. Again, some members of the working group commented on the potential impact that clearing firms engaged in legitimate risk management activities could inadvertently have on the index.

NEX confirmed that it has been approved as an authorised administrator of indices for use in the EU under the requirements of the EU Benchmarks Regulation. NEX is a private sector administrator and license fees will apply if market participants wish to use non-delayed data.

In short, members believed the transactions-only non-panel-based methodology of RepoFunds Rate, combined with the high volumes, made this secured index worthy of further consideration.

Table 5

Summary of attributes of selected secured overnight rates

	GC Pooling Deferred	RepoFunds Rate
Historically – 15 January 2013 to 15 January 2018		
Minimum allowed transaction size	€1.0 m	€0.5 m
Trading participants	131	~80
Average daily volume	€27.2 bn	€180.1 bn
Lowest daily volume	€2.8 bn	€123.4 bn
Average number of banks reporting daily volume	45	N/A – contributions are made by trading venues and not individual banks*
Recently – 1 August 2016 to 15 January 2018		
Minimum allowed transaction size	€1.0 m	€0.5 m
Trading participants	104	~80
Average daily volume	€8.9 bn	€200.6 bn
Lowest daily volume	€2.8 bn	€131.5 bn
Average number of banks reporting daily volume	25	N/A – contributions are made by trading venues and not individual banks*

Sources: STOXX, NEX Data Services and working group on euro risk-free rates.
* The volume of an individual bank is not disclosed. However, the participating banks' trading activity on the trading venues would make up the total volume.

Question 3
Do you agree with the working group's analysis of the secured candidate rates? (Yes/no/no opinion)
Please elaborate.

Question 4
Do you support the working group's conclusion that GC Pooling Deferred and RepoFunds Rate are the most reliable and robust secured rate candidates for the euro risk-free rate? (Yes/no/no opinion)
Please elaborate.

4.2.4 Summary of EONIA and final euro risk-free rate candidates

Table 6
Summary of final candidate rates' attributes compared to EONIA

	ESTER	GC Pooling Deferred	RepoFunds Rate	EONIA
Economic interest of index	Wholesale unsecured borrowing rate	Borrowing rate secured by general collateral	Borrowing rate secured by general and specific collateral	Interbank unsecured lending rate
Representativeness of index	Non panel-based bank borrowing	Could be influenced by regulatory and collateral factors unrelated to bank borrowing	Could be influenced by regulatory and collateral factors unrelated to bank borrowing	Panel-based bank lending
Familiarity with economic interest of index	May be easier to understand for most users	May be more difficult to understand for some market participants	May be more difficult to understand for some market participants	Existing benchmark
Average daily volume (1 August 2016 to 15 January 2018)	€29.8 bn	€8.9 bn	€200.6 bn	€7.7 bn
Lowest daily volume (1 August 2016 to 15 January 2018)	€6.8 bn	€2.8 bn	€131.5 bn	€0.8 bn
Number of reporting agents (ESTER) or trading participants	52	104	~80	28
Average number of banks reporting daily volume	31	25	N/A – contributions are made by trading venues and not individual banks*	12
Average number of countries represented	10	9	11	6
Performance during periods of market stress	Potentially less resilient	Potentially more robust	Potentially more robust	Known to market participants
Volatility	Generally stable during reporting periods	More volatile, particularly at quarter-end and year-end	More volatile, particularly at quarter-end and year-end	Known to market participants
Publication day	Next day by 09:00 CET	Same day at 18:00 CET	Same day at 19:35 CET	Same day by 19:00 CET

