



# REFINITIV BENCHMARK SERVICES (UK) LIMITED

USD IBOR INSTITUTIONAL CASH FALLBACKS BENCHMARK

USD IBOR CONSUMER CASH FALLBACKS BENCHMARK

METHODOLOGY



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# 1. INTRODUCTION

## 1.1 Overview

This document specifies the methodology (“Methodology”) of (i) the USD IBOR Institutional Cash Fallbacks benchmark and (ii) the USD IBOR Consumer Cash Fallbacks benchmark (together the “Benchmarks”). This Methodology and the Benchmarks are subject to the disclaimer in Section 8 below.

The purpose of the USD IBOR Institutional Cash Fallbacks benchmark and the USD IBOR Consumer Cash Fallbacks benchmark is to provide fallbacks for existing institutional and consumer cash financial products such as adjustable rate mortgages, bilateral business loans, floating rate notes, securitizations, syndicated loans and variable rate private student loans that currently reference US dollar LIBOR. ICE LIBOR® and LIBOR® are registered trade marks of ICE Benchmark Administration Limited (IBA), and are used by Refinitiv with permission under licence by IBA.

The UK Financial Conduct Authority (FCA) has confirmed that all LIBOR settings will either cease to be provided by any administrator or no longer be representative<sup>1</sup>:

- Immediately after December 31<sup>st</sup> 2021, in the case of all sterling, euro, Swiss franc and Japanese yen settings, and the 1-week and 2-month US dollar settings, and
- Immediately after June 30<sup>th</sup> 2023, in the case of the remaining US dollar settings.

## 1.2 Benchmark Administrator

Refinitiv Benchmark Services (UK) Limited (“RBSL”) is the Administrator of the USD IBOR Institutional Cash Fallbacks benchmark and the USD IBOR Consumer Cash Fallbacks benchmark. RBSL is incorporated in England and Wales and is a wholly owned subsidiary of Refinitiv Limited (“RL”), itself a wholly owned indirect subsidiary of London Stock Exchange Group plc (“LSEG”).

RBSL is authorised and regulated in the UK by the Financial Conduct Authority (“FCA”), FCA Reference Number 610678.

As Administrator, RBSL is responsible for collecting input data, determining and publishing the benchmarks, and for all aspects of governance, oversight, compliance and integrity of the benchmarks.

## 1.3 Description of the Refinitiv USD IBOR Cash Fallbacks

The USD IBOR Institutional Cash Fallbacks benchmark comprises four types of rates:

- In-Arrears for institutional cash financial products,
- In-Advance for institutional cash financial products,
- In-Advance (30-day Average SOFR) for institutional cash financial products,

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<sup>1</sup> [www.fca.org.uk/publication/documents/future-cessation-loss-representativeness-libor-benchmarks.pdf](http://www.fca.org.uk/publication/documents/future-cessation-loss-representativeness-libor-benchmarks.pdf)

- Term for institutional cash financial products.

The USD IBOR Consumer Cash Fallbacks benchmark comprises two types of rate:

- In-Advance for consumer cash financial products,
- Term for consumer cash financial products.

Each “All In” fallback rate is composed of an “Adjusted SOFR” rate, which is based on either the daily SOFR rate published by the Federal Reserve Bank of New York or the CME Term SOFR Reference Rate, and a “Spread Adjustment”.

#### **USD IBOR INSTITUTIONAL CASH FALLBACKS BENCHMARK**

Adjusted SOFR for USD IBOR Institutional Cash Fallbacks (In-Arrears) is the average of daily SOFR over the interest accrual period following the publication of a LIBOR setting. Two versions of the average are produced resulting in two All In rates for each type of In-Arrears fallback (except for the O/N tenor): compounded SOFR and simple SOFR.

The Spread Adjustment is calculated in accordance with the ISDA USD LIBOR fallback rate methodology for each USD LIBOR tenor as of March 5<sup>th</sup>, 2021. Each Spread Adjustment for a specific USD LIBOR tenor is added to the Adjusted SOFR to produce the All In USD IBOR Institutional Cash Fallback (In-Arrears) benchmark of the equivalent tenor on both a compound and simple basis. Each USD IBOR Institutional Cash Fallback (In-Arrears) benchmark setting is published toward the end of the interest accrual period that follows the publication of the corresponding LIBOR setting once the final required daily SOFR rate is available.

The three Adjusted SOFRs for USD IBOR Institutional Cash Fallbacks (In-Advance) are the three compounded averages of daily SOFR with tenors of 30-, 90-, and 180-calendar days published daily by the Federal Reserve Bank of New York. The Spread Adjustment calculation methodology is consistent with the ISDA USD LIBOR fallback rate for the corresponding tenor (1 month, 3 months and 6 months respectively) as of March 5<sup>th</sup>, 2021.

The Adjusted SOFR for all four USD IBOR Institutional Cash Fallbacks (In-Advance, 30-day Average SOFR) is the compounded average of daily SOFR with a tenor of 30-calendar days published daily by the Federal Reserve Bank of New York. The Spread Adjustment calculation methodology is consistent with the ISDA USD LIBOR fallback rate for the corresponding tenor (1 month, 3 months, 6 months and 12 months respectively) as of March 5<sup>th</sup>, 2021.

The four Adjusted SOFRs for the USD IBOR Institutional Cash Fallbacks (Term) are the CME Term SOFR Reference Rates with tenors 1 month, 3 months, 6 months and 12 months published daily by CME Group Benchmark Administration Limited. The Spread Adjustment calculation methodology is consistent with the ISDA USD LIBOR fallback rate for the corresponding tenor (1 month, 3 months, 6 months and 12 months respectively) as of March 5<sup>th</sup>, 2021.

**USD IBOR CONSUMER CASH FALLBACKS BENCHMARK**

The Adjusted SOFR for the USD IBOR Consumer Cash Fallbacks (In-Advance) with tenors of 1 week, 1 month and 2 months is the compounded average of daily SOFR with a tenor of 30-calendar days published daily by the Federal Reserve Bank of New York. The Adjusted SOFRs for the USD IBOR Consumer Cash Fallbacks (In-Advance) with tenors of 3 months and 6 months are the compounded averages of daily SOFR with tenors of 90- and 180-calendar days published daily by the Federal Reserve Bank of New York respectively.

