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Indices**

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iBoxx SD-KPI EUR Liquid Corporates Index Guide *September 2022*

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1) iBoxx SD-KPI EUR Liquid Corporates Index

The iBoxx SD-KPI EUR Liquid Corporates Index consists of a subset of bonds from the iBoxx EUR Corporates benchmark index. The index is designed to offer targeted coverage to the overall market with an emphasis on liquidity that is suitable for over the counter (OTC) and exchange-traded derivatives, and Exchange Traded Funds (ETFs). The index also incorporates environmental, social, and governance factors by allocating higher weights to issuers with higher Sustainable Development Key Performance Indicator (SD-KPI) scores and reducing weights to those with lower SD-KPI scores. The index is an integral part of the global suite of iBoxx Liquid Indices which provide the marketplace with liquid and investable versions of the broader iBoxx benchmark index families.

Broad benchmark indices generally consist of a large number of bonds, especially within the corporate sector. Portfolio managers tracking an index from the broad benchmark iBoxx EUR index family will therefore incur substantial costs in attempting to replicate or hedge the individual bonds in the portfolio. Furthermore, bonds with special features or smaller amounts outstanding usually suffer from illiquid trading, resulting in relatively large bid-ask spreads. The iBoxx SD-KPI EUR Liquid Corporates Index is intended to address these deficiencies by limiting the number of bonds per index and excluding special bond types, thus reducing tracking and hedging costs.

The SD-KPI scores have the support of the German Environment Ministry and Sustainability Accounting Standards Board (SASB). The methodology is designed to focus on the three most material ESG indicators per industry that are relevant to financial performance and reputational risk over the next 5 years. The SD-KPI scores range between 0 and 100, with a higher score corresponding to a stronger company. For additional details on the SD-KPI methodology refer to [SD-KPI Standard 2016-2021](#).

All iBoxx indices are priced based on multiple data inputs. The iBoxx SD-KPI EUR Liquid Corporates Index uses multi-source prices as described in the document *Markit iBoxx Pricing Rules* publicly available under *Methodology* on www.ihsmarkit.com.

This document covers the index rules, calculation, and governance methodology.

2) Bond selection rules

The following selection criteria are used to determine the index constituents:

- Bond type
- Credit rating
- Time to maturity
- Amount outstanding
- Age (time since first settlement date)
- Maximum of Minimum Lot Size / Maximum of Minimum Increment

2.1) Bond type

Only fixed-rate bonds whose cash flow can be determined in advance are eligible for the indices. The indices are comprised solely of bonds. T-Bills and other money market instruments are not eligible. The iBoxx SD-KPI EUR Liquid Corporates Index include only Euro and legacy currency denominated bonds. The issuer's domicile is not relevant.

In particular, bonds with the following characteristics are included:

- Fixed coupon bonds (“plain vanilla bonds”)
- Zero coupon bonds
- Step-up bonds
- Event-driven bonds with step-up and step-down coupons, such as rating- or tax-driven bonds
- Dated and undated callable subordinated corporate bonds, including fixed-to-floating rate bonds
- Soft bullet bonds. These are bonds with an initial fixed-coupon period, and a variable or step-up coupon period thereafter, that are structured so that they are expected to be redeemed at the end of the initial period
- Bonds with call options where the first and subsequent call dates are on a date when the bond is otherwise no longer eligible for the index, i.e. bonds with American call options within the last year prior to maturity
- Subordinated financial debt with a contingent conversion feature at the point of non-viability, in line with the capital adequacy requirements of Basel III
- Subordinated financial fixed-to-floating rate bonds with a reset date on or after the first call date
- Senior bank bonds with call options where the first call date is 25 months or less prior to final maturity

The following bond types are specifically excluded from the indices:

- Sinking funds and amortizing bonds
- Other callable and undated bonds
- Floating rate notes and other fixed-to-floater bonds
- Optionally and mandatory convertible bonds from non-financial issuers
- Subordinated financial debt with mandatory contingent conversion features that are based on an observable trigger, or with any conversion options before the first call date, is ineligible for the index
- Collateralized Debt Obligations (CDOs) and bonds collateralized by CDOs
- Retail bonds. The list of retail bonds is updated every month and published on www.ihsmarkit.com
- Private placements. The list of private placements is updated every month and published on www.ihsmarkit.com. Partial private placements where information on the specific amounts publicly

placed and privately placed can be ascertained are included in the indices with the amount publicly placed. If the amount publicly placed is below the cut-off, the bond is not included in the indices

- Bonds with differences between accrual and coupon payment periods and monthly-paying bonds

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 IHS Markit's discretion based on the information available at the time of determination. IHS Markit may consult with the specific Index Advisory Committees to review potential retail bonds or private placements. 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 www.ihsmarkit.com 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, IHS Markit will analyze the features of such securities in line with the principles set out in 2.1 of this guide. IHS Markit may consult the specific Index Advisory 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.

