

Bloomberg Short-Term Bank Yield Index

Methodology

As of 4 January 2022

Introductory Note

This index methodology and rule book (the “**Methodology**”) has been made available by Bloomberg Index Services Limited (“**BISL**”) and sets out the rules, criteria, risk factors and other information applicable to the Bloomberg Short-Term Bank Yield Index (“**BSBY**” or the “**Index**”). Capitalized terms used but not otherwise defined have the meanings set forth in the attached Glossary.

BISL is the administrator of BSBY and has overall responsibility for all aspects of the Index determination process. This includes the development, determination, dissemination, operation and governance of the various BSBY tenors.

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The information in this Methodology reflects the policies of, and is subject to change by, BISL. BISL accepts no legal liability to any person for publishing or not continuing to publish for any period of time any BSBY tenor at any particular time.

This version of the Methodology is provided as of the date specified on the cover of this Methodology. Upon each update to this Methodology, the most recent version shall be deemed to supersede the preceding version from the date of such update such that, in the event of any conflict between an earlier version of the Methodology and the most recent version, the most recent version shall prevail. BISL will provide advance notice of such updates as may be required by law or regulation, and otherwise use reasonable efforts to provide notice, including a list in the Appendix. BISL will also consult with users of BSBY on material changes and seek user input. See “Design Review and Changes in Methodology or Cessation” below for further information.

All determinations and calculations made by BISL will be (in the absence of manifest error) final, conclusive and binding.

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OVERVIEW OF BSBY

The following overview does not purport to be a complete description of BSBY and is qualified in its entirety by reference to the detailed information provided in applicable sections of this Methodology.

BSBY aims to measure the yields for particular tenors (i.e., O/N, 1M, 3M, 6M and 12M) at which eligible banks, being predominantly global, systemically important banks can access short-term US dollar wholesale funding on a senior, unsecured basis.

Input Data

BSBY is based on the following types of financial instrument data:

- (i) transaction settlement data for commercial paper ("**CP**") and certificates of deposit ("**CD**") sourced from the Depository Trust & Clearing Corporation ("**DTCC**");
- (ii) transaction data of senior unsecured bank corporate bonds ("**Corporate Bonds**") as reported in FINRA's Trade Reporting and Compliance Engine ("**TRACE**");
- (iii) transaction-related data for bank deposits ("**Deposits**") provided by Bloomberg from its FX<GO> electronic trade negotiation function; and
- (iv) executable quotes for CP, CD, ECP and ECD provided by Bloomberg from its BOOM and ECPX electronic trade negotiation functions.

Subject to the downscaling of executable quotes described below, there is no prioritization of the contribution of the above categories of input data to BSBY's calculation.

BSBY Included Banks

The financial instrument data is filtered by a list of eligible banks, which includes Global Systemically Important Banks ("**G-SIBs**") published by the Financial Stability Board ("**FSB**"),¹ in addition to certain other systemically relevant banks, but excluding any state-owned banks (collectively, the "**BSBY Included Banks**").² The current list of BSBY Included Banks is set forth in the Appendix.

Calculation Algorithm

BSBY is constructed using a three-day rolling window of data and uses a localized, trimmed curve-fitting methodology to calculate overnight, 1-month, 3-month, 6-month and 12-month yields. Each BSBY rate is published every US business day (based on the US SIFMA Calendar³) at 7:00 am Eastern Time ("**ET**").

Resilience

Each BSBY rate is calculated using transaction-related data and firm executable quotes. In the event that the minimum volume threshold ("**Minimum Threshold**") for a particular tenor is not met, the BSBY Methodology relies on a calculation waterfall, which initially uses a longer lookback window (up to five days) followed by an expansion of the relevant per

¹ See: <https://www.fsb.org/2021/11/2021-list-of-global-systemically-important-banks-g-sibs/>

² See the section 'Maintaining the List of BSBY Included Banks' below.

³ This may be found by selecting 'US' on CDR<GO> on the Bloomberg Terminal® service. BSBY is published on partial trading days unless the Securities Industry and Financial Markets Association ("**SIFMA**") recommends that the fixed income departments of its members be closed for the entire day for purposes of trading in US government securities.

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tenor input data corridors and, if needed, a publicly available base rate plus a fixed, per tenor spread ("**Alternative Calculation Waterfall**"). This Alternative Calculation Waterfall aims to ensure that BSBY rates can be published daily, including during periods of extreme market stress.

Further details for each step of the BSBY calculation are set forth below.

INPUT DATA: SELECTION CRITERIA AND TIMING

As noted above, BSBY uses CP and CD transaction data sourced from DTCC, transaction data of senior unsecured bank Corporate Bonds as reported in TRACE, Deposits data from Bloomberg's FX<GO> electronic trade negotiation function, and executable quotes for CP, CD, ECP and ECD from Bloomberg's BOOM and ECPX electronic trade negotiation functions.

