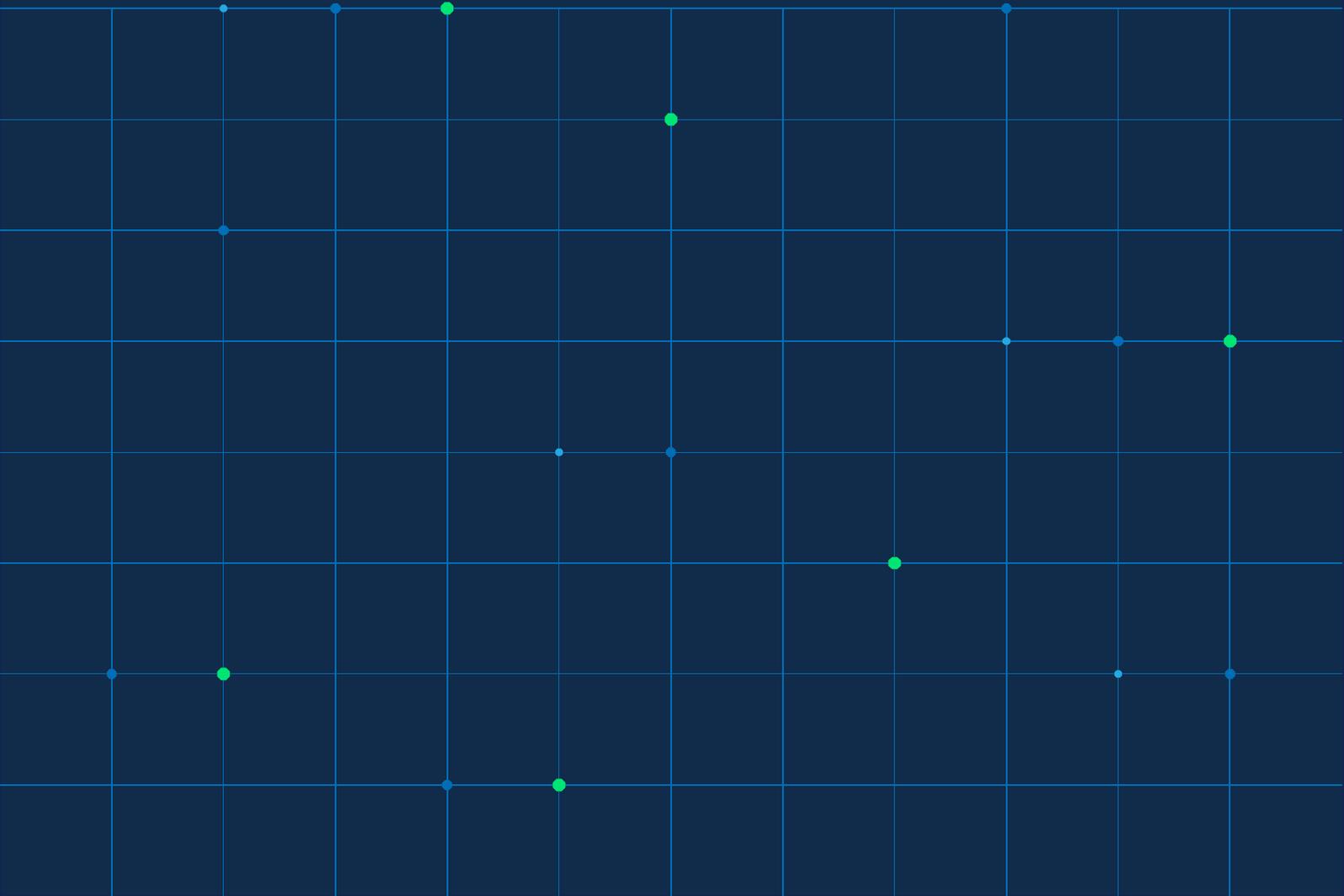# CME Group

CME Overnight Repo-Backed Benchmarks Consultation

RepoFunds Rate Euro "RFR Euro"
RepoFunds Rate Sterling "RFR Sterling"
Repo Funds Rate JBOND *RFR JBOND"

CME Group Benchmark Administration Limited

December 13th, 2021

Contents

1. Introduction

CME Overnight Repo-Backed Benchmarks is a suite of benchmarks administered by CME Group Benchmark Administration Limited ("CBA" or the "Administrator") and intended to measure the cost of secured one-day repo funding of sovereign bonds issued by a sub-set of Eurozone Countries, the United Kingdom and Japan.

