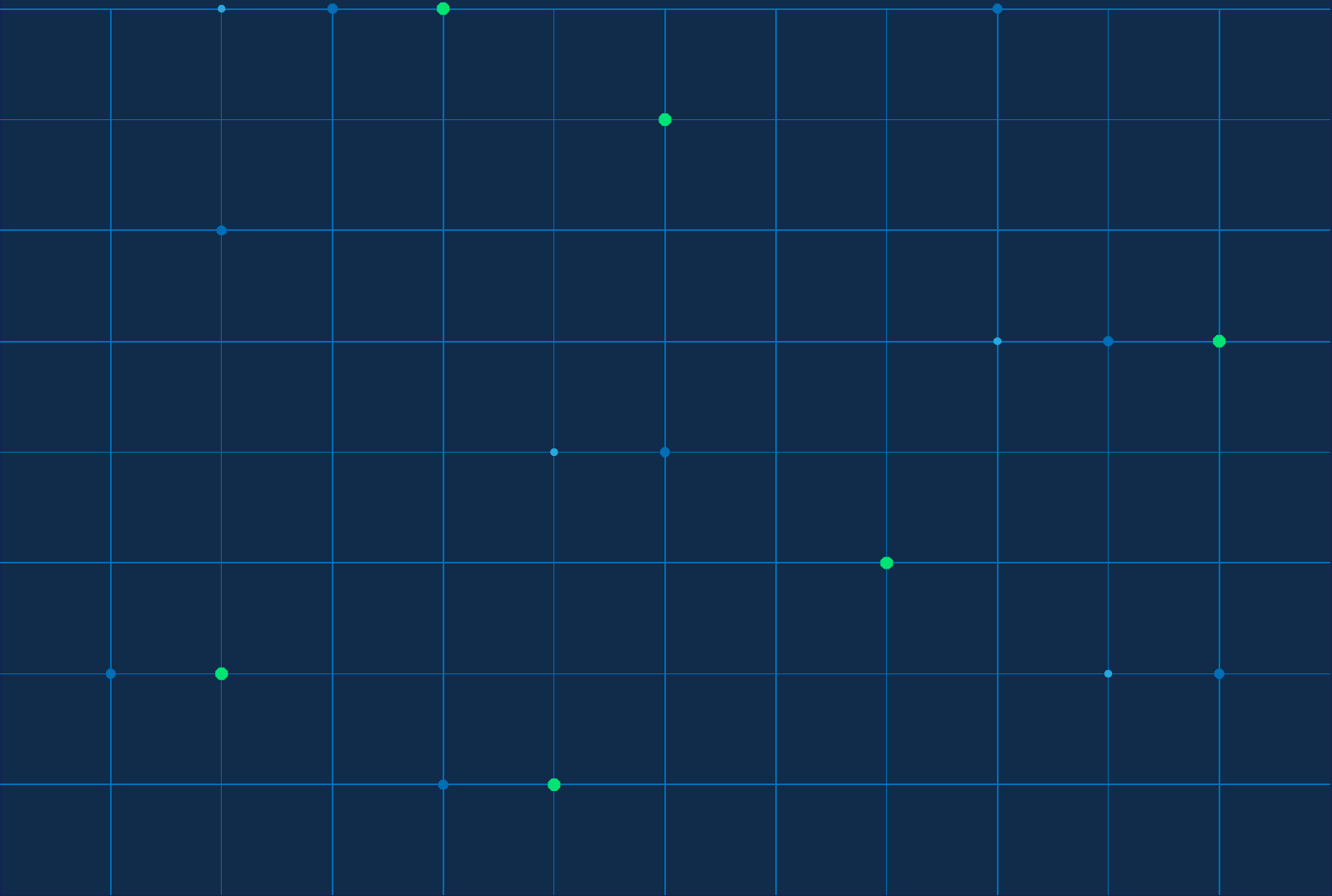


CME Term SOFR Daily Return Indices Methodology

CME Group Benchmark Administration Limited

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Version Control

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1.0.0	Initial version	June 27 th , 2023

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1. Introduction

The CME Term SOFR Daily Return Indices suite of Benchmarks calculated by CME Group Benchmark Administration Limited (CBA) that provide the daily compounded returns for each Term SOFR tenor starting 21st September 2021.

