

iBoxx Emerging Markets Broad Overall Indices Guide

May 2024

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1 Introduction

The iBoxx USD Emerging Markets Broad Overall Index and iBoxx EUR Emerging Markets Broad Overall Index families measure the performance of USD and EUR denominated bonds issued by entities domiciled in the emerging markets. The index rules aim to offer broad coverage of the emerging market bond universe, while upholding minimum standards of investability and liquidity.

The index family is split into three major indices covering sovereign, sub-sovereign and corporate debt. These are further broken down into sub-indices based on regions, ratings, sectors and maturities.

For information on the definition of emerging markets, please refer to the IHS Markit Global Economic Development Classification Methodology, available [here](#).

Data Source. All iBoxx indices are priced based on multiple data inputs. The iBoxx Emerging Markets Broad Overall Indices use multi-source prices as described in the *iBoxx Pricing Methodology* document, available [here](#).

1.1 Index family structure

The family structure for the iBoxx USD Emerging Markets Broad Overall Index and iBoxx EUR Emerging Markets Broad Overall Index family is divided into two broad categories, Sovereigns and Non-Sovereigns, and is detailed below.

Table 1: Index family structure

iBoxx Emerging Markets Broad Overall			
Sovereigns	Non-Sovereigns		
	Sub-Sovereigns	Corporates	Collateralized
Country Indices	- Agencies - Regions - Other Sub-Sovereigns	- Financials > Core Financials > Financial Services > Real Estate - Non-Financials > Basic Materials > Consumer Goods > Consumer Services > Health Care > Industrials > Oil & Gas > Technology > Telecom > Utilities	Covered
Region, Country, Rating, Maturity and Capped Indices - Regions - Country - Ratings (Investment Grade, High Yield, AAA, AA, A, BBB, BB, B, CCC, Rated Only) - Maturity (0-1, 1-3, 3-5, 5-7, 7-10, 1+, 10+)			

The overall indices are further divided into six headline indices: Sovereign, Sub-Sovereign, Non-Sovereign, Corporates, Covered, and Sovereign & Sub-Sovereigns. IG and HY rating indices also calculate for the headline indices.

The corporates indices are divided into indices for financial and non-financial issuers. In addition, sector indices calculate for financials and non-financials.

2 Bond selection rules

2.1 Eligible jurisdictions

2.1.1 Issuer domicile

Debt issuers must satisfy the following criteria to be eligible for the indices:

- **Classification:** Be domiciled in an emerging market, as classified in the *Markit Global Economic Development Classification Methodology*.

For more information on market classifications, please refer [here](#).

Changes take effect according to the calendar for Markit Global Economic Development Classification, which updates annually on October 31st.

2.1.2 Defaulted countries and sovereign debt rating

The indices exclude countries that are in default on their external debt, as determined based on information from the rating agencies.

A country is considered to be in default if one of the six credit events as defined by the International Swaps and Derivatives Association (ISDA) occurs:

- Bankruptcy
- Obligation acceleration
- Obligation default
- Failure to pay
- Repudiation/Moratorium
- Restructuring

2.1.3 Application of Sanctions

2.1.3.1 Additional restriction for countries on financial sanction regimes

The indices excludes countries on the financial sanctions lists of the European Union or the United States (US) unless:

- Sanctions are applied to specific individuals only, or
- Funds, funding and financial transactions of the government and government-related entities are unaffected by the sanctions.

Sanctions regime information is compiled:

- For the European Union from the [Common Foreign & Security Policy](#)
- For the US from the [Office of Asset Control \(OFAC\)](#)

A country is placed on the sanctions list if relevant sanctions apply for either the European Union or the US. Decisions to add or remove countries are taken in consultation with the Index Committee. Any decision to change the list of countries on the sanctions list is immediately published on <https://www.spglobal.com/spdji/en/>.

If financial sanctions are applied for a particular country, the country is removed from the index at the next month-end. If financial sanctions are lifted, the country is included in the index at the next index rebalancing after all relevant sanctions have been lifted.

Based on current information, the indices exclude the following countries because of applicable sanctions:

- Cuba
- Iran
- Myanmar
- North Korea
- Sudan
- Syria
- Russia

2.1.3.2 US Executive Order 14032 sanctions

Sanctions as per US Executive orders 13959/14032 are applicable to the indices. The sanction details are available on [iBoxx-Consultation--US-Executive-Order-13959-Sanctions-2021-06-24.pdf \(spglobal.com\)](#).

2.2 Issuer type

Bonds issued by corporate, sovereign or sub-sovereign issuers and covered bonds are eligible for the indices. The sub-sovereign issuers include (but are not limited to) agencies and local governments as well as certain state-owned enterprises depending on the level of state support and commitment. All new issuers are classified according to the iBoxx classification scheme.