2.2) Credit rating

All bonds in the iBoxx SD-KPI EUR Liquid Corporates Index must have an iBoxx Rating of investment grade. Ratings from the following three credit rating agencies are considered for the calculation of the iBoxx Rating:

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

Investment grade is defined as BBB- or higher from Fitch Ratings and S&P Global Ratings and Baa3 or higher from Moody's Investor Service.

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 Methodology* document. The methodology can be found on www.ihsmarkit.com under *Methodology*.

Prior to 1 January 2008, the lowest rating was used as the iBoxx Rating.

2.3) Time to maturity

To qualify for the iBoxx SD-KPI EUR Liquid Corporates Index all eligible bonds must have a remaining time to maturity of at least 1.5 years measured from the respective rebalancing date to the maturity date. The time to maturity for substitutes is measured from the substitution date to the maturity date of the bond.

Bonds in a liquid index with a remaining time to maturity of less than 1.5 years will be excluded from the indices at the next rebalancing.

The expected remaining life is expressed in years and calculated as follows:

- For plain vanilla bonds, the expected remaining life of the bond is its time to maturity, calculated as the number of days between the last calendar day of the current month and its maturity.
- For senior callable bank bonds the first call date will be regarded as the workout date. The rule for setting the workout date will not apply to make-whole calls or calls that are less than 12 months prior to maturity.

2.4) Amount outstanding

All bonds require a specific minimum amount outstanding in order to be eligible for the indices, as shown below. The figures indicate minimum amount outstanding.

Table 1: Minimum amount outstanding

Issuer type	Minimum amount outstanding
Corporates	EUR 750 million

Bonds subject to a tender offer (i.e. where the issuer has announced its intention to buy back, tender or call parts or the whole amount of a bond) will not be eligible for any corporate liquid EUR index, in case the results of the tender are not publicly known three business days before the end of the quarterly rebalancing month. If a bond under a tender offer is already in a liquid index, it will be removed at the next regular quarterly rebalancing.

2.5) Age

The age of the bond is measured from the first settlement date of the bond to the current quarterly rebalancing date. The age of substitutes is measured from the first settlement date to the substitution date of the bond.

For the iBoxx SD-KPI EUR Liquid Corporates Index bonds that are currently part of the index and that are older than four years are excluded from the liquid indices. For the bonds that are currently not part of the index membership maximum age criterion is set to three years. The minimum age difference required for exchanges of bonds from the same issuer is two years.

2.6) Maximum of minimum lot size and maximum of minimum increment

The maximum permissible minimum lot size for bonds in the iBoxx SD-KPI EUR Liquid Corporates Index is EUR 100,000. The upper limit for the minimum increment is EUR 1,000.

2.7) Minimum run

For the iBoxx SD-KPI EUR Liquid Corporates Index each bond has a minimum run of one year. The minimum run supersedes the age and ranking criteria. The amount outstanding criterion supersedes minimum run.

If a bond in the iBoxx SD-KPI EUR Liquid Corporates Index is in its minimum run but it has remaining time to maturity less than 1.25 years on the rebalancing date, the minimum run rule is disregarded and the bond is excluded from the index at the rebalancing.

2.8) Index size, issuer ordering and bond selection

To facilitate replication, the index has a maximum number of issuers. This chapter describes the selection procedure that is applied to determine the most liquid bonds for the iBoxx SD-KPI EUR Liquid Corporates Index.

2.8.1) Index size

The maximum number of bonds in each index is:

Table 2: Index size

Index Name	Number of bonds
iBoxx SD-KPI EUR Liquid Corporates Index	40

2.8.2) Minimum number of bonds

An index is calculated if there are at least three bonds available that match all index criteria. If less than three bonds qualify for an index, then the index level will remain constant. Should at least three bonds qualify again, the index calculation is resumed from the last calculated level.

2.8.3) Ranking criteria

Should more than the maximum number of bonds be available for an index, ordering criteria are applied in order to rank the eligible bonds for the iBoxx SD-KPI EUR Liquid Corporates Index.

The following five criteria are applied:

1. Minimum lot size of EUR 50,000 or less
2. Higher amount outstanding
3. More recent first settlement date
4. Longer time to maturity
5. Higher rating
6. Lower coupon

These criteria are applied to each pair of bonds in the order stated above until a difference can be established (i.e. if two bonds have the same amount outstanding and the same first settlement date, but one has a longer time to maturity, then criteria 1 to 4 are applied, but 5 and 6 are not). With the help of the ranking criteria, a bond hierarchy can be defined, with the bond that has the highest amount outstanding and minimum size below or equal to EUR 50,000 at the top of the hierarchy.