1.1. CME Group and CME Group Benchmark Administration Limited

As a leading and diverse derivatives market operator, CME Group is the parent of four U.S.-based designated contract markets (“DCMs”): Chicago Mercantile Exchange Inc. (“CME”), Board of Trade of the City of Chicago, Inc. (“CBOT”), New York Mercantile Exchange, Inc. (“NYMEX”), and the Commodity Exchange, Inc. (“COMEX”) (collectively, the “CME Group Exchanges”). These exchanges offer a wide range of products available across all major asset classes, including futures and options based on interest rates, equity indexes, foreign exchange, energy, metals, and agricultural commodities.

CBA capitalizes on CME Group’s wealth of electronic transaction-based data in the calculation of its indices and benchmarks. CBA is authorized and supervised by the UK Financial Conduct Authority (FCA).

1.2. Regulatory and IOSCO Compliance

The CME Term SOFR Daily Return Index is a family of benchmarks, designed on the basis of industry best practices and the IOSCO Principles for Financial Benchmarks. This will include but not be limited to the creation of an oversight committee and a published methodology. Material changes to the methodology will be announced via public consultation and any changes such as a re-balancing of the constituent components would be announced with a notice period of at least one month.

The CME Term SOFR Daily Return Indices is available for use under the UK Benchmark Regulation (BMR)¹.

¹ <https://www.fca.org.uk/markets/benchmarks/regulation>

2. CME Term SOFR Daily Return Indices

The CME Term SOFR Daily Return Indices are a set of benchmarks, designed to represent the daily compound return for each of the CME Term SOFR reference rates. The CME Term SOFR Daily Return Indices are calculated and published for 1-month, 3-month, 6-month and 12-month Term SOFR Rates.

CME Term SOFR Daily Return Indices will be calculated for each Business Day, in accordance with the recommended SIFMA US Holiday Schedule and will utilise the prior business day's published CME Term SOFR rates as input data.

CBA is the Benchmark Administrator with CME Inc. providing calculation agent and distribution services. This document describes the methodology used by CBA to calculate CME Term SOFR Daily Return Indices listed in [Appendix III](#).

3. Calculation Methodology

The CME Term SOFR Daily Return Indices measure the compound return for each of the CME Term SOFR Reference Rates. The initial value for each CME Term SOFR Daily Return Index is set to 100.000000 on September 21, 2021. The return level for each of the CME Term SOFR Daily Return Indices on date t shall be calculated in accordance with the following formulae:

Initial Term SOFR Daily Return Index value on September 21, 2021

$$x\text{Month Term SOFR Daily Return Index}_t = 100.000000$$

Initial Term SOFR Daily Return Index value after September 21, 2021

$$x\text{Month Term SOFR Daily Return Index}_t = 100 \times \prod_{i=\text{September 21, 2021}}^{t-1} \left(1 + \frac{xM \text{ Term SOFR}_i * n_i}{360} \right)$$

Where:

- $x\text{Month Term SOFR Daily Return Index}_t$ = Term SOFR Daily Return Index level for tenor x on date t
- $xM \text{ Term SOFR}_i$ = CME Term SOFR Rate for tenor x on date i
- n_i = Number of calendar days applicable to Term SOFR rate on date i

For initial Term SOFR Daily Return Index value after September 21, 2021 including a basis point spread

$$x\text{Month Term SOFR Daily Return Index}_t = 100 \times \prod_{i=\text{September 21, 2021}}^{t-1} \left(1 + \frac{(xM \text{ Term SOFR}_i + x\text{Spread}) * n_i}{360} \right)$$

Where:

- $x\text{Month Term SOFR Daily Return Index}_t$ = Term SOFR Daily Return Index level for tenor x on date t
- $xM \text{ Term SOFR}_i$ = CME Term SOFR Rate for tenor x on date i
- n_i = Number of calendar days applicable to Term SOFR rate on date i
- $x\text{Spread}$ = Constant basis point spread

3.1. Use of Expert Judgement

The CME Term SOFR Daily Return Indices are determined on the basis of the methodology documented above. No expert judgement is applied in the daily determination of the CME Term SOFR Daily Return Indices.

4. Publication and Error Policy

4.1. Publication

The CME Term SOFR Daily Return Indices are published each business day (in accordance with the SIFMA US Holiday Schedule) shortly after 8am ET.

The CME Term SOFR Daily Return Indices are calculated and published to six (6) decimal places.

CME Term SOFR Daily Return Indices are published to CME DataMine.

