Bloomberg Short–Term Bank Yield Index

Consultation on Methodology Enhancement

October 7, 2021

Proposed BSBY Methodology Enhancements

Background

BSBY is published by Bloomberg Index Services Limited ("**BISL**") daily based on a methodology that uses a three-day rolling window of input data. Under the current methodology, the minimum thresholds are $60 billion for the Overnight, $10 billion for 1M, $10B for the 3M, $10B for the 6M and $9B for the 12M rate ("**Minimum Thresholds**").

The transaction-related input data is aggregated and contributes to each tenor based on the respective days-to-maturity ("**DTM**") corridor of the underlying instruments. For example, BSBY Overnight has a DTM corridor of one to five days; BSBY 1M has a corridor of six to forty-five days.

In the event a Minimum Threshold is not met, the current BSBY construction algorithm relies on a lookback process that expands the window by incremental days (with a maximum of five days) to meet the required threshold per tenor. If none of the incremental lookbacks achieve the required input data volume, the previous business day BSBY rate is carried over for such tenor (the "**Carry Forward**").

Historically, BSBY calculations reflect a limited use of the existing lookback mechanism. For example, the BSBY 3M required a fourth day lookback in 2.5% of rate calculations over the past five years with no need to use a fifth day. The Carry Forward has never been needed on any BSBY tenors over this period. Nevertheless, following discussions with clients and other stakeholders, BISL has determined to issue this consultation to gather market feedback on whether to enhance the resiliency of the BSBY methodology during periods of extreme market stress.

<u>For clarity, these enhancements would only apply during—and for so long as—these extreme market scenarios are in effect, if ever, and would not otherwise change the day-to-day calculation or existing historical performance of the BSBY rate</u>.

As a reminder, BSBY is not currently available for use as a benchmark under the UK Benchmark Regulation and must not be used as a benchmark in the United Kingdom.

Executive Summary

BISL is soliciting stakeholder feedback on changes to the BSBY methodology's calculation waterfall process, in lieu of the Carry Forward, in the event the relevant Minimum Thresholds are not met (the "**Calculation Waterfall**").[1]

The first step is to expand the DTM corridor for the affected tenor to include the adjacent input data ("**Initial Expansion**" or "**IE**"). For example, BSBY 3M would include input data from the BSBY 1M and the BSBY 6M.

If the Minimum Threshold remains unmet, then the rate would be calculated using a linear regression global fit of all input data across the curve ("**Global Fit**" or "**GF**").

In the event the Global Fit calculation fails to meet the requisite Minimum Threshold, the rate would be calculated by applying a formulaic spread to the New York Fed's Overnight Bank Funding Rate ("**OBFR**"). Figure 1 depicts this updated Calculation Waterfall as compared to the current BSBY methodology.

Figure 1

BSBY Current Methodology Waterfall	**BSBY Proposed Methodology Waterfall Extension**
Standard 3D window of data within a corridor must meet tenor threshold	Standard 3D window of data within a corridor must meet tenor threshold
Add a 4th day of data to a tenor corridor meet threshold	Add a 4th day of data to a tenor corridor to ensure its threshold has been satisfied
Add a 5th day of data to a tenor corridor to meet threshold	Add a 5th day of data to a tenor corridor to ensure its threshold has been satisfied
Publish previous day BSBY	~~Publish previous day BSBY~~
	Enhancement Step 1 – Expand tenor corridor to include data from neighboring corridors "**IE**"
	Enhancement Step 2 – Use all available data across the curve – "**GF**"
	Enhancement Step 3 – Use OBFR plus a formulaic spread per tenor – "**L6**"

Each of these steps is described in further detail below along with relevant information regarding input data volumes and hypothetical rate performance.

