NatWest Markets

Below are our comments (NatWest Markets) regarding the public comments on SOFR Averages and SOFR Index. As a side note, for your reference, NWM has developed a RFR calculator which we distribute for general use on our website for SOFR, as well as SONIA and ESTR. The link is as follows: https://realisedrate.com/. Please let me know if you have any questions.

- Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?

  Yes...as this aligns with ISDA methodology for OIS swaps.

- Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention? Does the SOFR index appropriately address the need for calculating flexible period averages?[13]

  We think the modified following convention best aligns with OIS swaps. We think the SOFR index appropriately addresses the need for calculating flexible period averages.

- In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.

  The Fed should consider a 1 year tenor as well, as there are swaps referencing 12 month LIBOR. Doing so would further help the adoption of SOFR more quickly in the swaps marketplace and other markets which reference US LIBOR.

- Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?

  Rounding to the 5th decimal place is industry standard, so NWM agrees with this.

- Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?

  NWM proposes that the averages or index should be flexible enough to handle various fixing lags and rate cut-off days. There are derivative and cash transactions that alter these. This flexibility would be helpful for the marketplace.

- Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index?

  Yes.

Regards,

Alan Mittleman

Head of Rates & Credit Trading, Americas
NatWest Markets

Moses & Singer LLP

To Whom it May Concern:

As the attached article points out, the SOFR interest accrual formula (the formula used in the Overnight Index Swap market) incorporates an analytically awkward treatment of non-business days that entails the possibility that two 7-day transactions (the period used in the examples given in the ARRC's publication *A User's Guide to SOFR*) having identical sequences of prevailing interest rates for each of their consecutively numbered days (i.e., same rate on the first day, second day, etc.) may nevertheless not have the same overall interest accruals.

For example, assume that the only non-business days in the period 2/3/20 through and including 2/19/20 are weekend days:

Transaction 1 begins with rate R on Monday 2/3/20, then has rate r on 2/4, rate r on 2/5, rate r on 2/6, and rate R on Friday 2/7. Thus rate R will be attributed to each of Saturday 2/8 and Sunday 2/9. The sequence of rates in Transaction 1 is thus RrrrRRR for the seven days.

Transaction 2 begins with rate R on Thursday 2/13/20, then has rate r on Friday 2/14. Thus rate r will be attributed to each of Saturday 2/15 and Sunday 2/16. The transaction continues with rate R on Monday 2/17, rate R on 2/18, and rate R on 2/19. The sequence for the seven days of Transaction 2 is also RrrrRRR.

The overall accrual for Transaction 1 is ((1+r)^3)*(1+R)*(1+(3*R)).

The overall accrual for Transaction 2 is ((1+R)^4)*(1+(3*r)).

In comparing traditional simple interest to traditional compound interest, *A User's Guide to SOFR* states, "From an economic perspective, compound interest is the more correct convention." It is not here suggested that the start day anomaly illustrated above is likely to occur frequently, but do the reasons underlying the OIS interest accrual formula's departure from traditional compounding on non-business days justify even the potential for the occurrence of such anomalous results?

Very truly yours,
Thomas Volet

Thomas Volet | Partner
Moses & Singer LLP

To: Federal Reserve Bank of New York
From: Thomas Volet
Re: Comments on SOFR Formula

November 5, 2019

This is a supplement to my comment sent November 4, 2019 relating to the potential start day anomaly inherent in the SOFR interest accrual formula. The anomaly consists of the existence of two transactions of equal duration having identical sequences of interest rates applicable on the same consecutively numbered days but having different overall interest accruals for the duration.

In the material sent yesterday the identical sequences of interest rates involved seven-day transactions as used in the Appendix to the ARRC's *A User's Guide to SOFR*. The example used in my November 4 comment to demonstrate the anomaly used a sequence of seven consecutive days that treated the interest rates attributed by the formula to Saturday and Sunday (i.e., the Friday rate) no differently as members of the sequence than the market rates established for the five business days in the sequence. It was shown that for the 7-day sequence of consecutive interest rates R, r, r, r, R, R, R so compiled, under the SOFR formula the overall 7-day accrual for a transaction beginning on a Monday is not the same as the overall 7-day accrual for a transaction with the identical rates on the same consecutively numbered days beginning on a Thursday.

This supplement is intended to address an objection that in demonstrating such an anomaly the sequence should not include the rates attributed on non-business days but should rather be confined to include only the rates applicable to the five business days. However, if viewed from that perspective the potential for the anomaly will still exist (and in fact will be more likely to occur).

Consider a five business day sequence of the following interest rates for the respective consecutive business days: A, A, A, r, R. In other words on the first, second and third business day of each five-business-day sequence the rate is A, on the fourth business day the rate is r, and on the fifth business day the rate is R. If the first day of such a sequence is a Monday, Friday will occur on the fifth business day and the overall accrual under the formula for the full 7-day period will be $((1+A)^3)*(1+r)*(1+(3*R))$. But if that sequence of five consecutive business day rates begins on a Tuesday, Friday will occur on the fourth business day, and the overall accrual under the formula for the full 7-day period will be $((1+A)^3)*(1+(3*r))*(1+R)$.

Very truly yours,
Thomas Volet

Thomas Volet | Partner
Moses & Singer LLP

Mitsubishi UFJ Morgan Stanley Securities Co

MUMSS Response to Federal Reserve Bank of New York Statement Requesting Public Comment on a Proposed Publication of SOFR Averages and a SOFR Index

30th December 2019

Dear Federal Reserve Bank of New York,

We appreciate the opportunity to provide comments to the Federal Reserve Bank of New York's Statement Requesting Public Comment on a Proposed Publication of SOFR Averages and a SOFR Index. We support the publication of SOFR Averages and a SOFR Index, which would surely facilitate the adoption of the SOFR, in particular, by smaller market participants or to consumer products. We would like to provide some technical comments to the specific questions in the statement.

Q1. Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?

No. SOFR Average and SOFR Index are not well defined because the proposed calculation methodology does not provide the definition of the calculation period. In addition, it is not clear how the SOFR average would be calculated if the date 30, 90 or 180 days preceding the value date is not a business day[1].

We would suggest the following definitions:

<u>**Suggested Definition of SOFR Average over Any Calculation Period[2]**</u>

The SOFR Average over a given calculation period (which is a period from, and including, a calendar day[3] ("calculation period start date") on or after 2018-04-02 to, but excluding, another calendar day ("calculation period end date") after the calculation period start date) means the rate calculated in accordance with the formula set forth below:

$$SOFR\ Average = \left[\prod_{i=1}^{d_b}\left(1+\frac{SOFR_i \times n_i}{360}\right)-1\right]\times\frac{360}{d_c}$$

where:

"d_b" is the number of business days in the calculation period, <u>except if</u>, the calculation period start date is not a business day, then d_b is the number of business days in the calculation period plus one;

"i" is a series of whole numbers from one to d_b, each representing the relevant business days in chronological order from, and including, the first business day in calculation period, <u>except if</u>, the calculation period start date is not a business day, then "i" is a series of whole numbers from one to d_b, "i"

[1] In this document, a business day means a day on which a SOFR is published.

[2] CHF NWG discusses the compounded SARON for any calculation period which may be from, and including, and/or may be to, but excluding, a non-business day: https://www.snb.ch/n/mmr/reference/minutes_20191113/source/minutes_20191113.n.pdf

[3] A calendar day may or may not be a business day.

= one represents the calculation period start date, and "i"= two to d_b represent the relevant business days in chronological order from, and including, the first business day in calculation period;

"$\boldsymbol{SOFR_i}$", for any day "i" in the calculation period, is the SOFR applicable on business day "i", except if, the calculation period start date is not a business day, then $SOFR_i$ for "i" = one is the SOFR applicable on the business day immediately preceding the calculation period start date, and $SOFR_i$, for other "i" in the calculation period, is the SOFR applicable on business day "i";

"$\boldsymbol{n_i}$" is 1, except where the day "i" is the day immediately preceding a day which is not a business day, in which case it is the number of calendar days from, and including, the day "i" to, but excluding, the early of the first business day following the day "i" and the calculation period end date;

"$\boldsymbol{d_c}$" is the number of calendar days in the calculation period.

Suggested Definition of SOFR Averages over Fixed Period

Assume that the **value date** "$\boldsymbol{v}$" is a calendar day (which may or may not be a business day) and the **averaging length** "$\boldsymbol{L}$" is 30, 90, or 180. Assume that the date "L" calendar days preceding the value date "v" is on or after 2018-04-02.

"SOFR Average on the value date "$\boldsymbol{v}$" with the averaging length "$\boldsymbol{L}$"" means the SOFR Average over the calculation period from, and including, the date "L" calendar days preceding the value date "v" to, and excluding, the value date "v".

New York Fed will be able to calculate and publish "SOFR Average on the value date "v" with the averaging length "L"" on the value date "v", except if, the value date "v" is not a business day, on the business day immediately following the value date "v".

Suggested Definition of SOFR Index Start and SOFR Index End

We would propose defining "SOFR Index Start" and "SOFR Index End" in the following way.

Let the **origin date "$\boldsymbol{O}$"** be 2018-04-02. Define "$SOFR\ Index\ Start_O$" and "$SOFR\ Index\ End_O$"by:

$$SOFR\ Index\ Start_O = SOFR\ Index\ End_O = 1.$$

For any **value date** "$\boldsymbol{v}$", which is a calendar day after the origin date, define $SOFR\ Index\ Start_v$ and $SOFR\ Index\ End_v$ by

$$SOFR\ Index\ Start_v = \prod_{i=1}^{d_b-1}\left(1+\frac{SOFR_i \times n_i}{360}\right) \times \left(1+\frac{SOFR_{d_b} \times n_{d_b}}{360}\right) \times \left(1+\frac{SOFR_{d_b} \times (n_{d_b} - n_{d_b,v})}{360}\right)^{-1},$$

$$SOFR\ Index\ End_v = \prod_{i=1}^{d_b-1}\left(1+\frac{SOFR_i \times n_i}{360}\right) \times \left(1+\frac{SOFR_{d_b} \times n_{d_b,v}}{360}\right),$$

where:

"**Observation Period**" is the period from, and including the origin date "O", to, and excluding the value date "v";

"$\boldsymbol{d_b}$" is the number of business days in the Observation Period;

"$\boldsymbol{i}$" is a series of whole number from one to "d_b", each representing the relevant business day in chronological order from, and including the Origin Date "O" in Observation Period;

"$\boldsymbol{SOFR_i}$", for any "i" in the relevant Observation Period, is the SOFR applicable on business day "i";

"$\boldsymbol{n_i}$" is 1, except where the day "i" is the day immediately preceding a day which is not a business day, in which case it is the number of calendar days from, and including, the day "i" to, but excluding, the first business day following the day "i";

"$\boldsymbol{n_{d_b,v}}$" is the number of calendar days from, and including, the day "d_b" to, but excluding, the value date "v";

Note that, if "v" is a business day, $SOFR\ Index\ Start_v = SOFR\ Index\ End_v$.

Suggested Use of SOFR Index Start and SOFR Index End

A SOFR Average over a calculation period from, and including a calendar day "X" to, but excluding, a calendar day "Y" can be calculated by the following formula:

$$SOFR\ Average = \left(\frac{SOFR\ Index\ End_Y}{SOFR\ Index\ Start_X} - 1\right) \times \frac{360}{d_c},$$

where:

"$\boldsymbol{d_c}$" is the number of calendar days in the calculation period;

provided that there exists at least one business day in the calculation period.

Q2. Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention?

We do not have a strong opinion. Modified following convention or modified preceding convention could be used. If the fixed 30-, 90-, and 180-day tenors are adopted for the SOFR averages, then the Suggested Definition of SOFR Averages over Fixed Period described above should be used.

Q3. Does the SOFR index appropriately address the need for calculating flexible period averages?

No. The SOFR index should be defined for non-business days also. Our response to Q1 gives suggested definitions of "SOFR Index Start" and "SOFR Index End", which are defined for any calendar days.

Q4. In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.

No.

Q5. Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?

As proposed in the statement, the SOFR Averages should be published as percentages rounded to the fifth decimal place (X.XXXXX%), consistent with convention in the derivatives market.

The SOFR Index (or SOFR Index Start and SOFR Index End as suggested by us) should be published with a sufficiently high decimal precision so that the compounded SOFR calculated over any custom period using the SOFR Index (or SOFR Index Start and SOFR Index End) and rounded to the fifth decimal place will be always consistent (without any exceptions) with compounded SOFR calculated over the same period using the convention in the derivatives market (or the definitions described in our response to Q1). To that end, we would suggest that the SOFR Index (or SOFR Index Start and SOFR Index End) be published as a number rounded to a higher decimal place, e.g., the tenth decimal place (X.XXXXXXXXXX) or twelfth decimal place (X.XXXXXXXXXXXX).