Input data is collected daily according to the following selection criteria, and pertains solely to BSBY Included Banks:

CP and CD Transaction Settlement Data

- Source: DTCC
- Product Type: CP, CD
- Sector: Code equals Financial (FIN)
- Interest Rate Type: Fixed (F)
- Income Payment Type: Interest at maturity (I) or Zero Coupon (Z)
- Define Price: Settlement Amount/Principal Amount
- Define Volume: Principal Amount
- Transactions are capped at USD 500MM.⁴

Corporate Bond Transaction Data

- Source: TRACE
- Product Type: Corporate Bonds
- Issuers: BSBY Included Banks
- Currency: USD
- Bond must be fixed coupon
- Bond must be senior unsecured or unsecured
- Bond must be Bullet, Callable or Make-Whole maturity type
- Size of the trade must be equal to or larger than 1MM
- Maturities from 127 to 400 days

In addition to the above criteria for Corporate Bonds, the following criteria are applied to Corporate Bonds transaction data:

- Number of BSBY Included Banks issuing such Corporate Bonds must be at least ten (10).
- Amount outstanding with respect to the BSBY Included Bank with the largest aggregate Corporate Bond amount outstanding to be included must be less than thirty percent (30%) of the total amount outstanding to be included for all Corporate Bonds issued by BSBY Included Banks.
- Aggregate amount outstanding for the top five (5) BSBY Included Banks (based on Corporate Bonds amounts

⁴ For trades in excess of \$50MM, DTCC settlement data is generally reported to BISL in \$50MM increments. For example, a \$200MM transaction would be ticketed as four \$50MM trades. To ensure larger transactions (i.e., >\$500MM) do not overpower other transactions, prior to the application of the calculation algorithm (but following the determination of meeting the per tenor volume thresholds) the various trades of an issuer that are part of the same CP/CD program, issued at the same yield (to the fifth decimal place), and for the same maturity date are aggregated to a single transaction volume and, if necessary, limited to \$500MM.

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outstanding) must be less than sixty percent (60%) of the total Corporate Bond amounts outstanding to be included for all BSBY Included Banks.

Should the Corporate Bond data for any given day within the BSBY calculation window not meet the above criteria, then no Corporate Bond data will be used with respect to such day's BSBY rate calculation.

Note that, given the maturity range for Corporate Bond Transaction Data (i.e., 127 to 400 days), such data is not used in calculations for BSBY overnight, 1-month, and 3-month tenors.

Deposits Transaction-Related Data

- Source: Bloomberg's FX<GO> electronic negotiation function
- Product type: Term Bank Deposits
- Currency: USD
- Country where the deposit was made must be one of the countries set out in the list in the Appendix
- Direction of the trade must be "LEND".

CP, CD, ECP and ECD Executable Quotes

- Source: Bloomberg's BOOM and ECPX electronic trade negotiation functions
- Currency: USD
- Trade side: Offer
- Type of quote must be "Tradable"
- Days to maturity: See 'Curve Fitting Methodology' below.
- Instrument type must be CP, CD, ECP or ECD.
- All duplicated quotes⁵ are removed and the transaction volume value of the resulting data point is the highest of the duplicated quotes in question.
- The original volume of all executable data is then scaled by 12.5% ($0.125 \times$ the offering size reported).
- Resulting volume is capped at USD 500 MM⁶.

While there are minimum input data volume thresholds per BSBY tenor, described below, there are no per instrument, or per input data category, minimums.

YIELD NORMALIZATION

The input data sources are snapped between 4:05 pm and 4:30 pm ET daily. During that collection window, input data for inclusion in the BSBY calculation methodology for that day is limited to transactions concluded / executable quotes provided prior to 4 pm.

The yields of the different financial instruments used to calculate BSBY rates are quoted using different conventions. Yields from all different input data sources must be converted to an 'ACT/360' money market instrument yield for index construction purposes.

Money market instrument yields are collected across the data sources and X360/X365 scaling is used to adjust ACT/ACT, ACT/365-day count conventions.

⁵ Banks may offer the same transaction to multiple parties and may re-post offers during the course of the day with very slight variation. For de-duplication purpose, we deem yields that are equal to the third decimal place as the same executable offer.

⁶ Unlike DTCC settlement data, which has a \$500MM cap applied, if applicable, post-determination of the per tenor volume thresholds (but prior to the application of the final calculation algorithm), executable data is downscaled and capped prior to such minimum volume determinations.

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In addition, yield conversion is required for DTCC data. For example, if CP is issued at zero coupon, then the yield must be calculated based on the difference between transaction price and the face amount over the time to maturity. For CDs, the coupon may simply be taken as the yield. So, for CPs where Income type = "Z", the yield is equal to $100 \times [100/\text{price}]^{360/\text{DTM}} - 1$ and for CDs where Income type = "I", the yield is equal to "interest rate".

CURVE FITTING METHODOLOGY

The BSBY rates are generated through a localized trimmed methodology where the algorithm seeks to fit a curve locally around each of the published tenors.

As a first step, the resulting CP, CD, ECP, ECD, Deposit and Corporate Bond data are filtered by Days-to-Maturity ("**DTM**") and only contribute to the calculation if their respective maturities fall within a defined DTM range for each tenor.

DTM is calculated as the calendar day difference between the maturity date of an instrument and its settlement date.

For each BSBY tenor, the associated DTM range is wide enough to ensure a large number of data points and sufficient volumes contribute to the final calculation of the relevant BSBY tenor.

The table below defines the DTM range for each tenor.