CBA may, with [notification to the market](#), choose not to publish the CME Term SOFR Daily Return Indices on any given business day.

4.2. Error policy

The Administrator takes the utmost care to ensure that input data and calculations are accurate; during the calculation process and prior to publication, the Administrator performs additional validation checks to identify possible errors, and swiftly recalculate and revalidate the CME Term SOFR Daily Return Indices prior to publication.

If an error is not resolved before index calculation and publication, or if input data is revised retrospectively, a decision will need to be made whether to restate the CME Term SOFR Daily Return Indices. Restatement decisions are based on the materiality of the error, which is determined based on all relevant factors, including the number of indices affected, the time between publication and when the error is detected, the size of the deviation between published and updated index levels, the data processing impact on clients and vendors, and general market conditions. Not all factors need to be present to warrant a restatement and some may be more determinative than others depending on the circumstances.

A 2bps error materiality threshold is generally considered alongside other relevant factors for assessing materiality.

In case of restatement, users of the CME Term SOFR Daily Return Indices will be informed and a notice will be published to the [CBA Notices page](#).

5. Governance

The Administrator operates under a comprehensive Risk and Control Framework, providing clear policies on Governance, Oversight, Benchmark Design and Calculation, Outsourcing, Operations, Reporting of Infringements and Business Continuity.

CBA has in place a "Three Lines of Defence" model, enabling close cross-monitoring of the governance process - this being business, compliance and audit who all have a key role in ensuring that CBA meets its regulatory requirements.

5.1. Oversight Committee

An Oversight Committee is appointed by the Administrator to review the integrity of the benchmark, in accordance with the CBA Terms of Reference for the Oversight Committees.

The Oversight Committee will provide independent oversight of, and challenge, to the Administrator on all aspects of the Benchmark determination process. The minutes of the Oversight Committee are made available on the Administrator's website.

The Oversight Committee will escalate to the CBA Board if required.

5.2. Review of the Methodology

The Administrator constantly monitors the Benchmark Methodology and its consistency with the stated objectives. The Benchmark Methodology is reviewed annually by the Administrator and the Oversight Committee.

The Oversight Committee approves proposed changes to the Benchmark Methodology including, but not limited to, the structure of the Benchmark, input data used and all aspects of the Calculation Methodology.

The Oversight Committee may direct the Administrator to consult on any changes to the methodology with Stakeholders and the wider market.

5.3. Consultation Process

The Administrator will engage relevant stakeholders and end-users on material changes to the Benchmark Methodology, if required by regulation or where the Oversight Committee requests such consultation.

Changes to the Methodology are deemed material on the basis of an assessment conducted by the Administrator and submitted to the Oversight Committee for advice and feedback.

The Administrator will publish notice of the consultation on its website, inviting feedback from stakeholders and the wider market. Notice of a consultation will be posted at least 1 (one) month prior to the deadline for responses. The notice will include the details of the proposed material change, the timeline and the rationale for the change.

Findings of the consultation process and proposed changes to the Benchmark Methodology, recommended as a result of the consultation, will be presented by the Administrator to the Oversight Committee for its consideration.

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.

5.4. Cessation

The Administrator constantly monitors the representativeness of the Benchmark. If the Benchmark is deemed to be unrepresentative of the underlying economic reality due to paucity of input data or systemic changes in the related markets, the Administrator will engage the Oversight Committee at the earliest opportunity. These cessation arrangements are designed to mitigate cessation and transition risks.

The Oversight Committee may direct the Administrator to consult with Stakeholders as described in the [Consultation Process section](#).

As a last resort, if no alternative arrangements are feasible, the Oversight Committee may advise the Administrator to discontinue the Benchmark, providing Stakeholders at least 6 (six) months' notice and assistance to explore alternative reference instruments.

The Administrator will endeavour to identify alternative benchmarks; however, this might not always be possible due to Regulations, market conditions or suitable alternatives.

Users of the benchmark are recommended to ensure that they have adequate fallback policies and procedures in the event of the Benchmark becoming unrepresentative of its economic interest.

5.5. Records Retention

The Administrator has in place policies for the retention of any relevant evidence and documentation related to the determination and dissemination of the Benchmark, either in paper or in electronic format, for at least the mandatory term of 5 (five) years.

5.6. Auditing

An internal audit process is undertaken regularly, to ensure adherence to the stated Methodology, the IOSCO principles and regulatory requirements.

