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*Summary of Responses to the ISDA  
Supplemental Consultation on Spread and Term  
Adjustments*

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PREPARED FOR


International Swaps and Derivatives Association  
("ISDA")

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This report was prepared for ISDA by The Brattle Group (“Brattle”). Brattle assists clients involved in a wide range of litigation and consulting matters. Our experts present and defend principled economic and financial evidence, and identify and expose flaws in opposing opinions. Brattle provides expert testimony, analysis, and financial economic consulting in litigation and regulatory matters affecting, among others, financial institutions. Our experts include former senior staff of large financial institutions, as well as former regulators and senior government officials, allowing us to provide our clients with detailed, real-world knowledge of how various financial institutions actually operate. All results and any errors are the responsibility of the authors and do not represent the opinion of Brattle or its clients.

Brattle has been engaged by ISDA to provide an independent overview, summary, and analysis of the market participant responses to the ISDA 2019 Supplemental Consultation. Brattle understands that ISDA will rely on the analysis contained in this report to determine the level of support for the Compounded Setting in Arrears with the Historical Mean/Median approach for the benchmarks covered in the ISDA 2019 Supplemental Consultation.

As part of this analysis, Brattle reviewed the content of all responses to the ISDA Supplemental Consultation, and evaluated (based on the number and diversity of respondents) the degree to which the process followed by ISDA allowed for the consideration of different market perspectives. This report also presents areas of consensus across respondents and areas where additional considerations were raised.

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## I. Executive Summary

1. On May 16, 2019, the International Swaps and Derivatives Association, Inc. (“ISDA”) published a supplemental market-wide consultation (“2019 Supplemental Consultation”) on technical issues related to fallbacks for derivatives contracts that reference USD LIBOR, CDOR, and HIBOR.<sup>1</sup> The 2019 Supplemental Consultation followed an initial market-wide consultation published by ISDA on July 12, 2018 (“2018 ISDA Consultation” or the “2018 Consultation”), which primarily focused on technical issues related to fallbacks for derivative contracts that reference GBP LIBOR, CHF LIBOR, JPY LIBOR, TIBOR, Euroyen TIBOR, and BBSW. The 2018 Consultation also solicited preliminary feedback for derivatives referencing USD LIBOR, EUR LIBOR, and EURIBOR. The results of the 2018 Consultation were discussed in a report by The Brattle Group, commissioned by ISDA (Brattle’s 2018 Consultation Report).<sup>2</sup>

2. The 2019 Supplemental Consultation built on the 2018 Consultation and asked whether market participants viewed the most preferred approach in the 2018 Consultation—compounded setting in arrears rate with the historical mean/median approach—as suitable for USD LIBOR, CDOR, and HIBOR. The 2019 Supplemental Consultation allowed those market participants who participated in the 2018 Consultation to affirm, expand on, or modify their prior answers. In addition, the 2019 Supplemental Consultation presented new questions related to the secured overnight financing rate (SOFR), which is the basis for USD LIBOR fallbacks, including (i) whether it would be appropriate to rely on indicative SOFR values and the historical Overnight Treasury GC Repo Primary Dealer Survey Rate (which serves as a proxy for the SOFR) and (ii) whether the SOFR should be used as an input to calculate a fallback for the SOR, in the event that SOR is discontinued because USD LIBOR is discontinued.<sup>3</sup>

3. An overwhelming majority (approximately 90%) of respondents prefer to use the compounded setting in arrears rate with the historical mean/median approach to the spread adjustment for USD LIBOR, CDOR and HIBOR fallbacks, given that this combination of fallback rate and spread adjustment option will be used to calculate the fallbacks for GBP LIBOR, CHF LIBOR, JPY LIBOR, TIBOR, Euroyen TIBOR and BBSW, based on the results of the 2018 Consultation. Many of these respondents cited the need for a consistent fallback adjustment

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<sup>1</sup> <https://www.isda.org/a/n6tME/Supplemental-Consultation-on-USD-LIBOR-CDOR-HIBOR-and-SOR.pdf>

<sup>2</sup> <http://assets.isda.org/media/04d213b6/db0b0fd7-pdf/>

<sup>3</sup> SOR relies on USD LIBOR and adjusted SOR would rely on SOFR plus spread.

methodology across the different benchmarks as an important reason for their preference. Respondents also reiterated the advantages of the compounded setting in arrears rate with historical mean/median approach, as noted in their 2018 Consultation responses and summarized in Brattle’s 2018 Consultation Report. In contrast, a few respondents raised some concerns and potential operational challenges related to the compounded setting in arrears rate with the historical mean/median approach to the spread adjustment. While most of these concerns have been raised previously (and summarized in Brattle’s 2018 Consultation Report), one respondent further highlighted the difference between cash products and derivative products as well as differences across different jurisdictions. This respondent suggested that these differences might result in several issues and operational challenges. Additionally, two respondents commented that they changed their preference relative to the 2018 Consultation with regard to the compounded setting in arrears rate and the historical mean/median approach due to “new risks.” We summarize these comments in Section IV.

4. Respondents shared mixed views with respect to the appropriateness of relying on indicative SOFR values and the historical Overnight Treasury GC Repo Primary Dealer Survey Rate (which serves as a proxy for the SOFR), in calculating the spread adjustment for lookback periods starting prior to April 3, 2018.<sup>4</sup>

- i. The majority of respondents (approximately 60%) agreed with this approach. Some of these respondents highlighted that there is no other obvious alternative and therefore the use of proxy and indicative data are acceptable. Others viewed the indicative and proxy data as representative of what the SOFR would have been and/or as the best data available. Some respondents indicated that they agree with using the indicative and proxy data because they preferred a longer lookback period (i.e., 10 years or more).
- ii. A few respondents agreed in principle with using both the indicative and proxy data, but wanted further analysis to be conducted to determine whether the proxy data is “relevant” to the SOFR. In that regard, we note that since the conclusion of the 2019 Supplemental Consultation, a Federal Reserve economist has published comments

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<sup>4</sup> The Federal Reserve Bank of New York started officially publishing SOFR on April 3, 2018. It has also made available indicative SOFR values dating back to August 1, 2014 and the historical Overnight Treasury GC Repo Primary Dealer Survey Rate (which serves as a proxy for SOFR with a few technical differences), dating back to February 20, 1998.

noting that the historical Overnight Treasury GC Repo Primary Dealer Survey Rate is a reasonable proxy for historical SOFR data.<sup>5</sup>

- iii. Other respondents were comfortable with the use of the indicative data, but not the proxy data. More specifically, those that preferred a shorter lookback period did not think the proxy data would be needed. Others highlighted the differences in characteristics between the SOFR and the proxy data.
- iv. Only a few respondents objected to the use of both the indicative data and the proxy data.

5. With regard to the proposed update to the SGD-SOR-VWAP Rate in the 2006 ISDA Definitions to provide that, upon a permanent discontinuation of USD LIBOR, derivatives contracts that reference SGD-SOR-VWAP will fall back to an Adjusted SOR, almost 40% of respondents did not provide a direct comment. Of those who provided an answer, approximately 85% did not have any concerns with ISDA's proposed approach and only a few respondents expressed concerns.

## **II. A Discussion of the 2019 Supplemental Consultation versus the 2018 ISDA Consultation**

6. On July 12, 2018, ISDA published the 2018 Consultation on issues related to new fallbacks for derivatives contracts that reference certain interbank offered rates ("IBORs").<sup>6</sup> The 2018 Consultation solicited market participants' responses with respect to the proposed fallbacks for derivatives referencing GBP LIBOR, CHF LIBOR, JPY LIBOR, TIBOR, Euroyen TIBOR, and BBSW. The 2018 Consultation also solicited preliminary feedback from market participants

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<sup>5</sup> Board of Governors of the Federal Reserve System, *Historical Proxies for the Secured Overnight Financing Rate (2019)*, <https://www.federalreserve.gov/econres/notes/feds-notes/historical-proxies-for-the-secured-overnight-financing-rate-20190715.htm> (last accessed August 9, 2019).

<sup>6</sup> ISDA, *Interbank Offered Rate (IBOR) Fallbacks for 2006 ISDA Definitions, Consultation on Certain Aspects of Fallbacks for Derivatives Referencing GBP LIBOR, CHF LIBOR, JPY LIBOR, TIBOR, Euroyen TIBOR and BBSW (2018)*, <http://assets.isda.org/media/f253b540-193/42c13663-pdf/> (last accessed December 19, 2018).

(referred to as “respondents” throughout this report) with respect to fallbacks for derivatives referencing USD LIBOR, EUR LIBOR, and EURIBOR.<sup>7</sup>

7. The 2018 Consultation provided information on alternative options for calculating RFRs and spread adjustments, asked market participants to rank nine combinations of these options, and specify whether their preferences applied universally across the covered benchmarks. The 2018 Consultation also probed market participants about the potential impact of any of the possible combinations on their ability to complete transactions, and prompted them to express any concerns if fallbacks were based on different calculations across the covered benchmarks. Market participants were also asked to comment on the general appropriateness and effectiveness, and potential operational challenges or other barriers to implementation, of the options provided in the 2018 Consultation.

8. Brattle was engaged by ISDA to provide an independent overview, summary, and analysis of the market participant responses to the 2018 Consultation. ISDA’s review of market participant responses to the 2018 Consultation was informed by the analysis contained in Brattle’s 2018 Consultation Report<sup>8</sup> in determining which combination of options under consideration in the 2018 Consultation (i) had the broadest and most diverse support among respondents, and (ii) presented less operational difficulties.