2.8.4) Limit on number of bonds from any issuer in an index

The number of bonds from an issuing institution that may enter an index is limited.

iBoxx SD-KPI EUR Liquid Corporates Index will not have more than one bond from the same issuer.

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 IHS Markit, and status changes are included in the index 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 IHS Markit's discretion. IHS Markit will assign the IHS Markit classification according to its evaluation of the business risk presented in the security prospectus and annual reports, if available. IHS Markit will also compare the classification to peers in the potential sectors and may consult with the Index Advisory Committees. Membership lists including classification are published on the FTP server and in the *Indices* section on www.ihsmarkit.com for registered users.

3.1) Corporates

Bonds issued by public or private corporations. 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 insurance-wrapped is added under Financials for corporate bonds whose timely coupon and/or principal payments are guaranteed by a special mono-line insurer such as AMBAC or MBIA. The sector overview is shown in Table 1 below.

Table 3: 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
		Insurance-wrapped	*
	Real Estate	Real Estate	Real Estate Investment & Services
			Real Estate Investment Trusts
	Non-Financials	Basic Materials	Basic Resources
Industrial Metals			
Mining			
Chemicals			Chemicals
Consumer Goods		Automobiles & Parts	Automobiles & Parts
		Food & Beverage	Beverages

	Economic Sector	Market Sector	Market Sub-Sector
			Food Producers
		Personal & Household Goods	Household Goods
			Leisure Goods
			Personal Goods
			Tobacco
	Consumer Services	Education	Academic & Educational Services
		Media	Media
		Retail	Food & Drug Retailers
			General Retailers
		Travel & Leisure	Travel & Leisure
	Health Care	Health Care	Health Care Equipment & Services
			Pharmaceuticals & Biotechnology
	Industrials	Construction & Materials	Construction & Materials
		Industrial Goods & Services	Aerospace & Defense
			Electronic & Electrical Equipment
			General Industrials
			Industrial Engineering
			Industrial Transportation
			Support Services
	Oil & Gas	Oil & Gas	Alternative Energy
			Oil Equipment / Services & Distribution
			Oil & Gas Producers
	Technology	Technology	Software & IT Services
			Technology Hardware & Equipment
	Telecommunications	Telecommunications	Integrated Telecommunications
			Wireless Telecommunications
	Utilities	Utilities	Electricity
			Gas / Water & Multiutilities

3.2) 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 4: 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				
Insurance	SEN	*	*	
	SUB	T3	*	
		T2 dated	T2 dated callable	
			T2 dated non-callable	
		T2 perpetual	*	
		T1	*	
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 \geq 5 years
- Either perpetual or 'long-dated', where 'long-dated' is defined as $>$ 25 years of the time to maturity at issuance

4) Index calculation

4.1) Static data

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

4.2) Bond prices

For more details please refer to the *Markit iBoxx Pricing Rules* document, available in the *Methodology* section of the iBoxx Documentation page on www.ihsmarkit.com.

4.3) Rebalancing process

The index is rebalanced every quarter at the end of February, May, August and November. The indices are rebalanced on the last calendar day of the month after the last index calculation. Rebalancing also takes place if the last day of the month falls on a non-business day.

Changes to amounts outstanding are only taken into account if they are publicly known three business days before the end of the month. Changes in ratings are only taken into account if they are publicly known two business days before the end of the 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 has become known at least three trading days before the end of the month.

The rebalancing procedure for the iBoxx SD-KPI EUR Liquid Corporates Index is analogous to the rebalancing of the Markit iBoxx EUR Benchmark indices.

A preliminary membership list is published after the 6th calendar day of the month (moved to the next business day in case of holiday/weekend).

Three business days before the end of each month, another preliminary membership list is published on the FTP server.

Two business days before the end of each month, a membership list with final amount outstanding for each bond is published. This list contains the maximum number of constituents for the next month.

Two business days before the end of each month, the rating information for the constituents is updated and the list is adjusted for all rating changes which are known to have taken place two trading days before the end of the month. Bonds which are known to have been upgraded to investment grade two trading days before the end of the month are not included in the membership, but bonds which are known to have been downgraded to sub-investment grade two trading days before the end of the month do get excluded from the membership.

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

4.3.1) Index Weighting

For the iBoxx SD-KPI EUR Liquid Corporates Index two weight augmentations are applied. First, the market weight augmentation is applied to ensure that the index has a similar financial vs non-financial exposure to the EUR Corporates benchmark index. Second, the ESG weight augmentation is applied to

ensure that issuers with higher SD-KPI scores are over weighted and issuers with lower SD-KPI scores are under weighted.