2.3 Bond type

In general, the following bond types with known cash flows are eligible for the indices:

- Fixed and zero coupon bonds
- Callable and puttable bonds
- Step-ups and event driven bonds
- Amortizing bonds and sinking funds with fixed sinking schedules
- Covered bonds
- Perpetuals and fixed-to-float bonds with a reset date at or after the first call date
- Contingent convertible and other Basel III compliant A/RT1 and T2 capital with mandatory conversion/write-down with pre-specified objective triggers
- Financial subordinated debt with a contingent conversion feature at the point of non-viability, in line with the capital adequacy requirements of Basel III
- Extended bonds as defined under section 'Maturity extension' in this document

In addition to the above, the following bond types are eligible for USD denominated bonds:

- Preference share style AT1s
- RegS securities
- Payment-In-Kinds (PIKs)

The following bond types are ineligible:

- Floating rate notes
- Inflation-linked and other index-linked bonds
- Structured notes
- Catastrophe bonds
- Other collateralized bonds
- Other optional or mandatory convertible bonds
- 144As
- Perpetuals and fixed-to-float bonds with a reset date prior to the first call date
- Subordinated bank or insurance debt with non-regulatory conversion options before the first call date
- Bonds cum- or ex-warrant
- New bonds entering the index that have already been called prior to the rebalancing
- Retail bonds
- Private placements

In addition to the above, the following bond types are ineligible for EUR denominated bonds:

- Payment-In-Kinds (PIKs)

For retail bonds and private placements, publicly available information is not always conclusive and the classification of a bond as a retail bond or a private placement will be made at S&P DJI's discretion based on the information available at the time of determination. Any bond classified as retail or private placement is added to the list of excluded private placements and retail bonds. The list is published on <https://www.spglobal.com/spdji/en/indices/products/indices.html> under *News and Information* for future reference and to ensure decision's consistency.

In instances where a new bond type is not specifically excluded or included according to the published index rules, S&P DJI will analyze the features of such securities in line with the principles set out in this guide. S&P DJI may consult the specific Index Committees. Any decision as to the eligibility or ineligibility of a new bond type will be published and the index rules will be updated accordingly.

2.4 Amount outstanding

Bonds must have a minimum amount outstanding of greater than or equal to USD/EUR 250 million as of the bond selection cut-off date to be eligible for the indices.

S&P DJI considers changes to the outstanding face value of a bond as a result of partial or full buybacks or increases, provided that S&P DJI is aware of such changes as of the bond selection cutoff date.

In the case of 144A/RegS securities that are registered as global securities, the remaining amount of the 144A/RegS version and the registered version recombine if the bond is not exchanged in full.

RegS bond tap issue amounts, regardless of fungibility status are added to existing RegS versions to maintain consistency with the treatment of tap issues as reflected under existing 144A versions.

2.5 Time to maturity

There is no minimum remaining time to maturity rule. Newly issued bonds must meet the minimum initial time to maturity rule. The minimum initial time to maturity as measured from the first settlement date to the maturity date of the bond, must be 18 months or more.

Dated and undated fixed-to-floater bonds are removed from the indices at last rebalancing prior to the reset date unless they have already been called.

2.6 Credit Rating

There is no rating requirement. Unrated bonds are eligible for the iBoxx USD Emerging Markets Broad Overall Index but not eligible for the iBoxx EUR Emerging Markets Broad Overall Index.

Bonds with a rating downgrade to RD/SD remain eligible until the second rebalancing after the downgrade. If such bonds have not been upgraded by T-3 of the second rebalance following the initial downgrade, they are removed from the index. RD/SD rated bonds remain eligible in the index for the first rebalancing after the downgrade to allow for sufficient time to complete a distressed debt exchange or change of terms (assuming they meet all other criteria). Ratings from the following three credit rating agencies are considered for the calculation of the iBoxx Rating for rated bonds:

- Fitch Ratings
- Moody's Investor Service
- S&P Global Ratings

If a bond is rated by more than one of the above agencies, then the iBoxx rating is the average of the provided ratings. The rating is consolidated to the nearest rating grade. Rating notches are not used. For more information on how the average rating is determined, please refer to the iBoxx Rating Rules. The methodology can be found at www.spglobal.com/spdji/en/ in the document *iBoxx Rating Methodology*.

For senior debt, if a bond is not rated by any of the three credit rating agencies, the bond's issuer rating applies to the bond if available. Long-term foreign currency issuer ratings are applied to bonds issued by foreign issuers and long-term local currency issuer ratings are applied to bonds issued by domestic entities.

Unrated USD denominated bonds are assigned an implied credit quality based on their yield spreads. The implied credit quality is used to differentiate bonds into investment grade and high yield as well as to individual rating indices. The implied credit quality methodology is available in a separate document *iBoxx Implied Credit Quality Methodology* at www.spglobal.com/spdji/en/.

2.7 International clearability

Bonds must be clearable via one of the following three clearing venues:

- Clearstream
- Euroclear
- Hong Kong CMU

3 Bond classification

All bonds are classified based on the principal activities of the issuer and the main sources of the cash flows used to pay coupons and redemptions. In addition, a bond's specific collateral type or legal provisions are evaluated. Hence, it is possible that bonds issued from different subsidiaries of the same issuer carry different classifications.

The issuer classification is reviewed regularly based on updated information received by S&P DJI, and status changes are included in the indices at the next rebalancing if necessary.