9. The 2018 Consultation showed that a majority of respondents were in favor of using the compounded setting in arrears rate with the historical mean/median approach to the spread adjustment, as summarized in the Brattle’s 2018 Consultation Report.

10. On May 16, 2019, ISDA launched the 2019 Supplemental Consultation to solicit feedback from market participants for the determination of the approach for calculating adjusted risk free rates (“RFRs”) and spread adjustments for USD LIBOR, CDOR, and HIBOR fallbacks. In addition, the 2019 Supplemental Consultation also sought responses on the use of Adjusted SOR as a

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<sup>7</sup> The 2018 Consultation also included references and questions related to USD LIBOR, EUR LIBOR, and EURIBOR and explained that future supplemental consultations would specifically address fallbacks related to these rates and possibly other benchmark rates including HIBOR. See the 2018 Consultation, p 7.

<sup>8</sup> The full report title is “Anonymized Narrative Summary of Responses to the ISDA Consultation on Term Fixings and Spread Adjustment Methodologies.”

fallback for the SOR (as USD LIBOR is an input to the SOR). ISDA requested feedback from market participants by July 12, 2019.

11. The 2019 Supplemental Consultation built on the 2018 Consultation, first asking whether the most preferred approach in the 2018 Consultation—compounded setting in arrears rate with the historical mean/median approach—is suitable for USD LIBOR, CDOR, and HIBOR fallbacks. The 2019 Supplemental Consultation provided the option for respondents to affirm responses that they submitted for the 2018 Consultation—in other words, their previously provided responses would apply equally to this question set out in the 2019 Supplemental Consultation.

12. The 2019 Supplemental Consultation allows respondents to raise further concerns with the various approaches to the extent respondents did not agree with the outcome from the 2018 Consultation. Similar to the 2018 Consultation, the 2019 Supplemental Consultation sought information on whether respondents were completely opposed to any approaches, and whether the respondents would not be able to transact using the preferred approach from the 2018 Consultation. Market participants were also given the opportunity to comment on the specific methodologies for calculating the spread adjustment. Again, for these questions, the 2019 Supplemental Consultation provided the option for respondents to affirm responses that they submitted for the 2018 Consultation.

13. In addition, because of the direct reliance of SOR on USD LIBOR, the 2019 Supplemental Consultation also sought input from market participants on the fallback for the SOR.

14. Due to the nature and structure of the 2019 Supplemental Consultation, Brattle was engaged by ISDA to summarize and report on the degree to which respondents agreed with using the preferred approach from the 2018 Consultation responses, as well as any new or differing information that market participants provided in their 2019 Supplemental Consultation responses. This report does not address the other individual approaches proposed by ISDA in depth since these were already summarized in Brattle's 2018 Consultation Report.



### III. Demographics of Respondents to the ISDA 2019 Supplemental Consultation

15. Brattle reviewed responses from a total of 85 entities, collectively from 17 countries across Europe, Asia-Pacific, and the Americas.<sup>9</sup> These entities operate in a number of sectors and include banks, asset managers, pension funds, corporate entities, central counterparties, global financial service firms, and government entities. Collectively, the responses to the 2019 Supplemental Consultation came from a broad group of market participants, reflecting different perspectives regarding the options under consideration.

16. Out of the total of 85 respondents,<sup>10</sup> 62 had previously responded to the 2018 Consultation,<sup>11</sup> and 23 were new respondents to the 2019 Supplemental Consultation. Of the 62 returning respondents, 28 confirmed that the answers they provided to the 2018 Consultation apply equally to the questions set out in the 2019 Supplemental Consultation. Of the remaining 34 returning respondents, 29 respondents agreed to using the compounded setting in arrears with the historical mean/median approach as a fallback, while four indicated otherwise (one respondent did not provide any answer).

17. Figure 1 summarizes the industry affiliation, assigned by ISDA, to each of the 85 respondents to the 2019 Supplemental Consultation. Figure 1 shows that the 85 respondents include most commonly “bank/broker-dealers” (42 entities) and “asset managers” (14 entities). In addition, there are 14 government-sponsored entities, which are in the “Other” category. The

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<sup>9</sup> ISDA received 85 responses. Responses from three trade associations that did not provide the names of their members are excluded. This is in accordance with the terms of the 2018 Consultations that “[i]f a trade association, law firm, consultancy firm or similar organization responds on behalf of multiple market participants, they should name the market participants that specifically contributed to the response, and ensure that the response does not conflict with separate responses from any of the specified market participants. Trade associations, law firms and similar organizations should also encourage their members and clients to respond to the consultation directly.” See <https://www.isda.org/a/RNjEE/Fallback-Consultation-FAQ.pdf>. One other response listed the four entities it represented and therefore was counted as four respondents. After excluding three and adding three additional entities (because one of the responses represented four different entities), this gives us 85 respondents in total.

<sup>10</sup> This report refers to each entity that responded to the ISDA Consultation (both the 2018 Consultation and the 2019 Supplemental Consultation) as respondents.

<sup>11</sup> While 62 entities from the 2019 Supplemental Consultation also submitted responses in the 2018 Consultation, only 58 were included in the analysis of the Brattle 2018 Consultation Report. See footnote 6 and 7 on p. 3 of the Brattle 2018 Consultation Report.

other entities in the “Other” category include a student loan service firm, a central counterparty and a reinsurance firm.

**Figure 1**  
**Breakdown of Entities (Respondents) by Industry Affiliation**

ISDA category [A]	Number of entities [B]
[1] Asset Manager	14
[2] Bank/Broker-dealer	42
[3] Nonfinancial Corporation	1
[4] Insurance Company	5
[5] Local or Regional Government Entity	1
[6] Pension Fund	3
[7] Other Professional Services Firm	2
[8] Other	17
<b>Total</b>	<b>85</b>

Sources and notes:

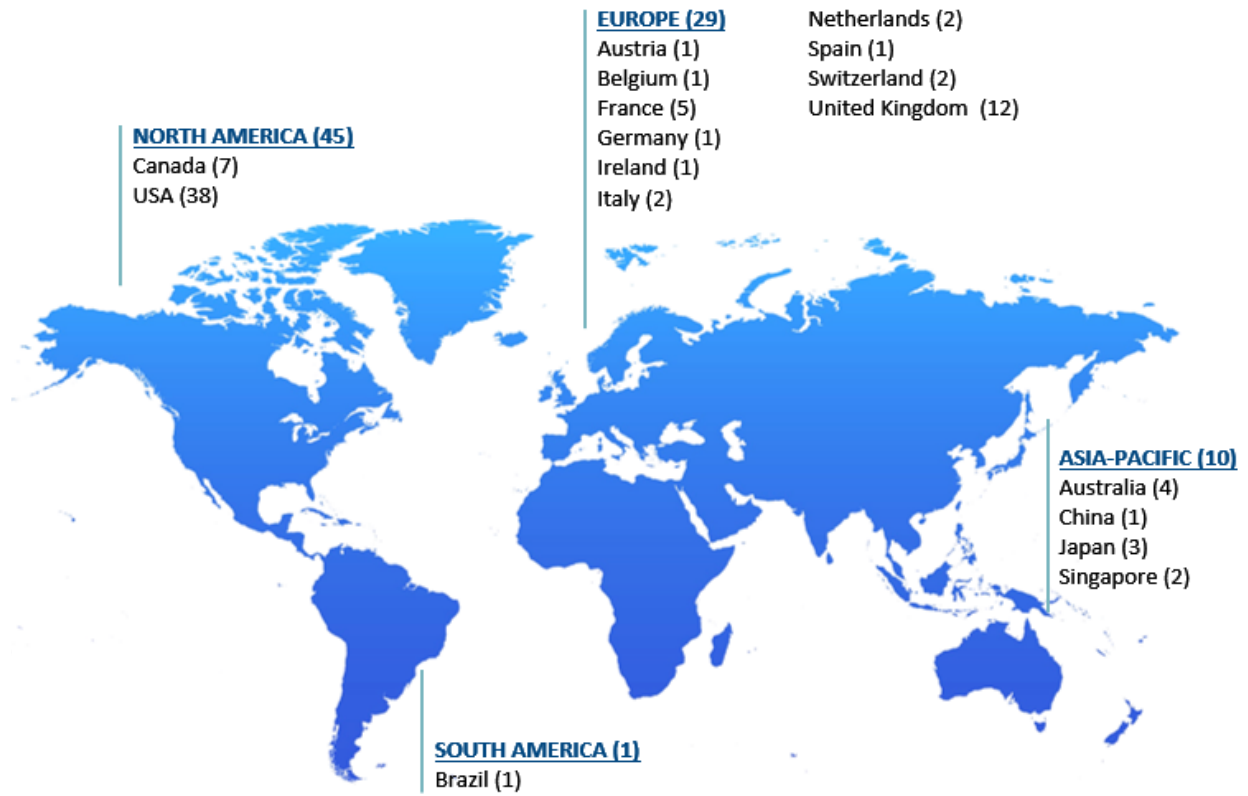
Industry affiliations represented by the entities that responded to the ISDA 2019 Supplemental Consultation. Excludes individuals and associations that did not name their members.

[8]: This category includes: government-sponsored enterprises, central counterparties, reinsurance firms, and student loan services.