If such a consistency is not guaranteed, market participants have to perfectly replicate the calculation of SOFR Index (or SOFR Index Start and SOFR Index End) in internal systems for valuation and risk management purposes, which would be unnecessarily burdensome, complex, and costly for the whole industry and could impede the adoption of the SOFR Index (or SOFR Index Start and SOFR Index End).

Q6. Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?

No.

Q7. Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index?

Yes.

Kind Regards,

Shinichiro Itozaki, Ph. D.

Senior Manager, Head of XVA Quantitative Research, Quants Research and Advanced Solutions Development Dept., Financial Engineering Division, Global markets Business Unit

Mitsubishi UFJ Morgan Stanley Securities Co., Ltd.

Otemachi Financial City Grand Cube, 1-9-2, Otemachi, Chiyoda-ku, Tokyo 100-8127, Japan

+81-3-6742-6423

itozaki-shinichiro@mumss.com

CME Group

CME Group

Via electronic submission to: rateproduction@ny.frb.org

4 December 2019

Federal Reserve Bank of New York
33 Liberty Street
New York, NY 10045

Re: Proposed Publication of SOFR Averages and a SOFR Index

To whom it may concern:

CME Group Inc. ("CMEG")[1] is grateful for this opportunity to respond to the *Statement Requesting Public Comment on a Proposed Publication of SOFR Averages and a SOFR Index* ("Consultation"), published 4 November 2019 by the Federal Reserve Bank of New York ("FRBNY")[2].

We commend FRBNY for undertaking the proposed publication program, which should help to foster adoption of SOFR in global financial markets and should ease operational burdens borne by firms during reference rate transition. FRBNY's espousal of a specified compounding methodology, moreover, should play a beneficial role in promoting standardization across global financial markets in the determination of term SOFR rates to be used in financial instruments, including both cash products and interest rate derivative contracts.

In what follows, we remark briefly on three of the questions posed in the Consultation:

- Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?

  It is our assessment that the proposed calculation methodology aligns sensibly and tractably with market practices now taking shape.

---

[1] CME Group offers futures and options on futures for trading, through the CME Globex electronic trading platform, on four separate designated contract markets: Chicago Mercantile Exchange Inc. ("CME"), the Board of Trade of the City of Chicago, Inc. ("CBOT"), the New York Mercantile Exchange, Inc. ("NYMEX"), and the Commodity Exchange, Inc. ("COMEX") (collectively, "the CME Group Exchanges"). The CME Group Exchanges offer the widest range of global benchmark products across all major asset classes based on interest rates, equity indexes, foreign exchange, energy, agricultural products and metals. Each of the CME Group Exchanges is subject to regulation by the US Commodity Futures Trading Commission ("CFTC"). All of the CME Group Exchanges are subject to the rules and regulations of the local jurisdictions in which they conduct business, including the European Securities and Markets Authority ("ESMA") and the UK Financial Conduct Authority ("FCA"). CME Group also offers fixed income trading via BrokerTec and foreign exchange trading on the EBS platform

Among the operating divisions of CME is CME Clearing, one of the largest central counterparty clearing houses in the world, which provides clearing and settlement services for exchange-traded contracts and for over-the-counter derivatives transactions. CME Clearing is a derivatives clearing organisation subject to regulation by the CFTC. With a range of pre- and post-trade products and services underpinning the entire lifecycle of a trade, CME Group also offers optimization and reconciliation services through TriOptima and trade-processing services through Traiana.

[2] FRBNY, *Statement Requesting Public Comment on a Proposed Publication of SOFR Averages and a SOFR Index*, November 4, 2019, available at: https://www.newyorkfed.org/markets/opolicy/operating_policy_191104

- Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention? Does the SOFR index appropriately address the need for calculating flexible period averages?

  Regular publication of the proposed term SOFR averages will serve many useful purposes. High on the list should be broad popularization of SOFR among market participants, especially commercial lenders and borrowers.

  With this in mind, we encourage you to compute the term SOFR average values over interest accrual periods that look and feel familiar to bank loan officers and corporate borrowers, *ie*, 1-month, 3-month, or 6-month calendar intervals, with notional settlement and maturity dates occurring on US bank business days, subject to "modified-following" day-count treatment. For further clarity, the daily data publication might include, eg, notional start dates and end dates and/or day-counts in addition to the corresponding term SOFR average values.

  Data users who, for whatever reasons, prefer to see term rates for fictive 30-, 90-, or 180-day interest accrual periods would be able to extract these from the published SOFR index.

- Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?

  We support the proposed level of precision to the fifth decimal place. Insofar as this choice conforms with existing derivatives market practice, it should ease the process of reference rate transition.

If you have further comments or questions, we would be happy to discuss this matter with you. Please contact me at +1 212 299 2340 or Sean.Tully@cmegroup.com.

Sincerely,

Sean Tully
Senior Managing Director and
Global Head of Financial & OTC Products

Morgan Stanley

Morgan Stanley

January 2020

Re: Response to the Federal Reserve Bank of New York's Statement Requesting Public Comment on a Proposed Publication of SOFR Averages and a SOFR Index

Ladies and Gentlemen,

Morgan Stanley appreciates the opportunity to provide comments on the Federal Reserve Bank of New York's Request for Public Comment on a Proposed Publication of SOFR Averages and a SOFR Index. Morgan Stanley recognizes the need for a smooth transition of SOFR to replace USD Libor. We find the two initiatives outlined in this request for comments as positive developments that may help to broaden understanding and encourage timely transition by market participants and end users. Our responses to the questions contained on the Federal Reserve Bank of New York's website are below.

Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?

Yes, Morgan Stanley believes that the methodologies proposed for calculating both the SOFR averages and the SOFR index are appropriate. We agree that the use of compounding is the most suitable interest accrual method and benefits from matching existing methods used by liquid hedge products, such as Overnight index Swaps.

Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention? Does the SOFR index appropriately address the need for calculating flexible period averages?

The proposed fixed 30-, 90-, and 180-day tenors are appropriate. This method provides an ease of understanding for all users as they navigate various U.S. market holiday conventions.

Yes, creation of the SOFR index may provide a useful tool for participants to calculate flexible date periods. A further benefit is that the effects of daily compounding may be well illustrated for users wishing to understand this characteristic.

In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.

Morgan Stanley thinks that the proposed tenors are the right ones to launch this initiative with and do not see a compelling case to launch additional tenors. In the case of shorter tenors, we think that adding periods such as 7 days or 60 days, may detract users attention from the pertinent tenors of 30, 90 and 180 days that are most relevant for transition to the SOFR. In the case of longer tenors, such as 360 days, we find that due to the backward-looking nature of the average rate, this longer time period is too long and does not provide as much of a use-case as the chosen tenors.

Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?

Calculating the SOFR averages to the fifth decimal place and the index to the eighth decimal place, as cited, may create some very small differences when comparing time periods. However, we agree that the size of these differences will be small in nature and should not impact decision making when using either the averages or the index.

Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?

Morgan Stanley does not have further suggestions to make to either the SOFR averages or the SOFR index.

Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the Index

Yes. Publishing shortly after the SOFR is published itself each day may help to draw attention to these initiatives, encouraging their use and building comfort in the concept of backward-looking term rates amongst market participants and end-users.

Respectfully submitted,

TD

3 December 2019

ATTN: New York Federal Reserve Board via email submission to: rateproduction@ny.frb.org

RE: Statement Requesting Public Comment on a Proposed Publication of SOFR Averages and a SOFR Index

TD welcomes the opportunity to respond and invites the NY FRB to consider the following submission:

Question 1: Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?

TD agrees with the proposed calculation methodology.

Question 2: Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention? Does the SOFR index appropriately address the need for calculating flexible period averages?

TD would prefer that publication follow a modified following convention. This aligns with the market standard set by the ISDA swap definition (Art. 3, 4, & 14; 2006 ISDA Definitions). It is also our view that the SOFR index would appropriately address the primary uses requiring the need for calculating flexible period averages.

Question 3: In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.

TD recommends the inclusion of 1-week, 2-month, and 1-year tenors so that they may provide a comparative basis for other tenors used and to further support the goal of universal adoption.

Question 4: Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?

TD agrees with the proposed decimal precision.

Question 5: Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?

If this publication is to support the transition, then TD would recommend that the New York Fed considers the supplemental publication of a SOFR average, and/or index, that observes a composite New York/London Banking calendar. The addition of this reference would enable market participants to more accurately enact hedging strategies against existing LIBOR exposure.

Question 6: Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index?

TD finds the initial publication time, around 8:00 AM ET, amenable. With regard to the revision cut-off, TD would like to take this opportunity to recommend that it be moved up, to 11:00 AM ET. This change is expected to allow for European users to undertake any actions required of them, during normal business hours.

JBA - Japanese Bankers Association

Ref: GYG/46/R1
December 4, 2019

Federal Reserve Bank of New York
(via Email: rateproduction@ny.frb.org)

Comment on "Proposed Publication of SOFR Averages and a SOFR Index"

Dear Sirs/Madams:

We, the Japanese Bankers Association (JBA), would like to express our gratitude for this opportunity to comment on *Statement Requesting Public Comment on a Proposed Publication of SOFR Averages and a SOFR Index* published on November 4, 2019 by the Federal Reserve Bank of New York (New York Fed).

We would like to answer to the fifth question indicated in the "Questions for Public Comment" as follows, and we respectfully expect that this will contribute to your further discussion.

Question: - Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?

(Our Answer)
The SOFR index is proposed to be published as "a number rounded to the eighth decimal place." However, we request that the New York Fed consider publishing it as a number with more than eight digits after the decimal point.

(Rationale)
As is pointed out in the Statement, the SOFR index rounded to the eighth decimal place may give rise to some minor differences between "published SOFR averages" and "SOFR averages calculated using SOFR index." We believe that the more the number of digits after the decimal point were published, the closer the two values would be matched up, and this would ensure further preciseness, effectiveness and usefulness of the index.

Sincerely yours,

H. Iwamoto

Hideharu Iwamoto
Vice Chairman and Senior Executive Director

Amundi

Amundi ASSET MANAGEMENT

Consultation Paper of Federal Reserve Bank of New York on the SOFR averages and a SOFR index as an alternative to U.S. dollar (USD) LIBOR

Amundi's Response

Amundi is Europe's largest asset manager by assets under management and ranks in the top 10 globally. It manages 1,487 billion euros[1] of assets across six main investment hubs in Boston, Dublin, London, Milan, Paris and Tokyo. Amundi offers its clients in Europe, Asia-Pacific, the Middle East and the Americas a wealth of market expertise and a full range of capabilities across the active, passive and real assets investment universes. Clients also have access to a complete set of services and tools. Headquartered in Paris, Amundi was listed in November 2015.

Amundi welcomes the Federal Reserve Bank of New York Consultation on the proposed publication of Secured Overnight Financing Rate (SOFR) averages and a SOFR index, as an ARRC's (Alternative Reference Rates Committee) recommended alternative to U.S. dollar (USD) LIBOR; it is an opportunity to express our comments to this proposal, notably regarding the appropriateness of methodology and that of publication details as well as the suggestion of additional tenors and other considerations on the use of the rate as a credit measure.

oOo

Q 1: Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?

We share the proposed analysis and fully support the calculation methodology.

Q 2: Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180- day count) or some other convention? Does the SOFR index appropriately address the need for calculating flexible period averages?

We welcome the proposed tenors and we would like to suggest the addition of the tenor of 1-week; this would support the respective tenor of Libor USD. In addition:

- We understand the objective of the 4 compounded SOFR indices is to "accurately reflect the time value of money". It is possible to do so for any bespoke period (typically picking bank holidays) with the "SOFR Index".
- On the need to adopt modified following convention of the 3 "average SOFR indices" then we do not have any particular preference or needs for any such. If the objective from the New York FED is to provide transparency / independent calculation of SOFR linked cash flow to end (US retail, for instance) clients, better to align rolling to mainstream conventions.

Q 3: In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.

Please see our answer to Q2 here above.

[1] Amundi figures as of June 30, 2019

Amundi
ASSET MANAGEMENT

Q 4: Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?

We consider that the proposed decimal precision is appropriate.

Q 5: Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?

At this point, we would like to share with you our considerations on an aspect, which seems not to be represented by the averages / index proposed in the consultation document; an alternative rate which contains a measure of credit risk.

More specifically, since SOFR is based on repo transactions (secured by US Government Securities), this market measure contains virtually no credit risk. On the other hand, USD LIBOR has been regarded by market participants to contain credit risk (i.e. "AA" proxy considering its place in the financial system) and, additionally, it is an unsecured rate.