[1] The current BSBY methodology is available under the 'Resources' tab here: https://www.bloomberg.com/professional/product/indices/bsby/

Enhancement Step 1 – Initial Expansion

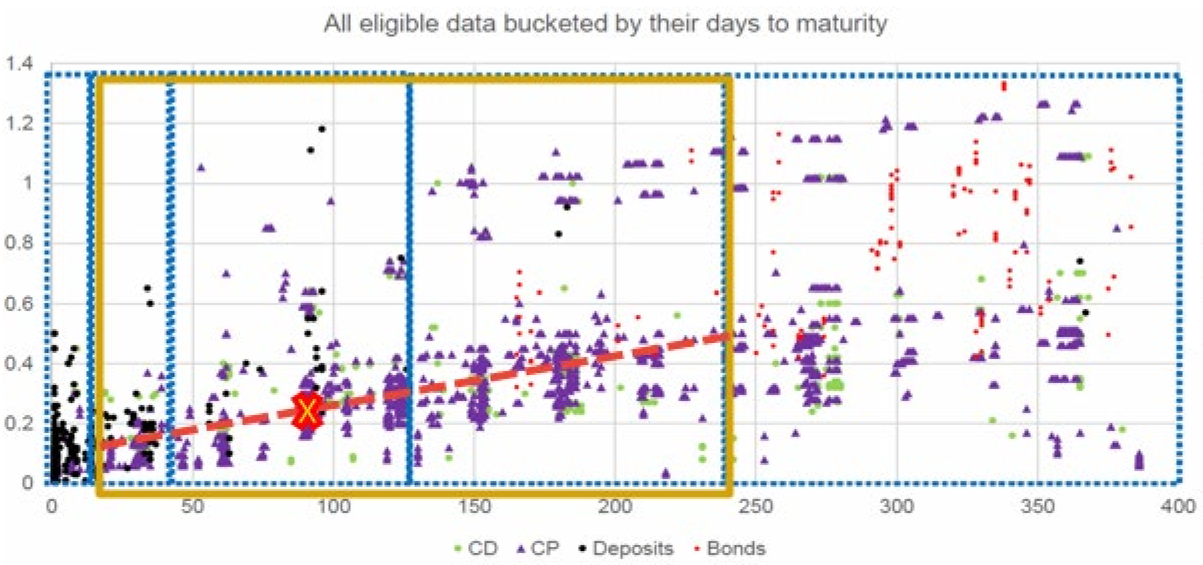
In the event the calculation window expansion to five days fails to meet the relevant Minimum Threshold for a particular tenor, rather than trigger the Carry Forward, such tenor's calculation will include input data from adjacent tenors under the Initial Expansion enhancement. For example, if the BSBY 1M fails to meet its Minimum Threshold, input data from the Overnight and the 3M will be included.[2]

The table below defines the DTM range for each rate under the Initial Expansion scenario.

Ticker	Evaluation Point (DTM in Calendar days)	IE DTM Range	
		Start	End
BSBYON	Next business day	1	45
BSBY1M	30	1	125
BSBY3M	90	6	240
BSBY6M	180	46	400
BSBY12M	365	126	400

Figure 2 below depicts this Initial Expansion from an input data perspective using the BSBY 3M as an example.

Figure 2



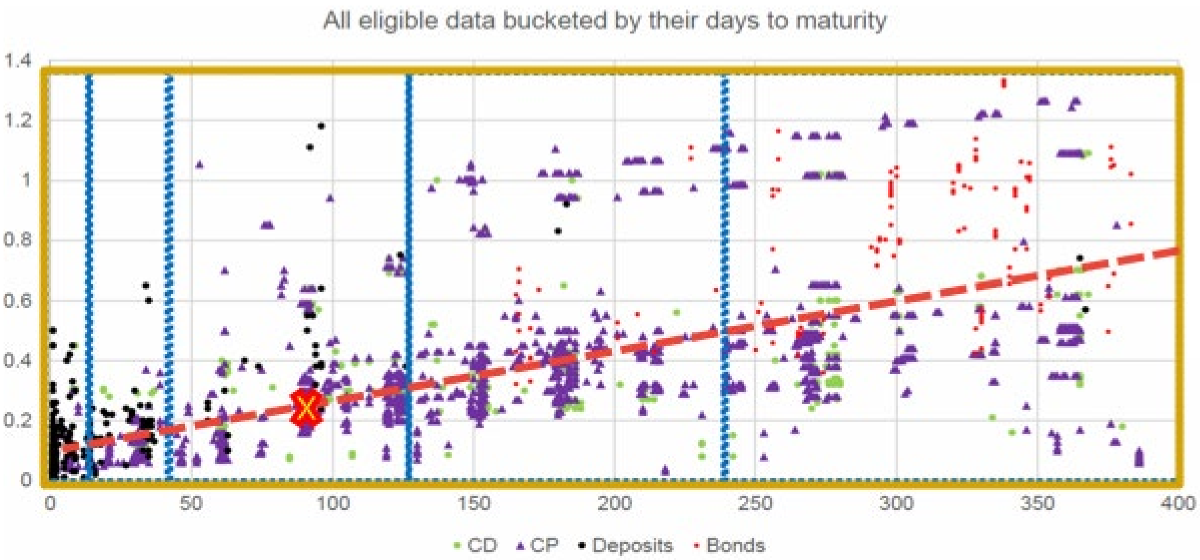
[2] For the Overnight, just the 1M transaction volumes would be included.

