S&P Dow Jones Indices
A Division of S&P Global

Short iBoxx € Sovereigns Eurozone Total Return Index Guide

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1 Short iBoxx € Sovereigns Eurozone Total Return Indices

This document details the technical calculation of the Short Markit iBoxx Total Return Indices:

- Short iBoxx € Sovereigns Eurozone Total Return Index
- Short Markit iBoxx Eurozone 3-5 Years Total Return Index.

The above indices measure the performance of holding a short position in the iBoxx € Sovereigns Eurozone Index and the Markit iBoxx Eurozone 3-5 Years Index respectively (hereafter referred to as the "underlying indices").

The iBoxx € Sovereigns Eurozone Index contains central government bonds of at least EUR 1 billion issued by countries whose local currency is the Euro and whose sovereign debt rating is investment grade. The Markit iBoxx Eurozone 3-5 Years Index contains the corresponding bonds with a maturity of 3-5 years.

The iBoxx € Sovereigns Eurozone Total Return Index and Markit iBoxx Eurozone 3-5 Years Total Return Index use the Euro short-term rate (€STR)+8.5 basis points and a repo rate as inputs.

The returns from €STR+8.5bps and the repo rate stem from the fact that the indices are long funding from investors' subscriptions and the funding received from holding short positions in the constituent bonds of the indices. This means that the fund can invest twice the funding in the money market. The repo rate is the difference between the €STR+8.5bps and an indicative market cost of borrowing the bonds in order to short them.

2 Index calculation

2.1 Index Calculation Eurozone Short Indices

The indices are calculated daily, for each day on which an Euro short-term rate (€STR) is officially published by the European Central Bank and the underlying indices are published by IHS Markit. The daily returns for the indices are calculated as follows:

$$tr_t^{Daily} = -(\frac{TR_t^{underlyingindex}}{TR_{t-1}^{underlyingindex}} - 1) + (r_{t-1}^{Euroshorttermrate+8.5bps} + r_{t-1}^{Repo}) \cdot \frac{days(t-1,t)}{360}$$

The corresponding index levels are calculated as follows:

$$TR_t^{ShortiBoxx} = (1 + tr_t^{daily}) \cdot TR_{t-1}^{ShortiBoxx}$$

where:

$r_{t-1}^{Euroshorttermrate+8.5bps}$	€STR rate on day $(t-1) + 8.5bps$
$days(t-1,t)$	Number of calendar days between $(t-1)$ and t, including t but excluding $(t-1)$
r_{t-1}^{Repo}	Assumed repo rate on day $(t-1)$
t	Calculation day t
$(t-1)$	Calculation day $(t-1)$
tr_t^{Daily}	Daily return of the Short Markit iBoxx index on day t
$TR_t^{underlyingindex}$	Total return index level of underlying index on day t
$TR_t^{ShortiBoxx}$	Index level of the Short Markit iBoxx index on day t

2.2 Other input factors

€STR: The Euro short-term rate (€STR) as published by the European Central Bank +8.5 basis points.

Repo rate: The assumed repo rate is (€STR+8.5bps) – COST_repo %.

The COST_repo rate is published at https://www.spglobal.com/spdji/en/ for each index and period. The assumed repo rate may vary at the discretion of S&P DJI, the index calculator, if, following discussion with market participants, it is determined that a different rate is a better reflection of market conditions. A notice announcing the change and the new rate will be posted at https://www.spglobal.com/spdji/en/ at least one week before the change becomes effective.

2.3 Publication of the index

Short iBoxx € Sovereigns Eurozone Total Return Indices are calculated as end-of-day and distributed once daily. The publication schedule is presented in the *Markit iBoxx FTP Guide* available at https://www.spglobal.com/spdji/en/. S&P DJI publishes an index calculation calendar also available at https://www.spglobal.com/spdji/en/.

2.4 Data publication and access

The table below summarizes the publication of Short iBoxx € Sovereigns Eurozone Total Return Indices at https://www.spglobal.com/spdji/en/ for registered users and on the FTP server.