External audits can be requested at any time by the Administrator's Board, the Oversight Committee or the internal audit function.

5.7. Data Licensing and Distribution

The Benchmark is made available subject to execution of an Information License Agreement (ILA) together with the appropriate Schedules. Market participants that intend to subscribe to the benchmark should contact the Administrator at the following email address: datasales@cmegroup.com

5.8. Complaints Procedures

The [CME Group EMEA / APAC Complaints Procedures](#) sets out details on the management of customer complaints to ensure that they are handed fairly and effectively, in a prompt and transparent manner and in accordance with applicable regulatory requirements.

Complaints will be dealt with by a senior member of staff not directly involved with the benchmark calculation and dissemination.

Information related to complaints will be stored in a restricted access area and kept for a period of at least 5 (five) years following the date when the complaint was first lodged. Complaints can be submitted at internationalcompliance@cmegroup.com

Appendix I – Key Terms & Definitions

TERM	DESCRIPTION
Administrator	CME Group Benchmark Administration Limited
BMR	UK Benchmark Regulation (Regulation (EU) 2016/2011, as retained in UK law under the EUWA)
CBA	CME Group Benchmark Administration Limited
ET	Eastern Time
EUWA	European Union (Withdrawal) Act 2018, as amended from time to time
SIFMA	Securities Industry and Financial Markets Association
SOFR	Secured Overnight Financing Rate

Appendix II – ESG Disclosures

Explanation of how ESG Factors are Reflected in the Key Elements of the Benchmark Methodology		
Item 1	Name of the benchmark administrator.	CME Group Benchmark Administration Limited
Item 2	Type of benchmark or family of benchmarks.	Fixed Income
Item 3	Name of the benchmark or family of benchmarks.	CME Term SOFR Daily Return Indices
Item 4	Does the benchmark methodology for the benchmark or family of benchmarks take into account ESG factors?	No

Appendix III – Term SOFR Daily Return Indices List

Index Ticker	Index Name
TSFI01	1-Month Term SOFR Daily Return Index
TSFI03	3-Month Term SOFR Daily Return Index
TSFI06	6-Month Term SOFR Daily Return Index
TSFI12	12-Month Term SOFR Daily Return Index
TSFI0105	1-Month Term SOFR +5bps Daily Return Index
TSFI0305	3-Month Term SOFR +5bps Daily Return Index
TSFI0605	6-Month Term SOFR +5bps Daily Return Index
TSFI1205	12-Month Term SOFR +5bps Daily Return Index
TSFI0108	1-Month Term SOFR +8bps Daily Return Index
TSFI0308	3-Month Term SOFR +8bps Daily Return Index
TSFI0608	6-Month Term SOFR +8bps Daily Return Index
TSFI1208	12-Month Term SOFR +8bps Daily Return Index
TSFI0110	1-Month Term SOFR +10bps Daily Return Index
TSFI0310	3-Month Term SOFR +10bps Daily Return Index
TSFI0610	6-Month Term SOFR +10bps Daily Return Index
TSFI1210	12-Month Term SOFR +10bps Daily Return Index
TSFI0115	1-Month Term SOFR +15bps Daily Return Index
TSFI0315	3-Month Term SOFR +15bps Daily Return Index
TSFI0615	6-Month Term SOFR +15bps Daily Return Index
TSFI1215	12-Month Term SOFR +15bps Daily Return Index
TSFI0118	1-Month Term SOFR +18bps Daily Return Index
TSFI0318	3-Month Term SOFR +18bps Daily Return Index
TSFI0618	6-Month Term SOFR +18bps Daily Return Index
TSFI1218	12-Month Term SOFR +18bps Daily Return Index
TSFI0120	1-Month Term SOFR +20bps Daily Return Index
TSFI0320	3-Month Term SOFR +20bps Daily Return Index
TSFI0620	6-Month Term SOFR +20bps Daily Return Index
TSFI1220	12-Month Term SOFR +20bps Daily Return Index
TSFI0125	1-Month Term SOFR +25bps Daily Return Index
TSFI0325	3-Month Term SOFR +25bps Daily Return Index
TSFI0625	6-Month Term SOFR +25bps Daily Return Index
TSFI1225	12-Month Term SOFR +25bps Daily Return Index