Enhancement Step 2 – Global Fit

In the event the Initial Expansion still fails to meet the Minimum Threshold due to extreme market illiquidity, then the input data for all BSBY tenors will be included and the calculation algorithm will be calculated as a Global Fit.

Figure 3 below depicts this Global Fit from an input data perspective using the BSBY 3M as an example.

Figure 3



The BSBY index team has tested these enhancements to assess historic input data volumes available under each scenario.

Figure 4 below depicts average volumes for the BSBY 1M under the Initial Expansion and the Global Fit against the average input data volumes for the standard BSBY 1M rate calculations as well as the average input data volumes using the full five-day lookback. As can be seen, average input data volumes are well above relevant Minimum Thresholds.

Figure 4

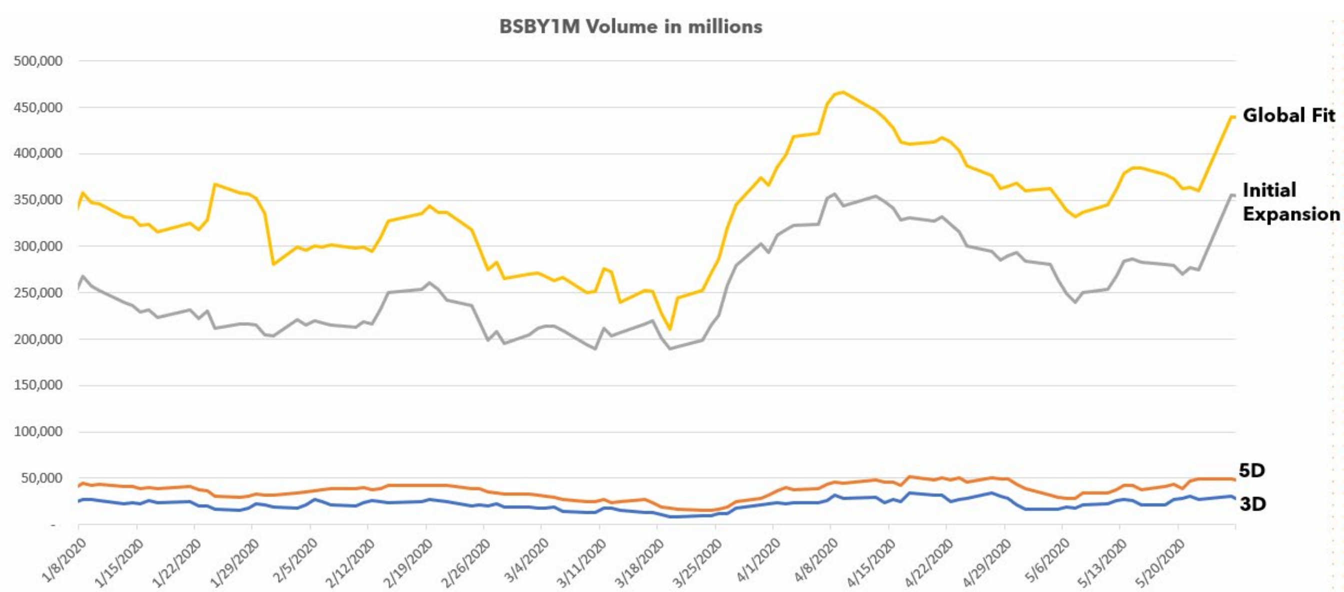
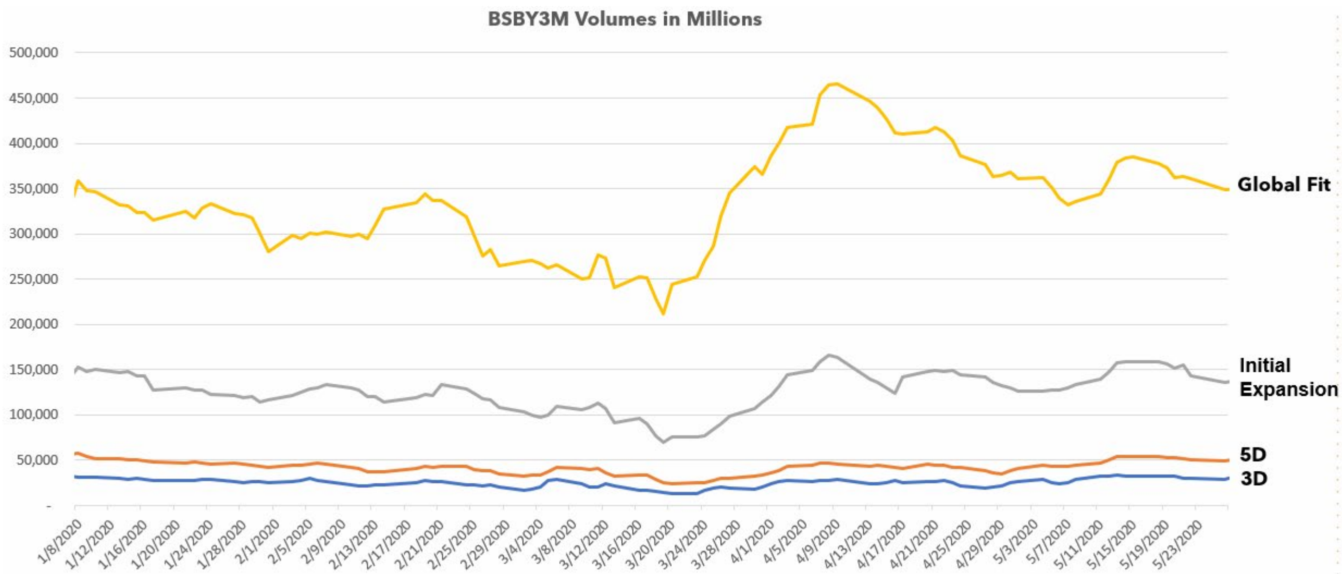