[B]: When respondents are an association representing multiple members, we count the number of underlying institutions (members) named as participating in the response, in accordance with the 2018 ISDA Consultation FAQs.

18. Figure 2 and Figure 3 break down the respondents by region and by country. The largest number of respondents came from North America, in particular, the United States (38 of 85 entities). Europe accounted for 29 of the responding entities, 12 of which came from the United Kingdom.

**Figure 2**  
**Breakdown of Entities (Respondents) by Geography**



Sources and notes:

Regions and countries represented by the entities that responded to the ISDA 2019 Supplemental Consultation. Excludes individuals and associations that did not name their members. Countries in Europe do not add up to the total for the region because one entity does not have a country-specific jurisdiction. There are 85 respondents in total.

**Figure 3**  
**Breakdown of Entities (Respondents) by Geography**

Region	Country	Number of entities
[A]	[B]	[C]
<b>Asia-Pacific</b>		<b>10</b>
	Australia	4
	China	1
	Japan	3
	Singapore	2
<b>Europe</b>		<b>29</b>
	Austria	1
	Belgium	1
	France	5
	Germany	1
	Ireland	1
	Italy	2
	Netherlands	2
	Spain	1
	Switzerland	2
	United Kingdom	12
<b>North America</b>		<b>45</b>
	Canada	7
	United States of America	38
<b>South America</b>		<b>1</b>
	Brazil	1
<b>Total</b>		<b>85</b>

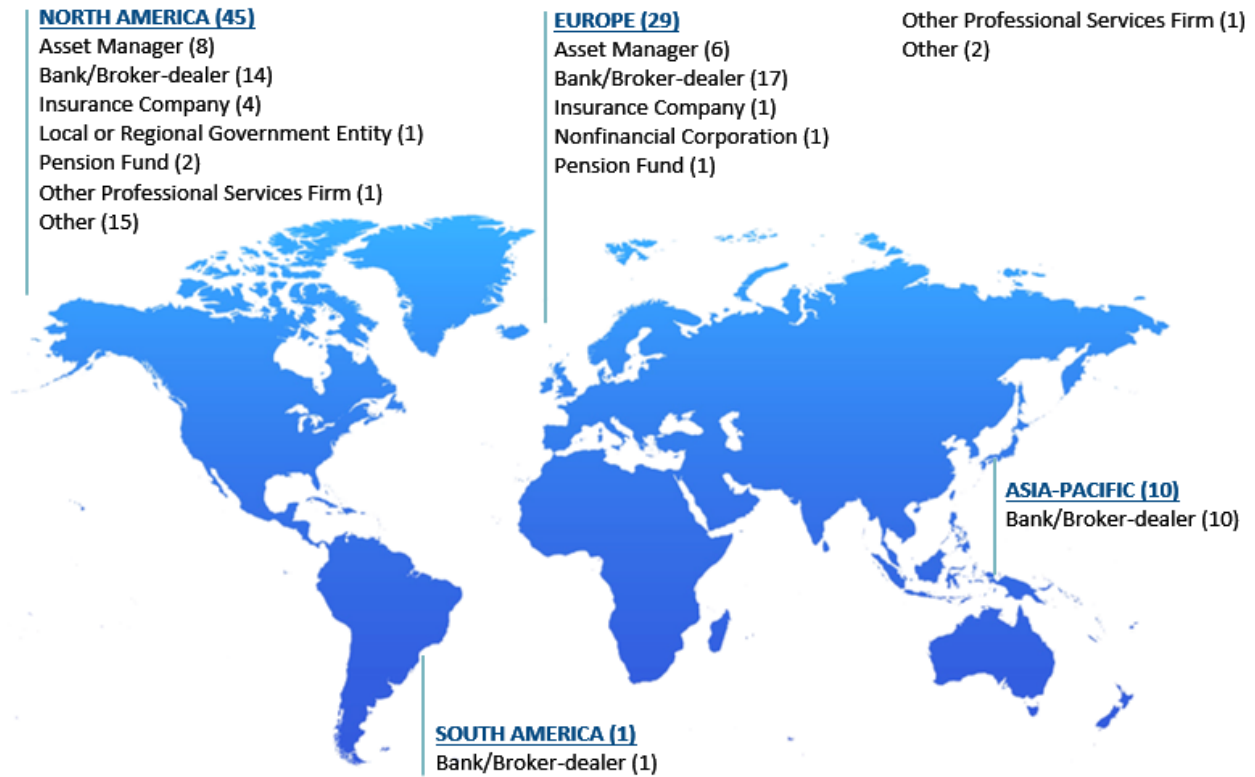
Sources and notes:

Regions and countries represented by the entities that responded to the ISDA 2019 Supplemental Consultation. Excludes individuals and associations that did not name their members. Countries in Europe do not add up to the total for the region because 1 entity does not have a country-specific jurisdiction.

[C]: When respondents are an association representing multiple members, we count the number of underlying institutions (members) named as participating in the response, in accordance with the 2018 ISDA Consultation FAQs.

19. Figure 4 summarizes the demographics of the respondents by both industry affiliation and geography. Consistent with the statistics in Figure 1 above, bank/broker-dealers and asset managers account for the biggest groups of respondents within each region.

**Figure 4**  
**Breakdown of Industry Affiliation of Entities (Respondents) by Geography**



Sources and notes:

Regions and countries represented by the entities that responded to the ISDA 2019 Supplemental Consultation. Excludes individuals and associations that did not name their members. There are 85 respondents in total.

#### IV. Preferences Regarding Compound Setting in Arrears Rate with Historical Mean/Median Approach

20. This section summarizes the responses from the 85 respondents to Question No. 1 of the 2019 Supplemental Consultation. This question asks whether the compounded setting in arrears rate with historical mean/median approach is also appropriate for USD LIBOR, CDOR and HIBOR fallbacks, given that this combination of fallback rate and spread adjustment options would also be used to calculate the fallbacks for GBP LIBOR, CHF LIBOR, JPY LIBOR, TIBOR, Euroyen TIBOR and BBSW, based on the 2018 Consultation responses. Overall, more than 90% of respondents agreed with adopting the compounded setting in arrears rate with historical

mean/median approach as USD LIBOR, CDOR and HIBOR fallbacks.<sup>12</sup> As previously noted, a small number of respondents raised certain concerns and operational challenges with this approach.

#### **A. SUMMARY OF RESPONDENTS' PREFERENCES**

21. Approximately 70% of the 85 respondents provided answers to this question. The remaining respondents chose to affirm their prior answers to the 2018 Consultation. A review of ranking preferences in the 2018 Consultation was necessary for respondents who affirmed their answers. If respondents' ranking preferences to the 2018 Consultation were such that the compounded setting in arrears rate with historical mean/median approach was their preferred combination, these respondents were treated as answering "Yes" to Question No. 1 of the 2019 Supplemental Consultation. If the respondents' ranking preferences to the 2018 Consultation were such that the compounded setting in arrears rate with historical mean/median approach was not the preferred combination (i.e., ranked second or lower), these respondents also were treated as answering "Yes" to Question No. 1 of the 2019 Supplemental Consultation as long as the respondents were not explicitly opposed to this combination in their response to the 2018 Consultation.<sup>13</sup>

22. Table 1 summarizes the different answers to Question No. 1 of the 2019 Supplemental Consultation across all 85 respondents.

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<sup>12</sup> Some respondents clarified that their answer was related to the benchmark that they had exposure to and they did not have a preference for the other benchmarks. We classified all these respondents as "agreed with adopting the compounded setting in arrears rate with historical mean/median approach" as fallbacks.

<sup>13</sup> One respondent who affirmed their prior preferences and did not have the compounded setting in arrears rate with historical mean/median approach as the top ranked option was not completely opposed to the option, but explicitly indicated that they did not prefer this option. In this analysis, this respondent was classified as answering "No" to Question No. 1.

**Table 1**  
**Summary Statistics of Responses to Question No. 1 of the 2019 Supplemental Consultation**

Response	Affirmed prior answers in 2018 Consultation		Directly responded to 2019 Supplemental Consultation	Summary Statistics	
	First Preference in 2018 Consultation	Other Preferences in 2018 Consultation		Count	% of total
Yes	20	6	52	78	92%
No	0	2	5	7	8%
<b>Total</b>	<b>20</b>	<b>8</b>	<b>57</b>	<b>85</b>	<b>100%</b>

23. Table 1 shows that the large majority (over 90%) of respondents who replied to the 2019 Supplemental Consultation viewed the compounded setting in arrears rate with historical mean/median approach as appropriate for USD LIBOR, CDOR and HIBOR fallbacks (i.e., they directly or indirectly indicated “Yes” to Question No. 1). Less than 10% of respondents did not agree with using the compounded setting in arrears rate with historical mean/median approach for USD LIBOR, CDOR and HIBOR fallbacks.

## B. SUMMARY OF RESPONDENTS’ COMMENTS ON THEIR PREFERENCES

24. Of the 78 respondents who we identify as answering “Yes” to Question No. 1, 26 of them (approximately 30%) did so by affirming their prior answers to the 2018 Consultation. Of these 26 respondents, 20 previously noted the compounded setting in arrears rate with historical mean/median approach was their preferred fallback adjustment combination. While the remaining six respondents had a different first preference, they were not completely opposed to this combination. 52 respondents explicitly indicated “Yes” to Question No. 1 for a number of different reasons, the most common one being the need for a consistent fallback adjustment methodology across the different benchmarks. Specifically, 32 respondents made this point.