Ticker	Evaluation Point (DTM in Calendar days)	DTM Range	
		Start	End
BSBYON	Next business day	1	5
BSBY1M	30	6	45
BSBY3M	90	46	125
BSBY6M	180	126	240
BSBY12M	365	241	400

The methodology to determine each BSBY tenor is identical once the DTM range and evaluation point are determined.

The subset of the dataset with DTM between (and including) start range and end range (calendar days) are eligible for a given rate's calculation. The resulting data set is processed in the following manner:

- Each transaction size is capped at USD500MM.⁷
- Transactions are aggregated by each BSBY Included Bank (across instruments types) and an input data volume contribution percentage is calculated.
- A set of input data pertaining to a single BSBY Included Bank is capped at 20%.
- The BSBY Included Bank (issuer) capping algorithm is an iterative process: Each BSBY Included Bank's associated input data is sorted in a descending order in terms of volume contribution percentage. A BSBY Included Bank breaching the 20% threshold will have the volume of all its associated input data reduced until it is at 20%.⁸ The process for determining and reallocating this excess weight is set forth below:
 - If the top BSBY Included Bank's volume contribution exceeds 20%:

$$\text{New Volume of the top bank's securities} = \frac{\text{Original Security Volume} * 0.2}{(\text{Breaching Bank Volume Contribution})}$$

⁷ As noted above, executable transaction data will have already been capped by this stage of the calculation.

⁸ For example, if a particular BSBY Included Bank's contribution included a \$100MM transaction data point, and 9% of its contribution had to be eliminated to bring it down to 20%, such data point would be scaled to reflect a \$91MM data point, ratably increasing the weights of the other banks' percentage contributions.

- Split the additional delta (difference) from the top bank's volume exceeding 20% among the other banks (with contributions strictly less than 20%):

$$\Delta = \frac{\sum (\text{Breaching Bank Volume Contributions} - 0.2)}{\sum (\text{Non Breaching Bank Volume Contributions})}$$

$$\text{Volume of other banks securities} = \text{Original Volume} * (1 + \Delta)$$

This process is repeated until no bank's weight exceeds 20%.

- The table below illustrates an example of the 20% capping algorithm for the top 6 banks only:

Bank	Old Weight	New Weight
B1	29.0%	20.0%
B2	28.0%	20.0%
B3	14.0%	19.5%
B4	11.0%	15.4%
B5	10.0%	14.0%
B6	8.0%	11.2%

- Yields of the data points in the corridor are then sorted in an ascending order. Outlier yields are trimmed. In particular, all yields above the 75th volume percentile and below the 25th volume percentile are eliminated.
- The data points within the resulting box, defined by the maturity range horizontally and 25%/75% quantiles vertically, are then assigned a weight proportional to their adjusted volume in the linear regression used to generate the final rate. Effectively, the calculation rules regress yields on DTM with the adjusted volume as regression weights.
- The final BSBY rate is the result of evaluating the linear function at the desired maturity.

The following equation describes the weighted regression for a given BSBY tenor:

$$\operatorname{argmin}_{\alpha, \beta} \sum_i w_i (Y_i - \alpha - \beta * DTM_i)^2$$

W_i are the capped volume of the securities

$BSBY_{0N} = \alpha_{0N}^* + \beta_{0N}^* * 1$ where α_{0N}^* and β_{0N}^* minimize the sum above for the 0/N tenor band

$BSBY_{1M} = \alpha_{1M}^* + \beta_{1M}^* * 30$ where α_{1M}^* and β_{1M}^* minimize the sum above for the 1M tenor band

$BSBY_{3M} = \alpha_{3M}^* + \beta_{3M}^* * 90$ where α_{3M}^* and β_{3M}^* minimize the sum above for the 3M tenor band

$BSBY_{6M} = \alpha_{6M}^* + \beta_{6M}^* * 180$ where α_{6M}^* and β_{6M}^* minimize the sum above for the 6M tenor band

$BSBY_{12M} = \alpha_{12M}^* + \beta_{12M}^* * 365$ where α_{12M}^* and β_{12M}^* minimize the sum above for the 12M tenor band

PRECISION

BSBY rates along with yields of the input data used in its calculation are rounded to five decimal points (0.00001).

VOLUME THRESHOLDS AND CALCULATION WATERFALL PROCESS

The total volume in each tenor calculation window must meet a Minimum Threshold before a rate can be published. The Minimum Thresholds are \$60 billion for the overnight rate, \$10 billion for the 1-month, \$10B billion for the 3-month, \$10 billion for the 6-month and finally \$9 billion for the 12-month rate.

In the event that a Minimum Threshold is not met in respect of any particular tenor, the BSBY construction algorithm relies on an Alternative Calculation Waterfall that looks to first expand the lookback window by incremental days (up to a maximum of five days) to meet the required thresholds per tenor.

If the expansion of the lookback window to include up to five days of data still does not meet a tenor threshold, then the next step is to expand (the “**Initial Expansion**” or “**IE**”) the DTM corridor for the affected tenor.

If the Minimum Threshold remains unmet after the Initial Expansion, then the tenor rate would be calculated using a linear regression global fit (“**Global Fit**” or “**GF**”) utilizing all 5-days’ input data across the curve.

