

Bloomberg Nominal Swap Tracker Indices Methodology

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Introduction

This methodology (the “Methodology”) has been made available by Bloomberg Index Services Limited (“BISL”) and sets out the rules, criteria, risk factors and other information application to the Bloomberg Nominal Swap Tracker Indices (the “Indices” and each, an “Index”). Capitalized terms used in this Methodology but not otherwise defined have the meanings set forth in Appendix I (Glossary).

Objectives and Key Features

The Bloomberg Nominal Swap Tracker Indices aim to reflect the performance of a notional rolling receiver position (i.e. a notional position that receives fixed rates and pays floating rates) in a succession of interest rate swap contracts.

Section 1: Calculation

Index Value

With respect to each Index, the Closing Index Value on the Index Base Date shall be the Index Base Value. Thereafter, the Index Value with respect to each subsequent Index Business Day, t , and Fixing, f , shall be calculated in accordance with the following formula, subject to Section 1 (“Rounding”):

$$I_{(t,f)} = I_{(t-1,close)} + UnitsReturn_{(t,f)} \quad (1)$$

Where:

$t - 1$ means the Index Business Day immediately preceding t ;

$close$ means the Closing Fixing;

$I_{(t,f)}$ and $I_{(t-1,close)}$ mean the Index Values for Fixing f on Index Business Day t and the Closing Fixing on Index Business Day $t - 1$ respectively;

$UnitsReturn_{(t,f)}$ means the return attributed to the Units at Fixing f on Index Business Day t , calculated in accordance with the following formula:

$$UnitsReturn_{(t,f)} = \sum_{i \in Constituents} U_t^i \times (P_{(t,f)}^i - P_{(t-1,close)}^i) \quad (2)$$

Where:

$Constituents$ mean the set of Constituents;

i means a Constituent;

U_t^i means the Units for Constituent i on Index Business Day t ;

$P_{(t,f)}^i$ means the Price of Constituent i at Fixing f on Index Business Day t ; and

$P_{(t-1,close)}^i$ means the Price of Constituent i at the Closing Fixing on Index Business Day $t - 1$.

Units

With respect to each Constituent, the Units on the Index Base Date shall be 0 (zero). Thereafter, the Units with respect to each Constituent, i , and subsequent Index Business Day, t , shall be calculated in accordance with the following formula:

$$U_t^i = U_{t-1}^i + IU_{t-1}^i \quad (3)$$

Where:

$t - 1$ means the Index Business Day immediately preceding t ;

U_t^i and U_{t-1}^i mean the Units for Constituent i on Index Business Days t and $t - 1$ respectively; and

IU_{t-1}^i means the Incremental Units for Constituent i on Index Business Day $t - 1$.

Incremental Units

With respect to each Constituent, i , the Incremental Units for each Index Business Day, t , shall be calculated in accordance with the following formulae:

If Index Business Day t is the Index Base Date:

$$IU_t^i = TU_t^i \quad (4)$$

If Index Business Day t is a Roll Date:

$$IU_t^i = TU_t^i - U_t^i \quad (5)$$

Else:

$$IU_t^i = 0 \quad (6)$$

Where:

IU_t^i means the Incremental Units for Constituent i on Index Business Day t ;

TU_t^i means the Target Units for Constituent i on Index Business Day t ;

U_t^i means the Units for Constituent i on Index Business Day t ;

Target Units

With respect to each Constituent, i , the Target Units for each Index Business Day, t , shall be calculated on the Determination Date for t in accordance with the following formulae:

If Index Business Day t is either the Index Base Date or a Roll Date:

$$TU_t^i = \frac{I_{(obs,close)} \times RW_t^i}{Notional Amount} \quad (7)$$

Else:

$$TU_t^i = TU_{t-1}^i \quad (8)$$

Where:

$t - 1$ means the Index Business Day immediately preceding t ;

TU_t^i and TU_{t-1}^i mean the Target Units for Constituent i on Index Business Days t and $t - 1$ respectively;

obs means, with respect to Index Business Day t , the Observation Date;