### 1. RESPONDENTS’ COMMENTS ON ADVANTAGES AND CONCERNS ON THE COMPOUNDED SETTING IN ARREARS RATE WITH HISTORICAL MEAN/MEDIAN APPROACH

25. Several respondents reiterated the advantages of the compounded setting in arrears rate with historical mean/median approach as summarized in Brattle’s 2018 Consultation Report. These advantages include:

- compatibility with the OIS swap market and the ability to reflect the daily interest rate movements during the relevant period;
- minimizing market manipulation;
- resistance to market distortions or extreme periods;
- present-value neutrality;
- less volatility;
- convexity-free;
- positive hedging implications relative to other options; and
- availability of the underlying data to calculate the spread adjustment at the time the fallbacks are triggered.

26. For example, a South American bank/broker-dealer stated the “Compounding Setting in Arrears Rate reflects the actual daily interest rate during the period and as well as the OIS structure referencing the RFRs, and Historical Mean/Median Approach methodology for spread adjustment avoids a cliff effect and a potential market manipulation.” A North American bank/broker-dealer added, “With respect to hedging, the compounding approach seems to work well as it can be matched off with underlying loan and security structures... The mean/median approach seems to be a sensible solution to adjusting the spread between LIBOR and a fallback rate such as SOFR. Over a long horizon, the relationship looks to be correlated and fairly consistent.” A North American asset manager commented, “Using a method based on compounded setting in arrears would significantly ease the transition process by allowing for the simple valuation of legacy swaps, permitting easy portfolio replacement with overnight RFR based swaps, and precluding the need to adapt systems for a third, temporary methodology. It would also lower the likelihood of the growth of competing products that could remove liquidity from the overnight RFR based swaps markets.”

27. In addition to reiterating the advantages of the compounded setting in arrears rate with historical mean/median approach, a number of respondents (including a group of North American government-sponsored enterprises) also commented, “This is the only proposed approach aligned with fallback recommendations for USD Libor cash instruments. Notably, the resulting index rates are representative of borrowing/lending rates achievable over the concurrent period. We are opposed to alternatives that do not align with the recommendations of the [US Alternative Reference Rates Committee] (ARRC). As a derivative hedger, alignment with the fallback methods of cash instrument assets and liabilities is critical in lowering potential



basis exposure. Other approaches will not align with the fallback of our cash instruments which will incorporate the ARRC recommended method - Compounded Setting in Arrears Rate with Historical Mean/Median Spread Approach.”

28. Specific to the SOFR, a North American bank/broker-dealer commented, “We believe that a compounding setting in arrears approach under the SOFR construct seems to be effective in smoothing the notable volatility with the SOFR rate. Evidence has been presented showing a high correlation between the compounding setting in arrears approach of EFR and 3 month OIS, suggesting the compounding approach of a daily rate could be effective in mirroring a term component over time. While this approach appears to work in an orderly interest rate environment, we note through our independent studies that correlations break down the most when the Federal Reserve is cutting rates or needs to take aggressive action. This can be driven by the environment and the potential for rate cuts to be less orderly than rate increases. While correlations remain strong over a longer horizon, there is the potential for short-term dislocations.”

29. As shown in Table 1, less than 10% of respondents did not agree with using the compounded setting in arrears rate with historical mean/median approach for the USD LIBOR, CDOR and HIBOR fallbacks. The concerns raised by these respondents were similar to the concerns raised in response to the 2018 ISDA Consultation, including that (i) the compounded setting in arrears rate is not known at the fixing date, and (ii) the historical mean/median approach may not be present-value neutral.

30. In addition, a European professional services firm commented, “The historical mean/median approach is appropriate under the condition that a strong governance procedures...are in place. For the moment, this appears not to be the case. Note that historical rate approach has created value transfer and will still do so in the future.” A North American bank/broker-dealer raised a concern with all the fallbacks that ISDA proposed, stating, “We believe that it is not clear that the fallbacks that ISDA has proposed in this consultation (as well as the July 12 2018 consultation) would work for any products other than vanilla interest rate swaps.”

31. A European bank/broker-dealer and North American student loan service also raised several concerns and operational challenges. The European bank/broker-dealer stated: (i) “cash products are using today forward looking approach when referencing IBORs, it means that to

make the transition to new backward looking benchmarks they will have to change and adapt their IT system. It could be very complex and very expensive to them... even more this small players won't be able to adapt their IT system to such backward looking approach.”; (ii) “Corporate clients want to know how much they will have to pay interest before the event and not after, it means that they will request a forward looking approach for their benchmarks as it is the case today for IBORs. It will be also the case for retail investors.”; (iii) “if the derivative industry continues to push for backward looking fallbacks and the cash products are moving to the forward looking direction, then the industry may face situation of fragmentations which will be very detrimental to the market.”; and (iv) “the transition of LIBOR to risk free rate is happening in the US and in the UK but not in the EU. It means that there will be jurisdictions with backward looking benchmarks (new RFR) and jurisdictions with forward looking benchmarks (EURIBOR). On top of this if of fragmentation between products and between jurisdictions there is a massive risk to have a messy transition and a market that will not work properly.” The North American student loan service said, “The Compounded Setting in Arrears introduces challenges for forecasting liquidity needs and limits the ability for back offices to work out calculation disputes prior to payment settlements. Consider providing a rate cut-off date to be three business days preceding the payment date if selecting the ‘in arrears’ methodology.”

32. Of the seven respondents that did not agree with using the compounded setting in arrears rate with historical mean/median approach for USD LIBOR, CDOR and HIBOR fallbacks, only four were completely opposed to the preferred approach—Compounded Setting in Arrears with Historical Mean/Median. One (the North American student loan service) was completely opposed to using the Compounded Setting in Arrears Rate while the other three were completely opposed to using the Historical Mean/Median Approach for the spread adjustment methodology.

33. The North American student loan service expressed concerns with the Compounded Setting in Arrears Rate because it is unknown at the start of the accrual period, stating, “Setting in Advance enables [them] to know at the start of the accrual period the amount due at the end of the accrual period, which is important, especially in the consumer-facing loans [they] hedge with swaps.” For this reason, it has “not yet found comfort in using a Compounding in Arrears methodology in a consumer-facing loan.” As a result, this North American student loan service changed their preference from the compounded setting in arrears rate expressed in their response

to the 2018 Consultation to the compounded setting in advance rate due to “operational challenges and new risks.”

34. The three respondents who were completely opposed to using the Historical Mean/Median Approach had concerns regarding present value neutrality and historical data not being representative of current market conditions. For instance, a European bank/broker-dealer said that “[u]sing the ‘Historical Mean/Median Approach’ would introduce a bias in the estimations based on long historical data not reflecting current market anticipations. As indicated as a potential disadvantage, it is very unlikely to be present value neutral.” A North American bank/broker-dealer aired similar concerns, stating that “the spot/spread and historical mean/median approaches are unlikely to be present-value neutral because spot rates are unlikely to be consistent with forward rates and because the average historical market conditions may not match market expectations for future market conditions. These approaches place a tremendous amount of emphasis on a single number and therefore are more vulnerable to manipulation.” A North American professional services firm noted that they have “observed that forward spreads between USD LIBOR and a SOFR proxy (compounded Fed Funds) have flattened out since July 2018 and are in line with historical averages, in contrast to the historical tendency for these spreads to widen with time. As a result, spreads have meaningfully converged to what the historic mean/median approach would be.” For this reason, this entity updated their response to the 2018 Consultation and now no longer ranked or supported the Historical Mean/Median Approach.

35. Overall, while a small number of respondents (less than 10%) expressed concerns with using the compounded setting in arrears rate with historical mean/median approach for USD LIBOR, CDOR and HIBOR fallbacks, the majority of respondents reiterated this as their preferred combination and agreed that it is a suitable fallback.

## **2. RESPONDENTS COMMENTS ON THE ABILITY TO TRANSACT UNDER THE COMPOUND SETTING IN ARREARS RATE WITH HISTORICAL MEAN/MEDIAN APPROACH**

36. Only three respondents indicated that they would not be able to transact with the Compounded Setting in Arrears with Historical Mean/Median approach. A European bank/broker-dealer, one of the three respondents, suggested that “[p]roducts that involve payment in advance, which require the reference rate to be known before the end of the relevant accrual period” and “[p]roducts like CMS (Constant Maturity Swaps), Cash Settled IRR swap-

tions and Bermudan swaptions that require a fixed-against-float vanilla interest rate swap that references an IBOR index” would be “examples of derivative contracts for which fallbacks would be problematic.” Another respondent, a European professional services firm, wrote, “We would not be able to transact under the compounded setting in arrears fall-back as it would create a too important financial and legal risk.” Finally, a North American student loan service noted, “We do not expect to be able to transact using the ‘in arrears’ method without a lock-out period of at least three days” which “presents operational challenges such as internal liquidity forecasting, calculation communication to Trustees and counterparties prior to payment, and will impede settling calculation disputes prior to the payment.”