In the event the Global Fit calculation fails to meet the Minimum Threshold, the calculation algorithm moves to a sixth and final (“**Level 6**” or “**L6**”) calculation by applying a formulaic spread (the “**BSBY Spread Adjustment**”) to the Secured Overnight Financing Rate (“**SOFR**”). The BSBY Spread Adjustment formula is set forth below.

The below series of tables summarizes this waterfall process with further details below.

Standard	4-Day	5-Day	IE	GF	L6
Use a 3-day rolling window of data to meet Minimum Threshold	Use a 4-day rolling window of data to meet Minimum Threshold	Use a 5-day rolling window of data to meet Minimum Threshold	Use a 5-day rolling window of data and expand to include adjacent corridor data	Use a 5-day rolling window of data and apply a global fit of all data across the curve	Use SOFR rate plus BSBY Spread Adjustment “L6”

Standard

- See calculation methodology above.

4-Day

- If the 3-day rolling window of data does not meet the Minimum Threshold for a given tenor, a fourth day of data for such tenor will be used to meet that tenor’s Minimum Threshold. The size of the corridor as measured by DTM remains the same.

5-Day

- If the addition of a fourth day of data fails to meet the Minimum Threshold for a given tenor, a fifth day of data for such tenor will be used to meet that Minimum Threshold. The size of the corridor as measured by DTM remains the same.

Initial Expansion (IE)

- If the five-day lookback does not meet the Minimum Threshold for a given tenor, the Alternative Calculation Waterfall expands such tenor's input data corridor to include the five-day rolling window of data from adjacent corridors via an Initial Expansion.
- The table below defines the DTM range for each rate under IE.

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

Global Fit (GF)

- If the Initial Expansion does not meet the Minimum Threshold for a given tenor, the Alternative Calculation Waterfall expands that tenor's input data corridors to include the five-day rolling window of data across the entire curve via a Global Fit.
- The table below defines the DTM range for each rate under GF.

Ticker	Evaluation Point (DTM in Calendar days)	"GF" DTM Range	
		Start	End
BSBYON	Next business day	1	400
BSBY1M	30	1	400
BSBY3M	90	1	400
BSBY6M	180	1	400
BSBY12M	365	1	400

Level 6 (L6)

- If the Global Fit does not meet the Minimum Threshold for a given tenor and/or the markets are locked-up, the Alternative Calculation Waterfall will move to Level 6 in the waterfall calculation process.
- Under this market crisis scenario, BSBY will produce a rate by calculating a per tenor BSBY Spread Adjustment and adding this to SOFR.
 - The BSBY Spread Adjustment is determined by averaging (i) the five-year daily average spread of a BSBY tenor (tM) minus the corresponding values for such days' SOFR and (ii) the five-day daily average spread of a BSBY tenor (tM) minus the corresponding values for that days' SOFR.
 - $BSBY\ Spread\ Adjustment = 0.5 * (5Y\ daily\ avg.\ (BSBY_{tM} - SOFR)) + 0.5 * (5D\ daily\ avg.\ (BSBY_{tM} - SOFR))$
 - The BSBY Spread Adjustment will 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.

Ticker	(DTM in Calendar days)	L6 Formula	
		Index	Spread
BSBYON	Next business day	SOFR	ON tenor spread

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BSBY1M	30	SOFR	1M tenor spread
BSBY3M	90	SOFR	3M tenor spread
BSBY6M	180	SOFR	6M tenor spread
BSBY12M	365	SOFR	12M tenor spread

- Each BSBY calculation day, the BSBY rate calculation process will begin at the first level (three-day rolling window) before advancing, if needed, through each subsequent step in the Alternative Calculation Waterfall. Note, however, that once a BSBY tenor requires calculation at “L6” of the Alternative Calculation Waterfall, the BSBY Spread Adjustment for such tenor will remain fixed as initially calculated for the next 30 SIFMA business days.

BACKTEST ASSUMPTIONS

The various BSBY tenor rates (BSBYO/N, BSBY1M, BSBY3M, BSBY6M and BSBY12M) were back tested back to January 6, 2016 using the methodology described above and the historically available data. The Alternative Calculation Waterfall was used whenever a given BSBY rate volume threshold was not met, though no BSBY tenor required more than the expansion of the lookback window to five-days (and that only in rare instances).⁹ Without limiting the disclaimer set forth in this Methodology, Bloomberg makes no representation, warranty or guarantee as to the accuracy, completeness or appropriateness of such back-testing methodology or available data, and accepts no liability for the use of such information.

DESIGN REVIEW AND CHANGES IN METHODOLOGY OR CESSATION

BISL reviews the BSBY Methodology on a periodic basis, and at least annually, to determine whether it continues to:

- (i) be robust and reliable;
- (ii) have clear rules, including regarding discretion;
- (iii) be rigorous, continuous and capable of validation;
- (iv) be resilient and ensures the Index can be calculated in the widest range of possible circumstances, without compromising its integrity; and
- (v) be traceable and verifiable.

In doing so, BISL will assess whether the Index continues to represent the market that it is intended to measure. More frequent reviews may result from extreme market events and/or material changes to the underlying market. Non-exhaustive examples of extreme market events include trading events such as trading interruptions or unexpected market closures, resulting in unusual market illiquidity or market volatility; exchange closures, government interventions, a pandemic or a natural catastrophe resulting in exceptional periods of stress.