Table 1: ***Frequency, File type and Access***

Frequency	File Type	Access
Daily	Indices file – Index level	FTP Server / website / Bloomberg for index levels only

The index identifiers for the publication channels are:

Index Name	Short iBoxx € Sovereigns Eurozone Total Return Index	Short Markit iBoxx Eurozone 3-5 Years Total Return Index
Return Type	TRI	TRI
ISIN	GB00B2R31133	GB00B52JGL25
Ticker	SHSVETR	IBOXXMJB
RIC	.IBXSHORTSOVEZ	.IBOXXMJB

3 Index Governance

Index Committee

An S&P Dow Jones Indices Index Committee maintains the indices. All committee members are full-time professionals at S&P Dow Jones Indices. Meetings are held regularly. The Index Committee oversees the management of the indices, including determinations of intra-rebalancing changes, maintenance and inclusion policies, and other matters affecting the maintenance and calculation of the indices.

In fulfilling its responsibilities, the Index Committee has full and complete discretion to (i) amend, apply, or exempt the application of index rules and policies as circumstances may require and (ii) add, remove, or by-pass any bond in determining the composition of an index.

The Index Committee may rely on any information or documentation submitted to it or gathered by it that the Index Committee believes to be accurate. The Index Committee reserves the right to reinterpret publicly available information and to make changes to the indices based on a new interpretation of that information at its sole discretion. All Index Committee discussions are confidential.

The Index Committee is separate from and independent of other analytical groups at S&P Global. In particular, the Index Committee has no access to or influence on decisions by S&P Global Ratings analysts.

S&P Dow Jones Indices' Index Committees reserve the right to make exceptions when applying the methodology if the need arises. In any scenario where the treatment differs from the general rules stated in this document or supplemental documents, clients will receive sufficient notice, whenever possible.

In addition to the daily governance of indices and maintenance of index methodologies, at least once within any 12-month period, the Index Committee reviews the methodology to ensure the indices continue to achieve the stated objectives, and that the data and methodology remain effective. In certain instances, S&P Dow Jones Indices may publish a consultation inviting comments from external parties.

For more information on index governance policies, please refer here.

4 Changes to the Short iBoxx € Sovereigns Eurozone Total Return Indices

Dec. 15, 2021	• IHS Markit IBOR Transition - Migration of EONIA to €STR + 8.5 basis points

5 Further information

Client support

For client support please contact index_services@spglobal.com.

Formal complaints

Formal complaints should be emailed 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.

A ESG Disclosures

EXPLANATION OF HOW ENVIRONMENTAL, SOCIAL & GOVERNANCE (ESG) FACTORS ARE REFLECTED IN THE KEY ELEMENTS OF THE BENCHMARK METHODOLOGY [1]		
1	**Name of the benchmark administrator.**	IHS Markit Benchmark Administration Limited (IMBA)
2	**Underlying asset class of the ESG benchmark. [2]**	N/A
3	**Name of the S&P Dow Jones Indices benchmark or family of benchmarks.**	iBoxx Benchmark Statement
4	**Do any of the indices maintained by this methodology take into account ESG factors?**	No
Appendix latest update:		May 2023
Appendix first publication:		May 2023

[1] The information contained in this Appendix is intended to meet the requirements of the European Union Commission Delegated Regulation (EU) 2020/1817 supplementing Regulation (EU) 2016/1011 of the European Parliament and of the Council as regards the minimum content of the explanation of how environmental, social and governance factors are reflected in the benchmark methodology and the retained EU law in the UK (The Benchmarks (amendment and Transitional Provision) (EU Exit) Regulations 2019).

[2] The ‘underlying assets’ are defined in European Union Commission Delegated Regulation (EU) 2020/1816 supplementing Regulation (EU) 2016/1011 of the European Parliament and of the Council as regards the explanation in the benchmark statement of how environmental, social and governance factors are reflected in each benchmark provided and published.

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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