The Spread Adjustment for each USD IBOR Consumer Cash Fallback (In-Advance) is a linear interpolation over one year (the relevant “Transition Period”) between (i) the average SOFR-LIBOR spread over the ten business days leading up to the cessation of publication or date of non-representativeness of each LIBOR tenor and (ii) the spread calculated in accordance with the ISDA USD LIBOR fallback rate methodology for the corresponding USD LIBOR tenor as of March 5<sup>th</sup>, 2021.

For each of the USD IBOR Consumer Cash Fallbacks (In-Advance) benchmark tenors, two versions of the All In rate are published: one version that is floored at zero (USD IBOR Consumer Cash Fallbacks Floored) and another that is not floored (USD IBOR Consumer Cash Fallbacks).

The four Adjusted SOFRs for the USD IBOR Consumer Cash Fallbacks (Term) are the CME Term SOFR Reference Rates with tenors 1 month, 3 months, 6 months and 12 months published daily by CME Group Benchmark Administration Limited.

The Spread Adjustment for each USD IBOR Consumer Cash Fallback (Term) is a linear interpolation over one year (the “Transition Period”) between (i) the average Term SOFR-LIBOR spread over the ten business days leading up to the cessation of publication or date of non-representativeness of each LIBOR tenor and (ii) the spread calculated in accordance with the ISDA USD LIBOR fallback rate methodology for the corresponding USD LIBOR tenor as of March 5<sup>th</sup>, 2021.

For each of the USD IBOR Consumer Cash Fallbacks (Term) benchmark tenors, two versions of the All In rate are published: one version that is floored at zero and another that is not floored.

**PUBLICATION**

All USD IBOR Cash Fallbacks benchmarks are published at approximately 08:20am ET, around 20 minutes after the Federal Reserve Bank of New York publishes the daily SOFR rate and the SOFR averages. SOFR is published at approximately 08:00am ET. CME Term SOFR Reference Rates are published at 06:00am ET.

**1.4 Purpose of the Benchmarks**

The purpose of the USD IBOR Institutional Cash Fallbacks benchmark and USD IBOR Consumer Cash Fallbacks benchmark is to provide fallbacks for existing institutional and consumer cash financial products such as bilateral business loans, floating rate notes, securitizations, syndicated loans, adjustable rate

mortgages and student loans that currently reference the relevant US dollar LIBOR tenors. On March 17<sup>th</sup>, 2021, the Alternative Reference Rates Committee (ARRC) announced<sup>2</sup> that it had selected Refinitiv to publish its recommended spread adjustments and spread-adjusted rates for cash products that transition away from USD LIBOR. The benchmarks provides such spread adjustments and spread-adjusted rates for institutional and consumer cash products that reference the relevant US dollar LIBOR tenors.

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<sup>2</sup> [www.newyorkfed.org/medialibrary/Microsites/arrc/files/2021/20210317-press-release-Spread-Adjustment-Vendor-Refinitiv.pdf](http://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2021/20210317-press-release-Spread-Adjustment-Vendor-Refinitiv.pdf)

## 2. REFINITIV USD IBOR CASH FALLBACKS

### 2.1 USD IBOR Institutional Cash Fallbacks (In-Arrears)

The USD IBOR Institutional Cash Fallbacks (In-Arrears) comprise the following 103 rates:

Tenor	No Lookback or Lockout	Lookback (no observation shift)	Lookback (with observation shift)	Lockout
O/N	✓	-	-	-
1-Week	✓	3 days	2 and 3 days	2 and 3 days
1-Month	✓	3, 5 and 10 days	2, 3 and 5 days	2 and 3 days
2-Month	✓	3, 5 and 10 days	2, 3 and 5 days	2 and 3 days
3-Month	✓	3, 5 and 10 days	2, 3 and 5 days	2 and 3 days
6-Month	✓	3, 5 and 10 days	2, 3 and 5 days	2 and 3 days
12-Month	✓	3, 5 and 10 days	2, 3 and 5 days	2 and 3 days
<b>Compounded Rates</b>	6	16	17	12
<b>Simple Rates</b>	7	16	17	12
<b>Total Rates</b>	13	32	34	24

Each rate has both an All In value and an Adjusted SOFR value.

### 2.2 USD IBOR Institutional Cash Fallbacks (In-Advance)

The USD IBOR Institutional Cash Fallbacks (In-Advance) comprise the following three rates. Each rate has both an All In value and an Adjusted SOFR value. The Adjusted SOFR used for each rate is the compounded average of daily SOFR published daily by the Federal Reserve Bank of New York with corresponding tenor.

- 1-Month
- 3-Month
- 6-Month



## 2.3 USD IBOR Institutional Cash Fallbacks (In-Advance, 30-day Average SOFR)

The USD IBOR Institutional Cash Fallbacks (In-Advance, 30-day Average SOFR) comprise the following four rates. Each rate has both an All In value and an Adjusted SOFR value. For each rate, the Adjusted SOFR used is the compounded average of daily SOFR published daily by the Federal Reserve Bank of New York with 30 day tenor.

- 1-Month
- 3-Month
- 6-Month
- 12-Month

## 2.4 USD IBOR Institutional Cash Fallbacks (Term)

The USD IBOR Institutional Cash Fallbacks (Term) comprise the following four rates. Each rate has an All In value. The Adjusted SOFR values are the corresponding CME Term SOFR Reference Rates.

- 1-Month
- 3-Month
- 6-Month
- 12-Month

## 2.5 USD IBOR Consumer Cash Fallbacks (In-Advance)

The USD IBOR Consumer Cash Fallbacks (In-Advance) comprise the following ten benchmarks. Each is published with an All In rate and a Spread Adjustment (the Spread Adjustment is the same for floored and unfloored benchmarks with the same tenor). The Adjusted SOFR rates are published by the Federal Reserve Bank of New York.