Below are additional details on how the market weight and ESG weight augmentations work.

Market Weight Augmentation

Due to significant differences in the average issue size of financial and non-financial bonds, the amount outstanding of the bonds in the iBoxx SD-KPI EUR Liquid Corporates Index is adjusted by a sector specific factor:

$$AF_r = \frac{MS_r}{\sum_{i \in r} N_i} \cdot 10^{12}$$

The adjustment factor is the market share in the benchmark index (rounded to a full percentage point) divided by the total amount outstanding of all bonds from the respective sector in the liquid index. This ensures that the initial market share of a sector in the liquid index equals that for the benchmark index.

Therefore, the weighting of a bond in the iBoxx SD-KPI EUR Liquid Corporates Index is as follows:

$$W_i = AF_r \cdot N_i$$

Thus each bond retains its relative weight within each sector. The weights of bonds from the two sectors are different to account for the differences in the average issue size.

However, the weighting W_i for the iBoxx SD-KPI EUR Liquid Corporates Index needs to be adjusted by the dirty price of the bond to derive a suitable adjusted volume for the index calculation:

$$O_i = \frac{W_i}{(P_{i,t-s} + A_{i,t-s} + XD_{i,t-s} \cdot CP_{i,t-s})}$$

Hence, a bond will enter a liquid index with notional O_i .

Market share and adjustment factor are recalculated at each quarterly rebalancing.

ESG Weight Augmentation

The ESG weight augmentation ensures that the index increases weights to issuers with higher SDKPI scores and decreases weights to issuers with lower SDKPI scores. SD-M[®] GmbH is a Germany based external non-financial data provider for sustainability scores. SD-M[®] evaluates each corporate bond issuer in the Markit iBoxx EUR Corporates benchmark index and assigns an accumulated SD-KPI score based on industry-specific SD-KPI standards published by SD-M[®] in collaboration with the German Environment Ministry and the Sustainability Accounting Standards Board (SASB). The underlying non-financial database called SD-KPIInform[®] has been created by SD-M[®] GmbH in collaboration with Sustainalytics[™] (a Morningstar company). The methodology is designed to focus on the three most material ESG indicators per industry that are relevant to financial performance and reputational risk over the next 5 years. The SD-KPI scores range between 0 and 100, with a higher score corresponding to a stronger company. For additional details on the SD-KPI methodology refer to [SDKPI Standard 2016-2021](#).

Below are the steps for the ESG weight augmentation process:

1. SD-M[®] GmbH will use T-4 data and deliver SD-KPI scores at bond constituent level no later than T-3 to IHS Markit.

2. Bonds that are not covered by SD-M[®] GmbH will be given an SD-KPI score of 50.

3. Bonds will then be classified into five intervals based on the below table

Interval	SD-KPI Score Range	Weight Adjustment Factor
1	>0 - 20	0.50
2	>20 - 40	0.75
3	>40 - 60	1.00
4	>60 - 80	1.25
5	>80 -100	1.50

4. Multiply the market augmented bond weight by the adjustment factor based on the interval the bond falls in.

5. After all adjustments are made, bond weights are normalized so the sum equals 100%. Notionals are then derived from the new weights.

4.3.2) Rebalancing Procedure

In a first step the selection criteria are applied to determine an eligible universe for the iBoxx SD-KPI EUR Liquid Corporates Index:

- Bond ratings and amounts outstanding are applied as of three business days before the rebalancing date
- A bond remains in its respective maturity bucket until the next rebalancing
- Only bonds with a first settlement date on or before the rebalancing date are included in the selection process

Once the eligible bond universe has been defined, the ranking criteria are employed to determine a distinct hierarchy of bonds in the universe.

Bond selection for the iBoxx SD-KPI EUR Liquid Corporates Index distinguishes between Financials and Non-Financials. The basis for bond selection is the market share of the two sectors in the iBoxx EUR Corporates benchmark index. The market share is defined as the percentage share of the total market capitalization of all bonds from a sector in the iBoxx EUR Corporates Benchmark Index:

$$MS_r = \frac{\sum_{i \in r}^n (P_{i,t-s} + A_{i,t-s} + CP_{i,t-s}) \cdot O_{i,t-s}}{\sum_{i \in F+N} (P_{i,t-s} + A_{i,t-s} + CP_{i,t-s}) \cdot O_{i,t-s}}$$

where:

$A_{i,t-s}$	Accrued interest of bond i on the last calendar day of the previous month
$CP_{i,t-s}$	Value adjustment of next coupon payment of a bond i because of its ex-dividend period; if none: the value is 0