We understand that the use of SOFR may reflect the cost of borrowing for market participants but only on a secured basis.

Consequently, while we agree that SOFR represents an appropriate replacement for LIBOR USD, we also identify a need for a transaction-based unsecured measure like Ameribor, for instance; an unsecured transaction-based measure rate that includes this credit spread component, developed by the American Financial Exchange (AFX).

Q 6: Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index?

We consider the proposed arrangements as appropriate.

Thank you

Contacts:

Simon Janin, Head of Public Affairs, Paris
simon.janin@amundi.com
Patrick Simeon, Head of Money Market, Paris
patrick.simeon@amundi.com
Louis Launoy, Head of Market and Credit Risk, Paris
louis.launoy@amundi.com

Seth Roman, Fixed Income Portfolio Manager, Amundi Pioneer, Boston, USA
Seth.Roman@amundipioneer.com
Geoff Smith, Head of Communication, Amundi Pioneer, Boston, USA
Geoff.Smith@amundipioneer.com

Barclays

Statement Requesting Public Comment on a Proposed Publication of SOFR Averages and a SOFR Index

In order to support a successful transition away from U.S. dollar (USD) LIBOR, and as administrator of the Secured Overnight Financing Rate (SOFR), the Federal Reserve Bank of New York (New York Fed), in cooperation with the Treasury Department's Office of Financial Research (OFR), is proposing to publish daily three compounded averages of the SOFR with tenors of 30-, 90-, and 180-calendar days. The New York Fed plans to initiate publication of these averages in the first half of 2020.

In addition to these three SOFR averages, the New York Fed is also proposing to publish daily a SOFR index that would allow the calculation of compounded average rates over custom time periods.

Questions for Public Comment

	Questions	Comments
	Summary Statement	In general, Barclays is supportive of the proposal. .....
1	Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?	Yes, appropriate for calculating the Averages and the Index. Methodology is consistent with existing methodology for derivatives. The calculation methodology for loans is still under review. If this differs from other products the tool/ index would need to differentiate the product being used.
2	Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention? Does the SOFR index appropriately address the need for calculating flexible period averages?	To increase the usefulness to support actual contracts, it would be more useful for 1m, 3m, 6m based on an actual 360-day calendar with a modified following convention (consistent with other existing convention e.g. Interest Accrual convention of cash products) Recommend using calendar based tenors. Yes, the Index appropriately addresses flexible periods
3	In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.	No.
4	Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered	Consider increasing the decimal precision for the Index.
5	Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?	See #2 above.
6	Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index?	Yes.

FHLB Cincinnati

The following are comments made by the Federal Home Loan Bank of Cincinnati in regards to the request for comment on Proposed Publication of SOFR Averages and a SOFR Index.

Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?

Yes. While the compounding approach is consistent with the derivatives market, it may take some time for compounding to be accepted in the debt markets and for loan systems to be modified to accept compounding. This may or may not be a factor in SOFR acceptance by the both larger and smaller participants in the financial markets.

Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention? Does the SOFR index appropriately address the need for calculating flexible period averages?

Yes, the time periods are appropriate. It might be helpful to market participants to offer a calculator function if other time periods are necessary that could calculate the compounded average for a specified number of days or a specified date range. This would facilitate other conventions.

In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.

Please see the answer to the question above. We believe the addition of an on screen calculator verses a published rate would provide additional flexibility to the users.

Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?

No. We believe that the decimal precision is adequate.

Are there any other changes to the averages or index as proposed that would make them for useful? For what purpose(s)?

It should be made very clear that the index rates being published are for the preceding period and not a forward looking rate.

Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index?

The publication arrangements seem appropriate.

Thank you for allowing us to comment,
Tami Hendrickson

Tami L. Hendrickson, SVP, Treasurer
FHLB Cincinnati

Cobank (Farm Credit Banks)

6340 South Fiddlers Green Circle
Greenwood Village, CO 80111
800-542-8072
www.cobank.com

December 4, 2019

Federal Reserve Bank of New York
33 Liberty Street
New York, NY 10045
Submitted via Email

Dear Federal Reserve Bank of New York:

CoBank, ACB (CoBank), on behalf of the Farm Credit Banks (FC Banks), appreciates the opportunity to comment on the Proposed Publication of SOFR Averages and a SOFR Index issued by the Federal Reserve Bank of New York (New York Fed) in cooperation with the U.S. Treasury Department's Office of Financial Research (Proposal).

The FC Banks are part of the Farm Credit System (FCS), which is a government-sponsored enterprise of the United States that provide loans, leases, and financial services to rural American farmers, ranchers, and agricultural, aquatic, and infrastructure cooperatives and providers, across all fifty states and the Commonwealth of Puerto Rico.[1] The FC Banks are: (1) CoBank, ACB; (2) AgFirst Farm Credit Bank; (3) AgriBank, FCB; and (4) Farm Credit Bank of Texas. Together, the FC Banks are among the leading lenders to rural America; they provide credit for rural housing, agricultural processing and marketing activities, utilities providers, and certain farm-related businesses.

Congress created the FCS to provide a permanent, stable source of credit and related services to support rural America and improve the lives of its residents. Specifically, the FC Banks, as part of the FCS, were created "to accomplish the objective of improving the income and well-being of American farmers and ranchers by furnishing sound, adequate, and constructive credit and closely related services to them, their cooperatives, and to selected farm-related businesses necessary for efficient farm operations".[2] Since its creation, CoBank

[1] See generally 2018 Annual Report on the Farm Credit System by the Farm Credit Administration.
[2] 12 U.S.C. § 2001(a).

was granted authorities to provide credit to rural infrastructure providers, who are vital to creating successful businesses and healthy rural communities.

The FC Banks and their respective associations hold rural residential real estate loans as part of their mission. As of September 30, 2019, the FC Banks held $11.8 billion of rural residential loans. Before directly addressing the Proposal, the FC Banks would like to provide several general comments related to the transition from USD LIBOR to an alternative reference rate.

The FC Banks compliment the Alternative Reference Rates Committee (ARRC) on its fallback-language recommendations from the Business Loans, Floating Rate Notes, and Securitization Workgroups in developing a reasonably coordinated approach to the fallbacks across cash products. The FC Banks encourage the ARRC's Consumer Product Workgroup to follow their example.

The FC Banks also have asked the International Swap and Derivative Association in our responses to their consultations to work to align key aspects of the fallback language for USD LIBOR bilateral derivatives with the ARRC's cash products recommendations. In the cleared-derivative markets, the FC Banks encourage the Commodity Futures Trading Commission to direct participants to also adopt fallbacks in coordination with the ARRC's cash market recommendations. In our view, a lack of coordination among these various groups when developing fallback language across different financial products could create substantial basis risks to all financial institutions if, for example, triggers for different types of instruments are invoked at varying times or alternative reference rates (including spread adjustments) are inconsistent. The FC Banks encourage the Federal Reserve to take a leadership role in encouraging greater coordination with other working groups on these issues.

Additionally, the FC Banks are concerned that regulators do not have a full appreciation of the complexity, expense and legal ramifications related to the transition to alternative reference rate indexes. It would be regrettable if global and domestic financial markets encounter a major systemic event related to a quick implementation of the alternative reference rate indexes.

As part of our comments on this Proposal, the FC Banks also are concerned about the use of SOFR averages "in advance" as a published index for consumer loans. In particular, the FC Banks are concerned that applying this possible alternative reference rate index on consumer loans could create significant variability in SOFR indexes utilized for consumer loans versus floating rate notes (FRN) funding and derivatives utilized for hedging. We also believe that the introduction of these new indexes will increase the complexities in the lending markets and increase litigation risks related to the LIBOR transition.

As an example, the table below represents an estimate of the 30-, 90- and 180-day lagging averages indexes discussed in this Proposal and the current reported SOFR, as of November 8th. We also have included the CME Group's calculation of the forward-looking term SOFR rates from SOFR futures.

Secured Overnight Financing Rate
As Reported on November 8, 2019

	Actual SOFR	Estimated Avg. SOFR In Advance	Forward Term SOFR (Impl. Futures*)
1 Day	1.56%		
30 Day		1.80%	1.60%
90 Day		2.04%	1.60%
180 Day		2.22%	1.57%

* CME SOFR Strip Rates use prices of CME SOFR futures to provide an indicative view into forward-looking expectations for overnight Treasury repo rates.

If a LIBOR-indexed residential mortgage loan utilized the Average SOFR "In Advance" 180-day index, as part of a loan fallback that repriced on November 8th, the index rate would be 2.22% prior to the spread adjustment. If a bank had a LIBOR-indexed floating rate note that funded this loan and repriced on that same date, utilizing the ARRC's FRN fallback recommendation, that index would be 1.57% prior to adjustment. That difference is 0.65%. Note that if the instruments continued to be repriced utilizing 6-month LIBOR, the index would be the same for both transactions. In this example, the bank would increase its net interest margin by 0.65%, but would face heightened risk of prepayments and litigation. Note that under a tightening cycle, the bank's net interest margin would decrease by 0.65%.

As illustrated in this example, the FC Banks also are concerned that the use of lagging loan indexes will have an adverse effect on the financial markets because it will probably create significant earnings volatility for financial institutions in periods of monetary easing or tightening for entities that report based on accrual accounting. Specifically, the effect of the lagging loan indexes will probably lead to ineffectiveness of hedges and create issues with hedge accounting.

The FC Banks encourage the New York Fed to reconsider moving forward on compounded SOFR averages “in advance” for use as an index for consumer loans. The banks again encourage the ARRC, Federal Reserve Banks, and Treasury to accelerate the development and publication of forward-looking term SOFR indexes based on implied rates from SOFR futures and swaps. The FC Banks believe these alternative reference rate indexes ultimately will replace USD LIBOR.

The following are the FC Banks’ responses to the specific questions in the Proposal:

- Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?

  Response: Notwithstanding the FC Banks’ concern about utilizing lagging indexes, the banks believe that the compounding approach is appropriate. The primary reason for our support on this item is our view that the approach is consistent with other calculation recommendations.

- Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention? Does the SOFR index appropriately address the need for calculating flexible period averages?

  Response: The FC Banks recommend that the proposed indexes utilize 1-month, 3-month, 6-month and 1-year conventions. These are the conventions utilized in the current USD LIBOR market and the CME Group forward-looking term rates as discussed previously. Again, the FC Banks strongly encourage all participants to look to develop consistency with current market conventions.

- In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.

  Response: Again, notwithstanding the FC Banks’ concern about utilizing lagging indexes, the banks believe that a 360-day or 1-year index should be *added. By adding the 360-day or 1-year index, the new indexes will mimic the current primary maturities utilized in the USD LIBOR market.*

- Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?

  Response: No comment at this time.

- Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?

  Response: Again, the FC Banks discourage the proposed publication of SOFR average "in advance" indexes and encourage acceleration of the process to develop forward-looking term SOFR indexes.

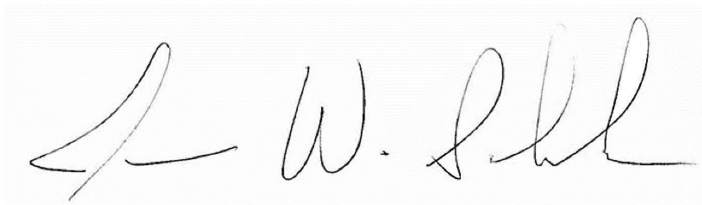
- Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index?

  Response: No comment at this time.

The FC Banks welcome the opportunity to discuss our comments with you. Please contact the following staff with any comments or questions:

Bank	Contact	Email
CoBank, ACB	James Shanahan	jshanahan@cobank.com
AgFirst, FCB	Josh Goethe	JGoethe@AgFirst.com
AgriBank, FCB	Luis Sahmkow	Luis.Sahmkow@agribank.com
Farm Credit Bank of Texas	Matthew Windsor	matthew.windsor@farmcreditbank.com

Sincerely,



James W. Shanahan, CFA
Vice President – Financial Regulatory Compliance
CoBank, ACB

SIFMA

December 4, 2019

Comments submitted to: rateproduction@ny.frb.org

Federal Reserve Bank of New York
33 Liberty Street
New York, NY 10045

Re: Statement Requesting Public Comment on a Proposed Publication of SOFR Averages and a SOFR Index

Dear Madam or Sir,

SIFMA[1] is pleased to submit comments regarding the Federal Reserve Bank of New York's ("FRBNY") proposal to publish a SOFR index and three compounded averages of the SOFR with tenors of 30-, 90-, and 180-calendar days on a daily basis.[2] SIFMA supports this proposal and encourages the FRBNY to move expeditiously to implement this proposal and publish the proposed rates and index.