Where the sector classification of a specific entity is not very clear due to the diversified business of the entity, decision will be made at S&P DJI's discretion. S&P DJI will assign the classification according to its evaluation of the business risk presented in the security prospectus and annual reports, if available. S&P DJI will also compare the classification to peers in the potential sectors. Membership lists including classification are published on the FTP server and in the *Indices* section of the webpage for registered users.

3.1 Sovereigns

Bonds issued by central governments or member countries of the Eurozone and denominated in USD and EUR.

3.2 Sub-sovereigns

Bonds issued by entities with explicit or implicit government backing due to legal provision, letters of comfort, or the public service nature of the issuer's business. The issuer requires a strong central government ownership/relationship if its bonds are not explicitly guaranteed by the central government.

EUR denominated bonds' main sub-sovereign sectors:

- **Agencies:** Bonds issued by entities with a major focus on government-sponsored, public, non-competitive services. The issuers are financial in nature and carry out government policies through special development programs, often explicitly government-backed or with a business scope defined by a specific law.
- **Supranationals:** Bonds issued by supranational entities, i.e. entities that are owned by more than one central government (e.g. World Bank, EIB).
- **Public Banks:** Bonds issued by publicly owned and backed banks that provide regular commercial banking services (e.g. NV Bank Nederlandse Gemeenten).
- **Regions:** Bonds issued by local governments (e.g. Isle of Man).
- **Other Sub-Sovereigns:** All remaining bonds considered sub-sovereign, classified into the following three main categories:
 - > **Non-Financials:** Bonds issued by entities from the non-financial sector with an explicit or strong implicit debt guarantee from the state. The issuer's credit rating is closely correlated to the sovereign rating and expresses a strong credit uplift based on a high level of government support. S&P DJI expects the issuer's credit rating to be no worse than on par or two notches below the sovereign rating. A 'strong implicit guarantee' means the issuer is 100% owned by the state or public sector with its debt consolidated into state public debt, or the issuer has preexisting access to government financing or funding derived from tax revenues. State-owned issuers that are profit-

oriented, provide competitive services, and operate under a regulatory framework are considered Corporates.

- > **Guaranteed Financials:** A specific bond issued by a private sector financial institution that is irrevocably guaranteed by a government. Most of these bonds are issued under programs set-up after the 2008 financial crisis.
- > Bonds issued by unguaranteed institutions with an irrevocable and explicit guarantee by a central government that covers amount and timeliness of all interest and principal payments until the maturity of the bond.

USD denominated bonds' main sub-sovereign sectors:

- **Agencies:** Bonds issued by entities with a major focus on government-sponsored, public, non-competitive services. The issuers are financial in nature and carry out government policies through special development programs, often explicitly government-backed or with a business scope defined by a specific law.
- **Supranationals:** Bonds issued by supranational entities, i.e. entities that are owned by more than one central government (e.g. World Bank, EIB).
- **Local Government:** Bonds issued by local governments (e.g. Province of Manitoba, Canada).
- **Other Sub-Sovereigns:** All remaining bonds considered sub-sovereign, classified into the following three main categories:
 - > **Non-Financials:** Bonds issued by entities from the non-financial sector with an explicit or strong implicit debt guarantee from the state. The issuer's credit rating is closely correlated to the sovereign rating and expresses a strong credit uplift based on a high level of government support. S&P DJI expects the issuer's credit rating to be no worse than on par or two notches below the sovereign rating. A 'strong implicit guarantee' means the issuer is 100% owned by the state or public sector with its debt consolidated into state public debt, or the issuer has preexisting access to government financing or funding derived from tax revenues. State-owned issuers that are profit-oriented, provide competitive services, and operate under a regulatory framework are considered Corporates.
 - > **Guaranteed Financials:** A specific bond issued by a private sector financial institution that is irrevocably guaranteed by a government. Most of these bonds are issued under programs set-up after the 2008 financial crisis.
 - > Bonds issued by unguaranteed institutions with an irrevocable and explicit guarantee by a central government that covers amount and timeliness of all interest and principal payments until the maturity of the bond.

3.3 Collateralized

3.3.1 Covered bonds

Bonds which are secured by a general pool of assets in case the issuer becomes insolvent, in particular bonds conforming to the criteria specified in UCITS 22.4 or similar directives, e.g. CAD III. In addition, bonds with a structure affording an equivalent risk and credit profile that are considered by the market as covered bonds are also included in the indices.

3.4 Corporates

Bonds issued by public or private corporations. Bonds secured by a 'floating charge' over some or all assets of the issuer are considered corporate bonds. Corporate bonds are further classified into Financials and Non-Financials bonds and then into their multiple-level economic sectors, according to the issuer's business scope. The category Guaranteed & Wrapped is added under Financials for corporate bonds whose timely coupon and/or principal payments are guaranteed by a non-affiliated insurer or through

a letter of credit from a non-affiliated bank. Each bond in the index is assigned to one of the following sectors.