Index Ticker	Index Name
TSFI0150	1-Month Term SOFR +50bps Daily Return Index
TSFI0350	3-Month Term SOFR +50bps Daily Return Index
TSFI0650	6-Month Term SOFR +50bps Daily Return Index
TSFI1250	12-Month Term SOFR +50bps Daily Return Index
TSFI0175	1-Month Term SOFR +75bps Daily Return Index
TSFI0375	3-Month Term SOFR +75bps Daily Return Index
TSFI0675	6-Month Term SOFR +75bps Daily Return Index
TSFI1275	12-Month Term SOFR +75bps Daily Return Index
TSF10I01	1-Month Term SOFR +100bps Daily Return Index
TSF10I03	3-Month Term SOFR +100bps Daily Return Index
TSF10I06	6-Month Term SOFR +100bps Daily Return Index
TSF10I12	12-Month Term SOFR +100bps Daily Return Index
TSF12I01	1-Month Term SOFR +125bps Daily Return Index
TSF12I03	3-Month Term SOFR +125bps Daily Return Index
TSF12I06	6-Month Term SOFR +125bps Daily Return Index
TSF12I12	12-Month Term SOFR +125bps Daily Return Index
TSF15I01	1-Month Term SOFR +150bps Daily Return Index
TSF15I03	3-Month Term SOFR +150bps Daily Return Index
TSF15I06	6-Month Term SOFR +150bps Daily Return Index
TSF15I12	12-Month Term SOFR +150bps Daily Return Index
TSF17I01	1-Month Term SOFR +175bps Daily Return Index
TSF17I03	3-Month Term SOFR +175bps Daily Return Index
TSF17I06	6-Month Term SOFR +175bps Daily Return Index
TSF17I12	12-Month Term SOFR +175bps Daily Return Index
TSF20I01	1-Month Term SOFR +200bps Daily Return Index
TSF20I03	3-Month Term SOFR +200bps Daily Return Index
TSF20I06	6-Month Term SOFR +200bps Daily Return Index
TSF20I12	12-Month Term SOFR +200bps Daily Return Index
TSF22I01	1-Month Term SOFR +225bps Daily Return Index
TSF22I03	3-Month Term SOFR +225bps Daily Return Index
TSF22I06	6-Month Term SOFR +225bps Daily Return Index
TSF22I12	12-Month Term SOFR +225bps Daily Return Index

Index Ticker	Index Name
TSF25I01	1-Month Term SOFR +250bps Daily Return Index
TSF25I03	3-Month Term SOFR +250bps Daily Return Index
TSF25I06	6-Month Term SOFR +250bps Daily Return Index
TSF25I12	12-Month Term SOFR +250bps Daily Return Index
TSF27I01	1-Month Term SOFR +275bps Daily Return Index
TSF27I03	3-Month Term SOFR +275bps Daily Return Index
TSF27I06	6-Month Term SOFR +275bps Daily Return Index
TSF27I12	12-Month Term SOFR +275bps Daily Return Index
TSF30I01	1-Month Term SOFR +300bps Daily Return Index
TSF30I03	3-Month Term SOFR +300bps Daily Return Index
TSF30I06	6-Month Term SOFR +300bps Daily Return Index
TSF30I12	12-Month Term SOFR +300bps Daily Return Index
TSF32I01	1-Month Term SOFR +325bps Daily Return Index
TSF32I03	3-Month Term SOFR +325bps Daily Return Index
TSF32I06	6-Month Term SOFR +325bps Daily Return Index
TSF32I12	12-Month Term SOFR +325bps Daily Return Index
TSF35I01	1-Month Term SOFR +350bps Daily Return Index
TSF35I03	3-Month Term SOFR +350bps Daily Return Index
TSF35I06	6-Month Term SOFR +350bps Daily Return Index
TSF35I12	12-Month Term SOFR +350bps Daily Return Index
TSF37I01	1-Month Term SOFR +375bps Daily Return Index
TSF37I03	3-Month Term SOFR +375bps Daily Return Index
TSF37I06	6-Month Term SOFR +375bps Daily Return Index
TSF37I12	12-Month Term SOFR +375bps Daily Return Index
TSF40I01	1-Month Term SOFR +400bps Daily Return Index
TSF40I03	3-Month Term SOFR +400bps Daily Return Index
TSF40I06	6-Month Term SOFR +400bps Daily Return Index
TSF40I12	12-Month Term SOFR +400bps Daily Return Index