This proposal would result in the publication of SOFR information by a neutral third party, with a known methodology and timing - similar to the production of SOFR itself. While some market participants may build their own compounding and indexing algorithms internally, others will not, and will be well-served by the FRBNY's publication. Smaller market participants and end users may not have the resources to build these algorithms in the near-term. Other market participants, such as trustees or calculation agents, may desire to be able to consume rate information from a trusted source rather than calculate a rate on their own for liability and other reasons. Further, we note that many transaction documents for FRNs or securitizations that currently use LIBOR refer to a specific place of publication of the reference rate (e.g., a specific screen function on an information platform). Publication of SOFR rates and an index by FRBNY will allow for a similar agreement among transaction participants to use a specific, designated source and therefore calculation methodology. Finally, even large market participants who develop internal tools may appreciate the FRBNY publication as a "check" on their work. All in all, for a variety of market participants, the proposal would reduce the risk of disputes and mistakes, ease the implementation of SOFR into their workflows, and provide certainty.

Importantly, publication of the index will simplify calculations for many participants. Rather than compounding SOFR on a daily basis over a given period of time, a firm would be able to simply take a starting and ending index value to compute a SOFR rate over that term, as described in the proposal. This will drive efficiency and ease the adoption of SOFR-based transactions.

Some of our members have suggested that FRBNY should also consider the addition of a simple average-based index to complement the compound average-based index. Many transactions in the market today utilize a simple average, and these types of transactions may continue to be issued. A

[1] SIFMA is the leading trade association for broker-dealers, investment banks and asset managers operating in the U.S. and global capital markets. On behalf of our industry's nearly 1 million employees, we advocate on legislation, regulation and business policy, affecting retail and institutional investors, equity and fixed income markets and related products and services. We serve as an industry coordinating body to promote fair and orderly markets, informed regulatory compliance, and efficient market operations and resiliency. We also provide a forum for industry policy and professional development. SIFMA, with offices in New York and Washington, D.C., is the U.S. regional member of the Global Financial Markets Association (GFMA). For more information, visit http://www.sifma.org.
[2] Available at this URL: https://www.newyorkfed.org/markets/opolicy/operating_policy_191104

simple interest index would provide similar benefits as noted above. However, other members point out that creation of an additional index could work against guiding the market towards adopting a compounded rate as the standard approach and note that the ARRC has incorporated this preference for compounding into the waterfall for fallbacks (which has as the second step falling back to compounded SOFR) and derivatives markets are moving in this direction as well.

In conclusion, publication of the compound average rates and the index will provide a neutral, third-party source of information for the usage of SOFR in financial transactions, will help ease the transition to SOFR, will reduce disputes, and will be beneficial to the robustness of financial markets and their participants. Accordingly, SIFMA supports this initiative.

Please contact me at ckillian@sifma.org for further discussion or if you have further questions.

Sincerely,

Christopher B. Killian
Managing Director

FHLB New York

FHLB NY response the request for Public Comment on a Proposed Publication of SOFR Averages and a SOFR Index

- We agree with proposed calculation methodology for calculating realized SOFR averages and a SOFR index. We see the treatment as consistent to how ISDA approaches compounding for OIS or SOFR and how interest is accrued by rolling overnight investments in either repo or fed funds transactions.

- The selection 30, 90 and 180 day calculations simplifies the comparison across periods but seems to interject differences from true business day adjusted 1month, 3month and 6month calendar periods. Therefore we believe there should be explicit language highlighting the differences between the non-adjusted rates and those implied by the calculation from the compound SOFR index. It may be useful to publish an interactive calculation widget for the index.

Philip Scott

Chief Capital Markets Officer

Federal Home Loan Bank of New York

PGIM

Please find PGIM Fixed Income responses (in blue) to the Proposed Publication of SOFR Averages and a SOFR Index

- Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?

  Yes, the proposed calculation methodology is appropriate in our view. The compounding methodology aligns with existing overnight rate compounding methodologies (e.g. Fed OIS). This will assist in a transition of liquidity in SOFR.

  We would note that there is currently no market standard for cutoffs of SOFR basis swaps (e.g. SOFR-LIBOR) and this approach introduces a different potential standard. Currently, most SOFR-LIBOR swaps are traded with a 1-day lockout that would be different than the averages laid out here.

- Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention? Does the SOFR index appropriately address the need for calculating flexible period averages?

  In our view the published SOFR averages should follow a modified following convention to align with LIBOR. The motivation of these averages is to facilitate the transition of LIBOR liquidity to SOFR liquidity. Given that the convention should mirror LIBOR which uses modified following.

- In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.

  In our view, no additional tenors are needed. The presence of a SOFR index allow for compounded SOFR values to be calculated over custom periods.

- Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?

  In our view, no

- Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?

  In our view, no

- Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index?

  Yes

Thanks,

Scott Donnelly

Vice President

PGIM Fixed Income

Wells Fargo

December 4, 2019

To: Federal Reserve Bank of New York

via email submission to: rateproduction@ny.frb.org

Re: Request for Public Comment on a Proposed Publication of SOFR Averages and a SOFR Index[1]

The following sets forth Wells Fargo & Company's response to the Federal Reserve Bank of New York ("New York Fed") proposal to publish a SOFR index and compounded averages of SOFR on a daily basis.[2]

Wells Fargo supports the New York Fed's proposal as an important step in furthering the adoption and use of SOFR in financial contracts.

(1) *Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?*

Yes, the proposed calculation methodology and compounding approach are appropriate for calculating the averages and index because they promote application of averages with minimal convexity. The calculation methodology and compounding approach also appear to align with the ISDA methodology for fallback rates (e.g. are compatible with an observation period shift).

(2) *Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention? Does the SOFR index appropriately address the need for calculating flexible period averages?*

The averages in conjunction with the index will address the need for flexibility. The published averages should follow the calendar day convention and not utilize following or modified following conventions for the interest accrual calculations. Financial

[1] Available at https://www.newyorkfed.org/markets/opolicy/operating_policy_191104.
[2]These responses reflect Wells Fargo's current views of the approaches identified in the proposal and not any determinations by Wells Fargo with respect to its own business operations. In that regard, the responses are provided for informational purposes only, are not intended to be comprehensive, and Wells Fargo makes no representation regarding their accuracy or applicability to any particular circumstance, product, or categories of or individual transactions.

markets vendors could use the index to provide the market with additional averages as needed.

(3) *In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.*

While these tenors are the most widely used LIBOR tenors it may be helpful to include all of the LIBOR tenors (*e.g.* 7, 60, and 360 day averages) which may be used for cash products with similar interest periods.

(4) *Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?*

No, the decimal precision is appropriate and consistent with U.S. market convention.

(5) *Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?*

We recommend that the New York Fed publish a simple interest average expressed as an index as articulated in "A User's Guide to SOFR."[3] This is needed for systems that support products that utilize a simple average. Moreover, because many systems will need to support both compounded and simple averages, publishing only compounded averages will be of limited utility.

$$\textit{Simple Interest Formula} = \left[\sum_{i=1}^{d_b}\left(\frac{r_i \times n_i}{N}\right)\right] \times \frac{N}{d_c}$$

Where

d_b = the number of *business days* in the interest period

d_c = the number of *calendar days* in the interest period

r_i = the interest rate applicable on business day *i*

n_i = the number of calendar days for which rate r_i applies (on most days, n_i will be 1, but on a Friday it will generally be 3, and it will also be larger than 1 on the business day before a holiday). This can also be stated as the number of calendar days from and including business day *i* to but excluding the following business day.

N = the market convention for quoting the number of days in the year (in the United States, the convention for money markets is N = 360, while in the UK it is N=365).

And *i* represents a series of ordinal numbers representing each business day in the period.

[3] The Alternative Reference Rates Committee, A User's Guide to SOFR (2019), https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2019/Users_Guide_to_SOFR.pdf

(6) *Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index?*

Yes, the publication arrangements are appropriate to facilitate use of the averages. The publication of the compounded average rates should occur at the same time and on the same webpage as the New York Fed published SOFR.

Wells Fargo wishes to thank the New York Fed for the opportunity to provide comment on the proposed publication of SOFR Averages and a SOFR Index. We are happy to discuss our responses further or provide any additional information that may be helpful.

Thank you,

Wells Fargo

Chatham Financial

4 December 2019

Chatham Financial appreciates the efforts of the Federal Reserve Bank of New York to facilitate and promote the use of an alternative rate to USD LIBOR by proposing the publication of historic Secured Overnight Financing Rate ("SOFR") term rates in addition to the daily SOFR index.

Chatham Financial is the largest independent financial risk management advisory and technology firm. A leader in debt and derivative solutions, Chatham provides clients with access to in-depth knowledge, innovative tools, and an incomparable team of nearly 700 employees to help mitigate risks associated with interest rate, foreign currency, and commodity exposures. Founded in 1991, Chatham serves more than 3,000 companies across a wide range of industries — handling over $700 billion in transaction volume annually and helping businesses maximize their value in the capital markets, every day.

For more than two decades, Chatham has invested in creating proprietary models and independently gathering data to value debt and derivatives. Our best-in-class valuation models have been tested and reviewed by auditors from leading accounting firms, providing a thorough calculation of nonperformance risk for clients needing ASC 820 or IFRS 13 fair values. Chatham incorporates industry-leading modern CVA-DVA-FVA and OIS discounting techniques into valuation methodologies.

Chatham offers the following comments in response to the questions posted for public comment. Our comments reflect our orientation toward the interests and concerns of derivatives end users, the core constituency of our client base.

Question 1: Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?

Chatham believes the proposed calculation methodology, including the compounding approach, is appropriate for calculating the average values for the proposed SOFR indices.

Question 2: Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention? Does the SOFR index appropriately address the need for calculating flexible period averages?

There have been varied conventions used in SOFR issuances, and no single market consensus has emerged. Given that standard conventions are, however, established in USD LIBOR markets, Chatham believes that it would be reasonable to follow these standard conventions when possible. In the case of USD LIBOR, the modified following convention is most commonly used, is familiar to users, and therefore more likely to be broadly used in the market. Additionally, calendar-based structures (1-month, 3-month, or 6-month) would follow the most commonly used conventions in the current cash and derivatives markets. These conventions may lead to broader use of the published averages. If the modified following convention and calendar-based structures are used, disclosing the dates of the covered reference period with each published rate would add clarity for users of the indices.

Question 3: In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.

The proposed tenors appear to provide reasonable coverage for many potential users of the proposed average SOFR index. If new market demands arise as SOFR liquidity builds, the NYFRB should investigate the need to propose additional indices.

Question 4: Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?

The proposed fifth decimal place rounding convention for the SOFR average appears appropriate, aligns with the current decimal precision of LIBOR and also captures the precision of the daily SOFR index. Implementing this rounding convention will likely not require major changes to systems, and Chatham does not have any suggested changes to the rounding convention.

Question 5: Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?

As mentioned in the response to question 2, Chatham believes adding the dates of the covered reference period would add clarity to the index.

Question 6: Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index?

The proposed publication arrangements appear appropriate, and Chatham does not have any suggested changes to the publication arrangements.

Bank of Nova Scotia

Federal Reserve Bank of New York
Request for Comment on Proposed Publication of SOFR Averages and a SOFR Index

Bank of Nova Scotia Response
December 4, 2019

Questions

1. Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?

2. Are the proposed fixed 30, 90, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention? Does the SOFR index appropriately address the need for calculating flexible period averages?

3. In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.

4. Are there any changes to the proposed decimal precision for SOFR averages or index that should be considered?

5. Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?

6. Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index?

Answer

The Bank of Nova Scotia is generally supportive of the approach being proposed by the Federal Reserve Bank of New York in connection with the publication of SOFR averages and SOFR Index.

Our comments are reserved to the following:

In connection with Questions 2 and 3, we propose, and believe the market would benefit from, the calculation and publication of an additional 60 day tenor. Although not as widely used as other tenors being proposed, our view is that the availability of this additional tenor would be particularly useful to borrowers, providing them with a useful option when a 30 or 90 day tenor may not be suitable.

In addition, we support the methodology and parameters being proposed for the calculation of the averages and the index, provided that methodology is the same methodology being employed by ISDA to calculate compounded SOFR in arrears. Similarly, and in response to Questions 4 and 5, the decimal precision being proposed should be the same convention as the ISDA convention with respect to the use of decimal places. Our primary concern is that there is symmetry between conventions used in derivatives as in cash products.