Table 2: Overview of Markit iBoxx Corporates Sectors

	Economic Sector	Market Sector	Market Sub-Sector
Financials	Core Financials	Banks	Banks
		Insurance	Life Insurance
			Nonlife Insurance
	Financial Services	Financial Services	General Financial
			Equity Investment Instruments
			Nonequity Investment Instruments
		Guaranteed & Wrapped	*
	Real Estate	Real Estate	Real Estate Investment & Services
			Real Estate Investment Trusts
Non-Financials	Energy	Oil & Gas	Oil & Gas Producers
			Oil Equipment / Services & Distribution
		Renewable Energy	Renewable Energy
	Basic Materials	Chemicals	Chemicals
		Basic Resources	Industrial Metals
			Mining
			Forestry & Paper
	Industrials	Construction & Materials	Construction & Materials
		Industrial Goods & Services	Aerospace & Defense
			Electronic & Electrical Equipment
			General Industrials
			Industrial Engineering
			Industrial Transportation
			Support Services
	Consumer Goods	Automobiles & Parts	Automobiles & Parts
		Food & Beverage	Beverages
			Food Producers
		Personal & Household Goods	Household Goods
			Personal Goods
			Tobacco
			Leisure Goods
	Health Care	Health Care	Pharmaceuticals & Biotechnology

	Economic Sector	Market Sector	Market Sub-Sector
			Health Care Equipment & Services
	Consumer Services	Retail	Food & Drug Retailers
			General Retailers
		Media	Media
		Travel & Leisure	Travel & Leisure
		Education	Academic & Educational Services
	Telecommunications	Telecommunications	Integrated Telecommunications
			Wireless Telecommunications
	Utilities	Utilities	Electricity
			Gas / Water & Multiutilities
	Technology	Technology	Software & IT Services
			Technology Hardware & Equipment

3.5 Additional classification

Corporate debt is further classified into senior and subordinated debt. Bank senior debt structure additionally differentiates between Bail-in and Preferred bonds. The Bail-in classification captures all senior notes which are subject to write-down or conversion into a subordinated instrument on the occurrence of a resolution event, as well as senior bank debt issued by bank holding companies.

Hybrid capital issued by banking and insurance institutions is further detailed into the respective tiers of subordination.

The market information on the tier of subordination for insurance capital is often less standardized and clear than the equivalent issues by banks. In these cases, the classification is based on the maturity, coupon payment and deferral provisions of the bond from the offering circulars of the bonds. The table below displays the seniority classification of debt issued by both financial and non-financial sectors.

Table 3: Overview of seniority levels

Market Sector	Seniority Level 1	Seniority Level 2	Seniority Level 3
Bank	SEN	Preferred	*
		Bail-in	*
	SUB	T2 (post-Jan '13 issuances)	T2 callable
			T2 non-callable
		T2 (pre-Jan '13 issuances)	LT2 callable
			LT2 non-callable
			UT2
		T1	T1 step
			T1 non-step

Market Sector	Seniority Level 1	Seniority Level 2	Seniority Level 3
		AT1	*
Insurance	SEN	*	*
	SUB	T3	*
		T2 dated	T2 dated callable
			T2 dated non-callable
		T2 perpetual	*
		T1	*
		RT1	*
Other sectors	SEN	*	*
	SUB	Other	Hybrid**
			Non-hybrid

** Bonds will be required to fulfil the following criteria to be considered hybrids:

- Subordinated
- Deferrable coupons
- First non-call period ≥ 5 years
- Either perpetual or 'long-dated', where 'long-dated' is defined as > 25 years of the time to maturity at issuance

4 Additional indices

4.1 iBoxx USD Liquid Emerging Markets Sovereigns & Sub-Sovereigns

The iBoxx USD Liquid Emerging Markets Sovereigns & Sub-Sovereigns Index measures the performance of USD denominated sovereign and sub-sovereign liquid bonds issued by entities domiciled in emerging markets.

The index follows the rules as applicable for iBoxx USD Emerging Markets Broad Overall index with the following additional conditions:

Additional conditions

- **Issuer domicile**

Debt issuers must satisfy the following criteria to be eligible for the index:

- > Classification: Must be domiciled in an emerging market, as classified in the Markit Global Economic Development Classification Methodology. The classification methodology as well as the most up-to-date classifications are published on www.spglobal.com/spdji/en/. The classifications are updated annually and implemented on 31 October each year.
- > National Income: Except for Gulf Cooperation Council (GCC) members, exclude territories classified as emerging markets which have Global National Income (GNI) per capita for each of the last five years higher than two times the World Bank GNI high income cut-off. Excluded countries must have a GNI per capita below two times the high income cut-off for five consecutive years to become re-eligible for the index. GCC members classified as emerging markets are eligible for the index regardless of GNI per capita.

Changes take effect according to the calendar for Markit Global Economic Development Classification, which updates annually on 31 October

- **Issuer type**

Only bonds issued by sovereign or sub-sovereign issuers are eligible for the index.

- **Amount outstanding**

Bonds must have USD 1 billion minimum amount outstanding as of rebalancing date.

- **Time to maturity**

All bonds must have a remaining time to maturity of at least one year at the rebalancing date.

Country capping

The maximum country weight is reviewed annually in December. The capping is based on the number of countries represented in the December index constituents list and calculates as follows:

1. Average country weight: defined as 1/number of countries represented in the index as of November
2. Weight based capping: 3 X Average country weight, rounded to the nearest 2.5%

The Country of risk level capping, as determined above, is applicable for next year starting January.