MS_r	Market share of sector r
$O_{i,t-s}$	Adjusted weight of a bond i in the index
$P_{i,t-s}$	Closing price of a bond i on the last trading day of the previous month
n	Number of bonds comprised in the index
r	F (Financials); N(Non-Financials)

The market share is determined after the benchmark index rebalancing one month prior to the iBoxx SD-KPI EUR Liquid Corporates Index rebalancing. For example, for the August 31 rebalancing the market share is determined on July 31. The data used are:

- Closing prices from the benchmark indices at the rebalancing date
- New constituents list

The market share is used to determine the number of bonds from each of the two sectors. The calculated market share is rounded to the nearest full 2.5%. The result is multiplied by 40. The resulting figure is the number of bonds to be selected from the Financials and the Non-Financials sector.

Within each sector, the necessary number of bonds is selected according to their rank in the hierarchy, beginning with the bond with the highest rank. If fewer eligible bonds than required are available for one of the sectors, then all eligible bonds from that sector will enter the index. The number of bonds from the other sector will remain unchanged. As a result, the number of issuers from each sector is split according to the market share in the benchmark index.

4.3.3) Weekly preview

In addition to the regular rebalancing, a preview list (including sector classification for new bonds) is published each Friday of the rebalancing month with predicted changes to the index constituents at the next rebalancing. The preview list includes the next month's index constituents and shows bonds joining or leaving the indices at the next rebalancing, based on information available on such Fridays.

The first weekly preview will be published on the Friday of the rebalancing month that is at least ten calendar days after the preceding month-end.

4.4) 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 family. In the event that 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, IHS Markit may consult market participants prior to the next rebalancing date. Decisions are made publicly available on a timely basis and IHS Markit may refer back to previous cases.

The iBoxx SD-KPI EUR Liquid Corporates Index is calculated as end-of-day index and distributed once daily. The index is calculated every Monday to Friday. In addition, the index is calculated with the previous trading day's closing prices on the last calendar day of each month if that day is not a trading day as well as on common bank holidays as published in the iBoxx index calculation calendar. This index calculation calendar is available on www.ihsmarkit.com under iBoxx Calendars. Index data is also available from the main information vendors. Bond and index analytical values are calculated every day using that day's

closing prices, or the previous trading day's closing prices on the last calendar day of each month if that day falls on a weekend or a common bank holiday as published in the iBoxx index calculation calendar. Closing index values and key statistics are published at the end of each calculation day in the Indices section on www.ihsmarkit.com for registered users.

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

4.5) Index calculus

For specific index formulas please refer to the *Markit iBoxx Bond Index Calculus* document, available in the *Methodology* section of the iBoxx Documentation page on www.ihsmarkit.com.

4.6) Treatment of the special intra-month events

Data for the application of corporate actions in the index 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, IHS Markit will estimate the approximate value based on the available data at the time of calculation.

4.6.1) Index adjustments between scheduled rebalancings

Coupon changes

While most index adjustments are made during the quarterly rebalancing procedure, coupon changes will be effective immediately and the indices are adjusted in the same way.

Bonds no longer in benchmark index

Bonds may drop out of the Liquid index at the end of a month, because they have left the benchmark indices. In this case they are replaced by suitable substitutes, or the proceeds are invested in existing bonds.

Cash investment

Cash from coupon payments and proceeds from bonds that could not be used to buy other suitable bonds is invested in the money market at the end of each month.

4.6.2) Monthly bond substitution between scheduled rebalancings

Bonds can leave the iBoxx SD-KPI EUR Liquid Corporates Index universe due to:

- Default of the issue or issuer
- Rating downgrade to sub-investment grade of the issue or issuer
- Reduction in the amount outstanding due to repurchases below threshold level
- Other reasons

Bonds dropping out of the benchmark index will also leave the liquid index at month-end. The procedures described below are applied only if a bond has left a liquid index between rebalancing dates.

Substitution list

At the end of the month, the eligible bond universe for the coming month is compiled and published for all liquid indices in accordance with the selection and ranking criteria. These are applied to establish a hierarchy within the eligible bond universe. For each index, all bonds already in the index are eliminated from the hierarchy, resulting in a substitution list for each index.

In case of multiple substitutions, all substitutes and deleted bonds are ranked in order to assign one specific substitute to each deleted bond. Ranking criteria from section 2 are applied. The assignment is essential for the determination of the fictitious amount outstanding.