These benchmarks, are registered under UK BMR as a "Benchmark Family":

- RepoFunds Rate Euro ("RFR EUR")

- RepoFunds Rate Sterling ("RFR Sterling")

- RepoFunds Rate JBOND ("RFR JBOND").

Following analysis of the CME Overnight Repo-Backed Benchmarks and reviewing the methodology, the following enhancement to the benchmark methodology has been identified to better reflect the economic reality of the underlying market the benchmark represents:

- Changing the special collateral filtering algorithm from an iterative calculation to one which trims only from the bottom.

Further details on the proposed enhancement are detailed within this document. Please provide feedback on these proposals to CBA at benchmarks@cmegroup.com on or before January 28th, 2022.

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2. Description of benchmarks

2.1. RepoFunds Rate Euro Benchmarks ("RFR Euro")

RFR Euro Benchmarks are overnight, secured Euro repo benchmarks, created with the intent to measure the effective cost of overnight funding of sovereign collateral. Benchmarks are calculated from repo trades that use Euro area sovereign government bonds denominated in EUR as the underlying collateral and are executed on the BrokerTec Regulated Market operated by CME Amsterdam B.V.[1] and BondVision multilateral trading facility ("MTF")[2] EuroMTS Limited[3].

RFR Euro is calculated on an Act/360 day-count convention and its publication follow the BrokerTec EU Repo Holiday Calendar.

The RFR Euro Benchmarks consists of the following benchmarks:

- RepoFunds Rate Austria ("RFR Austria")
- RepoFunds Rate Belgium ("RFR Belgium")
- RepoFunds Rate Finland ("RFR Finland")
- RepoFunds Rate France ("RFR France")
- RepoFunds Rate Germany ("RFR Germany")
- RepoFunds Rate Italy ("RFR Italy")
- RepoFunds Rate Ireland ("RFR Ireland")
- RepoFunds Rate Netherlands ("RFR Netherlands")
- RepoFunds Rate Portugal ("RFR Portugal")
- RepoFunds Rate Spain ("RFR Spain")
- RepoFunds Rate Euro ("RFR Euro"): based on the combination of the above ten (10) individual countries.

2.2. RepoFunds Rate Sterling ("RFR Sterling")

RepoFunds Rate Sterling ("RFR Sterling") is an overnight, secured Sterling repo index. The index is calculated from repo trades that use UK sovereign government bonds denominated in Sterling as the underlying collateral, executed on the BrokerTec operated by BrokerTec Europe Limited[4] and centrally cleared. Underlying collateral includes DBV[5], general collateral and specific collateral trades.

RFR Sterling is reported on an ACT/ACT day-count convention and its publication follows the BrokerTec UK Gilt Repo Holiday Calendar.

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[1] https://www.cmegroup.com/trading/market-tech-and-data-services/brokertec/regdocs.html#all-documentation

[2] Article 4(1)(22) of MiFID

[3] https://www.mtsmarkets.com/products/mts-bondvision

[4] https://www.cmegroup.com/trading/market-tech-and-data-services/brokertec.html
[5] Delivery by Value

2.3. RepoFunds rate JBOND ("RFR JBOND")

RepoFunds Rate JBOND is a tomorrow-next, secured Japanese Yen repo index, calculated from eligible repo trades that use Japanese sovereign government bonds denominated in Japanese Yen as the underlying collateral, executed on the JBOND Repo Trading System[6] electronic trading platform, and centrally cleared through the Japan Securities Clearing Corporation.[7] JBond Totan Securities Co., Ltd. is headquartered in Tokyo, Japan and operates the JBOND Repo System under the relevant PTS license.[8]

The Japanese one-day repo market is predominantly traded on tomorrow-next value date; rarely are repo on Japanese sovereign bonds executed on overnight dates (today-tomorrow). Consequently, RFR JBOND measures the cost of funding Japanese sovereign securities for one-day, for value date tomorrow-next.