Navient

Response to ARRC Consultation on Proposed Publication of SOFR Averages and a SOFR Index

Navient Solutions, LLC
December 4, 2019

We are well aligned with the ARRC's proposed publication of SOFR averages and a SOFR index; our comments are related to issues that impact day to day operations where we use USD LIBOR. With regard to SOFR fixings, we do not find issue with the calculation methodology of either SOFR compound average, or the setting of the index, which is broadly consistent with derivative index calculations. It is our hope that as a credit adjustment is developed, it is done so as a spread to one published rate or the other; we believe that having two sets of spread adjusted rates could add unnecessary complexity. Indeed, in order to reduce litigation risk, we advocate having one SOFR rate calculation (e.g. 30-day average SOFR plus a credit spread adjustment) for each tenor of USD LIBOR to be recommended as an equivalent. We find that the 30, 90, and 180-day tenors are adequate, based on currently available information; unfortunately, our systems, which are hosted by third party vendors, cannot process more than 6 decimals at this time and we are in contact with these vendors to encourage the enhancement of their product to accommodate more. In our view, a publication time that is earlier will provide more operational flexibility, and a setting as early as 7:00 AM New York time could add value; 8:00 AM New York time is adequate for our institution. We will continue to consider the impact of these, and similar variables, on our institution and its ability to participate in the SOFR market.

MetLife

Comments submitted to: *rateproduction@ny.frb.org*

Federal Reserve Bank of New York
33 Liberty Street
New York, NY 10045

December 4, 2019

Re: Statement Requesting Public Comment on a Proposed Publication of SOFR Averages and a SOFR Index

Dear Sir or Madam:

MetLife appreciates the opportunity to comment on the Federal Reserve Bank of New York's ("FRBNY") proposal to publish a SOFR index and three compounded averages of SOFR with tenors of 30-, 90-, and 180-calendar days on a daily basis, and recognizes that publication of a SOFR index and compounded averages by an authoritative source benefits all market participants and facilitates the transition to SOFR as an alternative reference rate. MetLife supports this proposal subject to the following comments:

1. MetLife agrees with the proposed methodology for calculating the index and averages. However, MetLife does not believe that the FRBNY should publish 30, 90 and 180 day tenor averages due to the day count differences for market convention accrual periods represented by 1 Month, 3 Month and 6 Month averages. Market participant reliance on 30, 90 and 180 day tenor average calculations for generating payments could lead to confusion and payment errors. Alternatively, we support the publication of only the SOFR Index; which can be used by market participants to determine the correct SOFR average for an applicable payment date by applying ratio of the indices on the Accrual End Date and Accrual Start Date.

2. In order to minimize the impact of rounding errors, the FRBNY should consider extending decimals to 10 digits for the SOFR Index, and to the extent that the FRBNY publishes the tenor averages, 8 digits.

3. MetLife believes that the FRBNY should promote consistency between the cash and derivatives markets in the transition to SOFR as an alternative reference rate. The use of compounded averages as a standard market convention serves to facilitate harmonization across asset classes. However, the publication of simple averages may cause divergences across such asset classes and ultimately create basis risk. Accordingly, we believe that only the publication of compounded averages is appropriate.

4. MetLife agrees that the proposed publication arrangements are appropriate for facilitating use of the index.

Once again, we thank you for the opportunity to comment on this important market initiative. Please contact me with any questions or comments.

With kind regards,

Kevin M. Budd
Vice President and Associate General Counsel

BMO

December 4, 2019

The Federal Reserve Bank of New York (NY Fed)

Via email submission to: rateproduction@ny.frb.org

Re: Consultation Response – Statement Requesting Public Comment on a Proposed Publication of SOFR Averages and a SOFR Index

Bank of Montreal ("BMO") welcomes the opportunity to respond to the NY Fed's request for public comment on the proposed publication of SOFR averages and a SOFR index. BMO recognizes the need to finalize the details for SOFR publication in order to support a successful transition away from USD LIBOR. Our responses are as follows:

Question 1: Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?

Response: BMO has no issues with the proposed calculation methodology and agrees that the compounding is the right approach as it is the most realistic. What is missing is not that there is no term rate, (as that can be calculated) but the lack of a forward rate. The missing forward looking curve is problematic.

Question 2: Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention? Does the SOFR index appropriately address the need for calculating flexible period averages?

Response:

The Modified Previous day count convention is used for groups at BMO. This allows for activity to be contained within the quarter. BMO also sees value in having a Simple Average Rate published that does not rely on compounding. Some early adopters of SOFR in the loan market are starting to use this convention in the absence of more sophisticated market standard conventions. BMO Capital Markets also thinks that 1Y would be helpful to other markets. Day count convention should follow the conventions in the swap market preferably whereas it looks like repo conventions are trying to be copied.

Question 3: In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.

Response: Some areas within BMO would like to see additional tenors published for: 1 week (7 days), 2 Months (60 days), 4 Months (120 days), 5 Months (150 days), and 1 year (365 days). The 1 year tenor sees particular value for Adjustable Rate Mortgage (ARM) products as this is the traditional tenor that has been used. Whereas BMO Capital Markets has suggested the tenors available match the tenors currently found in LIBOR excluding one week and possibly 2 Months as they are not commonly utilized.

Question 4: Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?

Response: To minimize system impacts, BMO recommends keeping both the averages and the index at 5 decimal places as there is minimal value realized in the precision improvement of having 8 decimal places.

Question 5: Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?

Response: BMO sees value in making a calculator tool available to calculate custom Averages as well Index values. For example, some variables that could be available for configuration include: Day count convention, Holiday Calendars, Compounding / Simple Interest selection, and Lookback, & lock out indicators. In addition, BMO Capital Markets also suggests the development for a forward looking rate with the same tenor and same methodology.

Question 6: Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index?

Response: Yes, BMO agrees that the proposed dates and times are acceptable.

National Australia Bank and Bank of New Zealand

Comments from National Australia Bank and Bank of New Zealand on the proposed publication of SOFR averages and a SOFR Index

Introduction

NAB and BNZ welcome the opportunity to provide (proposed published benchmarks).

We see the publication of the proposed benchmarks as a critical step in a successful transition way from US dollar LIBOR. There is currently a lack of clear consensus for conventions governing the use of SOFR in-arrears approaches for cash based lending, FRN and derivative products. The lack of consistency across products, affecting organisations like ours that are funding in USD, is likely one of the reasons the necessary liquidity in these products has not evolved.

Our own investigation into the application of in-arrears approaches to SOFR product has identified differences that arise between simple lookback and observation shifted lookback approaches. On balance, NAB and BNZ hold a preference for an observation shifted approach and note that such an approach is embedded in the proposed ISDA approach to fallback. However, the observation shift approach is more difficult to explain to customers and embed into contracts

We note that the use of proposed published benchmarks on a T-2 rate reset lag basis has the effect of achieving an observation shift outcome. However, this shift outcome would be achieved in a simplified manner, both from a system and contractual perspective. The published benchmark would also provide a degree of transparency to the process that would be beneficial to issuers, investors, and derivative participants alike.

Further, we believe the T-2 rate reset lag is the minimum shift given the challenges around settlements with global timeline differences. However, consistency across products with respect to the number of days lag will also be required if cash instruments are going to be effectively hedged in the future.

Finally, NAB and BNZ ***strongly suggest the ARRC recommend the use of the proposed published benchmarks, with a T-2 rate set lag, for cash lending, FRN, Cross Currency Swaps and conventional Interest Rate Swaps (USD IRS) alike***. The inclusion of all products in this manner would ensure a degree of much needed consistency across product. ***We believe that this is a critical component if effective cashflow based hedging and payments is to occur for global flows***. This level of homogeneity exists across existing LIBOR product and we see the replication of this feature as a critical element in the provision of SOFR liquidity going forward.

In addition, we have recognised that there are issues correctly calculating accrued interest intra-period for cash based product when the number of days in the observation period differs from that of the interest period. For example, it is possible for the interest period to start ahead of the observations period, even with a day lag in effect. In this situation it is not possible to calculate an accrual for these days. This will impact both the ability to trade the product and presents significant systems issues.

Given BNZ usage, where interest periods are predominantly calculated on a calendar month, modified following basis, we feel that the proposed methodology will exacerbate the number of instances where this impact is evident.

Specific answers to the consultation follow

Questions for Public Comment

Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?

Yes – the proposed calculation methodology is appropriate for the calculation of the proposed benchmarks.

We have confirmed the averages and the application of the index agrees with our own internal calculations.

Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention? Does the SOFR index appropriately address the need for calculating flexible period averages?

Proposed Fixings

We note that there is a range of conventions currently being discussed that result in the different observation and interest period tenors. Given current product usage, the strict application of 30, 90 and 180-day tenors as proposed, would almost certainly guarantee the interest and observation period would differ. Whilst this is not ideal, the proposed 30, 90, and 180-day published tenors will provide much needed consistency and transparency of approach.

We note that the existing LIBOR framework assumes the index is aligned to an underlying interest period. However, contracts containing different interest periods might reference the same LIBOR benchmark on any given day. Therefore, the replication of transparency currently embedded within LIBOR is a key feature of the overall proposal

A concern with the current proposal is the application of the index calculation when the start date is a weekend or holiday. The forced usage of the Friday rate from a Saturday or Sunday is inconsistent with the compounding approach. The result is that whilst the index could be used to replicate the published average on days where both the start and end are good business days, this is not the case in instances where the start date is a weekend.

From a systems perspective, this creates an added degree of complexity when forecasting future interest cashflows. As per our opening statement this also causes a lack of consistency between FRN and loan markets to derivatives unless uniform use of the index is used across these products.

Preferred Fixings

NAB and BNZ preference would be for the adoption of a 1, 3, and 6-month average process. We would see this as being based on full calendar months, with the start date being determined on a ***modified preceding*** basis.

For example, a 3-month SOFR Average for the 14th of December would, given the 14th of September is a weekend, compound from the 13th of September. This would increase the day count within the period by one day and align the observation period with the likely actual interest period for that cashflow.

As discussed in the consultation, we note that interest periods referencing any given index do not always align. This approach is potentially problematic at month-end, especially when the end month has fewer days than that of the starting month. This is particularly evident on the value date of the 28th of February. However, we note that to some extent this phenomenon exists currently, and would propose a similar month-end to month-end approach be adopted.

We see the number of instances where this day count mismatch may occur as being far fewer than that resulting from the weekend effect embedded in the current proposal.

Our preference for this methodology is that the observation period will likely be more closely aligned to the actual corresponding interest period. Although we do note that given potential likely T-2 usage of the benchmark average this may not always be the case.

SOFR Index Usage

The SOFR Index as proposed does sufficiently meet the need for calculating flexible interest periods.

To this end, the index could effectively be used to calculate the yield across the actual interest periods detailed above. However, in doing so both the observation-start and end-date would need to be offset on a t-2 basis to ensure settlement requirements. This small, but additional calculation complexity means this would be less desirable for interest periods approximating the average. i.e. 92 days vs. the 90-day published benchmark.

We do believe that the index would be used in place of existing situations where an interpolation between existing LIBOR indexes is required.

In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.

NAB and BNZ believe that the proposed tenors, supplemented with the provision of the index is sufficient

Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?

NAB and BNZ have no concerns or further comment.

Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?

NAB and BNZ has no further concerns to those as already outlined above

Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index?

The proposed publication times are appropriate.

NAB and BNZ acknowledge that the last rate required to calculate the index is the previous days overnight SOFR rate. As such the averages and index will have the same value and publishing date. However, given BNZ's domicile time zone (GMT+13), we note that these new benchmarks will published after standard New Zealand business hours. This will necessitate the need to the proposed benchmarks on a T-2 (minimum) rate reset basis to ensure timely settlement.

This requirement is identical in nature to the ISDA requirement for the provision of fall backs. NAB and BNZ would recommend the ARRC recommend use of these benchmarks on a T-2 rate reset basis.

Deutsche Bank

Deutsche Bank Response to Questions for Public Comment

1. **Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?**

    - As the methodology is line with current calculations utilized by the Fed for EFFR, it is appropriate to use that methodology for SOFR based calculations. This will create consistency for market participants.

2. **Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention? Does the SOFR index appropriately address the need for calculating flexible period averages?**
    - The publication of compounded averages will only be useful to the extent a Compounded in Advance Convention is applied to a loan (e.g. last 30 day compound average is applied to this accrual period).

    - The publication of these averages & index will allow for market transparency, as there will be a source that allows for verification by any industry participant.

    - However, the published averages will not help lenders or other market participants to calculate accrual calculations each day correctly. Daily SOFR will need to be consumed by systems in order to enable compounding calculations given the bespoke time periods needed to accommodate a given loan contract, and given that the notional balance on a loan could change intra-period.