Figure 5 below depicts average input data volumes for the BSBY 3M under the Initial Expansion and the Global Fit against the average input data volumes for the standard BSBY 3M rate calculations as well as the average input data volumes using the full five-day lookback.

Figure 5



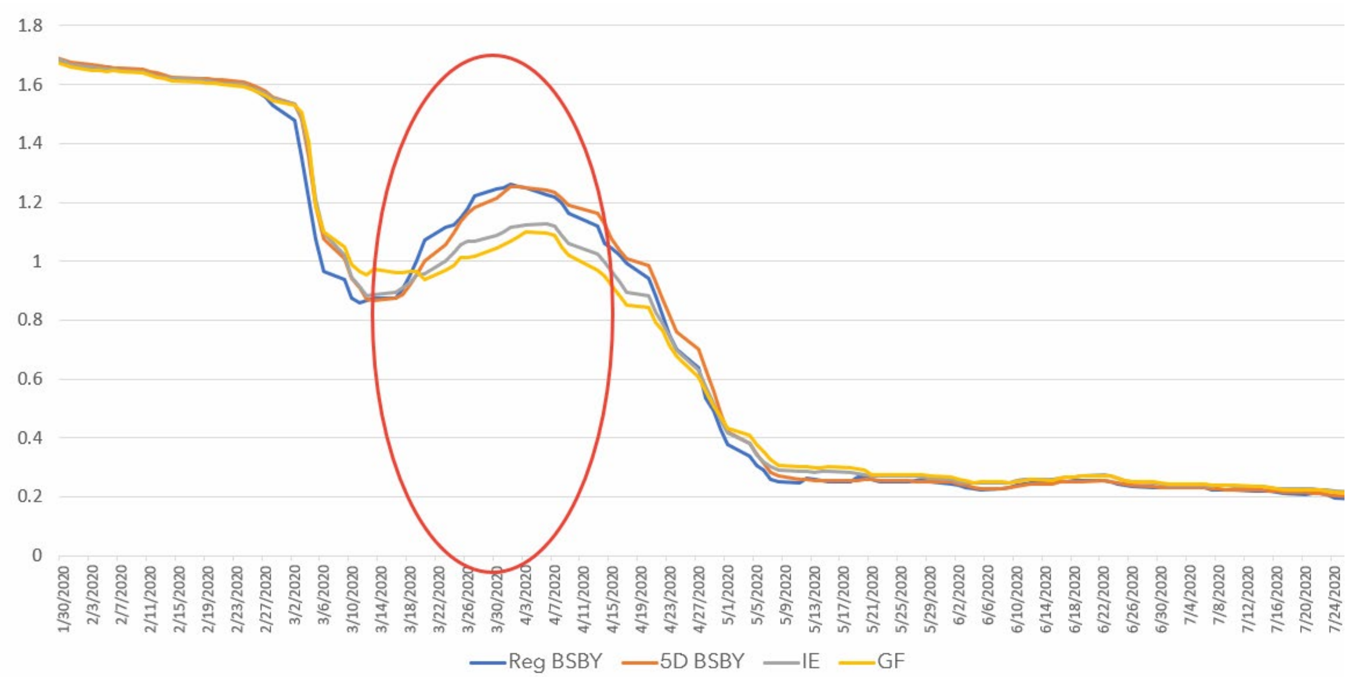
The BSBY index team has tested these enhancements to assess performance of the rate under each scenario, as well.