37. In addition, 14 respondents noted that the preferred approach would be problematic (of which four affirmed their responses from the 2018 Consultation). However, these respondents did not explicitly say that they would be unable to transact. For example, a European bank/broker-dealer noted that “the compounded setting in arrears rate approach and the historical mean/median approach will introduce systems, accounting and operational challenges for our existing infrastructure.” Similarly, a North American government-sponsored enterprise indicated that “[i]t will take time to adjust our technology. We may not immediately be able to fully transact utilizing this methodology. Given time we believe that we and our vendors will be able to adjust to the utilization of this methodology and as it becomes more widespread to products other than just swaps, the markets will also harmonize.” A North American asset manager added that “[t]he implementation of the interpolated spread during the transition period may present issues across several internal systems that may require enhancements by third party vendors. More information on the proposed transition period interpolation mechanic is needed to determine the scope of these potential system issues.”

38. Some participants were concerned with the compatibility with cash products. A North American bank/broker-dealer stated, “Derivatives used for hedging purposes will be affected if there are limitations for cash products adopting compounded averaging and setting rates in arrears.” An Asia-Pacific bank/broker-dealer added, “Considering that cash products are likely to adopt a certain term RFR as a fallback rate, derivative contracts related to the cash products should adopt the same index without applying Definitions. In other words, when our customers request that the same terms as the cash products be applied to the derivative, it is likely that the fallback of the Definitions can not be applied.”

39. Other entities raised issues about relying on data vendors for the approach. A North American bank/broker-dealer stated that “[it]s current loan administration system is not able to handle the use of a LIBOR fallback based on the compounded setting in arrears rate approach and the historical mean/median approach. It has been in communication with the vendor of that loan administration system and has encouraged that vendor to update its system appropriately, but the vendor has made no firm commitment to do so. In this regard, it would be particularly helpful if an internet based calculator could be made available for free to the public to allow speedy determination of daily compounded SOFR in arrears over a flexibly selected historical term.” A European asset manager agreed, saying, “Considering the spread adjustment calculation, we cannot agree to be dependent on one data vendor. We are strong believers that IBORs are public goods largely accessible freely or at a reasonable cost-based rate and that it should be maintained with substitutes. In that respect the historical mean/median approach implies the availability of long running data over years and it may pose the question of their cost.”

40. Beyond operational constraints, respondents also raised concerns with the Compounded Setting in Arrears with Historical Mean/Median approach in relation to certain products. For example, An Asia-Pacific bank/broker-dealer noted that “[t]he volatility of SOFR is fundamentally lower than LIBOR and therefore the valuation of an option will be impacted.” Another Asia-Pacific bank/broker-dealer also suggested that “FRAs/Swaps fixed in arrears requires a forward looking fixing will not be able to apply the backward-looking compounded setting in arrears approach.” Similarly, a North American government-sponsored enterprise stated that “[f]or some products (e.g., LIBOR caps, forward rate agreements, etc.), a compound rate in arrears may not work. The fallback rate under this methodology is not known until the end of the reset period and the math involved in modeling the caps needs to change. Other exotic contracts may have similar or more complex issues. A forward term SOFR rate clearly is preferable for these products.”

## **V. Comments on Using the Indicative SOFR Values and the Historical Overnight Treasury GC Repo Primary Dealer Survey Rate**

41. As ISDA stated in its 2019 Supplemental Consultation, SOFR was only published by the Federal Reserve Bank of New York starting April 3, 2018. Therefore ISDA asked whether market participants would agree with the use of the indicative SOFR values (dating back to August 1,

2014) and the historical Overnight Treasury GC Repo Primary Dealer Survey Rate (which serves as a proxy for SOFR) “when calculating the spread adjustment in respect of adjusted SOFR (i.e. as part of a lookback period).” This section summarizes the responses to Question No. 6 in the 2019 Supplemental Consultation.

#### **A. IS IT ACCEPTABLE TO USE THE INDICATIVE AND PROXY DATA?**

42. Of the 85 respondents, nine did not provide an answer to this question, with a European nonfinancial corporation indicating that they did not have enough information to answer the question (“We do not feel as if we understand enough about the differences between the two data sets and the technical differences between them to comment on their appropriateness. It would be useful to see some example days of actual transactions that make up the fixings so that we could make an educated assessment.”)<sup>14</sup> The majority (approximately 60% or 50 out of 85) of respondents agreed with the use of the indicative and/or proxy data for several different reasons, examples of which are summarized below.

43. Some respondents highlighted that there is no other obvious alternative and therefore the proxy and indicative data are acceptable. More specifically, a European bank/broker-dealer stated that “using repo survey data is appropriate in the absence of SOFR swap data, as there are limited alternative options should LIBOR cease to be published on January 1, 2022. The use of Fed Funds Overnight Index Swap (OIS) data may also be appropriate.” Similarly, a European bank/broker-dealer commented, “Absent any closer aligned alternatives this seems to be the right approach in particular as the historic reference also relates to a secured rate.”

44. A number of respondents viewed the indicative and proxy data as representative of what the SOFR would be and/or as the best data available. For example, a North American government-sponsored enterprise commented, “As there was no actual market data available, the Fed Reserve's proxy data is the best relative data points to consider. We assume that the Fed has validated the data to assure the absence of errors in the calculations such that this is the best approximation of the calculation that would have been in place at the time.” Similarly, an Asia-

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<sup>14</sup> Since the conclusion of the 2019 Supplemental Consultation, we noted that the Federal Reserve published a note arguing that the historical Overnight Treasury GC Repo Primary Dealer Survey Rate is a good proxy for historical SOFR data. It is available at:

<https://www.federalreserve.gov/econres/notes/feds-notes/historical-proxies-for-the-secured-overnight-financing-rate-20190715.htm>.

Pacific bank/broker-dealer stated the data “is published by the Fed, with enough creditability.” A North American bank/broker-dealer added that “the underlying data is widely available and the calculation transparent and accessible for review in a timely manner is the main consideration from our perspective.”

45. Consistent with the above view, a North American insurance company stated, “We accept these historical rates as a reasonable proxy for SOFR. The size of their relative daily market movements is comparable to those of SOFR and the correlation with Fed Funds is also comparable to SOFR.” Another North American insurance company added, “We have reviewed the historical indicative SOFR data and the historical Overnight Treasury GC Repo Primary Dealer Survey Rate and did not find any obvious areas of controversy, data integrity, or otherwise. Further, we find the ranges for the SOFR/LIBOR spread using each of the datasets to be comparable, apart from obvious spikes during the tech bubble and global financial crisis (and in such cases the spread series behaved intuitively). We find no reason to ignore such readily available data and feel it could be a useful complement to the live SOFR publication data and permit a longer historical window to be used in calculating the SOFR adjustment.”

46. A European bank/broker-dealer agreed, noting some differences between the proxy rate and SOFR: “[the European bank/broker-dealer] accepts the use of the data stemming from Overnight GC Repo Survey of primary dealers as proxy for SOFR before April 2018, since it is the designated fallback rate in case of SOFR disruption. We understand that - The rates coming from the survey are expressed as volume-weighted mean average (whereas SOFR uses the Volume weighted Median average) - The transactions underlying the survey rate are not as broad as those underlying SOFR as it does not capture borrowing activity conducted by non-primary dealer market participants. As a consequence, we recognize that this may be as close as we could be to reconstitute a SOFR rate before April 2018 when it was first published.” This European bank/broker-dealer further notes that they “expect to be able to express an opinion as to the period during which the Adjustment Spread is observed for the Libor fallback, at the upcoming ISDA consultation on Spread computation methodology. Important Note : Primary Dealers have been self-declaring an aggregation of their trades to the Overnight Repo survey since the 1990’s; Using this data to define an adjustment spread to achieve USD LIBOR to SOFR conversion, may raise the same questions on contribution quality as LIBOR by some counterparties that are hit unfavorably by the Adjustment Spread.”

47. Several respondents expressed their views regarding the indicative and proxy data in relation to their preference of the length of the lookback period. These respondents indicated that they agree with the use of the indicative and proxy data given their preference for a long lookback period (of 10 years or more). For example, a North American bank/broker-dealer stated, “We would be in favor of using the longest possible time period to calculate the SOFR / LIBOR basis relationship. Looking back to 1998 would observe the relationship over multiple business and interest rate cycles and would include the Financial Crisis of 2007-2009. There have been many regulatory changes over the past 10 year that has impacted the relationship, the liquidity behind LIBOR, and the value of Treasury securities. Some of these regulations are under review for further change.” Similarly, a North American asset manager commented, “It would be acceptable. The benefits stemming from a longer time period for calculating the spread adjustment, in our view, outweigh any potential issues arising from using indicative and proxy data.” A group of North American government-sponsored enterprises expressed that their “[p]reference would be to use the indicative SOFR formulated data and accumulate to a rolling 10yr observation window. Using the proxy data may be acceptable and ensure a 10yr window of ready history.” A couple of respondents (a North American pension fund and a North American asset manager) preferred to use only the indicative data; however, these respondents also preferred a longer lookback period, and therefore, concluded that both series of data could be acceptable.<sup>15</sup>

48. In addition to the above comments, a North American bank/broker-dealer raised a different issue regarding “permissibility”: “[This North American bank/broker-dealer] believes that it would be appropriate to use this indicative data, so far as it is permissible for use, when calculating “adjusted SOFR,” under relevant law(s) and/or regulation(s). A European professional

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<sup>15</sup> The North American pension fund stated, “[W]e think it is appropriate to rely only on the indicative SOFR data because it encapsulates a methodology that cleans up the underlying repo data from various undesirable features (e.g., removes trades between related entities, truncates to remove specials, etc.) and this methodology will be present in SOFR going forward. That said, if indicative SOFR could not be provided for a 10 years period we would reluctantly use the GC repo survey rate because we put a lot of weight on making sure that the period covers a full economic cycle.” The North American asset manager stated, “The case for including the proxy data seems somewhat weaker in our view. Assuming a 2022 fallback at the earliest, and a 10-year lookback at the longest, the proxy data would add no more than two and a half years of data, a significantly smaller extension. Additionally, the process by which the series was calculated is less similar to the SOFR calculation. However, there are still advantages to having additional data and a longer history, so we do not have a strong view on this series.”



services firm further emphasized, “The use of past data, by opposition to data that would neutralise the value transfers, is already a substitute to a neutral spread. The use of a substitute to the substitute is not changing fundamentally the issue. Like for other answers related to the spread, one will have to make sure that the governance related to that choice, as for example described in Section 1.6, is strictly enforced. One way to reduce the material non-public information issue would be to use some random selection of data...”