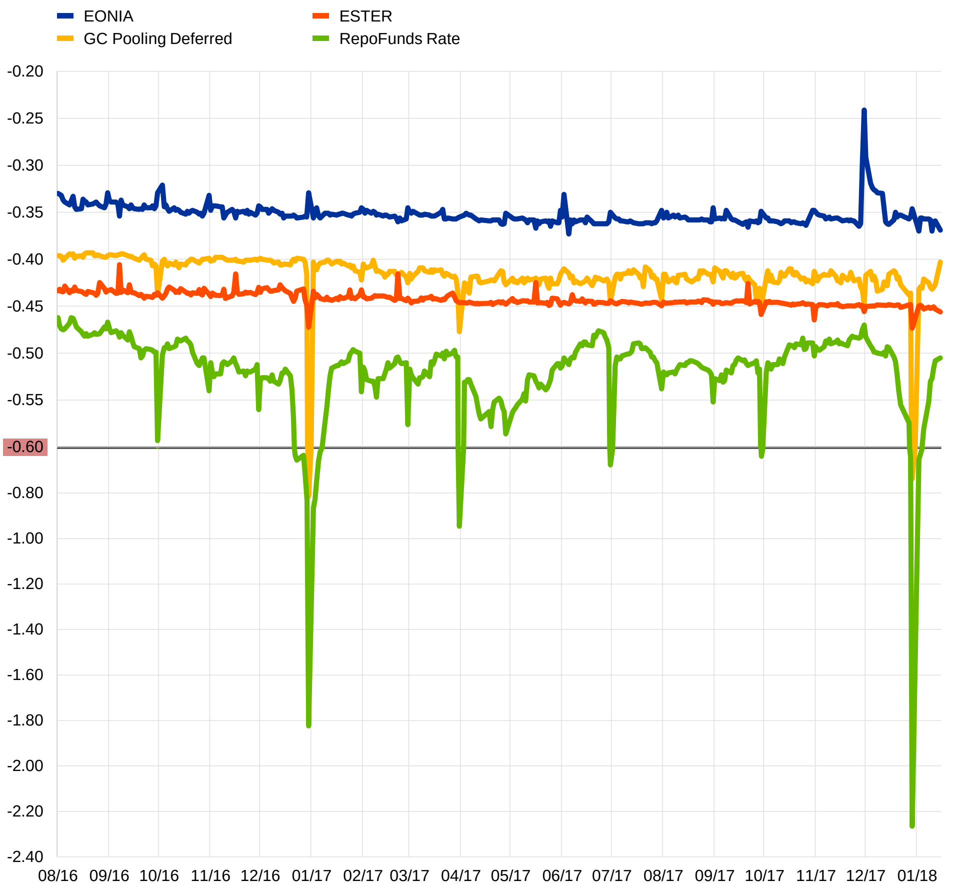
	ESTER	GC Pooling Deferred	RepoFunds Rate	EONIA
Nature of administrator	Central bank – data to be freely available	Private sector – no current licence fees	Private sector – licence fees apply for non-delayed data	Not-for-profit association; fees apply to non-panel banks as per EMMI data subscription services package
Administrator compliant with the EU Benchmarks Regulation?	Exempt	Intends to apply for authorisation during transitional period – IOSCO compliance statement published on website	Authorised for use in EU	Intends to apply for authorisation during the transitional period**
Availability of historical data	Since August 2016	Since January 2010	Since January 2006	Since January 1999

Sources: ECB, STOXX, NEX Data Services and working group on euro risk-free rates.
*The volume of an individual bank is not disclosed. However, the participating banks' trading activity on the trading venues would make up the total volume.
** The application will only pertain to the administration of EURIBOR; EONIA will not be compliant with the EU Benchmarks Regulation after 2019.

Chart 1

EONIA and the final three euro risk-free rate candidates

(1 August 2016 – 15 January 2018, percentages)



Sources: EMMI, ECB, STOXX, NEX Data Services and working group on euro risk-free rates.
Notes: The chart displays two differently scaled panels - joined by a bold horizontal line - to illustrate the developments of EONIA and the three final euro risk-free rate candidates. The larger scaled lower panel highlights developments around reporting dates.

