

**S&P Dow Jones
Indices**

A Division of **S&P Global**

**S&P Dow Jones Indices Limited
iBoxx Indices
*Recalculation Policy***

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iBoxx Indices Restatement Policy

S&P Dow Jones Indices Limited (S&P DJI) strives to calculate all iBoxx indices according to a given index's published methodology rules, but sometimes errors occur that require a recalculation and restatement of an index value if such errors materially impact published index values.

Recalculation Events

S&P DJI, at its discretion, reserves the right to recalculate an index if any of the following events materially impact index values:

- Input Data Error
 - Incorrect Input Prices
 - Incorrect Analytics (i.e., yield, duration, or spread)
 - Incorrect Instruments T&C (i.e., coupon, redemption date, or workout date)
 - Incorrect calculations or data entry errors
- Late Announcements
- Incorrect Application of Index Methodology or Missed Methodology
 - Constituents' eligibility (inclusion/exclusion)
 - Constituents' weightings

The decision to recalculate an index considers the following:

- materiality of the error's impact on an index value (Index Value Δ). In general, only material errors trigger potential index recalculations. Errors with non-material impact generally do not trigger recalculations.
- client impact
- whether the replicability of the index is preserved.

All recalculation events, whether approved by the Index Committee or conducted independently by the Index Production & Management Group (IMPG) under the present policy, are reported to the Index Committee at the next committee meeting.

Incorrect Data Input and Late Announcement Events

In general, if IMPG determines an incorrect input data or late announcement error's impact on an index to be "material" the index value recalculates, dependent on the timing of the error's reporting.

- **Errors Reported Within Two Business Days of Index Value Publication.** In general, the index recalculates.
- **Errors Reported After Two Business Days of Index Value Publication.** In general, the index recalculates. When a recalculation occurs, the Index Committee then determines whether to apply the recalculation retroactively to extend further back in history past the last index rebalancing. Recalculations are usually only applied backward to the last rebalancing, the Index Committee must specifically approve recalculations extending beyond the last rebalancing.

Incorrect or Inaccurate Instrument Classification

If stakeholders challenge a bond's classification by industry, type, or estimated workout date for callables and perpetual, or if IMPG determines a specific classification is inaccurate, IMPG assesses the materiality

of the impact on index value. Generally, non-material events do not trigger index recalculations. For material events the Index Committee meets to assess and approve a reclassification of the instrument.

Incorrect Application of the Methodology

Certain incorrect applications of the index methodology cause errors that require the Index Committee to determine whether to recalculate an index, typically involving one of the following scenarios:

- incorrect application of the index eligibility criteria resulting in a constituent's addition to or removal from an index
- incorrect application of the index weighting scheme

In the event either of the above errors occur, the Index Committee reviews the error, approves a correction, and considers whether to apply the correction retroactively. Generally, to preserve index replicability and stability, the Index Committee only makes changes to index composition and/or weightings for the following errors:

- a constituent doesn't meet the index's defined objective (example: adding a non-Sukuk bond to a Sukuk bond index).
- the changes differ from those previously announced by S&P DJI in advance of the effective date (e.g., pro-forma files)

The Index Committee's decision to recalculate an index for such methodology application errors considers the replicability of the index, among other factors, and are treated according to the following guidelines.

Error Materiality Assessment

IMPG conducts a materiality assessment for the potential impact of any error, appropriately escalating and reporting the assessment to the Index Committee. Materiality is determined based on the liquidity and volatility profile of the underlying index constituents, with consideration given to the recalculation's impact on index users and the use of the index as a reference into other financial instruments. The table below outlines the remediation guidelines.

Type of Material Error	Reported Within Two Business Days	Reported Past Two Business Days
Incorrect Data Input / Late Announcement Events	corrected with notice	referred to the Index Committee
Incorrect or Inaccurate Bond Classification	referred to the Index Committee	
Incorrect Application of the Methodology	referred to the Index Committee	

Restatement

In cases where S&P DJI identifies a potential calculation error clients are notified as soon as possible. If the assessment determines a material error requiring index recalculation and republication of the index values, the following actions occur:

1. Regeneration and reposting of all impacted files.
2. Dissemination of a client announcement detailing the recalculation and the successful reposting of corrected files.

S&P DJI applies the rules set forth herein to all fixed income indices under its administration. Any decision that deviates from the stated rules is reviewed by the Index Committee and announced accordingly.

Further Information

Client Support

For client support please contact index_services@spglobal.com.