## **B. IS IT ACCEPTABLE TO USE THE INDICATIVE AND PROXY DATA UPON FURTHER ANALYSIS?**

49. A few respondents agreed in principle with using the indicative and proxy data, but wanted further analysis to be conducted to show that the proxy data is “relevant.”<sup>16</sup>

50. For example, an Asia-Pacific bank/broker-dealer stated that “using the proxy data is [a]cceptable if it can be shown that the proxy is very close to the actual SOFR.” A North American bank/broker-dealer added, “For values prior to August 2014, it is unclear what the potential basis might have been due to the 'technical differences' and whether the volumes were robust enough to rely upon that rate as an index for that period. We are not opposed to incorporating that period as part of a lookback should the value of technical differences be extremely minimal (i.e., < 0.5bp) and the volume be sufficiently robust (relative to the broader market) so as to substantiate it as an appropriate, ‘alternative’ benchmark for this purpose. Such rates, however, may need to be adjusted to reflect actual tradable value.” A North American professional services firm expressed that it “would like to address the differences between proxy SOFR and indicative SOFR. On average, indicative SOFR was 0.91 basis points higher than proxy SOFR over their overlapping time frame. This difference should be considered when calculating the spread adjustment over lookback periods that incorporate both data-sets.”

51. Similarly, a European asset manager stated, “It does not hurt to use historical data of a close proxy in order to gain data on the longer run for SOFR. However, when it comes to use those data to calculate the spread that should apply to SOFR, if used as fallback for USD LIBOR,

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<sup>16</sup> Since the conclusion of the 2019 Supplemental Consultation, we noted that the Federal Reserve published a note arguing that the historical Overnight Treasury GC Repo Primary Dealer Survey Rate is a good proxy for historical SOFR data. It is available at <https://www.federalreserve.gov/econres/notes/feds-notes/historical-proxies-for-the-secured-overnight-financing-rate-20190715.htm>.

there is a need to further assess that proxy is as relevant as suggested. We fear that in different market circumstances SOFR and its proxy ancestor may diverge. Few technical differences may turn into large discrepancies. This possibility should be examined from a theoretical and a practical point of view, using (when relevant) data relating to other markets. We recommend an in depth assessment before validating the proposed methodology.”

52. The concern regarding the reliability of the proxy data across different market conditions was also raised by a North American asset manager: “Generally we would be comfortable with the use of this rate and risk managers would find the continuity helpful. Our concerns would be around market stress events in the periods between 1998 and 2008 specifically 2008 that would make the data a little noisy. The consideration or trade-off is between having a complete set of historical data or a set with the greater precision as a longer data set will introduce some volatility. Some groups within we think a 5 year look back from 2021 you would have coverage on pricing from the SOFR and the Pre-SOFR period. Only with a 10 year lookback would we have to go to the primary dealer information in order to supplement it. We would generally be comfortable with the use of this rate. During stress periods in 2008 there are some outliers in the data that could create a little noise. The question is, do we want a complete data set or precision as it will introduce some volatility... Assuming LIBOR discontinuation happens no earlier than the end of 2021, a 10 year history would use at most 2.5 years of SOFR proxy data. Equally given the preference of a median spread, the few observations where the SOFR proxy would deviate from traditional relationship with SOFR would also carry less weight compared to a mean spread calculation.”

### **C. IS IT ACCEPTABLE TO USE THE INDICATIVE DATA BUT NOT THE PROXY DATA?**

53. A number of respondents (approximately 20%) expressed a preference for potentially relying on indicative data but not on proxy data. This was attributed to their preference for a shorter lookback period and/or differences between the proxy data and the SOFR.

54. As an example, certain respondents expressed their preference for a shorter lookback period, noting that the shorter period would mostly require the use of indicative data and not proxy data. More specifically, a European bank/broker-dealer stated, “[our] view is that data going back to August 1, 2014 would be sufficient as that will equal seven years’ worth of data by the end of 2021 when the IBOR’s are expected to cease. These are also indicative SOFR values that would have been published in any event. However we do not see data that goes back to

February 20, 1998 as useful at all. This is on the basis that the market was very different 20 years ago to what it is now, in terms of regulation, capital constraints and the funding market etc.” A European bank/broker-dealer shared a similar view: “It would be acceptable to use the indicative SOFR values dating back to August 1, 2014. This would allow for at least 5 years of look-back period over a consistent dataset: at least 2-3 years of officially published SOFR rate and 2-3 years of indicative SOFR. It would have the benefit of reducing the risk of manipulation (longer period), while reflecting the recent market conditions.”

55. Similarly, a North American pension fund and a European bank/broker-dealer stated a preference for a shorter lookback period. However, these two respondents added that in the event that the proxy data is needed, they still think that it is acceptable to use and rely on proxy data. The North American pension fund stated, “In answering the question above, we are of the view that ISDA should select a lookback period with the ultimate goal of seeking to minimize to the greatest extent possible the value transfer from the Covered IBOR to the alternative RFR (plus spread). Accordingly, as such a lookback period (seeking to minimize value transfer) is likely to be a shorter lookback period (e.g., 3 years), we believe that it should hopefully not be necessary to use the historical indicative proxy data from Overnight Treasury GC Repo Primary Dealer Survey Rate in order to correctly calculate the spread adjustment in respect of adjusted SOFR. With that said, in the event that either (i) a 3 year lookback period (or shorter) were to be used, but a pre-cessation trigger were to somehow occur shortly, requiring proxy data or (ii) a longer (5, 7 or 10 year) lookback period is chosen, then in both cases, we believe that it is appropriate and necessary to use GC Repo Primary Dealer Survey Rate in order to calculate the spread adjustment in respect of adjusted SOFR.” The European bank/broker-dealer was in favor of even a shorter lookback period: “[This European bank/broker-dealer] agrees in principle with the use of indicative data in this context, as may be required, provided only that any and all data used by the Federal Reserve Bank of New York is made publicly available to all market participants well in advance so that the market can build it into their models. As we have recommended above, a 1-year look back long enough to reduce the risk of manipulation, and would better reflect the current rates, therefore reducing PNL impacts.”

56. In addition to a preference for a shorter lookback period, other respondents indicated that the use of the proxy data is not “acceptable” or “desirable” due to differences in the characteristics between the SOFR and the proxy data. A European asset manager expressed that it supported the use of the indicative data, but it was “not able to ascertain the integrity of the GC

Repo data and as such would not recommend a look back period prior to 1 August 2014.” A North American bank/broker-dealer added, “Our strong preference is to only use data provided by the FRBNY that dates back to August 22, 2014. Our concern with using data prior to that date is that the historical Overnight Treasury GC Repo Primary Dealer Survey Rate data is limited to Primary Dealers and may not be an accurate proxy for SOFR.” A European bank/broker-dealer agreed, stating that “[a] substantial spread between this index and the SOFR is observable since the SOFR exists and has a substantial volatility. Furthermore, the regulatory and market environment has changed since 2014 in particular with the integration of LCR impacts. We believe consequently that limiting the lookback period in the [2014/2019] window would be preferable.”

57. An Asia-Pacific bank/broker-dealer, North American bank/broker-dealer, and European central counterparty further highlighted the differences between the proxy data and the SOFR. The Asia-Pacific bank/broker-dealer stated, “The overnight Treasury GC Repo Primary Dealer Survey Rate is not acceptable. Because the data source and calculation method differ from SOFR, the rationality for using it as equivalent to SOFR is not sufficient. We are concerned that the change in fair value will be large, as there is a high possibility of divergence from the market.” The North American bank/broker-dealer added, “As described by the FRBNY, the transactions underlying the Primary Dealer survey rate are ‘not as broad as those underlying the SOFR, as the survey collects only the general collateral segments of the repo market and does not capture borrowing activity conducted by non-primary dealer market participants.’ Our analysis shows that SOFR averaged ~1bp higher than the Primary Dealer survey rate from Aug 2014 – Feb 2018. There was a more meaningful deviation in 2016 where SOFR averaged 3bps higher, including several data points in September 2016 where SOFR was 10-26 basis points higher than the Primary Dealer survey. As such we do not think that this survey rate is fit for purpose to proxy as SOFR for dates prior to 2014 given that fundamental differences in the underlying transactions could lead to deviations from SOFR.” The European central counterparty emphasized, “Regarding the use of the historical Overnight Treasury GC Repo Primary Dealer Survey data, we note that such rates are subject to certain technical differences versus SOFR. In the absence of corresponding data for SOFR itself, the scale of these differences is uncertain. The scale of the impact on the spread adjustment value through use of this data is also therefore uncertain. Without certainty on this matter, we cannot be confident of recommending the use of such data for the calculation in question.”