Based on above, below country capping is considered for the index:

- Effective 31 Dec 2013 till 30 Nov 2014: 7.5%
- Effective 31 Dec 2014 till 30 Nov 2023: 5%
- Effective 31 Dec 2023: 7.5%

Index data

The calculation of the index is based on bid prices. New securities are included in the index at their respective ask prices when they enter the index.

4.2 iBoxx USD Liquid Emerging Markets Sovereigns & Sub-Sovereigns Interest Rate Hedged Index

The iBoxx USD Liquid Emerging Markets Sovereigns & Sub-Sovereigns Interest Rate Hedged Index provides a duration hedge to iBoxx USD Liquid Emerging Markets Sovereigns & Sub-Sovereigns Index (“Underlying Index”) which reflects the performance of USD denominated sovereign and sub-sovereign liquid bonds issued by entities domiciled in emerging markets.

The index aims to achieve a neutral duration (i.e. duration equal to zero) by taking a long position in the Underlying Index and short positions in the U.S. Treasury front month quarterly futures contracts.

Long position

Refer section 4.1 for Underlying Index details.

Short position

The eligible contracts for the short position include: 2-Year T-Note, 5-Year T-Note, 10-Year T-Note, T-Bond and Ultra T-Bond futures and follows a March quarterly cycle and expire in March, June, September and December.

The “Cheapest-To-Deliver” bond (“CTD”) for each futures contract is determined at every rebalancing.

Index Calculation

Bond and Future prices

The close prices from the open auction from CME Group are used for the futures.

For more details on bond prices used in the index calculation please refer to the *iBoxx Pricing Rules* document, available in the *Methodology* section of the iBoxx Documentation page on www.spglobal.com/spdji/en/.

• Rebalancing process

The iBoxx USD Liquid Emerging Markets Sovereigns & Sub-Sovereigns Interest Rate Hedged Index strategy uses futures contracts to fully hedge the duration of the Underlying Index. The hedge positions are reset to achieve neutral duration (i.e. duration equal to zero) at each monthly rebalancing day.

1. Rebalancing procedure

On each rebalancing day each long position of the underlying index is paired to a certain number of specific futures contracts in a short position. These long/short pairs are then aggregated into the duration neutral index.

The rebalancing process follows five steps as follows:

- > Determining the Cheapest-To-Deliver bond (“CTD”) of each futures contract
 - > Determine the duration for each j-years futures contract
 - > Each bond is assigned to the two neighboring futures contracts
 - > The delta distribution ratio ($\delta_{i,j,t-s}$) is determined for each bond/future The distribution weight is between 0 and 1
 - > Calculate the index
- **Determining the Cheapest-To-Deliver bond**

The Cheapest-To-Deliver bond (“CTD”) is the least expensive bond that can be delivered upon expiry to satisfy the requirements of a futures contract.

The “CTD” is used as the proxy of a futures contract in determining the number of contracts required to fully hedge the index.

- **Determining the duration of each futures contract**

The duration of the futures contract is determined as follows:

$$MD_{j,t-s}^F = MD_{j,t-s}^{CTD}$$

- **Determining the distribution weight**

The “delta distribution ratio” is determined for each bond and futures combination:

1. a. For all bonds with a duration less than the duration of the 2-years futures contract or a duration greater than the duration of the Ultra T-Bond Futures, the “delta distribution ratio” is 1
- b. For all bonds where the duration is in between the duration of two neighboring futures contracts, the “delta distribution ratio” is calculated as:

$$\delta_{i,j,t-s} = 1 - \frac{abs(MD_{i,t-s} - MD_{j,t-s}^F)}{MD_{j+1,t-s}^F - MD_{j,t-s}^F}$$

and

$$\delta_{i,j+1,t-s} = 1 - \delta_{i,j,t-s}$$

where

$$MD_{j,t-s}^F \leq MD_{i,t-s} \leq MD_{j+1,t-s}^F$$

- **Index calculation**

Step 1: Calculate the number of futures contracts used

The notional of each futures contract is determined as:

$$N_{j,t-s}^F = \frac{CF_{j,t-s}^{CTD} \sum_{i=1}^n (\delta_{i,j,t-s} BMV_{i,t-s} MD_{i,t-s})}{P_{j,t-s}^{CTD} MD_{j,t-s}^{CTD}}$$

Step 2: Calculate the number of futures contracts

The number of futures contracts is determined as:

$$contracts_{j,t-s} = round(\frac{N_{j,t-s}^F}{FCS_{j,t-s}}, 0)$$

and the notional based on this number is calculated as:

$$N_{j,t-s}^{F,rounded} = contracts_{j,t-s} FCS_{j,t-s}$$

Step 3: Calculate the ratio of each futures contract

$$W_{t-s}^S = \frac{N_{t-s}^{F,rounded}}{\sum_{i=1}^n BMV_{i,t-s}^{Nominal}}$$

Step 4: Calculate the index level

$$IL_t = IL_{t-s} \cdot \left(1 + \left(\frac{IL_t^{long,Nominal}}{IL_{t-s}^{long,Nominal}} - 1 \right) - W_{t-s}^S [P_t^F - P_{t-s}^F] \right)$$

For specific index formulas please refer to *iBoxx Bond Calculus* document, available on the iBoxx Rules page of www.spglobal.com/spdji/en/ in the *Methodology* section.