Table 7

Standard deviation of day-to-day changes

Time period	ESTER	GC Pooling Deferred	RepoFunds Rate	EONIA
15 January 2013 – 15 January 2018	-	5.3 bps	8.2 bps	3.8 bps
1 August 2016 – 15 January 2018	0.6 bps	3.8 bps	14.4 bps	0.8 bps

Sources: ECB, STOXX, NEX Data Services and working group on euro risk-free rates.

Question 5

Which of the final three candidate rates do you think would be the most appropriate future euro risk-free rate?

Please elaborate on the reasons for your preference, taking into account that your preferred rate could serve as the basis for an alternative to current benchmarks used in the euro area.

5 Assessing potential fallback rates to the euro risk-free rate

Article 28.2 of the EU Benchmarks Regulation requires supervised users of a benchmark to “*maintain robust written plans setting out the actions that they would take in the event that a benchmark materially changes or ceases to be provided.*”

In addition, if it is “*feasible and appropriate, such plans shall nominate one or several alternative benchmarks that could be referenced to substitute the benchmarks no longer provided.*”

The regulation does not require all users to nominate the same rate; this is the user's decision. The working group expects the recommended euro risk-free rate to be robust and sustainable but is contemplating whether it could be beneficial to the market to assist in identifying potential fallback rates.

Question 6
Do you think the working group should consider assessing potential fallback rates to the euro risk-free rate? (Yes/no/no opinion)

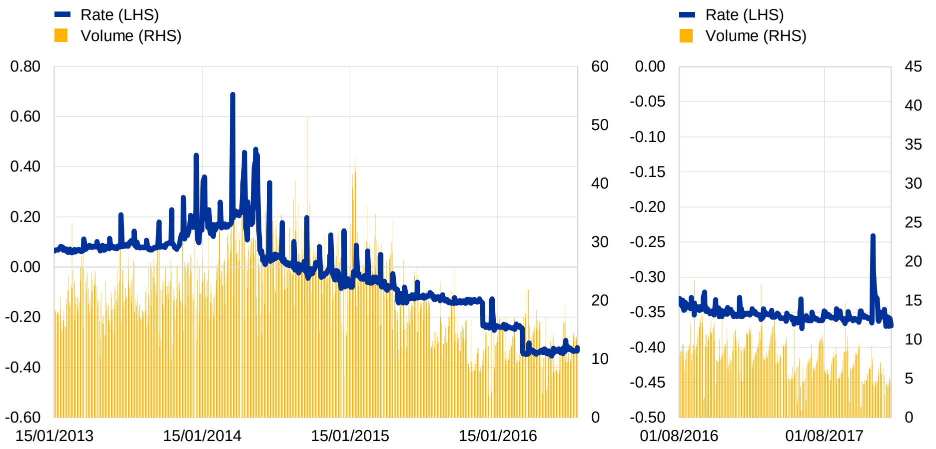
Please elaborate on:
(i) the main reason for your opinion that the working group should or should not undertake this exercise.
(ii) the critical issues that the working group should consider with respect to nominating fallback rates.

6 Appendix: rate and volume developments of EONIA and three potential euro risk-free rate candidates

Chart A1
EONIA

Rate and volume developments

(15 January 2013 to 31 July 2016 (left panel) and 1 August 2016 to 15 January 2018 (right panel); percentages (LHS) and EUR bn (RHS))



Sources: ECB, EMMI and working group on euro risk-free rates.

Chart A2
ESTER

Rate and volume developments

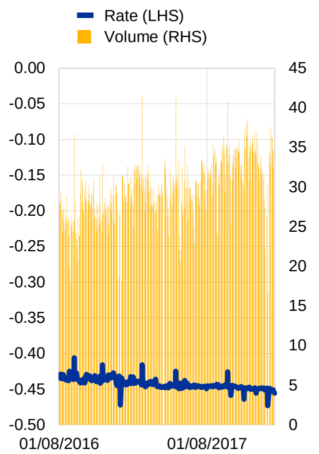
(15 January 2013 to 31 July 2016 (left panel; n/a) and 1 August 2016 to 15 January 2018 (right panel); percentages (LHS) and EUR bn (RHS))

ESTER will be based entirely on transactions in euro that are reported by banks in accordance with the ECB's money market statistical reporting (MMSR).