Tenor	Adjusted SOFR	Adjusted SOFR	Benchmark Status
1-Week	30-day SOFR Average	30-day SOFR Average All In Rate Floored at Zero	Benchmark
1-Month	30-day SOFR Average	30-day SOFR Average All In Rate Floored at Zero	Benchmark
2-Month	30-day SOFR Average	30-day SOFR Average All In Rate Floored at Zero	Benchmark
3-Month	90-day SOFR Average	90-day SOFR Average All In Rate Floored at Zero	Benchmark
6-Month	180-day SOFR Average	180-day SOFR Average All In Rate Floored at Zero	Benchmark

## 2.6 USD IBOR Consumer Cash Fallbacks (Term)

The USD IBOR Consumer Cash Fallbacks (Term) comprise the following benchmarks. Each is published with an All In rate and a Spread Adjustment (the Spread Adjustment is the same for floored and unfloored benchmarks with the same tenor).

Tenor	Adjusted SOFR	Adjusted SOFR	Benchmark Status
1-Month	1M CME Term SOFR	1M CME Term SOFR All In Rate Floored at Zero	Benchmark
3-Month	3M CME Term SOFR	3M CME Term SOFR All In Rate Floored at Zero	Benchmark
6-Month	6M CME Term SOFR	6M CME Term SOFR All In Rate Floored at Zero	Benchmark
12-Month	12M CME Term SOFR	12M CME Term SOFR All In Rate Floored at Zero	Benchmark

## 3. INPUT DATA

### 3.1 Daily SOFR and SOFR Averages

Daily SOFR rates and the 30-, 90- and 180-day SOFR averages are published on each SIFMA business day by the Federal Reserve Bank of New York. Daily SOFR rates are used to calculate Adjusted SOFR rates for USD IBOR Institutional Cash Fallbacks (In-Arrears) and the SOFR averages are used as Adjusted SOFR rates for all In-Advance USD IBOR Cash Fallbacks.

### 3.2 USD LIBOR

Overnight, 1-Week, 1-Month, 2-Month, 3-Month, 6-Month and 12-Month USD LIBOR is published on each London business day by ICE Benchmark Administration Limited.

USD LIBOR® is used to calculate the Spread Adjustment in accordance with the ISDA USD LIBOR fallback rate methodology for each USD LIBOR tenor as of March 5<sup>th</sup>, 2021. 1-Month, 3-Month and 6-Month USD LIBOR® are also used to calculate the interpolated Spread Adjustment for the USD IBOR Consumer Cash Fallbacks (In-Advance) benchmark during the relevant Transition Period.

### 3.3 CME Term SOFR

1-Month, 3-Month, 6-Month and 12-Month CME Term SOFR Reference Rates are published on each SIFMA business day by CME Group Benchmark Administration Limited.

CME Term SOFR Reference Rates are used to calculate the interpolated Spread Adjustment for the USD IBOR Consumer Cash Fallbacks (Term) benchmark during its Transition Period.

## 4. DETERMINATION OF THE BENCHMARK

### 4.1 USD IBOR Institutional Cash Fallbacks (In-Arrears) Benchmark

#### 4.1.1 Adjusted SOFR for Overnight Tenor

The Adjusted SOFR  $ASR_{O/N,t}^{simp}$  for the overnight tenor and LIBOR setting date  $t$  is the SOFR rate for the date  $t$ . As only one SOFR rate is used for the Adjusted SOFR rate, there is no compound version of the Adjusted SOFR rate for the overnight tenor.

#### 4.1.2 Adjusted SOFR for 1W to 12M Tenors

Adjusted SOFR on a compound basis  $ASR_{f,t}^{comp}$  for tenor  $f$  and LIBOR setting date  $t$ , is calculated in accordance with equation 1.

$$ASR_{f,t}^{comp} = \frac{360}{N(t_0 - r, T_{f,t} - r)} \cdot \left[ \prod_{u \in AP_{f,t_0}} \left( 1 + \frac{n_{u-r, u-r+1}}{360} \cdot SOFR_{D(u)} \right) - 1 \right] \quad (1)$$

Adjusted SOFR on a simple basis  $ASR_{f,t}^{simp}$  for tenor  $f$  and LIBOR setting date  $t$ , is calculated in accordance with equation 2.

$$ASR_{f,t}^{simp} = \frac{360}{N(t_0 - r, T_{f,t} - r)} \cdot \left[ \sum_{u \in AP_{f,t_0}} \frac{n_{u-r, u-r+1}}{360} \cdot SOFR_{D(u)} \right] \quad (2)$$

The following definitions apply to equations 1 and 2:

- $t_0$  is the start of the LIBOR interest accrual period corresponding to a LIBOR setting on day  $t$  and is defined for the 1W to 12M tenors as  $t + 2$  London business days and if such day is not both a London and a SIFMA business day,  $t$  is rolled forward to the first subsequent day that is both a London and SIFMA business day.
- For the 1W tenor,  $T_{f,t}$  is  $t_0$  plus 7 calendar days. If such day is not both a London and SIFMA business day,  $T_{f,t}$  is rolled forward to the first subsequent day that is both a London and SIFMA business day.
- For the 1M-12M tenors,  $T_{f,t}$  is  $t_0$  plus the relevant number of calendar months. If there is no corresponding day in the final month,  $T_{f,t}$  is set as the last calendar day of the final month (for example, for March 31<sup>st</sup> plus 1 calendar month,  $T_{f,t}$  would be April 30<sup>th</sup>). If such day is not both a London and a SIFMA business day,  $T_{f,t}$  is adjusted to the nearest day that is both a London and SIFMA business day in accordance with the modified following day adjustment convention.
- Interest accrual period  $AP_{f,t_0}$  is from and including  $t_0$  up to but excluding  $T_{f,t}$ .