$close$ means the Closing Fixing;

$I_{(obs,close)}$ means the Index Value for the Closing Fixing on Observation Date d ;

RW_t^i means the Roll Weight for Constituent i on Index Business Day t ;

Notional Amount means the Notional Amount of the Interest Rate Swap Contract in contract currency;

Roll Weights

With respect to each Constituent, i , the Roll Weights for each Index Business Day, t , shall be calculated in accordance with the following formulae:

If Index Business Day t is prior to the Index Base Date:

$$RW_t^i = 0 \quad (9)$$

If Index Business Day is a Roll Date:

$$RW_t^i = \begin{cases} 1 & , \text{ if } i = Next_t \\ 0 & , \text{ otherwise} \end{cases} \quad (10)$$

Else:

$$RW_t^i = RW_{t-1}^i \quad (11)$$

Where:

RW_t^i and RW_{t-1}^i mean the Roll Weights for Constituent i on Index Business Days t and $t - 1$ respectively;

$Next_t$ means, with respect to Index Business Day t , the Next Contract;

Rounding

The Index Values shall be calculated without rounding and published to 4 decimal places.

Section 2: Backtest assumptions

Prior to the commencement date of the indices, each underlying Interest Rate Swaps was created and priced with BVAL (Bloomberg Valuation Services) curves as if it was created and priced on each Index Business Day historically. It is assumed that BVAL prices have stayed unchanged between each historical Index Business Day and a later date when the interest rate swap was priced.

Section 3: Stakeholder engagement, risk, and limitations

Limitations of the index

Though the Index is designed to be representative of the markets it measures or otherwise aligns with its stated objective, it may not be representative in every case or achieve its stated objective in all instances. It is designed and calculated strictly to follow the rules of this Methodology, and any Index level or other output is limited in its usefulness to such design and calculation.

Markets can be volatile, including those market interests that the Index measures or upon which the Index is dependent to achieve its stated objective. For example, illiquidity can have an impact on the quality or amount of data available to the administrator for calculation and may cause the Index to produce unpredictable or unanticipated results.

In addition, changes to the availability and/or accuracy of trade, liquidity or forward rates data, may render the objective of the Index unachievable or to become impractical to replicate by investors. They are for the indicative purpose.

In particular, the Index measures the performance of holding and rolling interest rate swap contracts in accordance with a schedule. As with all investing, the Index is exposed to market risk. The value of interest rate swap contracts fluctuate with the changes in external factors such as economic forecasts, interest rate policies established by central banks and perceived geo-political risk. The Index does not take into account the cost of replication and as a result, a tracking portfolio's returns will underperform the Index with all else equal. As the Index is designed to measure those markets, it could be materially impacted by market movements, thus significantly impacting the use or usefulness of the fixings for some or all users.

Section 4: Benchmark oversight and governance

Benchmark governance, audit, and review structure

BISL uses three primary committees to provide overall governance and effective oversight of its benchmark administration activities:

- The Product, Risk & Operations Committee ("**PROC**") is responsible for the first line of control over the creation, design, production and dissemination of benchmark indices, strategy indices and fixings administered by the BISL.¹
- The oversight function is provided by Bloomberg's Benchmark Oversight Committee ("**BOC**"). The BOC is independent of the PROC and is responsible for the review and challenge of the Board and the PROC regarding relevant aspects of the provision of Benchmarks by BISL, as set out in the UK BMR.
- The Risk Committee ("**RiskCo**") advises the Board, the PROC and the BOC on the Company's overall risk appetite, tolerance and strategy and oversees the Company's risk exposure and risk strategy

On a quarterly basis, the PROC reports to the BOC on governance matters, including but not limited to client complaints, the launch of new benchmarks, operational incidents (including errors & restatements), major announcements and material changes concerning the benchmarks, the results of any reviews of the benchmarks (internal or external) and material stakeholder engagements.