Criteria for input data includes reliable availability of such data and active underlying markets. Whether an applicable market is active depends on whether there are sufficient volumes of transactions in the applicable constituents that a price may be supplied for such constituents.

The review will be conducted by BSBY product managers with any material information arising as a result of the review shared with the PROC (defined below) committee, along with the BOC (defined below). Any proposed change to the Methodology deemed to be material (discussed below) will be subject to the review of the PROC under the oversight of the BOC oversight committee, each of which committees shall be provided all relevant information and materials it requests relating to the change, such as pro forma Index levels, any expected user impact, and any changes to operational or other risks. Material changes will be reflected and tracked in updated versions of this Methodology.

⁹ Since January 6, 2016, BSBY has not required use of a fourth day's volume for the 1M, 3M, 6M, 12M tenors. During this same period, the BSBY ON required a fourth day's volume 16 times but never a fifth day's volume.

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In addition, BISL will consult with users of BSBY on material changes to the Methodology and seek user input. The user engagement will set forth the rationale for any proposed changes (including whether the representativeness of BSBY or its appropriateness as a reference for financial instruments or contracts would be at risk if the proposed changes are not made), the key elements of the methodology that would, in BISL's view, be affected by the proposed material change, as well as the timeframe and process for responses. BISL will provide at least 90 days' notice prior to any material change going into effect. In the event of exigent market circumstances, and/or as required by law, this period may be shorter. Subject to confidentiality terms, including BISL's interest in receiving proprietary and sensitive user feedback, a summary of such feedback and BISL's responses will be published or made accessible upon request.

In determining whether a change to BSBY is material, the following factors (among others) shall be taken into account:

- the economic and financial impact of the change;
- whether the change affects the original purpose of the Index; and/or
- whether the change is consistent with the overall objective of the Index and the underlying market interest it seeks to measure.

For example, changing the Methodology by using a five-day rolling window instead of a three-day rolling window may require user consultation, whereas supplementing and/or utilizing substantially similar input data sets may not.

In addition to changes to the Methodology, BISL may from time to time terminate one or more BSBY tenors or the Index as a whole (as applicable, "**Discontinued BSBY Rates**"), whether due to changes in market structure, a lack of requisite input data, insufficient usage, or due to other regulatory or practical concerns.

The process for terminating such Discontinued BSBY Rates is as follows: the PROC will review proposed terminations by BSBY product managers, and will be provided the reasons for the proposed termination, the impact on users (if any), the availability of alternative products and other such factors

If approved by the PROC, BSBY product managers will consult with BSBY users on the proposed cessation of the Discontinued BSBY Rate(s). Both the determination to proceed with any proposed termination as well as the results of the user consultation will be subject to the oversight of the BOC and BISL board of directors.

If, following this process, termination of one or more Discontinued BSBY Rates is approved, users will be provided at least 12 months advance written notice (in the absence of BISL reasonably believing the applicable Discontinued BSBY Rate(s) are not being used, in which event this period may be shorter). Advance notice may be subject to BISL being reasonably able to continue administering and calculating such Discontinued BSBY Rate(s) during such period (for example, BISL has access to requisite input data on commercially reasonable terms, is not subject to any litigation or other claims, has adequate internal resources and capabilities, etc.).

If lenders, financial product issuers, or others choose to use BSBY as the basis of a rate-linked financial product or as a borrowing rate, they should consider the possibility that factors, including external factors, may necessitate changes to, or the cessation of, BSBY or tenors thereof, including the potential need to terminate or modify the terms of a loan or other financial product resulting from the termination of the calculation of one or more of the BSBY tenors.

ERRORS & RESTATEMENTS

BISL conducts a number of quality checks on the input data utilized in BSBY, including validation checks comparing the current day's instrument count and volumes against historic averages, algorithm checks that seek to ensure the calculated values align with the calculation rules set forth above, including (for example) the capping rules that ensure a representative rate composed of instruments issued by multiple large banks, and post-calculation per tenor validation checks, which compare changes in the current day's values against historical averages.

In addition, if an error is discovered (whether via internal checks, from an input data source correction or otherwise) within four hours of publication (i.e., by 11 am ET for rates published at 7 am ET), BISL will aim to restate the published BSBY tenor(s) within five hours of publication (i.e., by 12 pm ET) if the restated BSBY tenor value(s) differ by 5% or more from the original value(s). All errors, whether restated or not, will be periodically reported to the BOC.

Announcements with respect to any restatements will be published via INP<GO> and to the BSBY website here:

<https://www.bloomberg.com/professional/product/indices/bsby/>.

L6 ANNOUNCEMENTS

In addition, BISL will publish via INP<GO> and to the BSBY website a notice each day that any BSBY tenor utilizes Level 6 of the Alternative Calculation Waterfall, indicating the relevant tenors, and provide other relevant information users may need for contractual fallback triggers (e.g., number of consecutive L6 SIFMA business days¹⁰ per tenor, aggregate number of such days within a given rolling period—30, 60 and 90 days—one or more BSBY tenors has utilized an L6 calculation, etc.). Lastly, BISL intends to publish the BSBY Spread Adjustments per tenor, including the long-term (five year) average credit spread component (referred to as the “BSBY SOFR 5Y Spread Adjustment”), each day both on the Terminal and via the BSBY website regardless of any utilization of Level 6 of the Alternative Calculation Waterfall.