- $u$  is a SIFMA business day in the interest accrual period  $AP_{f,t_0}$  and  $r$  is the number of SIFMA business days for the observation shift for USD IBOR Institutional Cash Fallbacks (In-Arrears) with such an observation shift (and is zero otherwise).
- $D(u)$  is the SIFMA business day  $u$  adjusted for USD IBOR Institutional Cash Fallbacks (In-Arrears) with a lookback or lockout as applicable. If a lookback applies,  $D(u)$  is  $u$  minus the number of SIFMA business days in the lookback period. If a lockout applies,  $D(u)$  is the earlier of (i)  $u$  and (ii) the final  $u$  in the Interest accrual period  $AP_{f,t_0}$  minus the number of SIFMA business days in the lockout. If no lookback or lockout applies for the IBOR Cash Fallback being calculated,  $D(u)$  is simply  $u$ .
- $SOFR_{D(u)}$  is the daily SOFR rate published by the Federal Reserve Bank of New York in respect of day  $D(u)$ .
- $n_{u-r, u-r+1}$  is the number of calendar days from  $u - r$  to  $u - r$  plus one SIFMA business day.
- $N(t_0 - r, T_{f,t} - r)$  is the number of calendar days from  $t_0 - r$  to  $T_{f,t} - r$  where  $r$  is the number of SIFMA business days for the observation shift for USD IBOR Institutional Cash Fallbacks (In-Arrears) with such an observation shift (and is zero otherwise).

### 4.1.3 Spread Adjustment

The Spread Adjustment  $S_f$  for tenor  $f$  is calculated in accordance with the ISDA USD LIBOR fallback rate methodology for each USD LIBOR tenor and is the median of the spread between each LIBOR tenor and compounded SOFR over the five year period ending on March 5<sup>th</sup>, 2021. The values are:

Tenor	Spread Adjustment
O/N	0.00644%
1W	0.03839%
1M	0.11448%
2M	0.18456%
3M	0.26161%
6M	0.42826%
12M	0.71513%

### 4.1.4 All In USD IBOR Institutional Cash Fallbacks (In-Arrears)

The All In USD IBOR Institutional Cash Fallbacks  $CFR_{f,t}$  for tenor  $f$  and LIBOR setting date  $t$  is calculated in accordance with equation 3.

$$CFR_{f,t}^{comp/simp} = ASR_{f,t}^{comp/simp} + S_f \quad (3)$$

## 4.2 USD IBOR Institutional Cash Fallbacks (In-Advance)

Each USD IBOR Institutional Cash Fallback (In-Advance),  $CFR_{f,t}$ , is calculated using the SOFR average  $AVS_{f,t}$  with corresponding tenor  $f$  as published on day  $t$  by the Federal Reserve Bank of New York and the Spread Adjustment  $S_f$  for tenor  $f$  described in section 4.1.3 in accordance with equation 4.

$$CFR_{f,t} = AVS_{f,t} + S_f \quad (4)$$

## 4.3 USD IBOR Institutional Cash Fallbacks (In-Advance, 30-day Average SOFR)

Each USD IBOR Institutional Cash Fallback (In-Advance, 30-day Average SOFR),  $CFR_{f,t}$ , is calculated using the SOFR average  $AVS_{30d,t}$  with 30-day tenor as published on day  $t$  by the Federal Reserve Bank of New York and the Spread Adjustment  $S_f$  for tenor  $f$  described in section 4.1.3 in accordance with equation 5.

$$CFR_{f,t} = AVS_{30d,t} + S_f \quad (5)$$

## 4.4 USD IBOR Institutional Cash Fallbacks (Term)

Each USD IBOR Institutional Cash Fallback (Term),  $CFR_{f,t}$ , is calculated using CME Term SOFR  $TS_{f,t}$  with corresponding tenor  $f$  as published on day  $t$  by CME Group Benchmark Administration Limited and the Spread Adjustment  $S_f$  for tenor  $f$  described in section 4.1.3 in accordance with equation 6.

$$CFR_{f,t} = TS_{f,t} + S_f \quad (6)$$

## 4.5 USD IBOR Consumer Cash Fallbacks (In-Advance)

### 4.5.1 Transition Period for 1W and 2M Benchmark Tenors

The Transition Period for the 1 week and 2 month benchmark tenors was from Monday January 3<sup>rd</sup> 2022 to Friday December 30<sup>th</sup> 2022.

Following the Transition Period (i.e. from Monday January 2<sup>nd</sup> 2023 onwards), the daily spread is the relevant constant Spread Adjustment  $S_f$  for tenor  $f$  described in section 4.1.3.

### 4.5.2 Transition Period for 1M, 3M and 6M Benchmark Tenors

The Transition Period for the 1 month, 3 month and 6 month benchmark tenors is from Monday July 3<sup>rd</sup> 2023 to Friday June 28<sup>th</sup> 2024. During the Transition Period, a linearly interpolated daily spread is derived using an initial spread and the final Spread Adjustment  $S_f$  for tenor  $f$  described in section 4.1.3.

The initial spread,  $S_{f,0}$ , is the spread between LIBOR,  $LIBOR_{f,t}$ , and the SOFR average,  $AVS_{f,t}$  of corresponding tenor  $f$ , and is calculated in accordance with equation 7. Only days that are both London and SIFMA business days are included in equation 7<sup>4</sup>.

$$S_{f,0} = \sum_{t=16.Jun.23}^{30.Jun.23} [LIBOR_{f,t} - AVS_{f,t}] / 10 \quad (7)$$

During the Transition Period, the interpolated daily spread,  $S_{f,t}^{Int}$ , is derived in accordance with equation 8 where  $n_{30.Jun.23,t}$  is the number of calendar days from June 30<sup>th</sup> 2023 to  $t$ <sup>5</sup>.

$$S_{f,t}^{Int} = S_{f,0} + [S_f - S_{f,0}] \cdot \frac{n_{30.Jun.23,t}}{366} \quad (8)$$

Following the Transition Period (from Monday July 1<sup>st</sup> 2024 onwards),  $S_{f,t}^{Int} = S_f$ .

### 4.5.3 All In USD IBOR Consumer Cash Fallbacks Benchmark

Each USD IBOR Consumer Cash Fallbacks benchmark  $CFR_{f,t}$  of tenor  $f$  is derived in accordance with equation 9. For the 1 week and 2 month tenors  $S_{f,t} = S_f$ , the constant Spread Adjustment for tenor  $f$  described in section 4.1.3. For the 1 month, 3 month and 6 month tenors  $S_{f,t} = S_{f,t}^{Int}$ , the interpolated daily spread defined by equation 8.

$$CFR_{f,t} = AVS_{f,t} + S_{f,t} \quad (9)$$

Each USD IBOR Consumer Cash Fallbacks Floored benchmark  $CFR_{f,t}^{floored}$  of tenor  $f$  is derived in accordance with equation 10.

$$CFR_{f,t}^{floored} = \text{Max}[AVS_{f,t} + S_{f,t}^{Int}, 0] \quad (10)$$

In both cases, the USD IBOR Consumer Cash Fallbacks benchmarks of tenors 1-Week, 1-Month and 2-Month use the 30-day SOFR average,  $AVS_{30D,t}$ , whereas the USD IBOR Consumer Cash Fallback benchmarks of tenors 3 month and 6 month use the SOFR average,  $AVS_{f,t}$  of corresponding tenor 90-days and 180-days.