RFR JBOND is reported on an ACT/365 day-count convention and its publication follow the Japanese settlement calendar[9].

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[6] https://jbond.co.jp/_us/index.html

[7] https://www.jpx.co.jp/jscc/en/

[8] https://www.jbond.co.jp/_us/profile.html

[9] https://www.boj.or.jp/en/about/outline/holi.htm/

3. Current Special Collateral Filtering Algorithm

Repo markets execute a mix of trades types, usually described as "general collateral" or "special collateral".

Unlike "general collateral", special collateral trades (special trades) precisely identify the ISIN of the security to be used as collateral. Normally it happens when a special security is in high demand and the transacted repo rate tends to be below typical market levels, often by a significant spread.

Hence, the calculation algorithm is designed to remove "special trades" from the set of trades used for benchmark calculation. Special trades are not clearly labelled at the time of execution and only the magnitude of their trading spread versus the median value of the eligible set can provide guidance.

The current filtering algorithm is applied as follows:

- All repo trades labelled as specials are combined by settlement date and by benchmark, and are sorted by descending rate;

- The volume-weighted average rate (VWAR) of special trades is calculated;

- The absolute furthest trade in rate terms from the VWAR is removed (if there is more than one trade with the same rate, the smallest trade is removed);

- A new VWAR of the remaining set is calculated and the process is iterated until 25% (twenty five percent) of the original number of special trades is removed;

The iterative filtering process is applied to the calculation of RFR Euro, where the entire set of repo trades executed in the ten (10) individual Eurozone countries listed above, is aggregated in a single set and the filtering algorithm described above is applied. Additionally, the filtering process is applied individually to each single country RFR benchmark calculation.

4. Current Calculation Methodology Analysis

Regular analysis of benchmarks performance conducted by the Administrator, has highlighted some anomalies in the iterative trimming process.

Close analysis has revealed that the current calculation methodology might not faithfully reflect the relative credit standing of their respective countries and suggest greater volatility in certain repo markets than is actually present.

As can be seen in the following chart, the areas circled in red show unusual behaviour for RFR Portugal and RFR Ireland at different points of the month. In these examples, RFR Portugal results in being one of the lowest RFR Euro rates on the 7th and 8th January and again on the 24th, 25th and 26th March.

Figure 1

07 January 2021 – 26 March 2021
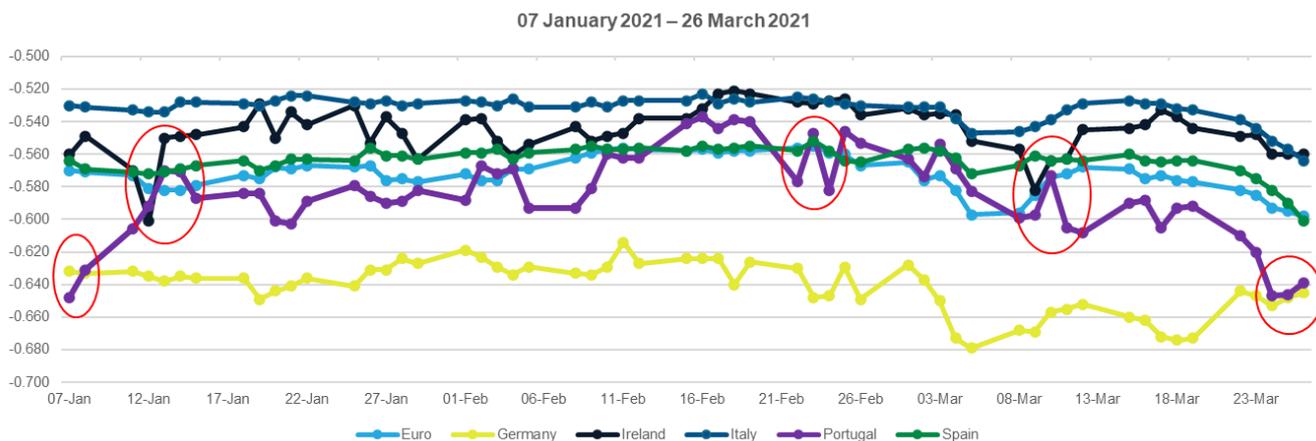
Throughout the period there is noticeable day on day volatility in RFR Portugal, RFR Ireland and slight volatility in RFR Germany when compared to the light blue RFR Euro Benchmark.