Daily statistical information relating to money market transactions is collected on the basis of Regulation (EU) No 1333/2014 (MMSR Regulation), which entered into force on 1 January 2015.

Regular data collection started on 1 July 2016.

Analysis related to ESTER began 1 August 2016.



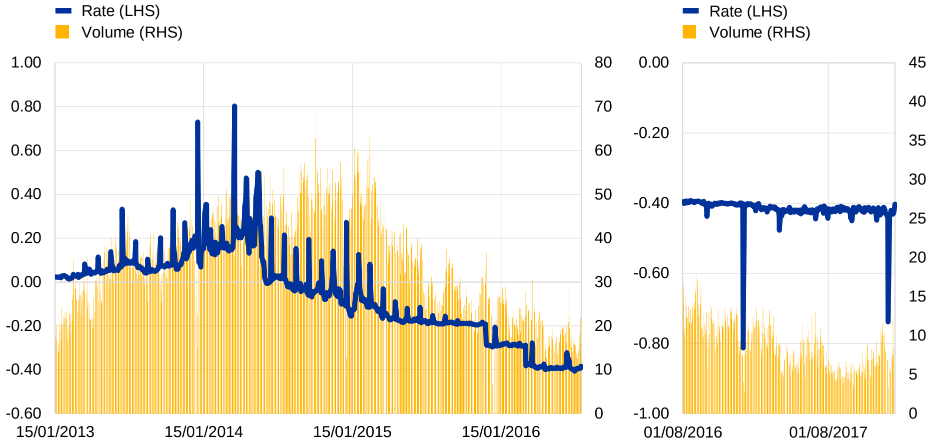
Sources: ECB and working group on euro risk-free rates.

Chart A3

GC Pooling Deferred

Rate and volume developments

(15 January 2013 to 31 July 2016 (left panel) and 1 August 2016 to 15 January 2018 (right panel); percentages (LHS) and EUR bn (RHS))



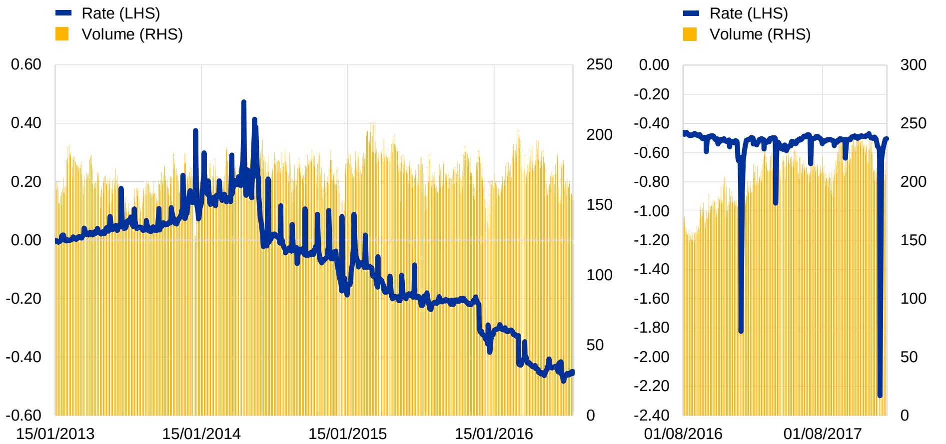
Sources: STOXX and working group on euro risk-free rates.

Chart A4

RepoFunds Rate

Rate and volume developments

(15 January 2013 to 31 July 2016 (left panel) and 1 August 2016 to 15 January 2018 (right panel); percentages (LHS) and EUR bn (RHS))



Sources: NEX Data Services and working group on euro risk-free rates.

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For specific terminology please refer to the ECB glossary.