Formal Complaints

Formal complaints should be e-mailed to spdji_compliance@spglobal.com.

Please note: spdji_compliance@spglobal.com should only be used to log formal complaints.

General Index Inquiries

For general index inquiries, please contact index_services@spglobal.com.

Disclaimer

Performance Disclosure/Back-Tested Data

Where applicable, S&P Dow Jones Indices and its index-related affiliates (“S&P DJI”) defines various dates to assist our clients by providing transparency. The First Value Date is the first day for which there is a calculated value (either live or back-tested) for a given index. The Base Date is the date at which the index is set to a fixed value for calculation purposes. The Launch Date designates the date when the values of an index are first considered live: index values provided for any date or time period prior to the index’s Launch Date are considered back-tested. S&P DJI defines the Launch Date as the date by which the values of an index are known to have been released to the public, for example via the company’s public website or its data feed to external parties. For Dow Jones-branded indices introduced prior to May 31, 2013, the Launch Date (which prior to May 31, 2013, was termed “Date of introduction”) is set at a date upon which no further changes were permitted to be made to the index methodology, but that may have been prior to the Index’s public release date.

Please refer to the methodology for the Index for more details about the index, including the manner in which it is rebalanced, the timing of such rebalancing, criteria for additions and deletions, as well as all index calculations.

Information presented prior to an index’s launch date is hypothetical back-tested performance, not actual performance, and is based on the index methodology in effect on the launch date. However, when creating back-tested history for periods of market anomalies or other periods that do not reflect the general current market environment, index methodology rules may be relaxed to capture a large enough universe of securities to simulate the target market the index is designed to measure or strategy the index is designed to capture. For example, market capitalization and liquidity thresholds may be reduced. In addition, forks have not been factored into the back-test data with respect to the S&P Cryptocurrency Indices. For the S&P Cryptocurrency Top 5 & 10 Equal Weight Indices, the custody element of the methodology was not considered; the back-test history is based on the index constituents that meet the custody element as of the Launch Date. Also, the treatment of corporate actions in back-tested performance may differ from treatment for live indices due to limitations in replicating index management decisions. Back-tested performance reflects application of an index methodology and selection of index constituents with the benefit of hindsight and knowledge of factors that may have positively affected its performance, cannot account for all financial risk that may affect results and may be considered to reflect survivor/look ahead bias. Actual returns may differ significantly from, and be lower than, back-tested returns. Past performance is not an indication or guarantee of future results.

Typically, when S&P DJI creates back-tested index data, S&P DJI uses actual historical constituent-level data (e.g., historical price, market capitalization, and corporate action data) in its calculations. As ESG investing is still in early stages of development, certain datapoints used to calculate certain ESG indices may not be available for the entire desired period of back-tested history. The same data availability issue could be true for other indices as well. In cases when actual data is not available for all relevant historical periods, S&P DJI may employ a process of using “Backward Data Assumption” (or pulling back) of ESG data for the calculation of back-tested historical performance. “Backward Data Assumption” is a process that applies the earliest actual live data point available for an index constituent company to all prior historical instances in the index performance. For example, Backward Data Assumption inherently assumes that companies currently not involved in a specific business activity (also known as “product involvement”) were never involved historically and similarly also assumes that companies currently involved in a specific business activity were involved historically too. The Backward Data Assumption allows the hypothetical back-test to be extended over more historical years than would be feasible using only actual data. For more information on “Backward Data Assumption” please refer to the FAQ. The methodology and factsheets of any index that employs backward assumption in the back-tested history

will explicitly state so. The methodology will include an Appendix with a table setting forth the specific data points and relevant time period for which backward projected data was used. Index returns shown do not represent the results of actual trading of investable assets/securities. S&P DJI maintains the index and calculates the index levels and performance shown or discussed but does not manage any assets.

Index returns do not reflect payment of any sales charges or fees an investor may pay to purchase the securities underlying the Index or investment funds that are intended to track the performance of the Index. The imposition of these fees and charges would cause actual and back-tested performance of the securities/fund to be lower than the Index performance shown. As a simple example, if an index returned 10% on a US \$100,000 investment for a 12-month period (or US \$10,000) and an actual asset-based fee of 1.5% was imposed at the end of the period on the investment plus accrued interest (or US \$1,650), the net return would be 8.35% (or US \$8,350) for the year. Over a three-year period, an annual 1.5% fee taken at year end with an assumed 10% return per year would result in a cumulative gross return of 33.10%, a total fee of US \$5,375, and a cumulative net return of 27.2% (or US \$27,200).

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