MAINTAINING THE LIST OF BSBY INCLUDED BANKS

BISL will review, via its governance and oversight committees, the eligibility and selection criteria for BSBY Included Banks on a periodic basis and update the criteria and current list of BSBY Included Banks whenever BISL determines necessary or prudent.

When reviewing non-G-SIB systemically relevant banks for inclusion, factors include investment grade rating, size of the financial assets on the balance sheet, participation in underlying markets BSBY seeks to measure, and geographic representation.

‘State-owned’ banks are those that are majority-owned and/or substantially controlled by government or state instrumentalities.

As an example, if a BSBY Included Bank were dropped from the G-SIB list by the FSB, or if a systemically relevant BSBY Included Bank was downgraded below investment grade, BISL would review the elimination of the bank from the list of BSBY Included Banks with its governance and oversight committees and, if eliminated, the list of BSBY Included Banks would be amended accordingly.

Similarly, if a non-state-owned bank was added to the G-SIB list by FSB, or if an investment grade super-regional bank began issuing CP, CDs or Deposits on a regular basis, BISL would consider adding them to the eligibility list after consulting with the governance and oversight committees. Again, if added, the list of BSBY Included Banks would be amended accordingly. For clarity, such changes are not deemed ‘material’ changes for which user consultation would be required though user input may nevertheless be solicited.

BENCHMARK OVERSIGHT AND GOVERNANCE

BISL uses two primary committees to provide overall governance and effective oversight of BSBY’s benchmark administration:

- The Product, Risk & Operations Committee (“**PROC**”) provides direct governance and is responsible for the first line of controls over the creation, design, production and dissemination of benchmark Indices, strategy Indices and fixings administered by BISL, including BSBY. The PROC is composed of Bloomberg personnel with significant experience or relevant expertise in relation to financial benchmarks. Meetings are attended by Bloomberg Legal & Compliance personnel.
- The oversight function is provided by the Benchmark Oversight Committee (“**BOC**”). The BOC is composed of members independent of BISL and is responsible for reviewing and challenging the activities carried out by the BSBY product managers, including decisions by the PROC governance committee with respect to BSBY. In carrying out its oversight duties, the BOC receives reports of management information both from BSBY product managers, members of the PROC, and Bloomberg Legal & Compliance members engaged in second level controls.

¹⁰ See footnote 3 above.

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- In addition, the BISL board of directors, which is composed of senior Bloomberg executives a majority of which are independent of BISL, is empowered to set the strategy, objectives, and overall direction of BISL, and oversees and monitors BISL's decision-making.

BSBY product managers and other relevant personnel, including Bloomberg Legal & Compliance members engaged in second level controls, report quarterly to the BOC on governance matters, including but not limited to any client complaints, operational incidents (including errors, delays & restatements), major announcements, and material changes concerning BSBY, the results of any reviews of the benchmarks (internal or external) and material stakeholder engagements.

As a supplement to the PROC and to better support the oversight function of the BOC, BISL has established a BSBY-dedicated working group ("**BSBY WG**") composed of BSBY product managers and production personnel, with participation (as needed) from quantitative research analysts, engineering personnel, Risk and Compliance. The BSBY WG will meet on a more frequent basis than the BOC to prepare and review trend analysis, recommend adjustments to quality controls and related thresholds, and make day-to-day governance determinations with regard to the operation of the BSBY Index.

BISL's Index administration is also subject to Bloomberg's Compliance function, which periodically reviews various aspects of its businesses to determine whether it is adhering to applicable policies and procedures, and to assess whether applicable controls are functioning properly. In addition, Bloomberg may from time to time appoint an independent external auditor with appropriate experience and capability to review adherence to benchmark regulation and the IOSCO Principles. The frequency of such external reviews will depend on the size and complexity of the operations and the breadth and depth of Index use by stakeholders. For BSBY, BISL anticipates an external review to be conducted every two years.

EXPERT JUDGMENT

The BSBY Index construction is a fully automated process designed to produce a consistent and transparent rate while reducing the intervention of expert judgment or discretion. Nevertheless, BISL may use expert judgment or discretion with regards to the following:

1. Index restatements outside of the limitations set forth above
2. Extraordinary circumstances during a market emergency
3. Data interruptions, issues and closures

When expert judgment or discretion is required, BISL undertakes to be consistent in its application, with recourse to written procedures outlined in this Methodology and internal procedures manuals. In certain circumstances, exercises of expert judgment or discretion are reviewed by senior members of BISL management and Bloomberg's Compliance teams, and are reported to the PROC and BOC. BISL also maintains and enforces a code of ethics to prevent conflicts of interest from inappropriately influencing Index construction, production, and distribution, including the use of expert judgment or discretion.

CONFLICTS OF INTEREST

The BSBY Index confers on BISL discretion in making certain determinations, calculations and corrections from time to time. In making those determinations, calculations and corrections, BISL has no obligation to take the needs of any product investor or any other party into consideration. BISL is committed to avoiding and, where necessary, managing actual or potential conflicts of interest in the BISL decision-making process and has established a Conflicts of Interest Policy to minimize or resolve actual or potential conflicts of interest. BISL does not create, trade or market products.