Bond substitution

If the bonds are no longer in the Markit iBoxx EUR Corporates benchmark index, they will also leave the liquid indices. For each bond that has left, another bond will become a substitute and enter the index. The proceeds from the sale of a dropped bond are invested in its substitute. The substitute will have a fictitious amount outstanding:

$$O_{substitute} = \frac{(P_{dropped}^b + A_{dropped}) \cdot O_{dropped}}{P_{substitute}^a + A_{substitute}}$$

where:

$A_{dropped}$	Accrued interest of a dropped bond
$A_{substitute}$	Accrued interest of a substitute bond
$O_{dropped}$	Amount outstanding of a dropped bond
$O_{substitute}$	Fictitious amount outstanding of a substitute bond
$P_{substitute}^a$	Ask price of a substitute bond
$P_{dropped}^b$	Bid price of a dropped bond

If no suitable substitute is available after applying the selection criteria, then the rule concerning the maximum number of bonds from one issuer will be relaxed and the most suitable substitute will be determined using the other selection and ranking criteria.

For specific cost factor calculation formulae please refer to the *Markit iBoxx Bond Index Calculus* document, available in the Methodology section of the *Markit iBoxx Documentation* page on www.ihsmarkit.com. The substitute will have a notional amount outstanding based on formula above.

In the Markit iBoxx EUR Liquid indices a substitute bond enters the index at the ask price.

In the event that no substitute is available, the proceeds from the sale of the dropped bond are invested as cash.

4.6.3) Monthly cash reinvestment between scheduled rebalancing dates

Cash from received coupons and non-substituted bonds is reinvested at the end of each month in the money market until the end of the following month. Cash from earlier months is also re-invested at the end of each month at the 1-month EURIBOR minus 12.5 basis points. At the next scheduled rebalancing cash is invested back in the index.

4.7) Determination of benchmarks

Benchmark spreads are calculated for every constituent bond as the difference between the annual or semi-annual yield of the bond and the annual or semi-annual yield of its benchmark. The benchmark assignment for the bonds is reviewed monthly. Benchmarks for the bonds in the iBoxx SD-KPI EUR Liquid Corporates Index are equivalent to the benchmarks for the respective bonds in the iBoxx EUR Benchmark universe.

A benchmark bond of the Markit iBoxx EUR Benchmark universe is defined as the most liquid and low risk bond in each of the maturity bands listed below.

The procedure starts at first running a regression algorithm on all bonds in the Markit iBoxx Eurozone index in order to determine the benchmark curve, and bonds with a positive spread to the curve are eliminated. The procedure is then repeated until one of the following is met:

1. R-square above 0.99
2. Standard deviation of yield-spread to curve is less than 3.5 bps
3. Number of bonds left is between 15 and 40.

The bonds remaining after running the procedure above are assigned to Sets A or B depending on their age. An eligible bond is assigned to Set A within a maturity band if it is not older than two years. Otherwise, it is assigned to Set B. The age of a bond is calculated from the first settlement date to the current rebalancing date. The largest bond (by amount outstanding) of all bonds in Set A is selected as the respective benchmark for each defined maturity band. If Set A is empty, then the most recently issued bond of Set B is chosen as the respective benchmark of the band.

Maturity bands are defined as follows:

Benchmark Maturity Bands	Bond Maturity
1 year	< 1.5 years
2 years	1.5 to < 2.5 years
3 years	2.5 to < 3.5 years
4 years	3.5 to < 4.5 years
5 years	4.5 to < 5.5 years
6 years	5.5 to < 6.5 years
7 years	6.5 to < 7.5 years
8 years	7.5 to < 8.5 years
9 years	8.5 to < 9.5 years
10 years	9.5 to < 12.5 years
15 years	12.5 to < 17.5 years
20 years	17.5 to < 25 years
Long	≥ 25 years

For every bond in the Markit iBoxx EUR indices, the benchmark bond with the closest maturity is selected as a benchmark. Therefore, the chosen benchmark is not necessarily the same as the benchmark for the maturity band of the bond. If the time to maturity distance of a bond to its two neighboring benchmarks is exactly the same, then the benchmark bond with the closer coupon is chosen. If the coupon distance of the two neighbouring bonds is also exactly the same, then the younger of the two benchmark bonds is chosen.

4.8) Index History

The iBoxx SD-KPI EUR Liquid Corporates Index commenced on February 28, 2022. Prior to February 28, 2022, the history reflects the [iBoxx EUR Corporates Liquid Index](#) methodology which did not incorporate SD-KPI adjustments.

4.9) Settlement conventions

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

4.10) Calendar

IHS Markit publishes an index calculation calendar in the *iBoxx Calendars* section of the iBoxx Documentation page on www.ihsmarkit.com. This calendar provides an overview of the index calculation holidays of the iBoxx bond index families in a given year.

4.11) Publication of the Index

The iBoxx SD-KPI EUR Liquid Corporates Index is calculated as end-of-day index and distributed once daily after market close.