Index and data reviews

The Index Administrator will review the Indices (both the rules of construction and data inputs) on a periodic basis, not less frequently than annually, to determine whether they continue to reasonably measure the intended underlying market interest, the economic reality or otherwise align with their stated objective. More frequent reviews may result from extreme market events and/or material changes to the applicable underlying market interests.

In addition to material changes, BISL may from time to time terminate one or more Indices ("Discontinued Indices"), whether due to changes in market structure, a lack of requisite data, insufficient usage, or for other regulatory or practical concerns. The process for terminating such Discontinued Indices is as follows:

The PROC will review proposed terminations, taking into account the reasons for termination, the impact on users (if any), the availability of alternative products and other such factors. If termination is approved, users will be provided as much prior notice as is reasonable under the circumstances, typically 90 days. In the event there is little or no known usage identified, the Discontinued Indices may be terminated with less (or no) notice, as applicable. In the event the Discontinued Indices are licensed for use as the basis of an ETF or other widely-available financial product or is otherwise determined by BISL to be an important benchmark without reasonable substitutes, the notice period may be extended, as warranted. Any advance notice period is subject to BISL being reasonably able to continue administering and calculating such benchmark during such period (for example, BISL has access to requisite data on commercially reasonable terms, is not subject to any litigation or other claims, has adequate internal resources and capabilities, etc.). Terminations and associated user engagement decisions made by the PROC are subject to review by BISL's oversight function, the BOC. Criteria for data inputs include reliable delivery and active underlying markets. Whether an applicable market is active depends on whether there are sufficient numbers of transactions (or other indications of price, such as indicative quotes) in the applicable constituents (or similar underlying constituent elements) that a price (or other value, as applicable) may be supplied for such constituent(s).

Any resulting change to this Methodology will be subject to the review of the PROC under the oversight of the BOC, each of which committees shall be provided all relevant information and materials it requests relating to the change. Details regarding the PROC and BOC are described above. Any relevant changes will be reflected and tracked in updated versions of this Methodology.

Material changes related to the Indices will be made available in advance to affected stakeholders whose input will be solicited. The stakeholder engagement will set forth the rationale for any proposed changes as well as the timeframe and process for responses. The Index Administrator will endeavour to provide at least two weeks for review prior to any material change going into effect. In the event of exigent market circumstances, this period may be shorter. Subject to requests for confidentiality, stakeholder feedback and the Index Administrator's responses will be made accessible upon request.

Expert judgement

The Index is rules-based, and its construction is designed to consistently produce values without the exercise of expert judgment or discretion. Nevertheless, BISL may use expert judgment or discretion with regards to the following:

¹ Note that administrators of significant (but not critical) benchmarks may opt not to disclose (i) the roles performed by any persons involved in reviewing and approving the methodology and (ii) a description of the procedure for the nomination and removal of the persons involved in reviewing and approving the methodology.

- Extraordinary circumstances during a market emergency
- 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 Legal & Compliance teams, and are reported to the PROC, BISL's governance committee, which operates under the supervision of BISL's oversight function, the 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.

Data providers and data extrapolation

The Index is rules-based, and its construction is designed to consistently produce Index levels without the exercise of discretion.

In addition, BISL seeks to avoid contributions of input data that may be subject to the discretion of the source of such data and instead seeks to use input data that is readily available and/or distributed for a number of non-index or benchmark creation purposes. Accordingly, the index requires no 'contributors' to produce and no codes of conduct with any such sources are required.

Conflicts of interest

The 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.