## 4.6 USD IBOR Consumer Cash Fallbacks (Term)

### 4.6.1 Transition Period for USD IBOR Consumer Cash Fallback (Term)

The Transition Period for the 1, 3, 6 and 12 month tenors is from Monday July 3<sup>rd</sup> 2023 to Friday June 28<sup>th</sup> 2024. During the Transition Period, a linearly interpolated daily spread is derived using an initial spread and the final the Spread Adjustment  $S_f$  for tenor  $f$  described in section 4.1.3.

<sup>4</sup> Note that Monday June 19<sup>th</sup> 2023 is Juneteenth, a SIFMA non-business day and the 03 January 2022 Methodology has been updated to reflect this in equation 8.

<sup>5</sup> The Transition Period for 1, 3 and 6 month tenors is 366 days as 2024 is a leap year.

The initial spread,  $S_{f,0}$ , is the spread between LIBOR,  $LIBOR_{f,t}$ , and Term SOFR,  $TS_{f,t}$  of corresponding tenor  $f$ , and is calculated in accordance with equation 11. Only days that are both London and SIFMA business days are included in equation 11<sup>6</sup>.

$$S_{f,0} = \sum_{t=16,Jun.23}^{30,Jun.23} [LIBOR_{f,t} - TS_{f,t}] / 10 \quad (11)$$

During the Transition Period, the interpolated daily spread,  $S_{f,t}^{Int}$ , is derived in accordance with equation 12 where  $n_{30,Jun.23,t}$  is the number of calendar days from June 30<sup>th</sup> 2023 to  $t$ <sup>7</sup>.

$$S_{f,t}^{Int} = S_{f,0} + [S_f - S_{f,0}] \cdot \frac{n_{30,Jun.23,t}}{366} \quad (12)$$

Following the Transition Period (from Monday July 1<sup>st</sup> 2024 onwards),  $S_{f,t}^{Int} = S_f$ .

#### 4.6.2 All In USD IBOR Consumer Cash Fallbacks (Term) Benchmark

The USD IBOR Institutional Cash Fallback (Term) benchmark,  $CFR_{f,t}$ , is derived in accordance with equation 13.

$$CFR_{f,t} = TS_{f,t} + S_{f,t}^{Int} \quad (13)$$

The USD IBOR Institutional Cash Fallback (Term) floored at zero,  $CFR_{f,t}^{floored}$ , is derived in accordance with equation 14.

$$CFR_{f,t}^{floored} = \text{Max}[TS_{f,t} + S_{f,t}^{Int}, 0] \quad (14)$$

The All In USD IBOR Consumer Cash Fallbacks (Term) benchmark use CME Term SOFR,  $TS_{f,t}$ , and daily spread,  $S_{f,t}^{Int}$ , of corresponding tenor  $f$  and publication date  $t$ .

<sup>6</sup> Note that Monday June 19<sup>th</sup> 2023 is Juneteenth, a SIFMA non-business day.

<sup>7</sup> The Transition Period for 1, 3 and 6 month tenors is 366 days as 2024 is a leap year.



## 5. PUBLICATION AND REFIX POLICY

### 5.1 Publication

The USD IBOR Institutional Cash Fallbacks benchmark and the USD IBOR Consumer Cash Fallbacks benchmark are published at approximately 08:20am ET, around 20 minutes after the Federal Reserve Bank of New York publishes the daily SOFR rate and SOFR averages. SOFR is published at approximately 08:00am ET. CME Term SOFR Reference Rates are published at 06:00am ET.

The USD IBOR Institutional Cash Fallbacks (In-Arrears) are published toward the end of the interest accrual period that follows the publication of the corresponding LIBOR setting once the final required daily SOFR rate has been published by the Federal Reserve Bank of New York. The In-Advance USD IBOR Cash Fallbacks benchmark is published on the same day that the corresponding SOFR averages are published.

### 5.2 Delayed Publication

The Administrator of the USD IBOR Institutional Cash Fallbacks benchmark and the USD IBOR Consumer Cash Fallbacks benchmark, RBSL, may at its discretion delay publication of the benchmarks in the event that technical difficulties prevent receipt of input data or if RBSL has reason to believe that either the input data or the determination of the benchmarks includes a potential error. In such cases, all reasonable efforts will be made to publish the benchmarks at the earliest opportunity.

### 5.3 Refix Policy

If following publication, a material error is identified in the input data or the determination of the benchmarks before 12:00 ET, Refinitiv shall endeavour to refix the benchmarks. A material error is one that results in a change of + or – 0.001 basis points to the published value.

If there are any revisions to the published SOFR or the three compounded averages of daily SOFR with tenors of 30-, 90-, and 180-calendar days by the Federal Reserve Bank of New York at or prior to approximately 14:30 ET, Refinitiv will refix the benchmarks.

Refinitiv will aim to refix the benchmarks in such scenarios by 16:00 ET. No refix will be issued after 23:59ET in either scenario.

### 5.4 Publication RIC Identifiers

The USD IBOR Institutional Cash Fallbacks benchmark and USD IBOR Consumer Cash Fallbacks benchmark are made available on the Refinitiv RICs listed below. The benchmarks are also published on a delayed basis at [www.refinitiv.com/USDIBORCashFallbacks](http://www.refinitiv.com/USDIBORCashFallbacks).