RISKS & LIMITATIONS OF THE INDEX

While BSBY aims to be a robust, representative and resilient rate, there may be circumstances where BSBY's measurement of its intended market (i.e., short-term US dollar wholesale funding on a senior, unsecured basis) may not be fully reliable and BSBY may not always perform as users expect.

Impact of Significant Market Stress

Like all markets, money markets and short-term bond markets can go through periods of volatility and market stress. This can result in rapidly changing price movements and in much lower transaction volumes in the underlying market (in particular for CPs and CDs).

During times of illiquidity, for example, money market borrowers in need of financing may be willing to pay significantly increased premiums to access the limited liquidity available. For BSBY Included Banks accessing these markets, their cost of funding may therefore increase significantly. This increased cost of bank funding may be reflected in the BSBY rate, also driving it up. However, certain BSBY Included Banks may not depend as much on these underlying markets for funding themselves during times of stress, and thus the BSBY rate may reflect the bank funding costs of a limited subset of banks with greater, short-term funding needs and not, necessarily, funding conditions more generally.

In addition, during periods of extreme market stress where underlying markets may lockup, BSBY's transaction and transaction-related input data sources may be insufficient to meet volume thresholds even by utilizing a five-day lookback and, instead, rely upon the Initial Expansion, the Global Fit or the final Level 6 of the Alternative Calculation Waterfall. While reliance on these later waterfall calculations may be minimal (or even non-existent), BSBY calculations under these stressed scenarios may not perform in line with users' expectations. For example, under a Level 6 calculation with the BSBY Spread Adjustment added to SOFR, analysis shows hypothetical BSBY rates being lower (at least initially) than standard BSBY calculations.

Certain Bank Funding Mechanisms Not Included

While BSBY's mix of transaction-based input data aims to generally reflect short-term bank funding costs, it does not include all available mechanisms through which banks can fund themselves. For example, the input data does not reflect home loan advances, a mechanism that some banks have relied upon during times of market stress. Therefore, the BSBY rate represents only a portion of available bank funding.

In addition, bank funding practices can change, as has occurred historically. While BISL would engage with BSBY users to ensure it remains a relevant and accurate rate, there is no guarantee that (for example) BISL would have access to necessary data sets on reasonable commercial terms to evolve BSBY in line with such market changes.

Changes to BSBY Methodology; Use of Discretion

There is inherent, though transparent, discretion deployed in BSBY's design and construction, as outlined in this Methodology. While BISL will continue to engage with users to ensure BSBY remains a relevant and accurate rate, decisions by BISL, including via its governance and oversight processes, may result in changes to BSBY that not all BSBY users find to be aligned to their interests or use cases.

In addition, although efforts will be made to alert users of any changes, as outlined herein, every BSBY user may not be aware of them.

Lastly, it is important to note that BSBY is designed for general applicability and not to address the individual circumstances and needs of particular users. BISL does not advise on the usefulness of BSBY to a particular circumstance; users should seek their own counsel for such matters.

BSBY Measures a Multi-day Average

BSBY's standard calculation uses a three-day average. While the various tenors have historically shown to be in line with market movements, as a multi-day average rate it could lag sharp, one-day market movements, thus affecting the use or usefulness of BSBY for some users. For example, if the Federal Reserve Bank were to announce an unexpected change

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in monetary policy (i.e., that the markets have not priced in), markets may move faster than BSBY can respond, at least for the first two days.

Structural Market Changes

BSBY rates may be impacted by shifts in the underlying market, including if there are any legislative and / or market practice reforms to the money market funds. While we do not anticipate such market reforms to fundamentally affect BSBY's underlying markets, there is no guarantee they will not do so.

DATA EXTRAPOLATION, DATA PROVIDERS AND CONTRIBUTORS

BSBY is rules-based, and its construction is designed to consistently produce values without the exercise of discretion. Except as described in the calculation methodology set forth above, BSBY is produced without the interpolation or extrapolation of input data.

In addition, BISL generally seeks to avoid contributions of input data that may be subject to the discretion of the source of such data. Users of Bloomberg's electronic trading solutions are not deemed "submitters" under the IOSCO Principles or as "contributors" under the UK BMR, due to the fact that they do not transact or otherwise provide pricing information for the purposes of determining the BSBY benchmark. In addition, BSBY data sources such as TRACE and DTCC provide readily available data sets to a variety of users for various purposes.

Further, while the definition of a "submission" is broad under the IOSCO Principles and could be construed to include Bloomberg's provision to BISL of certain of the transaction-related input data, BISL is not currently treating such input data as "submissions" from Bloomberg in accordance with the IOSCO Principles' overarching principle of proportionality. BISL is therefore not applying those principles that apply where a benchmark is based on submissions. This is based, among other things, on the nature of the source (i.e., not stemming from a market participant with an interest in the underlying markets) and the nature of the input data itself. However, BISL has in place arrangements defining the nature of the services provided (e.g., input data sourcing) and expected standards (e.g., file formats, availability, service interruption/disaster recovery coordination, data integrity, etc.).