Restatement policy

BISL strives to provide accurate calculation of its indices. However, to the extent a material error in Index Values is uncovered following publication and dissemination, a public notification will be made alerting of such error and what course of action will be undertaken and when. In such situations, BISL may decide to:

- 1) Not correct until the next index review;
- 2) Apply a correction going forward with advance notification; or
- 3) Restate the historical indices

In some cases, BISL may apply discretion and determine that a restatement is required. The decision will take into consideration the following factors (not listed in order of importance):

- The relative importance of the data field impacted by the error
- Whether the indices were replicable
- When the error occurred and when it was discovered
- The number of indices and sub-indices affected
- Whether the impacted indices are linked to tradable products
- The magnitude of the error
- The burden of restatement on client re-processing relative to the impact of the error
- The impact of the restatement on analytical tools

A decision to restate any Index results in the restatement of all impacted Indices. Real-time indices are not considered for restatement, all real-time dissemination is considered indicative. Discrepancies discovered after 12 months will not be corrected.

Appendix I: Glossary

Contract Currency	The currency the Notional Amount of the Interest Rate Swap Contract are quoted in.
Constituents	The Eligible Interest Rate Swap Contracts.
Closing Fixing	The Fixing corresponding to the end of day valuation.
Closing Index Value	The value of the Index on any given Index Business Day at the Closing Fixing.
Determination Business Days	The days on which an index may make determinations with respect to changing weights or units.
Determination Date	For an Index Business Day, the Determination Business Day occurring the Determination Lag number of Determination Business Days prior.
Determination Lag	The number of Determination Business Days before any determinations made by an index should become effective.
Eligible Swap Contracts	The set of Interest Rate Swap Contracts that the index may hold.
Fixing	A given time, specified with respect to a location or time zone.
Financial Calendar	The calendar that provides indicative trading and settlement information for Trading Days.
Fixed Rate	The Fixed Rate is calculated, in accordance with the Pricing Source, such that the present value of fixed cash flows is exactly equal to the present value of the floating cash flows on the roll date.
Fixed Rate Day Count Convention	The value that determines how the Fixed Rate interest accrues over time.
Fixed Rate Payment Frequency	The frequency of the interest payments for the Fixed Rate.
Floating Rate	The interest rate that periodically adjusts up or down to reflect economic or financial conditions.
Floating Rate Day Count Convention	The value that determines how the Floating Rate interest accrues over time.
Floating Rate Payment Frequency	The frequency of the interest payments for the Floating Rate.
Incremental Units	The difference in Units attributed to an action or activity on a Fixing.
Index	Has the meaning set forth in the Introduction.
Index Base Date	The first date on which an Index publishes a value.
Index Base Value	The value of an Index on and prior to the Index Base Date.
Index Business Day	The days on which the Index is calculated.
Index Commencement Day	The date on which an index is first published.
Index Currency	The currency in which an index is published.
Index Value	The value of the Index at a given Fixing on an Index Business Day.
Interest Rate Swap Contract	An Interest Rate Swap Contract is a transaction in which one stream of future interest payments is exchanged for another based on a specified notional amount over a specified time period.
Lead Contract	For an Index Business Day, the Eligible Swap Contract whose Roll Date is the latest Roll Date that is prior to such Index Business Day.
Market Disruption Event	A situation wherein markets cease to function in a regular manner. See Appendix II: Market Disruptions.
Maturity Date	The termination date of an Interest Rate Swap Contract.
Next Contract	For an Index Business Day, the Eligible Swap Contract whose Roll Date is either on, or the earliest Roll Date after, such Index Business Day.
Observation Business Days	The days from which data used for making determinations may be taken.
Observation Date	For an Index Business Day, the Observation Business Day occurring the Observation Lag number of Observation Business Days prior.
Observation Lag	The number of Observation Business Days prior to the effective date of a determination from which data used for such determination should be taken.
Notional Amount	The principle on which the exchanged interest payments are based.
Price	On an Index Business Day, the Net Present Value of a Constituent as determined from the Price Source with respect to the Fixing. Otherwise, the value of such Constituent as determined from the Price Source with respect to the Closing Fixing on the immediately preceding Pricing Day.
Price Currency	The currency in which the Prices of the Constituents are quoted.
Price Source	The source of pricing to be used for each Constituent and Fixing.