**Consumer benchmark products**

USD IBOR Consumer Cash Fallbacks (In-Advance)

Calculated using 30-, 90- and 180-day average SOFR published by Federal Reserve Bank of New York

All In Fallbacks:

Feature	1W	1M	2M	3M	6M
N/A	USDCFCFCADA1W=	USDCFCFCADA1M=	USDCFCFCADA2M=	USDCFCFCADA3M=	USDCFCFCADA6M=
Floored	USDCFCFCADE1W=	USDCFCFCADE1M=	USDCFCFCADE2M=	USDCFCFCADE3M=	USDCFCFCADE6M=

Adjusted SOFR:

Feature	1W	1M	2M	3M	6M
N/A	SOFR1MAVG=	SOFR1MAVG=	SOFR1MAVG=	SOFR3MAVG=	SOFR6MAVG=

Spread Adjustment:

Feature	1W	1M	2M	3M	6M
N/A	USDCFCSCADA1W=	USDCFCSCADA1M=	USDCFCSCADA2M=	USDCFCSCADA3M=	USDCFCSCADA6M=

USD IBOR Consumer Cash Fallbacks (Term)

Calculated using CME Term SOFR

All In Fallbacks:

Feature	1M	3M	6M	12M
N/A	USDCFCFCTSA1M=	USDCFCFCTSA3M=	USDCFCFCTSA6M=	USDCFCFCTSA1Y=
Floored	USDCFCFCTSE1M=	USDCFCFCTSE3M=	USDCFCFCTSE6M=	USDCFCFCTSE1Y=

Spread Adjustment:

Feature	1M	3M	6M	12M
N/A	USDCFCSCTSA1M=	USDCFCSCTSA3M=	USDCFCSCTSA6M=	USDCFCSCTSA1Y=

USD IBOR Consumer Cash Fallbacks (Term) on a delayed basis are also available at

[www.refinitiv.com/usdiborconsumercashfallbacks](http://www.refinitiv.com/usdiborconsumercashfallbacks).

**Institutional benchmark products**

USD IBOR Institutional Cash Fallbacks (Compounded In-Arrears)

Calculated using overnight SOFR

All In Fallbacks:

Feature	O/N	1W	1M	2M	3M	6M	12M
No lookback or lockout	USDCFIFSARAON=	USDCFIFCARA1W=	USDCFIFCARA1M=	USDCFIFCARA2M=	USDCFIFCARA3M=	USDCFIFCARA6M=	USDCFIFCARA1Y=
3 day lookback (no observation shift)		USDCFIFCAR3B1W=	USDCFIFCAR3B1M=	USDCFIFCAR3B2M=	USDCFIFCAR3B3M=	USDCFIFCAR3B6M=	USDCFIFCAR3B1Y=
5 day lookback (no observation shift)			USDCFIFCAR5B1M=	USDCFIFCAR5B2M=	USDCFIFCAR5B3M=	USDCFIFCAR5B6M=	USDCFIFCAR5B1Y=
10 day lookback (no observation shift)			USDCFIFCAR10B1M=	USDCFIFCAR10B2M=	USDCFIFCAR10B3M=	USDCFIFCAR10B6M=	USDCFIFCAR10B1Y=
2 day lookback (observation shift)		USDCFIFCAR2C1W=	USDCFIFCAR2C1M=	USDCFIFCAR2C2M=	USDCFIFCAR2C3M=	USDCFIFCAR2C6M=	USDCFIFCAR2C1Y=
3 day lookback (observation shift)		USDCFIFCAR3C1W=	USDCFIFCAR3C1M=	USDCFIFCAR3C2M=	USDCFIFCAR3C3M=	USDCFIFCAR3C6M=	USDCFIFCAR3C1Y=
5 day lookback (observation shift)			USDCFIFCAR5C1M=	USDCFIFCAR5C2M=	USDCFIFCAR5C3M=	USDCFIFCAR5C6M=	USDCFIFCAR5C1Y=
2 day lockout		USDCFIFCAR2D1W=	USDCFIFCAR2D1M=	USDCFIFCAR2D2M=	USDCFIFCAR2D3M=	USDCFIFCAR2D6M=	USDCFIFCAR2D1Y=
3 day lockout		USDCFIFCAR3D1W=	USDCFIFCAR3D1M=	USDCFIFCAR3D2M=	USDCFIFCAR3D3M=	USDCFIFCAR3D6M=	USDCFIFCAR3D1Y=

## USD IBOR Institutional Cash Fallbacks (Simple In-Arrears)

Calculated using overnight SOFR

All In Fallbacks:

Feature	O/N	1W	1M	2M	3M	6M	12M
No lookback or lockout	USDCFIFSARAON=	USDCFIFSARA1W=	USDCFIFSARA1M=	USDCFIFSARA2M=	USDCFIFSARA3M=	USDCFIFSARA6M=	USDCFIFSARA1Y=
3 day lookback (no observation shift)		USDCFIFSAR3B1W=	USDCFIFSAR3B1M=	USDCFIFSAR3B2M=	USDCFIFSAR3B3M=	USDCFIFSAR3B6M=	USDCFIFSAR3B1Y=
5 day lookback (no observation shift)			USDCFIFSAR5B1M=	USDCFIFSAR5B2M=	USDCFIFSAR5B3M=	USDCFIFSAR5B6M=	USDCFIFSAR5B1Y=
10 day lookback (no observation shift)			USDCFIFSAR10B1M=	USDCFIFSAR10B2M=	USDCFIFSAR10B3M=	USDCFIFSAR10B6M=	USDCFIFSAR10B1Y=
2 day lookback (observation shift)		USDCFIFSAR2C1W=	USDCFIFSAR2C1M=	USDCFIFSAR2C2M=	USDCFIFSAR2C3M=	USDCFIFSAR2C6M=	USDCFIFSAR2C1Y=
3 day lookback (observation shift)		USDCFIFSAR3C1W=	USDCFIFSAR3C1M=	USDCFIFSAR3C2M=	USDCFIFSAR3C3M=	USDCFIFSAR3C6M=	USDCFIFSAR3C1Y=
5 day lookback (observation shift)			USDCFIFSAR5C1M=	USDCFIFSAR5C2M=	USDCFIFSAR5C3M=	USDCFIFSAR5C6M=	USDCFIFSAR5C1Y=
2 day lockout		USDCFIFSAR2D1W=	USDCFIFSAR2D1M=	USDCFIFSAR2D2M=	USDCFIFSAR2D3M=	USDCFIFSAR2D6M=	USDCFIFSAR2D1Y=
3 day lockout		USDCFIFSAR3D1W=	USDCFIFSAR3D1M=	USDCFIFSAR3D2M=	USDCFIFSAR3D3M=	USDCFIFSAR3D6M=	USDCFIFSAR3D1Y=