    - To the extent the averages are used to price a product using a Compound in Advance Convention, 90 and 180 day conventions are less likely to be used in the market given that they are furthest removed from current market conditions

    - The SOFR Index addresses the need to capture flexible averaging periods. However, depending on how a rate is applied to a loan, the SOFR Index may also cause confusion as it is not the actual rate that may apply to a given loan where there is a pre-payment intra-period.

3. It**In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.**
    - **No**
4. **Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?**
    - **No**
5. **Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?**
    - It may be useful to publish a Simple Average of SOFR given the reality that systems are better able to handle this convention today across the market.

    - This would also be useful given that residential ARMs are expected to use a Simple Average of SOFR in Advance to the extent there is no Term SOFR.

    - If this is published, it may help the market move to SOFR sooner while systems are upgraded to handle compounding in parallel.

6. **Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index?**
    - It is important to raise awareness with respect to how the compounded averages are to apply to a given product. For instance, for loans, there is not yet clarity on whether daily effective SOFR is to be applied to Principal + Accumulated Unpaid Interest on a given loan per accrual period OR whether to apply a calculated compounded rate to the principal of the loan. The compounding averages may be useful for the latter; however, they may cause confusion if the former convention takes off in the market

As it relates to compounding & business days;

- Please consider compounding interest rates over Nonbusiness Days (similar to Business Days) rather than using a method of accrual resembling simple interest (for example, consider using Friday's rate to compound over Saturday and Sunday).

- Please consider compounding interest rates on the Business Day preceding a Nonbusiness Day (for example, on Friday) to maintain consistency with other Business Days.

    - For 1 and 2, if traditional compounded interest is abandoned on such days, there is a start-day anomaly leading to odd results for borrowers borrowing at the beginning of the week vs. late in the week. The same anomaly applies to loan buyers purchasing at the beginning of the week vs. late in the week. We understand that this anomaly is not present under the OIS convention.

- If 1 and 2 are not possible, please use the same conventions for Nonbusiness Days and Business Days preceding Nonbusiness Days when calculating Spread Adjustments based on historical data (please use the method of accrual resembling simple interest over weekends and holidays detailed in the Consultation when comparing historical compounded SOFR with LIBOR).
    - We request this so that the spread adjustment calculated based on historical compounded SOFR is not lower than what is necessary to equate compounded SOFR, as calculated using the suggested conventions in the Consultation, with LIBOR.

Bank of America

December 5, 2019

Correspondence delivered electronically to: **rateproduction@ny.frb.org**

Federal Reserve Bank of New York
33 Liberty Street
New York, NY 10045

Re: Comment on Proposed Publication of SOFR Averages and a SOFR Index

Dear Madam or Sir,

Bank of America ("BofA") is pleased to submit comments regarding the Federal Reserve Bank of New York's ("FRBNY") proposal to publish a SOFR index and three compounded averages of the SOFR with tenors of 30-, 90-, and 180-calendar days on a daily basis.[1]Having reviewed the proposal, BofA supports its objective and believes its implementation would further assist the meaningful progress being made on LIBOR transition.

BofA believes that that the publication of SOFR averages and index by FRBNY would be useful across products and for different types of market participants. BofA anticipates that this publication would be particularly beneficial to smaller market participants, who may not have the resources to build and maintain their own compounding and indexing tools. BofA will continue to evaluate whether to also maintain SOFR compounding and indexing algorithms for our own systems in parallel to the capabilities envisioned in the proposal.

With respect to the individual questions for which the FRBNY is soliciting feedback, BofA wishes to offer the following responses:

1) *Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?*

   BofA finds the proposed calculation methodology appropriate.

2) *Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention? Does the SOFR index appropriately address the need for calculating flexible period averages?*

   The proposed fixed tenor convention is acceptable, and appropriately addresses the need for calculating flexible period averages.

3) *In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.*

---

[1] Available at this URL: https://www.newyorkfed.org/markets/opolicy/operating_policy_191104

BofA would suggest further consideration of an additional 360 day (1 year) tenor, as the tenor is currently used in certain product offerings. For example, BofA notes that Adjustable Rate Mortgages (ARMs) currently reference 1 year LIBOR.

4) *Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?*

   BofA recognizes the need to balance precision with operational efficiency and systems capabilities. BofA notes that while the proposed 8 decimal place precision for the index results in small differences over small notional amounts, our firm's simulations resulted in smaller rounding errors when another decimal place was added to the index; i.e. X.XXXXXXXXX, or 9 decimal places.

5) *Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?*

   BofA does not suggest any proposed changes. However, clarification from FRBNY on two points would be beneficial to our understanding of the methodology:

   a. BofA assumes that when a published FRB SOFR average containing 5 decimal places is used to calculate a payment, the value would be divided by 100 first (X.XXXXX is published but 0.0XXXXXX is used for payment calculations). This suggests that the actual precision is 7 decimal places (0.0XXXXXX), as is the convention in the derivatives market. On the other hand, BofA is of the understanding per the consultation that the published FRB Index containing 8 decimal places would be the rate directly applied to calculate payments. This would imply a difference of 1 decimal point in precision between the two methodologies instead of 3. BofA wishes to confirm whether this understanding is correct.
   b. BofA wishes to confirm whether in practice and internally at FRBNY, the index value would be recalculated i) from inception every day (i.e. a growing value) or ii) calculated day-to-day by using the previous day's published index value.

6) *Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index?*

   Yes, BofA believes that the proposed publications arrangements for SOFR averages and the index are appropriate to encourage further adoption of SOFR.

Thank you for the opportunity to share BofA's perspectives on these questions. Please do not hesitate to contact me for further discussion.

Yours sincerely,

Sonali Theisen
Managing Director, Head of Fixed Income Market Structure & E-Trading
Bank of America

Murisq

Madame, Sir,

I read with interest the Proposed Publication of SOFR Averages and a SOFR Index as described on your website at https://www.newyorkfed.org/markets/opolicy/operating_policy_191104

SOFR Averages

In general, I consider that the publication of official numbers related to payments to be made by end users in financial markets is to be encouraged. In the context of the transition of some financial products to more usage of overnight rates, proposing a ready made composition / average would be beneficial in certain circumstances.

Unfortunately the proposed 30, 90, 180-day periods do not correspond to any existing or planned financial product (except in unlikely cases when 1, 3 or 6 month exactly cover that round number of days). The introduction of averages published by an official institution but that do not cover exactly and in all circumstances the requirements of the users can only create unnecessary confusion and frustration. It would delay the acceptance of the compounded SOFR as a natural mechanism; many disagreements on the amount to be paid will be born from the proposed NY Fed SOFR Averages publication. End users may rely on the published numbers while their contract specifies something different. In the format proposed, the publication of those SOFR Averages appears a useless and even unnecessarily confusing mechanism.

As described above, the publication of averages not corresponding to market periods by itself appears superfluous, moreover the methodology seems arbitrary and not corresponding to any market standard or economic principle. In particular, the proposal states "Simple interest would apply to any day that is not a business day, at a rate of interest equal to the SOFR value for the last available business day." To my understanding, that means that if a 30, 90 or 180-day period start on a non-good business day, a simple interest would be used for that specific day, even if the market rate is for a different (longer) period. Even the idea of an interest rate starting on non-good business days does not incite to take the proposed number seriously. On the rate convention side, the simple rate used in financial markets is a quotation mechanism, not an economic principle. Most of the processes around the overnight transition is to use the natural and economically justified notion of accumulation of interest by composition. The notion that part of the interest would be accumulated on a non-compounding mechanism (simple interest) appears to negate the foundation of the composition as the foundation of the SOFR Average proposed.

The request for comments asks about other convention than the one currently proposed by the NY Fed. To my opinion, the only average numbers that would be useful are the one coming from standard periods (1, 3 and 6 month) using standard market conventions (modified following) and taking into account the different mechanisms that lead to those periods - a stand alone x-month period is not necessarily the same as a x-month period in a periodic schedule like a swap. To be useful, the average should be published on the standard periods and for all of them. This would potentially include, for one tenor, several periods with the same end date and several periods with the same start date.

The published text on the NY Fed website does not contains a single example where the published number could be used. On my side, I have not found any situation where the proposed SOFR Average could be of interest for any end user.

SOFR Index

The SOFR Index is a more interesting proposal than the SOFR Average in its currently proposed form. From the theoretical index, one could recompute the rate on any period with two divisions while the computation of the rate on a 3-month period typically require around 2x60 multiplications.

One issue will be the precision (number of decimals). As noted on the document, the rounding may lead to a difference in computed interest in some cases. The monetary value of such discrepancy is small but still exists. This would mean that when doing the reconciliation with a counterpaty, one may find a discrepancy because one party uses the Index and the other one uses the actual precise composition mechanism. This discrepancy will probably lead to investigation and a reconciliation procedure that itself will be more time consuming and costly that any advantage one would have in using the Index. Also it would mean that the institution using the index would need to store two time series with essentially the same information: the original SOFR fixing and the derived SOFR Index. This in turn could lead to further technical issues if the two are not fully aligned all the time.

In a financial institution, I would advice for not using the NY Fed published SOFR Index for actual payments in order to make sure that the small discrepancies are not creating issues with clients or counterparties. Such an index may be used internally to speed up some computation, but if this low level improvements is required by a financial institution, it is expected that it can create the index itself and probably improve it by removing the arbitrary rounding at the 8th decimal place by using the precision of their data base/computer language.

For the proposed SOFR Index, it would be interesting to have some examples of application by financial institution or end users.

Regards,

--

Marc Henrard

SBA

This email provides comments on the proposal dated November 4 2019 to publish, in cooperation with the Treasury Department's Office of Financial Research (OFR), three compounded averages of the Secured Overnight Financing Rate (SOFR), along with a daily SOFR Index. I appreciate the work extended in this exercise and would like to address comments that are germane to SBA's 7(a) Loan Program.

In reference to the question:

Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?

Yes, the compounding approach makes sense.

In reference to the question:

Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose?

LIBOR is a rate priced for the use of funds on an unsecured basis. This works well for overnight lending, or for derivatives trading, but doesn't work as a reasonable benchmark for secured longer term instruments. SOFR is designated as an overnight repurchase rate based on actual secured rate transactions. This removes the theoretical mismatch of using a base rate from unsecured credit offerings to price a secured lending instrument. The certainty of actual transaction data to establish SOFR is alluring, however with that same certainty comes the primary use of the secured overnight rate.

Repurchase agreements are financing vehicles widely used for investment hedging or for enhanced yield opportunities. SOFR's use for this market seems reasonable. If used, however, in other capital market transactions, the averages will include the observed volatility witnessed in end of quarter and end of year trading.

When pricing longer-term lending instruments,

Smoothing the volatility with compounded averages will mitigate the swings, but it may make sense to construct the averages on a time-delayed basis when the data becomes more static and less sensitive to near term trading activity.

Anonymous 1

You might want to use 10 instead of 8 decimal places. Otherwise the calculation might not be precise, in case you calculate the SOFR averages for a very short tenor.

I have a further comment. You could review if there is a preference to have SOFR Averages (not the Index) also available on non-business days. You already include a convention in case the start date is not a business day. So it would be straightforward to use the same convention also for the end date. Those could be published on the following business day.

Anonymous 2

Consultation on Proposed SOFR Averages and SOFR Index

Questions and responses:
1. Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?

Response: Yes, the proposed methodology seems reasonable.

2. Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention? Does the SOFR index appropriately address the need for calculating flexible period averages?

Response: We recommend using conventions such as “3 months” (which could be “unadjusted” to match bond market conventions) rather than “90 days” given that the derivatives market does not trade with reference to calendar days. Introducing a mismatch between cash and derivatives conventions would be undesirable.

3. In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.

Response: It would also be beneficial to have 9 and 12 month averages respectively, given cash markets transact in these tenors.

4. Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?

Response: We recommend that the Fed share a sensitivity analysis with market participants, since rounding index values before calculating averages instead of applying the compounding conventions to the unrounded values could lead to a mathematical basis. We also propose that raw (unrounded) index values be used for the calculation of the averages regardless of whether the index is published on a rounded basis.

5. Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?

Response: N/A

6. Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index?

Response: We recommend aligning the publication date across the spot SOFR fix, average SOFR fix and the SOFR index to prevent any unintended confusion in the market. For example, it would be confusing to have an index value published for “today” when there would be no such SOFR fixing available.

Anonymous 3

- Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?
  The proposed calculation methodology [redacted] view provides reasonable framework for calculating the averages and index.

- Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention?
  [redacted] preference is to follow LIBOR 1m, 3m and 6m conventions, acknowledging the expected differences with fixed 30, 90 and 180 day tenors respectively.