Figure 6 below depicts the performance of the BSBY 1M under the Initial Expansion and the Global Fit against both the standard BSBY 1M performance as well as the performance using the full five-day lookback.

Figure 6

Figure 7 below depicts the performance of the BSBY 3M under the Initial Expansion and the Global Fit against both the standard BSBY 3M performance as well as the performance using the full five-day lookback.

Figure 7



As noted in our [July, 2021 report](), underlying input data volumes remained significant even during the March 2020 period of market stress (March 18, 2020 to April 1, 2020). Accordingly, we also tested BSBY's proposed Calculation Waterfall changes by significantly downscaling the overall set of input data across the curve. For BSBY 1M, just the Initial Expansion was necessary. For BSBY 3M, the Global Fit was needed under this hypothetical scenario analysis.

Figure 8 below depicts the performance of the BSBY 1M using the Initial Expansion against the standard BSBY 1M performance.

Figure 8

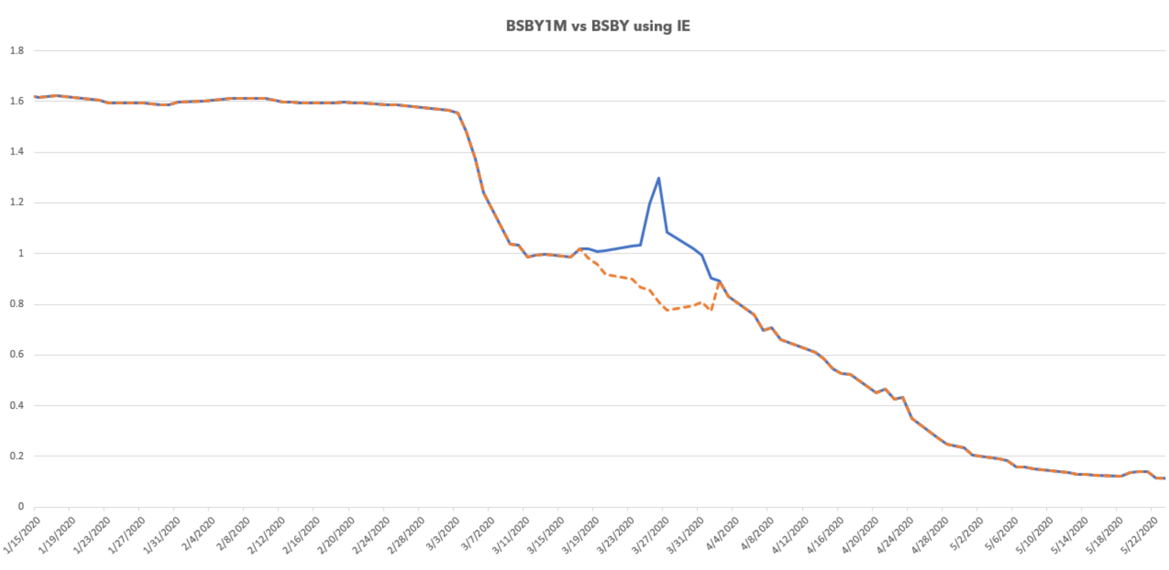