- **Roll process**

At each rebalancing day prior to the delivery month the futures contract is rolled into the new front month quarterly futures contract.

- **Monthly reinvestment**

P/L from the index is reinvested in the Underlying Index.

Annotations

$A_{j,t-s}^{CTD}$	denotes the accrued of the CTD of the <i>j</i> -years futures contract at the rebalancing day t-s
$BMV_{i,t-s}$	denotes the base market value of the <i>i</i> -th bond constituent at the rebalancing day t-s
$Cash_{i,t-s,t}$	denotes the cash accumulated of the <i>i</i> -th constituent in the period that starts from the rebalancing day t-s and ends on (including) day t
$CF_{j,t-s}^{CTD}$	denotes the conversion factor of the CTD bond for the <i>j</i> -years futures contract
$\delta_{i,j,t-s}$	denotes the “delta distribution ratio” for bond <i>i</i> and <i>j</i> -years futures contract at the rebalancing day t-s
$FCS_{j,t-s}$	denotes the contract size (\$ face value) of the <i>j</i> -years futures contract [1]
IL_t	denotes the index level on day t
IL_t^{long}	denotes the index level of the long index on day t
$MD_{i,t-s}$	denotes the annual modified duration of the <i>i</i> -th bond constituent at the rebalancing day t-s
$MD_{j,t-s}^{CTD}$	denotes the annual modified duration of the CTD bond associated to the <i>j</i> -years futures contract at the rebalancing day t-s
$MV_{i,t}$	denotes the market value of the <i>i</i> -th bond constituent at day t

$N_{j,t-s}^F$	denotes notional of the j-years futures contract at the rebalancing day t-s
$P_{j,t-s}^{CTD}$	denotes the price of the CTD of the j-th futures contract at the rebalancing day t-s
$P_{j,t-s}^F$	denotes the price of the j-th futures contract at the rebalancing day t-s
S_F	denotes the set of eligible futures contracts (2-Year T-Note, 5-Year T-Note, 10-Year T-Note, T-Bond and Ultra T-Bond Futures)
$W_{j,t-s}^S$	denotes the ratio of the j-years futures contract in the short position on the rebalancing day t-s

[1] The contract size is \$100,000 for the 5-Year T-Note, 10-Year T-Note, T-Bond and Ultra T-Bond futures and \$200,000 for the 2-year T-Note futures contracts.

5 Index calculation

5.1 Static data

Information used in the index calculation is sourced from offering circulars and checked against standard data providers.

5.2 Bond prices

For more details, please refer to the *iBoxx Pricing Methodology* document, available in the *Methodology* section of the webpage at <https://www.spglobal.com/spdji/en/>.

5.3 Rebalancing process

The indices are rebalanced monthly on the last business day of the month. Any inclusion after the index cut-off day (t-3) will not be considered in the rebalancing process, but will become effective at the end of the following month. New bonds issued are taken into account if they are publicly known to settle until the last calendar day of the month, inclusive, and if their rating and amount outstanding has become known at least three trading days before the end of the month.

A preliminary membership list is published on the 6th calendar day of the month (moved to the next business day in case of holiday/weekend). This list contains preliminary information on rating and amount outstanding of all bonds.

Two business days before the end of each month, the rating and amount information for the constituents are updated. The constituent list is adjusted by the rating and amount changes that have occurred three business days prior to month end. This adjustment can result in the exclusion of a bond. Bonds that are part of the respective US Dollar and EUR universe two business days prior to rebalancing and became eligible due to rating or amount changes, will be included in the indices.

On the last business day of each month, S&P DJI publishes the final membership with closing prices for the bonds, and various bonds analytics based on the index prices of the bonds.

5.4 Index data

The calculation of the indices is based on bid prices. New securities are included in the indices at their respective ask prices when they enter the index family. If no price can be established for a particular security, the index continues to be calculated based on the last available price. This might be the case in periods of market stress, or disruption as well as in illiquid or fragmented markets. If the required inputs become impossible to obtain, S&P DJI may consult market participants prior to the next rebalancing date. Decisions are made publicly available on a timely basis and S&P DJI may refer back to previous cases.

A sub-index is calculated if at least one bond matches all inclusion criteria. If no bonds qualify for an index, then its level remains constant. If at least one bond becomes available again, the index calculation resumes and is chained to the last calculated level. All bonds are assigned to sub-indices according to their classification. The assignment of a bond to a certain maturity bucket is based on its expected remaining life. All bonds remain in their maturity bucket for the entire month. All top-level indices are computed and disseminated Monday to Friday (except during common US trading holidays). They are based on US end of day prices. The indices are also calculated on the last calendar day of each month irrespective of holidays and weekends. If the indices are calculated on a day that is a non-business day,

then the prices from the previous trading day will be carried forward and the index will be calculated using those prices and the current accrued interest and coupon payment data.

The rebalancing takes place after close of market on the last trading day of a rebalancing month.