- Does the SOFR index appropriately address the need for calculating flexible period averages?
  Yes

- In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.
  [redacted] view is to consider for publication the following tenors - 1m, 2m, 3m, 6m and 12m LIBOR indices. With 1m, 3m, and 6m being the most critical and widely used across multiple products, followed by 12m and 2m (actively used today and is important ongoing in financing markets).

- Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?
  No

- Are there any other changes to the averages or index as proposed that would make them more useful?
  In addition to compounded averages, [redacted] view is that it will be beneficial to have forward looking term rates as well.

- For what purpose(s)?
  [redacted] view is that a forward looking SOFR term rate could ease the transition for many market participants who operationally and otherwise, want a rate that mechanically behaves the way Libor does today.

- Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index?
  Yes

Anonymous 4

Dear Sir/Madam,

Thank you for the opportunity to comment on the Proposed Publication of SOFR Averages and a SOFR Index by the Federal Reserve Bank of New York in cooperation with the Treasury Department's Office of Financial Research.

Before responding to the questions raised in this consultation, we would like to highlight some important **loan market** points that are relevant context:

- The loan market has intrinsic features (for example, changes in principal amount due to prepayments during an interest period) that need to be accommodated in the compounding methodology ultimately adopted by the loan market
    - The compounding methodologies proposed to produce the SOFR Averages and SOFR Index may not be appropriate, especially in the context of a 'Compounded in Arrears' approach that is expected to be required for the loan market
    - There are ongoing discussions involving the ARRC Business Loans Working Group, vendors and loan market stakeholders to determine an appropriate and operationally robust compounding methodology for the loan market
    - Whilst there is no direct impact from the production of SOFR Averages and a SOFR Index as proposed, we believe there is merit in establishing the compounding methodology and conventions for 'Compounded in Arrears' for the loan market in advance of the production of SOFR Averages and SOFR Index so there is clarity on the approach for the loan market and minimal potential confusion over multiple compounding methodologies

- Specifically, it is worth noting:
    - the SOFR Index may present complications from a loan market perspective unless it can be viewed by the loan market as the compounded daily rate on a daily basis (i.e. today's Index rate relative to yesterday's Index rate); in light of potential complications with changes in the principal amount of loans as a result of prepayments during interest periods (as flagged above) or loan trading, calculations during a loan interest period need to be correct for loans to avoid confusion.

In addressing the specific questions raised, aside from the loan market context (i.e. the SOFR Averages and SOFR Index may not be appropriate for the loan market), the methodology and conventions proposed in the Statement seem prima facie logical and acceptable:

- The compounding approach is appropriate for calculating the averages and index as proposed
- We do not have a strong view on the tenors for the SOFR Averages or on any need for additional tenors. Fixed 30-, 90- and 180-day tenors should provide consistency; the SOFR Index facilitates the ability to calculate flexible averages which could be helpful in parts of the market which typically use 1, 3 or 6 month tenors or where rates for parts of a month are required
- The proposed decimal precision for the SOFR looks appropriate
- The proposed publication arrangements, including publication dates and times, look appropriate

Thank you once again for the opportunity to comment. We look forward to the outcome of the consultation.

Anonymous 5

Question 1: Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?	Yes, we support the publication of a daily SOFR index and the proposed calculation methodology. This will enable market participants to figure out interest due on their products and help them to monitor the approximate level of any final interest payment in the days before a payment is due.
Question 2: Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention? Does the SOFR index appropriately address the need for calculating flexible period averages?	No, we prefer the modified following adjusted 1M, 3M and 6M rates rather than exact 30, 90 and 180 day look backs as this is market standard. Also this makes the calculation much simpler with no starting dates happening on holidays and/or weekends using the index.
Question 3: In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.	We felt that any rates beyond 6M are quite unusable due to the significant lookback period while shorter tenors may be more useful, i.e. 1 or 2 week tenors. However it is unclear how these shorter tenor could be used at this stage.
Question 4: Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?	For complete accuracy and transparency, one consideration might be pushing the precision of the SOFR index from 8 to 10 decimals which would help with the small rounding discrepancies. To reduce the differences noted previously in the consultation, the precision of the SOFR averages should be published as percentages rounded to the 6 instead of 5 decimal.
Question 5: Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?	As indicated in question 2 above we prefer the modified following adjusted 1M, 3M and 6M rates. The exact 30, 90 and 180 day periods could be problematic if a start date is a holiday or weekend as it will not appear in the index.

Question 6: Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index?	Yes, we generally support the proposed publication time though the earlier in the day would be more preferable.

Anonymous 6

- Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?
  We find the calculation method appropriate.

- Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30, 90-, or 180-day count) or some other convention? Does the SOFR index appropriately address the need for calculating flexible period averages?
  Given the use is designed for the cash market, we do not find it necessary to alter the calculation methodology to follow a modified following convention.

- In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.
  No, 30, 60, 90 days are sufficient as it most closely replicates a "libor look-a-like".

- Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?
  No changes.

- Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?
  No, however, it is our view that this calculation only serves to simply the arithmetic for a segment of users that are perhaps less sophisticated. It does not solve the larger issue of a lack of a forward looking term rate. We do not believe this adds significant inertia to SOFR's adoption.

- Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index?
  Yes.

Anonymous 7

Fed Consultation: Proposed SOFR Averages and a SOFR Index	
Question	**Answer**
Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?	Yes the proposed methodology is appropriate. The methodology follows the same conventions as the daily compounding averages in the OIS market.
Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention? Does the SOFR index appropriately address the need for calculating flexible period averages?	The proposed 30-, 90-, and 180-day tenors for the SOFR averages are appropriate
In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.	The fed should consider the below additional tenors as they are consistent with what is available for LIBOR currently: - 7-day tenor - 60-day tenor - 365-day tenor
Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?	We do not propose any changes to the decimal precision as the proposed is consistent with the level of granularity currently available
Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?	No
Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index?	Yes, the proposed publication dates and times are appropriate.

Anonymous 8

Date: December 4, 2019

Submitted Electronically to: rateproduction@ny.frb.org

Federal Reserve Bank of New York
33 Liberty Street
New York, NY 10045

Re: Request for Comment Response – Proposed Publication of SOFR Averages and a SOFR Index

Below please find responses provided by [REDACTED] and its affiliates (collectively, "**[REDACTED]**") regarding the Federal Reserve Bank of New York's (**"FRBNY"**) Statement Requesting Public Comment on a Proposed Publication of SOFR Averages and a SOFR Index, published on November 4, 2019 (the "**Request for Comment**"). Capitalized terms used and not defined herein shall have the meanings set forth in the Request for Comment.

[REDACTED] submits the enclosed responses to the Request for Comment ("**[REDACTED]'s Response**") at the request of the FRBNY.

[REDACTED] requests that the FRBNY, and any parties acting on behalf of the FRBNY in connection with the Request for Comment, anonymize [REDACTED]'s Response such that no attribution to [REDACTED] may be made by any party other than the FRBNY and its legal advisors for purposes of the Request for Comment. [REDACTED]'s Response may include details regarding the business plans and internal business processes of [REDACTED]. This information has not been made available to the public. Disclosure or use of this information in any manner that is not authorized in writing by [REDACTED] may result in substantial competitive harm to [REDACTED].

[REDACTED]'s response to the questions in the Request for Comment are as follows:

Question #1

Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?

[REDACTED] generally agrees with the proposed calculation methodology for the SOFR averages. However, as discussed in more detail below, [REDACTED] believes that the rounding convention for the SOFR index be changed to the fifth decimal place so the mathematic calculation performed by market participants using the index will be equivalent to the published SOFR averages. Such mathematical equivalence is especially important for large loans, loans with embedded interest rate hedging vehicles and loans and other cash products that are prepaid in between interest reset dates.

Question #2

(a) Are the proposed fixed 30-, 90-, or 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention?

[REDACTED] believes that the published averages should follow a modified following convention. A modified following convention allows cash products and their embedded interest rate hedging vehicles to arrive at the same overall rate when covering the same start and end dates. It is also consistent with the current market conventions around calculation of LIBOR and we believe that this type of consistency will be helpful as the market adjusts to all of the necessary changes associated with adopting replacement benchmarks. [REDACTED] is also uncertain how the 30-, 90-, or 180-day tenors would be applied in the absence of a modified following convention if the start date of an interest period falls on a weekend or holiday and the rate from the preceding business day is used for the number of weekend or holiday days initially included in such period.

(b) Does the SOFR index appropriately address the need for calculating flexible period averages?

Although a published SOFR index will address some of the needs of the market related to flexible period averages, for lending products particularly, [REDACTED] believes that simply publishing the averages and the index is not sufficient. The FRBNY or the Alternative Reference Rates Committee (the "ARRC") should consider publishing recommended conventions as well as a detailed user's guide on a public website concurrently with the publication of the SOFR Averages and the SOFR index that will give guidance to the markets as to how the SOFR averages and index can be used by market participants to calculate the interest payable on SOFR-indexed products. Market participants that are less involved in the LIBOR transition process need to understand that the published SOFR averages and the SOFR index are only one part of the systemic and market changes that need to be made to convert from LIBOR-indexed products to SOFR-indexed products. In [REDACTED]'s view, clear messaging from the FRBNY and/or the ARRC on this point is key to a smooth market transition to SOFR-indexed products.

Based on [REDACTED]'s observations at the ARRC Business Loans Operations Vendor Whiteboard Sessions, loan market participants have found it extremely challenging to agree on conventions for calculating and applying SOFR to loans due to the diversity of requirements for existing lending products. Availability of recommended conventions, a detailed user's guide and/or a calculator with embedded conventions could limit potential lender-borrower disputes and disruptions in secondary loan market transactions. A calculator with embedded conventions would be especially helpful for borrowers as well as financial institutions that have operational and technological challenges in adopting SOFR. Some issues that the FRBNY or the ARRC could address in a user's guide could include (i) how to address implementing zero floor language for SOFR when using the SOFR averages or index and (ii) the ways lookback and lockout periods can (or cannot) be used with the published averages and index.

We also believe that publication of recommended market conventions and a user's guide will be valuable to other cash products such as FRNs and securitizations. This could result in faster market uptake of SOFR-indexed products.

Finally, [REDACTED] believes that there are public policy benefits to consistent calculation of replacement benchmarks and the FRBNY and/or the ARRC are in a unique position to identify with specificity the components necessary to calculate a replacement interest rate using the SOFR averages and index.

Question #3

(a) In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.

We do not believe that publication of any additional tenors is necessary. However, as discussed above, we do believe that publication of recommended market conventions for application of the published averages as well as a detailed user's guide will be extremely beneficial for the cash product markets and accelerate the market uptake of SOFR-indexed products.

Question #4

Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?

Yes. As stated above, [REDACTED] requests that the same rounding convention (the fifth decimal place) apply to both averages and index. One of the potential use-cases for the index is to calculate interest due on a loan in the event of a prepayment made in the middle of an interest period. If the index does not use the same rounding convention as the published averages, it may be difficult to use the index to calculate interest for the stub period for the final interest payment.

Question #5

Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?

As discussed above, [REDACTED] believes that the FRBNY or the ARRC consider publishing a comprehensive user's guide for the averages and index on a public website. Such a user's guide could also provide more clarity on potential use-cases for the SOFR index. Further, as stated above, a calculator with embedded conventions on a public website will assist a broader market to test the SOFR index and facilitate a quicker adoption of SOFR-indexed products.

In addition, [REDACTED] believes that it would be helpful for the FRBNY or the ARRC to provide updated guidance on whether the over-the-counter derivative market is free to use any iteration of SOFR in derivatives contracts (including overnight SOFR, compounded SOFR in arrears, simple average SOFR, term SOFR, SOFR averages, SOFR index for customized tenor or other types of SOFR as they evolve) as opposed to simply overnight SOFR. Past public statements by the ARRC have given the impression that the over-the-counter derivatives market should only use overnight SOFR as the replacement benchmark for U.S. dollar LIBOR. Revised affirmative guidance should allow the over-the-counter derivatives market to adopt, on a contract-by-contract basis, the specific type of SOFR rate referenced in the financial instrument for which such derivatives provide hedging protections.

Question #6

Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index?

It would be helpful to get additional clarity on the following phrase from the Request for Comment: "be published each business day that is not broadly recognized as a holiday for secondary market trading of US government securities" that is used in the Request for Comment Does this mean that the averages and index are to be published for any day that SOFR is published? It is our view that the same business day convention should apply to all published SOFR rates. Further, it would be helpful to have some guidance on how a same-day revision of SOFR (at approximately 2:30 p.m. ET) would impact the calculation of the averages and the application of the index if the FRBNY revises SOFR on the last day of a tenor. As stated above, published and publicly available recommended conventions covering the date/time conventions would be helpful for avoiding disputes among interested parties.