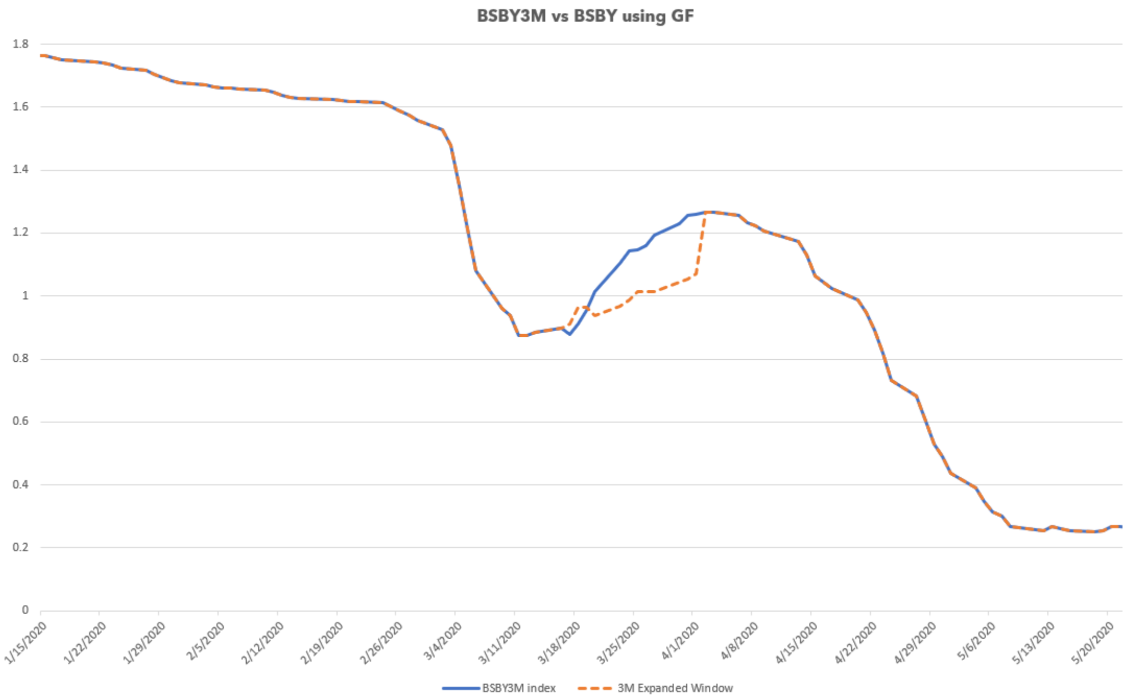


Figure 9 below depicts the performance of the BSBY 3M using the Global Fit against the standard BSBY 3M performance.

Figure 9



Enhancement Step 3 – Publicly Available Bank Funding Rate Plus Spread Add-On

In addition to the Initial Expansion and Global Fit enhancements set forth above, the BSBY index team proposes a sixth and final step in the Calculation Waterfall in the event underlying markets for BSBY lock-up ("**Level 6**").

Under this market crisis scenario, BSBY would produce a rate by calculating a per tenor spread adjustment ("**Spread Add-On**") and adding this to the New York Fed's Overnight Bank Funding Rate ("**OBFR**"). OBFR has been identified as an appropriate base rate because, like BSBY, it is market-driven, transaction-based, unsecured and reflects wholesale bank funding.[3]

The Spread Add-On is determined by averaging (i) the 5-year daily average spread of a BSBY tenor (*t*M) minus the corresponding day's OBFR and (ii) the 5-day daily average spread minus the corresponding OBFR.