Bond and index analytical values are calculated end of day Monday to Friday using that day's closing prices. In addition, bond and index analytical values are calculated using the previous trading day's closing prices on the last calendar day of each month if that day is not a regular trading day as well as on common bank holidays as published in the iBoxx index calculation calendar. This index calculation calendar is available on www.ihsmarkit.com under *iBoxx Calendars*. Index data is also available from the main information vendors.

Closing index values and key statistics are published at the end of each calculation day in the *Indices* section on www.ihsmarkit.com for registered users.

4.12) Data publication and access

The table below summarizes the publication of iBoxx SD-KPI EUR Liquid Corporates Index in the Indices section of the IHS Markit website www.ihsmarkit.com for registered users and on the FTP server.

Table 5: Data publication and access

Frequency	File Type	Access
Daily	Underlying file – Bond level	IHS Markit FTP Server
	Indices files – Index level	IHS Markit FTP Server / IHS Markit website/ Bloomberg for index levels only
Friday's after 6th calendar day, T-3, and T-2	Preview components	IHS Markit FTP Server / IHS Markit website
Monthly	End of month components	IHS Markit FTP Server / IHS Markit website
	XREF files	IHS Markit FTP Server

The index identifiers for the publication channels are:

Index Name	ISIN	SEDOL	BBG	RIC
iBovx SD-KPI EUR Liquid Corporates Index CPI	GB00BNP85F92	BNP85F9	IBXXELCP	.IBXXELCP
iBovx SD-KPI EUR Liquid Corporates Index TRI	GB00BNP85G00	BNP85G0	IBXXELTR	.IBXXELTR

4.13) Annual index review

The rules for the index are reviewed at least once per year during the public annual index review consultation process to ensure that the index provides a balanced representation of the EUR denominated debt market. Decisions made following feedback from market participants, the annual index review and External Advisory Committees (EAC) will be published on www.ihsmarkit.com shortly after the EAC meetings have been held. The publication will contain a detailed overview and timelines for implementation of any rules changes.

5) 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, including external committees
- 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](#).

6) Summary of key ESG factors

Explanation of how ESG factors are reflected in the key elements of the benchmark methodology	
Item 1: Benchmark administrator	IHS Markit Benchmark Administration Ltd. ('IMBA UK')
Item 2: Type of benchmark	Fixed Income
Item 3: Name of benchmark or family of benchmarks	iBoxx SD-KPI EUR Liquid Corporates Index
Item 4: Does the benchmark methodology take into account ESG factors	Yes
Item 5a: List of Environmental factors considered	SD-KPI scores are driven by 3 industry specific key performance indicators (KPIs). The full list of material ESG KPIs for the 68 different industries is outlined here: https://www.sd-kpi.com/images/files/SD-KPI_Standard_2016-2021.pdf . The SD-KPI Standard includes the weighting of SD-KPI 1, 2 and 3 in the accumulated SD-KPIIntegration® Score in %. The index components of the iBoxx Standard index are over-/underweighted according the quintile (0-20-40-60-80-100%) of SD-KPIIntegration Score to form the iBoxx SD-KPI index.
Item 5b: List of Social factors considered	SD-KPI scores are driven by 3 industry specific key performance indicators (KPIs). The full list of material ESG KPIs for the 68 different industries is outlined here: https://www.sd-kpi.com/images/files/SD-KPI_Standard_2016-2021.pdf . The SD-KPI Standard includes the weighting of SD-KPI 1, 2 and 3 in the accumulated SD-KPIIntegration® Score in %. The index components of the iBoxx Standard index are over-/underweighted according the quintile (0-20-40-60-80-100%) of SD-KPIIntegration Score to form the iBoxx SD-KPI index.
Item 5c: List of Governance factors considered	SD-KPI scores are driven by 3 industry specific key performance indicators (KPIs). The full list of material ESG KPIs for the 68 different industries is outlined here: https://www.sd-kpi.com/images/files/SD-KPI_Standard_2016-2021.pdf . The SD-KPI Standard includes the weighting of SD-KPI 1, 2 and 3 in the accumulated SD-KPIIntegration® Score in %. The index components of the iBoxx Standard index are over-/underweighted according the quintile (0-20-40-60-80-100%) of SD-KPIIntegration Score to form the iBoxx SD-KPI index.
Item 5d: List of any other overall ESG factors	None
Item 6: Hyperlink to ESG factors information	iBoxx SD-KPI EUR Liquid Corporates Index
Item 7a(i): Source of input	The SD-KPI scores are sourced externally from SD-M® GmbH and its SD-KPIIntegration® Database, which builds the main source. It has modeled the SD-KPI Standards since 2009 in collaboration with Sustainalytics, which has provided the ESG raw scores.
Item 7a(ii): Data input	The input data is sourced from the SD-KPIInform® database, which covers more than 12,500 companies worldwide (as of 2022).
Item 7b: Verification and quality of data	The ESG raw scores for the SD-KPIInform® database are assured by Sustainalytics' total quality management. The quality of the calculated SD-KPIInform® Scores is assured by SD-M's monthly plausibility checks.