Pricing Day	The days on which Prices for a Constituent are considered to be available.
Roll Business Days	A day that is both an Index Business Day and a Trading Day.
Roll Date	With respect to each Eligible Swap Contract, the Trading Day that is Roll Offset number of Roll Business Days prior to the Start Effective Date of such contract.
Roll Disruption Rule	The set of rules by which a roll will be adjusted in the event of certain Market Disruption Events. See Appendix II.
Roll Offset	A number used to compute the Roll Date from the Start Effective Date.
Roll Weight	The intended weight of a Constituent that an Index uses to determine the Target Units.
Start Effective Date	The start date of an Interest Rate Swap Contract and when interest will start accruing on the first coupon.
Swap Tenor	The number of calendar years between the Start Effective Date and the Maturity Date of an Interest Rate Swap Contract.
Target Units	The Units of a Constituent that an index intends to hold after trading activities are performed.
Trading Day	The days on which an index considers that a Constituent can be traded.
Units	The number of units of each Constituent held on opening of an Index Business Day.

Appendix II: Market Disruptions

If on any Index Business Day a Market Disruption Event occurs or is occurring that BISL determines, in its sole discretion, materially affects the Index, the impact of the market disruption will be assessed and actions are determined as per the rules stated in Section 4: Benchmark oversight and governance.

Appendix IV: ESG Disclosures

EXPLANATION OF HOW ESG FACTORS ARE REFLECTED IN THE KEY ELEMENTS OF THE BENCHMARK METHODOLOGY	
1. Name of the benchmark administrator.	Bloomberg Index Services Limited ("BISL")
2. Type of benchmark	Other Benchmark
3. Name of the benchmark or family of benchmarks.	Bloomberg Nominal Swap Tracker Indices
4. Does the benchmark methodology for the benchmark or family of benchmarks take into account ESG factors?	No
<p>5. Where the response to Item 4 is positive, please list below, for each family of benchmarks, those ESG factors that are taken into account in the benchmark methodology, taking into account the ESG factors listed in Annex II to Delegated Regulation (EU) 2020/1816.</p> <p>Please explain how those ESG factors are used for the selection, weighting or exclusion of underlying assets.</p> <p>The ESG factors shall be disclosed at an aggregated weighted average value at the level of the family of benchmarks.</p>	
a) List of environmental factors considered:	Selection, weighting or exclusion: N/A
b) List of social factors considered:	Selection, weighting or exclusion: N/A
c) List of governance factors considered:	Selection, weighting or exclusion: N/A
<p>6. Where the response to Item 4 is positive, please list below, for each benchmark, those ESG factors that are taken into account in the benchmark methodology, taking into account the ESG factors listed in Annex II to Delegated Regulation (EU) 2020/1816, depending on the relevant underlying asset concerned.</p> <p>Please explain how those ESG factors are used for the selection, weighting or exclusion of underlying assets.</p> <p>The ESG factors shall not be disclosed for each constituent of the benchmark, but shall be disclosed at an aggregated weighted average value of the benchmark.</p> <p>Alternatively, all of this information may be provided in the form of a hyperlink to a website of the benchmark administrator included in this explanation. The information on the website shall be easily available and accessible. Benchmark administrators shall ensure that information published on their website remains available for five years</p>	
a) List of environmental factors considered:	Selection, weighting or exclusion: N/A
b) List of social factors considered:	Selection, weighting or exclusion: N/A
c) List of governance factors considered:	Selection, weighting or exclusion: N/A

7. Data and standards used.	
a) Data input. <i>(i) Describe whether the data are reported, modelled or, sourced internally or externally.</i> <i>(ii) Where the data are reported, modelled or sourced externally, please name the third party data provider.</i>	N/A
b) Verification of data and guaranteeing the quality of those data. <i>Describe how data are verified and how the quality of those data is ensured.</i>	N/A
c) Reference standards <i>Describe the international standards used in the benchmark methodology.</i>	N/A
Date on which information has been last updated and reason for the update:	August , 2023 (initial publication)

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