# 5. Proposed Special Collateral Filtering Algorithm

The Administrator has assessed a number of alternative filtering approaches to improve the economic reality of the benchmark. The Administrator has backtested the potential filtering approaches on RFR Euro (including the 10 individual countries), RFR Sterling and RFR JBOND benchmarks for the period 1st December 2020 to 30th April 2021. Based on the analysis, it is proposed to change the special collateral filtering algorithm to the following:

All repo trades labelled as specials are combined by settlement date and by individual benchmark and are sorted by descending rate. Then, the bottom 25% of trades are removed from the population, before combining the filtered set with general collateral trades, for the final VWAR calculation.

6. Proposed Calculation Methodology Analysis

The following chart plots RFR rates calculated according to the Proposed Methodology on the same dataset used in Figure 1. It demonstrates a smoother trend, with individual countries broadly aligned and orderly spaced by their credit spread.

Figure 2

07 January 2021 – 26 March 2021

Legend: Euro, Germany, Ireland, Italy, Portugal, Spain
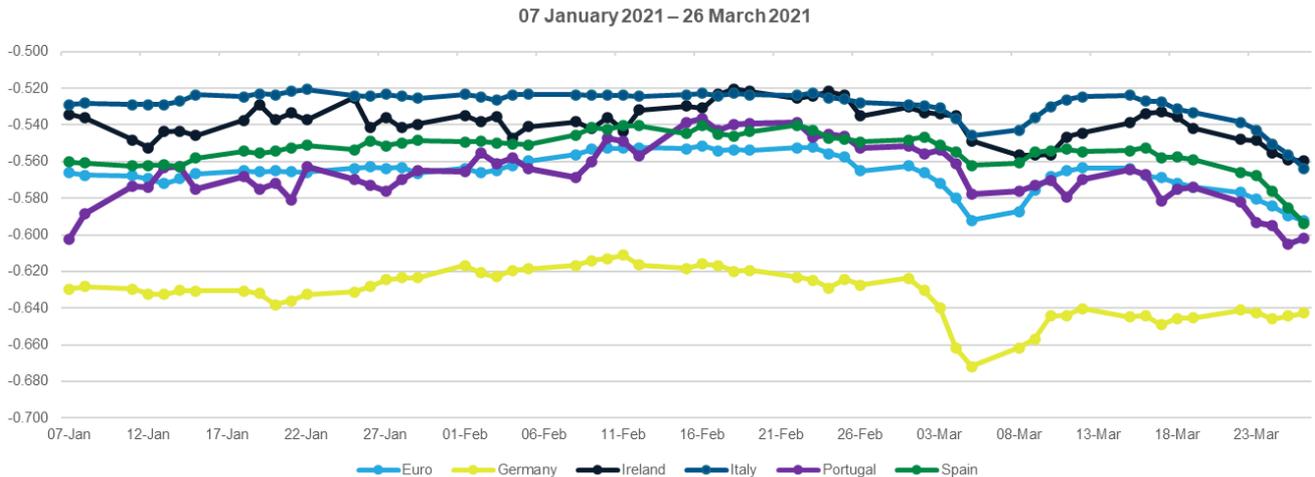
7. Impact of methodology change

The analysis contained in this section compares the current methodology with the proposed methodology of filtering the bottom 25% of trades.