Thank you for considering [REDACTED]'s Response in connection with the Request for Comment. We welcome any feedback and/or questions regarding the substance or format of our submission. Please direct any questions regarding this submission to the undersigned.

Best regards,

[REDACTED]
[REDACTED]

Phone: [REDACTED]
Email: [REDACTED]

* * * * *

[REDACTED] *("[REDACTED]") requests confidential treatment for this material including all exhibits, ("Confidential Information"), which contains confidential information concerning the business plans and internal business processes of [REDACTED]. This information is not available to the public and is exempt from disclosure under the Freedom of Information Act (5 U.S.C.§552(b)(4)), and related regulations promulgated by the Board of Governors of the Federal Reserve System under 12 C.F.R. Part 261. Disclosure of this information would result in substantial competitive harm to [REDACTED]. [REDACTED] requests that if the Federal Reserve should determine to make available to the public any of the Confidential Information, it will inform [REDACTED] prior to doing so and provide it with an opportunity to make an appropriate submission as to why such information should be preserved in confidence.*

Anonymous 9

1. Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?

Yes, the calculation methodology is appropriate. The calculations mirror those proposed by ISDA for swaps.

2. Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention? Does the SOFR index appropriately address the need for calculating flexible period averages?[13]

An additional tenor (360-day convention) should be considered for development in support of consumer ARMs where we regularly see a 12M LIBOR referenced and syndicated loans were we do on occasion see a 12M LIBOR referenced. An additional consideration would be for the NY Fed to include the start and end date of each of the average periods as part of the on screen rate publications. This will allow for transparency and avoid ambiguity relating to weekends and holidays. There should be a "modified following" convention to align with swaps.

The SOFR index does appropriately address the need for calculating flexible period averages.

3. In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.

As recommended above, a 360-day average, would be the primary recommendation. A possible additional recommendation would be a one-week tenor option - largely dependent on the customers coming forward with a need for a one-week tenor (to meet short-term funding needs, and the flexibility this tenor offers).

4. Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?

The norm for the swaps market is 5 decimals places. To introduce 8 decimals (as suggested in the consultation), systems may need to be amended to support 8 decimal places.

5. Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?

The indexing of SOFR daily rates need to be changed from alphabetic to numeric to avoid confusion, the actual rate should be used. This could support the creation of a time series. In the case of a miscalculation or error in producing the rate, the Fed should provide an update/announcement on the time of the correction.

6. Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index?

Institutions and vendors would benefit from an API to take in the daily SOFR, average tenors, and index rates, as opposed to just publishing on a website.

Anonymous
10

Comments on the SOFR Average and Index Calculations

Comments should be submitted to the New York Fed by December 4, 2019 via email to rateproduction@ny.frb.org

Responses to the following questions:

1. **Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?**
   » We have built a calculator based on the proposed methodology, and have a recommendation for the treatment of the simple interest accrual when the 1st day of the calculation period falls on a weekend or holiday. There are two ways to calculate the multiple calendar day rate when the starting date is on the weekend. We recommend using Approach #2, as described below

   In our example, we want to know the SOFR rate from 06/01 to 06/03 and 06/01 is Saturday. Assuming 5/31 (Friday) rate is r1 and 06/03 (Monday) rate is r2, we can have the following two approaches:

Approach 1: 06/01-06/02 are weekend days and we use the 5/31 rate of r1. Approximately the two-day weekend rate is 2*r1, so the 06/01-06/03 three-day rate would be: [(1+2*r1)*(1+r2)-1]. From the following table, the result would be **[(1+2*0.0249/360)*(1+0.024/360)]-1=0.00020501**

Approach 2: we create the rate index for every calendar day (beginning of the day). Assume 05/31 starting with the index of 1, we can have the following SOFR indices:

Date	Index (Starting index =1 on Friday morning)
5/31 (Friday)	1
6/01(Saturday)	(1+r1)
6/02(Sunday)	(1+2*r1)
6/03(Monday)	(1+3*r1)
6/04(Tuesday)	(1+3*r1)*(1+r2)

So, the 06/01-06/03 three-day rate would be: Index(6/04)/Index(6/01)-1, i.e., [(1+3*r1)*(1+r2)/(1+r1)-1]. From the following table, the three-day rate should be: **1.00027418/1.00006917-1=0.00020500**

	calendar date	day of week	SOFR as of date	SOFR rate	days applicable	index
	5/31/2019	Friday	5/30/2019			1
start date ==>	6/1/2019	Saturday			1	1 X (1+(2.49% X 1)/360) = 1.00006917
	6/2/2019	Sunday			2	1 X (1+(2.49% X 2)/360) = 1.00013833
	6/3/2019	Monday	5/31/2019	2.49	3	1 X (1+(2.49% X 3)/360) = 1.00020750
	6/4/2019	Tuesday	6/3/2019	2.40	1	1.00020750 X (1+(2.40% X 1)/360) = 1.00027418

Approach 1 result [(1+2*r1)*(1+r2)-1] would be slightly higher than Approach 2 result [(1+3*r1)*(1+r2)/(1+r1)-1], although the difference is very small (to the 8th digit in this example).

We plan to take **Approach 2** because it is a more consistent method when we try to combine multiple-period rates. Another reason is that Approach 1 (implicitly) assumes we can invest on Saturday.

2. **Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention? Does the SOFR index appropriately address the need for calculating flexible period averages?**
    - » The proposed tenors are appropriate, and the index addresses the need for calculating flexible period averages
3. **In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.**
    - » For the Multifamily loan market, a calendar month accrual period is typically used for calculating the interest payment. To closely replicate the existing loan terms and LIBOR index, a SOFR monthly compounded average is being proposed as the replacement index for the new SOFR loans and legacy product transition.
    - » The calendar month accrual is used prevalently throughout the commercial loan products (e.g., October monthly rate is calculated using the SOFR values from Oct 1st to Oct 31st, which would be available on the first business day of November).
    - » The publication of the calendar month average tenor would be very useful for the commercial mortgage market
4. **Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?**
    - » No changes to recommend.
5. **Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?**
    - » Besides the recommendation for the publication of a SOFR monthly compounded average rate described in #3, no other changes are recommended.
6. **Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index?**
    - » If possible, to publish the revisions to the daily rate earlier than 2:30 pm, that would be very helpful. Other systems and processes require the SOFR monthly compounded rate to be available by 3:00 pm, which gives a small timeframe for processing.

Anonymous
11

Via Email to rateproduction@ny.frb.org

December 4, 2019

Alternative Reference Rates Committee (ARRC)
Board of Governors, Federal Reserve System
New York Federal Reserve

Re: Proposed Publication of SOFR Averages and a SOFR Index

To the Members of the ARRC:

Please accept this letter as the internally coordinated response from [redacted] Bank (the "Bank"). The Bank's commentary on the "Proposed Publication of SOFR Averages and a SOFR Index" follows.

Background

As a community financial institution with [redacted] billion in assets, we have a material portion of our loan portfolio referencing LIBOR. The composition of this exposure includes Multi-family loans, Residential mortgages, Commercial real estate mortgages, and Commercial & Industrial (C&I) lending. Our C&I lending includes both bilateral loans and syndicated credits. In addition to the on-balance sheet exposure, we also facilitate derivative transactions on behalf of our commercial clients.

Proposed Calculation Methodology

Averages

(Question 2) It is the Bank's opinion that the proposed fixed 30-, 90-, or 180-day tenors for SOFR averages are appropriate. However, the Bank has some concerns with the back-test sample provided. It would be helpful to recalculate SOFR during a stressed period. It is recommended the chart labeled "SOFR and Indicative SOFR Averages" provided include similar trend lines based on 2007-2009 data.

Decimal Precision

(Question 4) The Bank favors percentages and numbers rounded to the eighth decimal place harmonized across averages and the O/N index. While the Bank understands the reason to match the derivatives methodology, it is the Bank's opinion that, over time, the decimal variation could create a financial impact variance. A bank should have the option to truncate decimals to adapt to their specific process; however, the published data should be more granular.

Publication Time

(Question 6) The Bank requests clarification on timing of publication, as the current proposal only indicates the averages and the index would be published shortly after 8AM ET.

We appreciate this opportunity to share our comments; and invite the ARRC to contact us for discussion or additional information.

Sincerely,
[redacted]

Anonymous
12

Please find below our answers to the public consultation :

Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?

Yes, as long as it aligns with the ISDA methodology that will be used for derivatives fallback provisions.

Having different SOFR averages available would be detrimental for market adoption.

Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention? Does the SOFR index appropriately address the need for calculating flexible period averages?

The averages should follow a modified following convention, which would be in line with the actual cash-market conventions.

In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.

The proposed tenors should cover the vast majority of needs. However, additional calculation would come with a very limited marginal cost, hence we suggest adding a 360-days SOFR average.

Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?

None.

Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?

None other than the ones proposed above.

Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index?

Yes.

Anonymous
13

Questions	Responses
Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?	Yes
Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention? Does the SOFR index appropriately address the need for calculating flexible period averages?	No, the tenors are not appropriate as proposed: Modified following convention is necessary for the averages to be useful as the convention takes into account the true settlement dates for money market products, commercial loans, and derivatives. Having a "fixed number of days" is less important for market participants. Yes, the index addresses the need to calculate averages for flexible periods.
In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.	No, the index will suffice as a tool to calculate other periods
Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?	Yes, there is no requirement to have the decimal precision beyond the 5th place. It's also in sync with the current standards.
Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?	No
Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index?	Yes, though the revised publication at 2:30 PM is a little late as settlement would have already occurred in the morning may need to be adjusted/netted.
Other Comments	At least any combination of below payment holidays calendars should be available - LDN, NYK, EUR / TARGET 2, AMS, FRA, HKG, MAD, MIL, PAR, SIN, SYD, TOK, TOR, ZUR

Anonymous
14

- Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?
  - **Answer: Yes**

- Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention? Does the SOFR index appropriately address the need for calculating flexible period averages?
  - **Answer: Next to the 30/90/180 day counts it is required to also have a period for one year. Also, when a loan is being entered during the month / period, it is required to have these flexible period averages from 0-30 days and 30-90 days to ensure the payment will fit into the accounting principles.**

- In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.
  - **Answer: 1 Year / 12 months, i.e. 360 or 365 days in order to align with the accounting principles and rules.**

- Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?
  - **Answer: currently 5 decimals are used for LIBOR publication which should also be used for SOFR.**

- Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?
  - **Answer: no suggestions**

- Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index
  - **Answer: The publication of the SOFR average (2:30 PM) should be 1. Same day and 2. closer to the publication of SOFR itself (08:00 AM) to smoothen the operational processes and to reduce the time between publication**

Anonymous
15

Please find attached responses to the consultation on a Proposed Publication of SOFR Averages and a SOFR Index

Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?

We would be supportive of this approach, we consider simplicity of the calculation to be a key factor that will facilitate wider market adoption of SOFR. We are of the opinion that proposals in relation to adopting Observation Shifts present an additional layer of complexity and removes an element of transparency of the calculation.

- Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention? Does the SOFR index appropriately address the need for calculating flexible periods.

We would be supportive of a Modified Following convention.

- In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.

We do not see the need for any additional tenors to be published however the calculator should be sufficiently flexible to allow users to select specific date ranges and these should be retained for all available historical periods.

- Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?

We are supportive of 5 decimal places and ideally this would be consistent across all currencies

- Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?

Not that we are aware of

- Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index?

We are supportive of these plans (and would welcome publishers of other currency Risk Free Rates to adopt a similar approach). It would be helpful to market participants if a notification process were to be put in place alerting users to any changes from a previously published rate.

Anonymous
16

ARRC – FRN Consultation

- **Is the proposed calculation methodology, including the compounding approach, appropriate for calculating the averages and index?**
  R.: Yes, it is appropriate.

- **Are the proposed fixed 30-, 90-, and 180-day tenors for the SOFR averages appropriate, or should the published averages follow a modified following convention (which would not result in a fixed 30-, 90-, or 180-day count) or some other convention? Does the SOFR index appropriately address the need for calculating flexible period averages?**
  R.: we believe it should follow a modified following convention. Yes the SOFR index appropriately addresses the need for calculating flexible period averages.

- **In addition to the proposed tenors for the SOFR averages, are there any additional tenors that should be considered for publication? Please explain the purposes that such tenors might be used for.**
  R.: No.

- **Are there any changes to the proposed decimal precision for the SOFR averages or index that should be considered?**
  R.: No.

- **Are there any other changes to the averages or index as proposed that would make them more useful? For what purpose(s)?**
  R.: No.

- **Are the proposed publication arrangements, including publication dates and times, appropriate to facilitate use of the averages and the index?**
  R.: Yes, they are.