Item 7c: International reference standards	<p>"The SD-KPI Standards have been developed on behalf of the German Government and Big Four Accounting Firms since 2004. This scientific work has been done by SD-M according to the EU Modernisation Directive 2003/51/EC of the European Parliament and of the Council of 18 June 2003 amending the EC Accounting Directives 78/660/EEC, 83/349/EEC, 86/635/EEC and 91/674/EEC on the annual and consolidated accounts of certain types of companies, banks and other financial institutions and insurance undertakings. The Accounting Directives demand disclosure of „non-financial key performance indicators relevant to the particular business, including information relating to environmental and employee matters“ since 2003. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32003L0051&from=en https://www.sd-kpi.com/de/sd-kpi-standards First published in January 2010, the SD-KPI Standard 2010-2015 was the first global standard for material sector-specific ESG indicators. SD-M® surveyed global investors and analysts, who represented EUR 2 trillion in assets, on behalf of the German Government. The SD-KPI Standard 2016-2021 is currently available in English, Japanese, Chinese and Arabic versions: https://www.sd-kpi.com/images/files/SD-KPI_Standard_2016-2021.pdf https://www.sd-kpi.com/images/files/SD-KPI_Standard_2016-2021_JP.pdf https://www.sd-kpi.com/images/files/SD-KPI_Standard_2016-2021_CN.pdf https://www.sd-kpi.com/images/files/SD-KPI_Standard_2016-2021_Arabic.pdf</p> <p>According to the BaFin Guidance Notice on Dealing with Sustainability Risks, ESG risks should be strategically considered, e.g. by means of SD-KPI Standard 2016-2021, which defines three material ESG KPIs in 68 industries. https://www.sd-kpi.com/images/files/BaFin_Merkblatt_Nachhaltigkeitsrisiken_SD-KPI_Standard_auf_Seiten_19-20.pdf (German).</p> <p>The SD-KPI Standard 2016-2021 has been further supported by the Sustainability Accounting Standards Board (SASB), see page 3 of the introduction: The SD-KPI Standard 2016-2021 was revised by SASB's Technical Director Andrew Collins. SASB found a high degree of overlap in SD-KPI analysis and the SASB standards and appreciates the SD-KPI approach as well as how SD-M® ranked and prioritized topics for each industry.</p> <p>The SD-KPI Standard 2016-2021 was further revised during a workshop at the German Environment and Building Ministry with the following participants: Joachim Ganse (KPMG), Dr. Hendrik Garz (Sustainalytics), Tommy Piemonte (imug), Dr. Eckhard Plinke (Vescore), Marcus Pratsch (DZ Bank), Andrea Weber (Bank J. Safra Sarasin) and Patrick Wirth (GES Switzerland).</p> <p>S&P Dow Jones Indices gave the allowance to further use the Global Industry Classification Standard (GICS) as a part of the structure of the SD-KPI Standards.</p> <p>The Guidelines to The Sustainability Code recommends the SD-KPI Standards for materiality analysis. https://www.sd-kpi.com/images/files/BaFin_Merkblatt_Nachhaltigkeitsrisiken_SD-KPI_Standard_auf_Seiten_19-20.pdf (German). Together with the German Environment Ministry, SD-M® has also published the brochure ""Material for business and financial performance – non-financial key performance indicators relevant to the particular business in the non-financial statement according to NFRD Directive 2014/95/EU (German)"". https://www.sd-kpi.com/images/files/SD-M_wesentlich_fuer_geschaefsttaetigkeit.pdf</p> <p>The SD-KPI Standards represent a mainstream-capable alternative to the restrictive EU taxonomy."</p>
Item 8a: Information updated on	February 28, 2022
Item 8b: Reason for update	

7) Changes to the iBoxx SD-KPI EUR Liquid Corporates Index

30 Jun 2022	<ul style="list-style-type: none">• Monthly forward start date updated from 10th calendar day to 6th calendar day
February 28, 2022	Launch of the iBoxx SD-KPI EUR Liquid Corporates Index. Prior history reflects the iBoxx EUR Corporates Liquid Index which did not incorporate SD-KPI adjustments.

8) Further information

Glossary of key terms

The Markit iBoxx Glossary document of key terms is available in the *Methodology* section of the iBoxx *Documentation* page on www.ihsmarkit.com.

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