Table 1

	Current RFR Methodology (Iterative filtering process)	Proposed RFR Methodology (Filtering bottom 25% of trades)
Specials Filtering Approach	Specials are arranged in a descending rate. Iterative process, removing the trade furthest away (top and bottom) from the specials VWAR until 25% of the original number of trades have been removed.	Specials are arranged in descending rate. Only the bottom 25% of specials trades are removed.
Final Calculation	GC trades are combined with specials (post filtering). Final benchmark is calculated via a standard VWAR formula.	GC trades are combined with specials (post filtering). Final benchmark is calculated via a standard VWAR formula.
Pros	Iterative filtering will remove trades furthest away from the specials VWAR capturing both high and low specific collateral trades.	Removes lowest specials, creating a benchmark which is less volatile and more representative of the one-day cost of secured funding.
Cons	Can produce volatile results, particularly in benchmarks with lower volumes or where the distribution of specials compared to the average rat can change daily.	Would not remove specials with unusually high rates.

8. Comparative Results

The following table compares the average rates over the period 1st December 2020 to 30th April 2021. The rates are sorted in order or descending rate. Year end (31st December 2020) and quarter end (31st March 2021) have been excluded from the averages. The table illustrates the relative impact of the proposed methodology change for each of the RFR Euro benchmarks and 10 individual euro countries to each other, as calculated using the current and proposed methodologies

Table 2

Average Rate – 1st Dec 2020 – 30th Apr 2021*			
Current Methodology		**Proposed Methodology**	
Italy	-0.536	Italy	-0.534
Ireland	-0.557	Ireland	-0.549
Spain	-0.57	Spain	-0.562
Euro	-0.578	Euro	-0.571
Belgium	-0.586	Portugal	-0.581
France	-0.594	Belgium	-0.583
Austria	-0.596	France	-0.592
Netherlands	-0.603	Austria	-0.593
Finland	-0.605	Netherlands	-0.599
Portugal	-0.606	Finland	-0.601
Germany	-0.643	Germany	-0.633
*from highest to lowest rate			

While the relative position of Eurozone countries would remain broadly unchanged, some notable anomalies are better reflected of the economic reality in the underlying market. For example, in the case of RFR Portugal, moving from being the second cheapest country in the Eurozone, to be the 5th most expensive.

The following table presents the differential between the two methodologies, with the greatest correction in RFR Portugal (+2.5bps). Nevertheless, Germany, Ireland, Spain and RFR EUR also present noticeable corrections.

Table 3

	Average Rate – 1st Dec 2020 – 30th Apr 2021		Average Difference (basis points)
	Current	**Bottom 25% Filtering**	
Euro	-0.578	-0.571	0.739
Austria	-0.596	-0.593	0.312
Belgium	-0.586	-0.583	0.302
Finland	-0.605	-0.601	0.433
France	-0.594	-0.592	0.254
Germany	-0.643	-0.633	1.022
Ireland	-0.557	-0.549	0.824
Italy	-0.536	-0.534	0.256
Netherlands	-0.603	-0.599	0.340
Portugal	-0.606	-0.581	2.548
Spain	-0.570	-0.562	0.890
Sterling	0.021	0.024	0.367
JBOND	-0.108	-0.107	0.063

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9. Consultation Questions

The questions requesting specific feedback from market participants are listed below. More general feedback by email is also welcome.

1. Do you agree with the proposed change to the specific collateral filtering approach, as defined in section 6? Yes/No. If no, please explain why.

2. Please add any additional comments you may have about the CME Overnight Repo Backed Benchmarks.

Please provide feedback to CBA at benchmark@cmegroup.com on or before January 28th, 2022.

Feedback to a consultation is considered confidential, however the Administrator will publish an anonymized summary with its conclusions, as soon as it is practical, but before implementation of any changes to the CME Overnight Repo Backed Benchmarks.