5.5 Index calculus

For specific index formulas please refer to the *iBoxx Bond Index Calculus* document available on <https://www.spglobal.com/spdji/en/> under *Methodology*.

5.6 Index and analytics weights

The indices are market-value-weighted, with the bond's amount outstanding as the weighting factor. The amount outstanding of a bond is only adjusted at the monthly rebalancing process at the end of each month. However, scheduled redemption payments for amortizing bonds and sinking funds are taken into account from the date they occur, as they have a significant influence on index return and analytical values. In addition, bonds that are fully redeemed intra-month are also taken into account immediately. Therefore, the indices are based on adjusted amount outstanding, derived from the amount issued and closely related to the amount outstanding of a bond. The concept is summarized below.

Definitions:

- *Amortizing bonds*: Bonds whose face value is redeemed according to a schedule at more than one redemption date. Interest payments are made on the basis of the remaining value of the bond.
- *Sinking funds*: Bonds, for which money is applied periodically to redeem part of the outstanding before maturity. At the redemption dates the appropriate amount of bonds may either be retired randomly from the outstanding bonds, or purchased on the open market and thus retired. Interest payments are made on the remaining outstanding bonds.
- *Fully redeemed bonds*: Bonds that are fully called or completely repurchased prior to or at the calculation date. The amount issued of a bond does not change when coupons are paid and bonds are redeemed. However, additional tranches and unscheduled repurchases have to be taken into account to arrive at a suitable basis for index and analytics calculations. Therefore the adjusted amount outstanding is the common basis on which all calculations are based.

In addition, incoming bond prices are linked to the amount outstanding, rather than to the amount issued. This ensures a common basis (to the nominal value of 100), on which all bonds are priced and the index is calculated.

5.7 Treatment of the special intra-month events

Data for the application of corporate actions in the indices may not be fully or timely available at all times, e.g. the final call prices for make-whole calls or the actual pay-in-kind percentage for PIK-payment options. In such cases, S&P DJI will estimate the approximate value based on the available data at the time of calculation.

5.7.1 Funged bonds

Bonds may be issued in several tranches. The different tranches are initially legally separate and therefore trade independently for a certain period. On and after the fudge date, the tranches will be combined into one bond, i.e. the parent tranche will contain the original security, as well as the additional notional(s) from the new tranche(s). After the fudge date, the prices for both the securities are the same, because they constitute one uniform bond. This is reflected in the indices as follows:

5.7.1.1 Parent and new tranche are both index constituents

- After the funged date, the price from the parent tranche is used for the funged tranche; no price for the funged bond
- Funged tranche leaves the index at the next rebalancing and parent amount outstanding increases accordingly

5.7.1.2 Parent is an index constituent, but the new tranche is not

- No special intra-month treatment necessary
- Parent amount outstanding increases at the next rebalancing

5.7.1.3 Parent is not an index constituent but the new tranche is

- No special intra-month treatment necessary
- Funged tranche leaves the index; parent tranche enters the index at the next rebalancing

5.7.2 Full redemptions: exercised calls, puts and buybacks

If a bond is fully redeemed intra-month, the bond effectively ceases to exist. In all calculations, the redeemed bond is treated as cash based on the last price, the call price or repurchase price, as applicable. The redemption factor, redemption and the redemption price are used to treat these events in the index and analytics calculation. In addition, the clean price of the bond is set to the redemption price, and the interest accrued until the redemption date is treated as an irregular coupon payment.

5.7.3 Maturity extension

5.7.3.1 Maturity extension for perpetual bonds without a reset date

Maturity	Coupon/call structure	Workout date at issuance	Updated Workout date if not called
Perpetual	Fixed/ Callable	Assume first call date as workout date	Extend workout date until the assumed next call date - 5 years from first call date*.

*Assumes the terms allow for a redemption at the new assumed maturity date.

5.7.3.2 Maturity extension for perpetuals & dated fixed-to-fixed bonds with a reset date

Maturity	Coupon/Call structure	Workout Date at issuance	Updated Workout date if not called
Perpetual	Reset*/Callable	Assume first call date as workout date	Extend workout date until the end of the next reset date*
Dated	Reset/Callable	Assume reset date as workout date	Extend workout date until the end of the next reset date or final maturity date*

*Assumes the bond terms allow for a redemption at the new assumed maturity date

5.7.4 Bonds trading flat of accrued

If a bond is identified as trading flat of accrued, the accrued interest of the bond is set to 0 in the total return index calculation and is excluded from the calculation of all bond and index analytical values.

Bonds will be considered trading flat of accrued in any of the following situations:

- a bond has been assigned a default rating and/or
- issuer has announced a failure to pay a coupon and/or
- issuer has announced an intention not to make a payment on an upcoming coupon (grace period).

5.7.5 Multi-coupon bonds

Some bonds have pre-defined coupon changes that lead to a change in the annual coupon over the life of the bond. In all instances, the coupon change must be a fixed amount on top of a fixed coupon, i.e. floating coupon bonds are not eligible for the indices. The two main categories of bonds are step-up bonds and event-driven bonds.