## USD IBOR Institutional Cash Fallbacks (In-Advance)

Calculated using 30-, 90- and 180-day average SOFR published by Federal Reserve Bank of New York

All In Fallbacks:

Feature	1M	3M	6M
N/A	USDCFIFCADA1M=	USDCFIFCADA3M=	USDCFIFCADA6M=

USD IBOR Institutional Cash Fallbacks (In-Advance, 30-day Average SOFR)<sup>8</sup>

Calculated using 30-day average SOFR published by Federal Reserve Bank of New York

All In Fallbacks:

Feature	1M	3M	6M	12M
N/A	USDCFIFCADA1M=	USDCFIFCADB3M=	USDCFIFCADB6M=	USDCFIFCADB1Y=

## USD IBOR Institutional Cash Fallbacks (Term)

Calculated using CME Term SOFR

All In Fallbacks:

Feature	1M	3M	6M	12M
N/A	USDCFIFCTSA1M=	USDCFIFCTSA3M=	USDCFIFCTSA6M=	USDCFIFCTSA1Y=

<sup>8</sup> Note, the USD IBOR Institutional Cash Fallbacks (In-Advance, 30-day Average SOFR) 1-Month rate is identical to the USD IBOR Institutional Cash Fallbacks (In-Advance) 1-Month rate and is published on the same RIC (USDCFIFCADA1M=).

## USD IBOR Institutional Cash Fallbacks (Compounded In-Arrears)

Calculated using overnight SOFR

Adjusted SOFR:

Feature	O/N	1W	1M	2M	3M	6M	12M
No lookback or lockout	USDSOFR=	USDCFIJCARA1W=	USDCFIJCARA1M=	USDCFIJCARA2M=	USDCFIJCARA3M=	USDCFIJCARA6M=	USDCFIJCARA1Y=
3 day lookback (no observation shift)		USDCFIJCAR3B1W=	USDCFIJCAR3B1M=	USDCFIJCAR3B2M=	USDCFIJCAR3B3M=	USDCFIJCAR3B6M=	USDCFIJCAR3B1Y=
5 day lookback (no observation shift)			USDCFIJCAR5B1M=	USDCFIJCAR5B2M=	USDCFIJCAR5B3M=	USDCFIJCAR5B6M=	USDCFIJCAR5B1Y=
10 day lookback (no observation shift)			USDCFIJCAR10B1M=	USDCFIJCAR10B2M=	USDCFIJCAR10B3M=	USDCFIJCAR10B6M=	USDCFIJCAR10B1Y=
2 day lookback (observation shift)		USDCFIJCAR2C1W=	USDCFIJCAR2C1M=	USDCFIJCAR2C2M=	USDCFIJCAR2C3M=	USDCFIJCAR2C6M=	USDCFIJCAR2C1Y=
3 day lookback (observation shift)		USDCFIJCAR3C1W=	USDCFIJCAR3C1M=	USDCFIJCAR3C2M=	USDCFIJCAR3C3M=	USDCFIJCAR3C6M=	USDCFIJCAR3C1Y=
5 day lookback (observation shift)			USDCFIJCAR5C1M=	USDCFIJCAR5C2M=	USDCFIJCAR5C3M=	USDCFIJCAR5C6M=	USDCFIJCAR5C1Y=
2 day lockout		USDCFIJCAR2D1W=	USDCFIJCAR2D1M=	USDCFIJCAR2D2M=	USDCFIJCAR2D3M=	USDCFIJCAR2D6M=	USDCFIJCAR2D1Y=
3 day lockout		USDCFIJCAR3D1W=	USDCFIJCAR3D1M=	USDCFIJCAR3D2M=	USDCFIJCAR3D3M=	USDCFIJCAR3D6M=	USDCFIJCAR3D1Y=

## USD IBOR Institutional Cash Fallbacks (Simple In-Arrears)

Calculated using overnight SOFR

Adjusted SOFR:

Feature	O/N	1W	1M	2M	3M	6M	12M
No lookback or lockout	USDSOFR=	USDCFIJSARA1W=	USDCFIJSARA1M=	USDCFIJSARA2M=	USDCFIJSARA3M=	USDCFIJSARA6M=	USDCFIJSARA1Y=
3 day lookback (no observation shift)		USDCFIJSAR3B1W=	USDCFIJSAR3B1M=	USDCFIJSAR3B2M=	USDCFIJSAR3B3M=	USDCFIJSAR3B6M=	USDCFIJSAR3B1Y=
5 day lookback (no observation shift)			USDCFIJSAR5B1M=	USDCFIJSAR5B2M=	USDCFIJSAR5B3M=	USDCFIJSAR5B6M=	USDCFIJSAR5B1Y=
10 day lookback (no observation shift)			USDCFIJSAR10B1M=	USDCFIJSAR10B2M=	USDCFIJSAR10B3M=	USDCFIJSAR10B6M=	USDCFIJSAR10B1Y=
2 day lookback (observation shift)		USDCFIJSAR2C1W=	USDCFIJSAR2C1M=	USDCFIJSAR2C2M=	USDCFIJSAR2C3M=	USDCFIJSAR2C6M=	USDCFIJSAR2C1Y=
3 day lookback (observation shift)		USDCFIJSAR3C1W=	USDCFIJSAR3C1M=	USDCFIJSAR3C2M=	USDCFIJSAR3C3M=	USDCFIJSAR3C6M=	USDCFIJSAR3C1Y=
5 day lookback (observation shift)			USDCFIJSAR5C1M=	USDCFIJSAR5C2M=	USDCFIJSAR5C3M=	USDCFIJSAR5C6M=	USDCFIJSAR5C1Y=
2 day lockout		USDCFIJSAR2D1W=	USDCFIJSAR2D1M=	USDCFIJSAR2D2M=	USDCFIJSAR2D3M=	USDCFIJSAR2D6M=	USDCFIJSAR2D1Y=
3 day lockout		USDCFIJSAR3D1W=	USDCFIJSAR3D1M=	USDCFIJSAR3D2M=	USDCFIJSAR3D3M=	USDCFIJSAR3D6M=	USDCFIJSAR3D1Y=