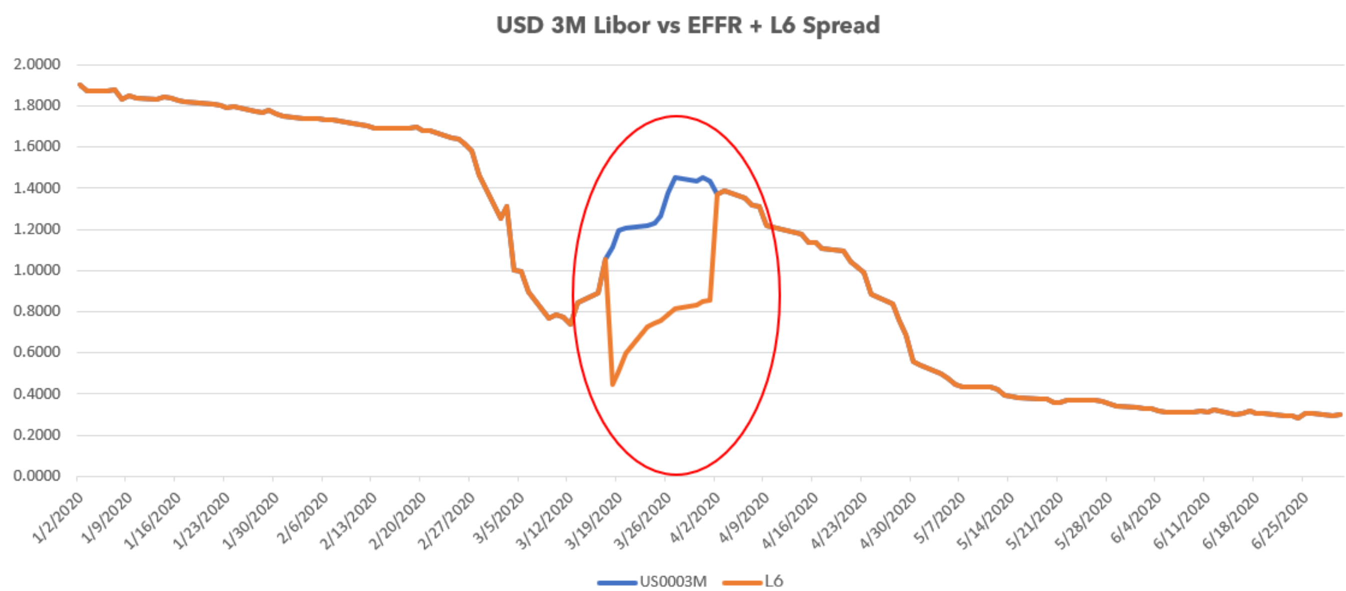
$$\text{Spread} = \frac{\text{5Y daily avg (BSBY}t\text{M - OBFR)) + (5D daily avg (BSBY}t\text{M - OBFR))}}{2}$$

This Spread Add-On would be calculated using the above formula which equally weights a long-term average credit/liquidity spread with a short-term average credit/liquidity spread. In this way, both long term and short term spread volatility are equally accounted for.

[3] For more details on the OBFR, please see here: https://www.newyorkfed.org/markets/reference-rates/obfr

Figure 10 depicts the hypothetical performance of an overnight publicly available base rate plus Spread Add-On against LIBOR 3M.[4]

Figure 10



Calculation Waterfall Application

For clarity, once BSBY requires calculation at Level 6 of its Calculation Waterfall, the Spread Add-On will remain fixed as initially calculated for the next 30 calendar days should BSBY again require calculation via Level 6. Each calculation day, however, the BSBY rate calculation will begin at the first level (i.e., three-day window) before advancing, as and if needed, through each step in the Calculation Waterfall.

Process & Timing

The changes proposed herein are informed by extensive engagements with various stakeholders, including key industry groups. In an effort to ensure all interested BSBY users are provided an opportunity to provide input, however, the formal consultation period will be open until November 1, 2021.

If these changes are approved via BISL's index governance process after the conclusion of the consultation period, the BSBY index team will make a public announcement detailing the specifics of the change and its implementation date.

The methodology changes outlined above are intended to work in conjunction with the contractual fallbacks in both loan and derivative markets' standard documentation. The BSBY index team continues to collaborate with relevant industry bodies to ensure a comprehensive approach to rate resiliency and robust fallbacks.

Any questions, comments or suggestions should be directed to info@bloombergindices.com.

[4] OBFR began publication in 2016 and BSBY's backfilled history goes back five years (to 2016). Therefore, to approximate "OBFR plus Spread Add-On" during March of 2020 (which would require data back to 2015 for both rates), proxy data which highly correlates with such rates has been used. I.e., Effective Federal Funds Rate (EFFR) for OBFR and LIBOR 3M for BSBY 3M.