- **Step-up bonds:** These are bonds with a pre-defined coupon schedule that cannot change during the life of the bond. The coupon schedule is used in all bond calculations.
- **Event-driven bonds:** These are bonds whose coupon may change upon occurrence (or non-occurrence) of pre-specified events, such as rating changes, e.g. rating-driven bonds, failure to register (register-driven bonds), or failure to complete a merger (merger-driven bonds). In the calculation of the indices and the analytics, the coupon schedule as of the calculation date is used. That is to say, any events occurring after the calculation date are ignored in the determination of the applicable coupon schedule. *Example of an event-driven bond:* A bond's rating changes on 31 December 2003 from A- to BBB+ and the coupon steps up from 6% to 6.25% from 1 March 2004 onward. The coupon dates are 1 October and 1 April each year. The correct coupon schedule for the bond and index calculations is date dependent. The index calculation on 20 December 2003 uses the 6% coupon for the whole life of the bond, while the calculation on 31 January 2004 uses a 6% coupon for the current coupon period to 29 February 2004, and a 6.25% coupon for all later interest payments. The index calculation on 20 March uses a 6% coupon until 29 February, a 6.25% coupon for the remainder of the current coupon period and a 6.25% coupon for all future coupon payments. The index calculation after 1 April uses a 6.25% coupon.

5.7.6 Ex-dividend conventions

Some markets have ex-dividend conventions. Ex-dividend means that the next coupon is detached from the bond several days in advance of the coupon payment date. The date on which the next coupon is detached is the ex-dividend date and the period between the ex-dividend date and the coupon payment date is the ex-dividend period. If a bond is in the ex-dividend period, the next coupon payment will not be paid to a buyer of this bond, but will be paid to the original bond holder.

The indices and analytics calculations take ex-dividend conventions into account. During the ex-dividend period, the accrued interest of the bond is negative, while the next coupon payment is held separate in the variable coupon adjustment. If the bond enters the index during the ex-dividend period, then the next coupon payment and the coupon adjustment will not accrue to the index. However, if the bond was already in the index, the next coupon payment needs to be included in the total return calculations. This is controlled via the ex-dividend indicator which is 0 if the bond enters the index during the current ex-dividend period and 1 if not. The same treatment is also applied to all analytics calculation, i.e. the first cash flow is excluded from the calculations if the bond enters during the current ex-dividend period.

5.8 Index history

The Index history for iBoxx USD Emerging Markets Broad Overall Index starts on December 31, 2013 and index history for iBoxx EUR Emerging Markets Broad Overall Index starts on December 31, 2017. The indices have a base value of 100 on that date.

5.9 Settlement conventions

All iBoxx indices are calculated using the assumption of T+0 settlement days.

5.10 FX rates

FX spot rates are sourced from WM/Reuters. The index calculation uses the FX rates from 4pm London time. If the rebalancing day is a non-business day the 4pm London time FX rates from the previous business day are used.

5.11 Calendar

S&P DJI publishes an index calculation calendar available on <https://www.spglobal.com/spdji/en/> under *iBoxx Indices Calendars*. This calendar provides an overview of the index calculation holidays of the iBoxx bond index families each year.

5.12 Data publication and access

The table below summarizes the publication of indices on the website for registered users and on the SFTP server.

Table 4: Data publication frequency, file types and access

Frequency	File Type	Access
Daily	Underlying file – Bond level	SFTP Server
	Indices files – Index level	SFTP Server / website / Bloomberg / Refinitiv (index levels only)
6th calendar day of the month (moved to next business day in case of weekends)	Forwards	SFTP Server
Monthly	End of month components	SFTP Server / website
	XREF files	SFTP Server

5.13 Index review

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.

6 Governance and regulatory compliance

IHS Markit Benchmark Administration Limited (IMBA UK) is the Index Administrator of iBoxx indices. Information on IMBA UK's governance and compliance approach can be found [here](#). This document covers:

- Governance arrangements
- Input data integrity
- Conflicts of interest management
- Market disruption and Force Majeure
- Methodology changes and cessations
- Complaints
- Errors and restatements
- Reporting of infringements and misconduct
- Methodology reviews
- Business continuity

More details about IMBA UK can be found on the [Administrator's website](#).

7 Changes to the iBoxx USD Emerging Markets Broad Overall Index and iBoxx EUR Emerging Markets Broad Overall Index

May 01, 2024	Annual Index Review 2023 • Update to Agencies' Classification Definition > Updated definition of 'Agencies' > Updated definition for 'Other Sub-Sovereigns'
March 01, 2024	• Inclusion of payment-in-kind (PIK) bonds to for USD denominated bonds • Exclusion of of payment-in-kind (PIK) bonds to for EUR denominated bonds
Apr 5, 2024	Launch of iBoxx EUR Emerging Markets Broad Overall Index
Mar 29, 2024	Launch of iBoxx USD Liquid Emerging Markets Sovereigns & Sub-Sovereigns Interest Rate Hedged Index
Mar 15, 2024	Launch of iBoxx USD Liquid Emerging Markets Sovereigns & Sub-Sovereigns Index
Nov 17, 2023	Launch of iBoxx USD Emerging Markets Broad Overall Index

8 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:		March 2024
Appendix first publication:		March 2024

[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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