OVERSIGHT OF THIRD PARTIES

BISL conducts all primary activities related to the determination of BSBY benchmark internally and uses no calculation agents or any other third parties in data collection, determination or dissemination of BSBY other than Bloomberg affiliates for collection of sourced input data and shared group services such as IT. With respect to Bloomberg affiliates, BISL has in place arrangements defining the nature of the services provided (e.g., input data sourcing) and expected standards (e.g., file formats, availability, BCP coordination, etc.). Such arrangements are monitored and reviewed on a periodic basis.

APPENDIX

List of Developed Market Countries used for deposits filtering are as follows:

Austria	Finland	Iceland	Norway	Sweden
Australia	Germany	Japan	New Zealand	Switzerland
Belgium	Greece	Lichtenstein	Portugal	United Kingdom
Canada	Hong Kong	Luxembourg	Singapore	United States
Denmark	Ireland	Monaco	South Korea	Vatican City
France	Italy	Netherlands	Spain	

BSBY Included Banks¹¹

Ticker	Name	Ticker	Name	Ticker	Name
ACAFF	Credit Agricole SA	ING	ING Groep N.V.	SANT	Banco Santander, S.A.
BAC	Bank of America Corporation	JPM	JPMorgan Chase & Co.	SOCGEN	Societe Generale SA
BARC	Barclays PLC	LLOYDS	Lloyds Banking Group	STAND	Standard Chartered Bank PLC
BMO	Bank of Montreal	MIZU	Mizuho Financial Group, Inc.	STT	State Street Corporation
BNP	BNP Paribas S.A.	MS	Morgan Stanley	SUMIBK	Sumitomo Mitsui Financial Group, Inc.
BPCE	BPCE SA	MUFG	Mitsubishi UFJ Financial Group, Inc.	TD	The Toronto-Dominion Bank
CAPONE	Capital One Financial Corporation	NATWEST	NatWest Group plc	UBS	UBS Group AG
CITI	Citigroup Inc.	NORBK	The Norinchukin Trust & Banking Co., Ltd.	UNICRD	UniCredit S.p.A
CS	Credit Suisse Group AG	NYMEL	The Bank of New York Mellon Corporation	USB	U.S. Bancorp
DB	Deutsche Bank AG	PNC	The PNC Financial Services Group, Inc.	WELLS	Wells Fargo & Company
GS	The Goldman Sachs Group, Inc.	RABO	Cooperatieve Rabobank UA		
HSBC	HSBC Holdings plc	RBC	Royal Bank of Canada		

¹¹ 'BSBY Included Bank' includes the relevant CP/CD-issuing, Corporate Bond-issuing and/or Deposit-taking entity or entities within the banking group.

NOTABLE CHANGES IN THE INDEX METHODOLOGY

This list is not intended to be an exhaustive list of changes.

Date	Summary of Updates
July 19, 2021	Clarified maturity range for bonds (i.e., from 127 to 400 days)
August 20, 2021	Enhanced Corporate Bond eligibility criteria to better align with listing standards
September 20, 2021	Integration of DTCC CP and CD data
January 4, 2022	Reflecting incorporation of enhanced resiliency calculation waterfall

GLOSSARY

Certificates of Deposit (CD) are products offered by banks and credit unions that provide an interest rate premium in exchange for the customer agreeing to leave a lump-sum deposit untouched for a predetermined period of time with terms typically less than 12 months.

Commercial Paper (CP) is a commonly used type of unsecured, short-term debt instrument issued by corporations, typically used for the financing of payroll, accounts payable and inventories, and meeting other short-term liabilities. Maturities on commercial paper typically last several days, and rarely range longer than 270 days.

Corporate Bonds are a type of debt security that is issued by a firm and sold to investors. The issuer gets the capital it needs and in return the investor is paid a pre-established number of interest payments at either a fixed or variable interest rate. When the bond expires, or “reaches maturity,” the payments cease and the original investment is returned.

Deposits consist of money placed into banking institutions for safekeeping. These deposits are made to deposit accounts such as savings accounts, checking accounts, and money market accounts. The account holder has the right to withdraw deposited funds, as set forth in the terms and conditions governing the account agreement.

ECD are certificates of deposit issued primarily in London by a foreign bank or a foreign branch of a U.S. bank. BSBY uses USD denominated ECD.

ECP is a short-term loan issued, denominated in a currency that differs from the domestic currency of the market where the paper is issued. BSBY uses USD denominated ECP.

IOSCO Principles means the Final Report on the Principles for Financial Benchmarks published by the International Organization of Securities Commissions in July 2013.

UK BMR means Regulation (EU) 2016/1011 of the European Parliament and of the Council of 8 June 2016, including the supplementary regulatory technical standards promulgated thereunder, as and to the extent such EU law was “on-shored” in the UK from 1 January 2021 by virtue of the European (Withdrawal) Act 2018.

ACCESSING BSBY DATA

Bloomberg Terminal®	BSBY is available on the Terminal by entering the applicable ticker + <GO> for each of the following tickers: BSBYON, BSBY1M, BSBY3M, BSBY6M and BSBY12M.
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Bloomberg BSBY Website https://www.bloomberg.com/professional/product/indices/bsby/	The website makes available BSBY information including: • Methodology • Delayed values • Usage Terms & Licensing Information
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