## D. NOT ACCEPTABLE TO USE THE INDICATIVE AND PROXY DATA

58. Only three respondents did not agree with the use of the indicative and proxy data. Of these three respondents, two stated that they did not agree with the use of the proxy data without commenting on the indicative data. The third respondent, a North American asset manager, proposed another approach commenting, “The Federal Reserve data described above should not be used when determining the historical average spread adjustment. While this data has value as an indicative yield, it is not suitable for use as a proxy for actual SOFR rates. SOFR data relates to a daily rate and not to market-defined term rates of various tenors, which are the actual rates market participants will be converting from. Extrapolating a term structure, even if possible, from the daily rates would require assumptions regarding the relationship between SOFR and OIS (Fed Funds Effective). The SOFR/OIS relationship has not been stable and, importantly, changed radically after the market learned about the potential selection of the historic average spread methodology by ISDA. Furthermore, the increased activity has driven changes in the SOFR/OIS spread term structure as new issues hit the market. These market forces driving the SOFR/OIS curve are missing from the static Federal Reserve data set, and relying upon that data set would lead to spread adjustments that are not representative. It is [our] view that the Fed Funds Effective Rate might be a more appropriate proxy for determining the credit spread adjustment upon the occurrence of an index cessation event with respect to USD LIBOR.”

## VI. Comments on ISDA’s Proposed Update to the SGD-SOR-VWAP Rate Option

59. Question No. 7 of the 2019 Supplemental Consultation aimed to solicit market participants’ view on the proposed update to the “SGD-SOR-VWAP Rate Option in Section 7.1 of the 2006 ISDA Definitions to provide that upon a permanent discontinuation of USD LIBOR (as triggered by the definition of ‘index cessation event’ above), derivatives contracts that reference SGD-SOR-VWAP will fall back to this Adjusted SOR.” The Adjusted SOR is “a fallback reference rate based on actual transactions in the USD/SGD FX swap market and a USD interest rate calculated pursuant to the methodology used to calculate fallbacks for USD LIBOR in the updated 2006 ISDA Definitions (i.e. adjusted SOFR plus a spread adjustment).”

60. Of the 85 respondents to the 2019 Supplemental Consultation, 33 respondents did not provide a direct comment to this question, five of which said that they did not comment because they did not have significant or material exposure to SOR (a North American asset manager,

student loan service, and insurance company, as well as two European bank/broker-dealers). Two of the 33 respondents commented that other market participants are better-placed to provide an opinion on this question. In particular, a European bank/broker-dealer stated, “We acknowledge and understand the proposal to use the Adjusted SOR based on adjusted SOFR plus a spread adjustment. ... Whilst in principle the Adjusted SOR method appears to be the industry direction, depending on the spread amount proposed to be added to SOFR, which is not determined as yet, this will determine real suitability of the fallback solution.” A European central counterparty commented, “[W]e defer to the derivatives market participants who make the original choice regarding benchmark use to assess the appropriateness of this approach vis-a-vis the original commercial intent of these contracts.”

61. Of the 52 respondents who did provide an answer to Question No. 7, 45 of them (i.e., 85%) had no concerns with ISDA’s approach to update the SGD-SOR-VWAP Rate Option, while seven respondents raised some concerns. Most of the respondents who did not have concerns simply stated that they had no concerns, that the approach appears reasonable, or that they agree with the proposed approach. Those that provided an explanation cited consistency (i.e., ISDA’s proposed approach is consistent with the methodology proposed for USD LIBOR) as the reason why they agreed with the approach. For example, a North American bank/broker-dealer viewed this approach as “acceptable to reduce the risk of market disruption upon the cessation of SOR.” A few other respondents said they had no concerns but that was because they did not have material exposure to SOR (a European bank/broker-dealer, a group of North American government-sponsored enterprises, and a North American insurance company).

62. A few respondents did express concerns with ISDA’s proposed approach. For example, A European non-financial corporation stated, “The FX Forward rates are forward-looking whilst the Adjusted SOFR will be a backward-looking rate.”

63. In addition, a couple of respondents raised a concern regarding differences in the timing of publication of the different benchmarks. An Asia-Pacific bank/broker-dealer stated, “The term structure and credit spread adjustment will come about only at cessation event. This would imply that SOR fallbacks have to [be aligned] with USD LIBOR fallbacks (i.e., USD SOFR) in terms of timing. USD SOFR is published at a much later timing than USD LIBOR which means that the publication of SOR will be delayed as well. USD LIBOR is forward looking while USD SOFR term rate will be backward looking since it is adopting the compounding in arrears approach. This will change the fundamental definition of SOR which is meant to be forward looking.”

Similarly, another Asia-Pacific bank/broker-dealer commented, “Further, there is the issue of timezone differences as SOFR is currently published at 8am New York time which is 8 pm Singapore time and the Adjusted SOR will be based on data which is one day late and not reflective of real time market pricing.”

64. Other respondents expressed concerns regarding whether this approach is an “acceptable fallback” including, a European professional services firm, which stated that “this is not a good choice. It leave[s] the SGD market dependent on choices that may not be relevant for its market. We strongly recommend to have a term rate fallback adapted to the local market. Rate like SIBOR already exists and could be used as one of the steps in a waterfall implementation of the fallback.” Similarly, an Asia-Pacific bank/broker-dealer’s comment stated, “We believe that such an approach may not be a very acceptable fallback. Three month SOR is a function of the three month forward looking USD 3 month LIBOR and the three month forward looking USD/SGD FX Swap. The three month forward looking USD/SGD FX Swap index is expected to continue and a more appropriate fallback for three month USD LIBOR in this case could be the three month Forward Looking Term SOFR Rate that may be published in the future.”

65. At the close of the 2019 Supplemental Consultation, ISDA noted that they have communicated the relevant feedback regarding SOR to the Monetary Authority of Singapore (“MAS”), for this to be considered by the Singapore Foreign Exchange Market Committee (“SFEMC”) and Association of Banks in Singapore (“ABS”) for their consideration as they determine how to address the implication of the permanent cessation of USD LIBOR on SOR. After the 2019 Supplemental Consultation closed, the SFEMC and ABS issued a public consultation report on “Roadmap for Transition of Interest Rate Benchmarks: From SGD Swap Offer Rate (SOR) to Singapore Overnight Rate Average (SORA).”<sup>17</sup> Separately, MAS announced the formation of a Steering Committee for SOR Transition to SORA.<sup>18</sup>

66. Taking into account market feedback, if the SFEMC and ABS, or this newly formed Steering Committee that is responsible for SOR transition, determine that a fallback to a rate such as “Adjusted SOR” is appropriate and that rate is produced and published (or will be

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<sup>17</sup> The consultation report is available at: <https://abs.org.sg/docs/library/consultation-report-on-roadmap-for-transition-of-interest-rate-benchmarks-from-sor-to-sora.pdf>.

<sup>18</sup> More information is available at: <https://www.mas.gov.sg/news/media-releases/2019/mas-sets-up-steering-committee-to-drive-the-interest-rate-benchmark-transition-from-sgd-sor-to-sora>.

produced and published), ISDA expects to update SGD-SOR-VWAP Rate Option in Section 7.1 of the 2006 ISDA Definitions to include a contractual fallback to that rate.

## VII. Comments on the Parameters of the Historical Mean/Median Approach

67. Question No. 5 of the 2019 Supplemental Consultation, in part, solicited market participants' views on whether their preferred historical static lookback period should be calculated based on the mean or the median spot spread between the IBOR and the adjusted RFR, and what would be the appropriate length of the lookback period. This section summarizes respondents' answers to this question.

### A. MEAN OR MEDIAN

68. Of the 85 respondents<sup>19</sup> to the 2019 Supplemental Consultation, 17 did not provide a response in regards to their preference between the mean and the median spot spread for the calculation of the lookback period. Seven of the respondents had no clear preference. Of the remaining respondents, 33 preferred the median spot spread while 23 were in favor of the mean spot spread. Five respondents also preferred a variation of the mean approach, which they called the "trimmed mean".

69. A majority of the respondents that preferred the median approach thought that it would be more stable and less volatile and could easily avoid the presence of outliers or skewed data outcomes. For example, a European bank/broker-dealer stated, "Calculation should be based on the median spot spread between IBOR and the adjusted RFR as this is likely to be more stable than a mean, and also reduce the sensitivity of the approach to outliers, for example to reduce the impact of the end-of-quarter jumps observed in SOFR." An Asia-Pacific bank/broker-dealer preferred "[t]he median spread, so as to deal more optimally with outliers. This seems particularly relevant, since any LIBOR announcement is likely to coincide with market turmoil...."

70. The respondents that preferred the mean approach generally expressed that it was more predictable and representative of the market. For example, ten respondents observed the mean

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<sup>19</sup> Note that 28 respondents affirmed responses from the 2018 Consultation.



approach to be more representative of shifts in the market, including a North American government-sponsored enterprise which stated, “The mean is preferable to the median, and a rate aligned to volume weighted observations. In tests, we observe it to be more predictably representative of trend shifts in the market. The median is arbitrary, and the mean more accurately reflects the true economics since spikes or dips of large magnitude would be realized in the markets and the median would not be impacted by the magnitude of any such moves.”