## USD IBOR Institutional Cash Fallbacks (In-Advance)

Calculated using 30-, 90- and 180-day average SOFR published by Federal Reserve Bank of New York

Adjusted SOFR:

Feature	1M	3M	6M
N/A	SOFR1MAVG=	SOFR3MAVG=	SOFR6MAVG=

## 6. METHODOLOGY REVIEW AND CHANGE PROCEDURES

### 6.1 Review of the Methodology and Input Data Providers

RBSL will carry out a review of the Methodology in respect of the USD IBOR Institutional Cash Fallbacks benchmark and the USD IBOR Consumer Cash Fallbacks benchmark on at least an annual basis. Additional reviews may be conducted at RBSL's discretion. Reviews will include an analysis of the underlying market that the benchmarks seek to represent and the availability and sufficiency of input data.

The aim of the review will be to ensure that the benchmarks continue to be a suitable fallback for institutional and consumer financial products that reference USD dollar LIBOR and that the input data continues to be available in an accurate and timely manner. The oversight committee will provide input into the review.

### 6.2 Changes to the Methodology

Changes to the Methodology in respect of the USD IBOR Institutional Cash Fallbacks benchmark and the USD IBOR Consumer Cash Fallbacks benchmark shall be made in accordance with the RBSL Benchmark Methodology Change and Cessation Policy in order to seek feedback from a range of stakeholders including the Federal Reserve and the ARRC (or any successor to the ARRC). The combined RBSL Benchmark Methodology Change and Cessation Policy is available at [www.refinitiv.com/content/dam/marketing/en\\_us/documents/methodology/rbsl-benchmark-methodology-change-cessation-policy.pdf](http://www.refinitiv.com/content/dam/marketing/en_us/documents/methodology/rbsl-benchmark-methodology-change-cessation-policy.pdf).

### 6.3 Objective of the Methodology

The objective of this Methodology in respect of the USD IBOR Institutional Cash Fallbacks benchmark and the USD IBOR Consumer Cash Fallbacks benchmark is to provide a suitable fallback for institutional and consumer financial products that reference USD dollar LIBOR. The dependence of the benchmarks on other benchmarks as input data minimizes the risk of data insufficiency. The Methodology shall also comply with UK Benchmark Regulation (BMR).

### 6.4 Identification of Potential Limitations of the Benchmark

The principal limitation of the USD IBOR Institutional Cash Fallbacks benchmark and the USD IBOR Consumer Cash Fallbacks benchmarks are their dependence on the availability of SOFR, the SOFR averages (both published by the Federal Reserve Bank of New York) and the CME Term SOFR Reference Rates (published by CME Group Benchmark Administration Limited) as input data. In the event that SOFR, the SOFR averages or the CME Term SOFR Reference Rates are unavailable, RBSL will consult with stakeholders as well as the oversight committee.



## 7. GOVERNANCE AND FURTHER INFORMATION

### 7.1 Benchmark Administrator

Refinitiv Benchmark Services (UK) Limited (RBSL) is the Administrator of the USD IBOR Institutional Cash Fallbacks benchmark and the USD IBOR Consumer Cash Fallbacks benchmark. As Administrator of the benchmarks, RBSL is responsible for collecting input data, determining and publishing the benchmarks, and for all aspects of governance, oversight, compliance and integrity of the benchmarks.

### 7.2 Oversight Committee

The oversight committee is responsible for oversight of all aspects of the provision of the benchmarks including the reviews of the Methodology at least annually, overseeing any changes to the benchmarks Methodology or cessation of the benchmarks, and overseeing RBSL's control framework, management and operation of the benchmarks.

### 7.3 Benchmark Manager

A benchmark manager is appointed from time to time by the Administrator who will be a subject matter expert responsible for interpreting the Methodology in respect of the benchmarks.

### 7.4 User Feedback

RBSL may communicate periodically with stakeholders in order to assess the ongoing fitness and suitability of the Methodology in respect of the benchmarks. Such feedback may be used as part of the periodic review of the Methodology in respect of the benchmarks.

### 7.5 Further Information

Further information is available at [www.refinitiv.com/USDIBORCashFallbacks](http://www.refinitiv.com/USDIBORCashFallbacks).

Refinitiv welcomes feedback. Any comments or questions regarding this Methodology, the USD IBOR Institutional Cash Fallbacks benchmark or the USD IBOR Consumer Cash Fallbacks benchmark should be sent to [index\\_queries@refinitiv.com](mailto:index_queries@refinitiv.com) and include 'USD IBOR Cash Fallbacks' in the email subject line.

## 8. DISCLAIMER

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## ANNEX: CLIMATE RELATED DISCLOSURES

EXPLANATION OF HOW ESG FACTORS ARE REFLECTED IN THE KEY ELEMENTS OF THE BENCHMARK METHODOLOGY	
Item 1. Name of the benchmark administrator.	Refinitiv Benchmark Services (UK) Limited
Item 2. Type of benchmark or family of benchmarks. Choose the relevant underlying asset from the list provided in Annex II to Commission Delegated Regulation (EU)2020/1816.	Other
Item 3. Name of the benchmark or family of benchmarks.	Refinitiv USD IBOR Cash Fallbacks
Item 4. Does the benchmark methodology for the benchmark or family of benchmarks take into account ESG factors?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Date on which information has been last updated and reason for the update:	July 03, 2023 Methodology updated to include USD IBOR Consumer Cash Fallbacks (In-Advance) 1-Month, 3-Month and 6-Month benchmarks and the USD IBOR Consumer Cash Fallbacks (Term) 1-Month, 3-Month, 6-Month and 12-Month benchmarks

Refinitiv is one of the world's largest providers of financial markets data and infrastructure, serving over 40,000 institutions in approximately 190 countries. It provides leading data and insights, trading platforms, and open data and technology platforms that connect a thriving global financial markets community – driving performance in trading, investment, wealth management, regulatory compliance, market data management, enterprise risk and fighting financial crime.