71. As part of their response, a few respondents that preferred the mean approach raised concerns about using the median approach stating that it might distort or ignore certain market information. For example, a European bank/broker-dealer’s response stated, “We consider the ‘mean’ (average) spread in the lookback period as the most appropriate value to adopt; the ‘median’ might be distorted by a very wide range of numbers.” Similarly, a North American bank/broker-dealer stated the median approach excludes certain stress periods: “To take median would be effectively deciding to ignore any future possibility of stress periods leading to an artificially low spread. Therefore we strongly oppose this approach.”

72. Lastly, some respondents preferred a variation of the mean approach known as the “trimmed mean”. A North American pension fund described this approach as “truncating the top and bottom decile of the distribution” which is done to “to eliminate outliers that can potentially skew the average”. A European asset manager provides further support for this approach, stating, “The robustness of the median is satisfactory but does not provide the same level of responsiveness as the mean. We therefore believe a trimmed mean could be a good compromise.”

## **B. LOOKBACK PERIOD**

73. In regards to the length of the lookback period, there is no clear preference between the shorter five-year and the longer ten-year lookback periods. Out of the 85 respondents<sup>20</sup> to the 2019 Supplemental Consultation, 21 respondents preferred the five-year lookback period and 24 respondents preferred the ten-year. Respondents discussed advantages associated with each lookback period option similar to those already raised in the 2018 Consultation, as summarized in the Brattle’s 2018 Consultation Report. Respondents also indicated other preferences for lookback periods. Two respondents preferred a lookback period longer than ten years while three respondents preferred a period shorter than five years. In addition, 11 respondents

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<sup>20</sup> Note that 28 respondents affirmed responses from the 2018 Consultation.

suggested lookback periods that cannot be classified by the duration of time. Eight respondents did not have a clear preference for a particular approach and 16 respondents did not provide an answer.

74. Out of the respondents that selected the five-year lookback period, 7 respondents preferred this option in order to avoid capturing the effects of the 2008 Financial Crisis. For example, an Asia-Pacific bank/broker-dealer stated, “Based on analysis of historic basis data [the Asia-Pacific bank/broker-dealer] believes the appropriate historical static lookback period to be 5 years given the extremes of basis – both spread and volatility – experienced through and in the immediate aftermath of the GFC. Use of the 10-year lookback would incorporate data containing historically exceptional basis spreads that in a lookback context proved misrepresentative of underlying risk.” A North American bank/broker-dealer also elaborated on this point by highlighting the importance of stability within the lookback period, stating that “the appropriate historical lookback period should be a rolling 5 year period in order to capture the period of central bank stability in the interest rate markets. This length of observation period would be more representative of longer term historical values and minimize the difference in realized LIBOR rates (which reflect a forecast of central bank action) and OIS rates (which do not have such a component).”

75. Another argument made by a number of respondents supporting the five-year lookback period was that this period would be more reflective of current market conditions. A European bank/broker-dealer noted, “A 5-year period is reasonable. It is long enough to mitigate the risk of manipulation and short enough to reflect recent market conditions.” An Asia-Pacific bank/broker-dealer made a similar argument stating that “five years will more reflect the market level, and we expect that the impact of the fair value transfer will be small. In addition, we think that it is not appropriate for a long period because market conditions, such as regulation, may be different.”

76. A majority of the respondents that chose the ten-year lookback period did so because they preferred a lookback period that captures a full economic/business cycle, which would not be captured by a five-year period. A North American asset manager noted, “The best argument in favor of the 5-year lookback period is that the data would not include data from periods during which material market manipulation is understood to have occurred. On the other hand, a 5-year lookback would not include data from a full business cycle, which is important and which suggests that, on balance, a 10-year lookback would be preferable. Ten years of data would also

be less manipulable.” A North American bank/broker-dealer added to this argument, stating, “The longer look back affords the industry to capture a higher number of periods of volatility that can be integrated into the analysis and provide a correlated relationship that includes the cost impact of these periods. 5 years could be suitable, but volatility over the past 5 years has been relatively low and does not include significantly disruptive events within that horizon. We would favor as long of a lookback as possible to ensure the highest correlation.”

77. Other respondents in support of the ten-year lookback period focused on minimising noise and/or stability. A group of North American government-sponsored enterprises noted, “The longer the time period within the average, the greater its stability,” while a North American asset manager added, “In general, we are in favor of longer historical lookback periods in order to minimize the effects of noise, manipulability and periods of instability. This leads us to support a 10-year lookback over a 5-year lookback, but both are fundamentally workable.” The issue of manipulability was also referred to by another North American asset manager.

78. The two respondents in favor of a period longer than ten years also used the business cycle argument mentioned above; however, their focus was on the inclusion of the 2008 Financial Crisis within the lookback period. For example, a North American government-sponsored enterprise noted that the “[f]ive- or ten-year measurement periods will not include rates from the 2008 crisis. We believe that the historical period should include the 2008 events. In that manner, the historical rate incorporates a broader range of credit risk premia. Our view is consistent with the initial margin models that are utilized by the derivatives clearinghouses, which similarly include the 2008 crisis period. We also considered the possibility that the spreads implied from the current LIBOR swap market vs. the risk-free rate may be pricing a weighted blend of pre- and post-2008 crisis periods. If there is not consensus for a 15-year period, then our second and third preferences are to use (i) a weighted (50/50) blend of pre- and post-2008 periods or (ii) a long historical period from post-2008 (10 years), respectively.”

79. Some respondents discussed both the five-year and the ten-year lookback period but did not indicate a clear preference for either. For example, a North American bank/broker-dealer noted, “Ideally, the historical lookback period would mirror the remaining term of a given derivative. As this is likely not operationally feasible, using a lookback that is generally consistent with the duration of the broader market should minimize value transfer in aggregate and suggest a lookback of roughly 5 years. Using longer terms (i.e., 5 to 10 years) has the benefit of capturing more of a full interest rate cycle and, thus, helps to neutralize some of the impact

monetary policy may have on the given spread (i.e., term differential, QE vs. QT policy impacts, US Treasury issuance impacts, etc.).” A few respondents did not indicate any preference for either approach, due to concerns with both lookback periods. For example, a European asset manager noted, “On Historical calculations we would again like to reiterate the below considerations; Historic prints must be robust (we are here because LIBOR was manipulated. SOFR has just being established) so using a long period will be harder to justify. Nonetheless a shorter time period uses more robust data but will not include a full market cycle (for example: no rate hiking cycle; insufficient financial stress periods) which seems inconsistent with a 50 year swap. Using historic prints can be thought of as a blunt way of trying to determine a fundamental value of the contract (similar to what might happen in an ALM model).”

80. Lastly, some respondents preferred approaches that were not specific to a time period. A European asset manager noted, “The longer the look-back period, the better to dilute the impact of exceptional observations without eliminating them. But practical reasons suggest not to extend the period too much. Thus, a 10 year period would seem, at first sight, appropriate. However, it is questionable that 2009/2018 is. We suggest to extend the period of observation to 15 or 20 years and compute mean and median on different sub-periods, for example 5 years, to judge whether there is sufficient stability in the spread before fixing it. Alternatively, we could suggest to aggregate 2 or 3 different periods of 5 or 3 years representing different interest rate contexts and thus reducing the impact of the recent QE policy developed by central banks.” Alternatively, a North American asset manager suggested a weighted approach, stating that “[a] longer history is likely most appropriate. However, it is important to note that there have been fundamental changes in money market conditions that have occurred and are likely to be sustained (e.g. money market reforms in US, change in transaction set for SONIA) over the past few years. So a ‘weighted’ history could be a possible approach.”

81. A North American bank/broker-dealer also suggested a different approach, stating that “[the bank/broker-dealer] would like to propose the use of a variable minimum lookback period. A variable period would allow for flexibility when addressing the data sufficiency of rates which have only recently entered publication (e.g. SOFR, €STR). The start date for which historical rate data has been deemed relevant and available would be determined by the administrator, its regulator, or the central bank of the relevant currency. Therefore, the observation period would incorporate the maximum period available up to a total duration of ten years. In addition, we would expect that a minimum of five years’ data be considered for admissibility. Under this

methodology, the lookback period for a specific rate would be determined by the following formula: Lookback Period =  $\min(n, 10) \geq 5$ ; where  $n$  = years of available data.” A European professional services firm preferred a similar flexible approach stating that “[t]he period depends on the method for the adjusted RFR and the situation in the market at the moment of the discontinuation. It is not certain that a static period can be appropriate, a flexible period may be required. If a compounding in arrears or compounding in advance approach is selected, it is important the period covers a full business cycle.”

## VIII. Conclusion

82. A thorough review of the feedback from respondents to the 2019 Supplemental Consultation shows that across the different types of market participants, an overwhelming majority were in favor of the compounded setting in arrears rate with the historical mean/median approach to the spread adjustment. The overwhelming majority of respondents also preferred to use the same adjusted risk-free rate and spread adjustment across all benchmarks.

83. Using the feedback collected from respondents, ISDA expects to proceed with developing fallbacks based on the compounded setting in arrears rate and the historical mean/median approach for USD LIBOR, CDOR and HIBOR fallbacks, as well as for fallbacks for the IBORs covered by the 2018 Consultation, for inclusion in the 2006 ISDA Definitions. ISDA will also continue to solicit feedback from market participants and continue to work with its independent advisors to determine the appropriate parameters for the historical mean/median approach and precise equations that will be used to calculate the adjustment.

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