

The iBoxx SD-KPI EUR Corporates Indices

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Executive Summary

Sustainable development key performance indicators (SD-KPIs) are made up of various relevant environmental, social and governance (ESG) indicators. The SD-KPI standards define the most important SD-KPIs for 68 different industries. The SD-KPIs have been defined by SD-M GmbH since 2007, as mandated by the German federal government. The current SD-KPI Standard 2016-2021¹ is the first global standard for sector-specific and material ESG indicators and is supported by the U.S. Sustainability Accounting Standards Board (SASB). The SD-KPI Standard 2016-2021 has been included in the Federal Financial Supervisory Authority (BaFin) Guidance Notice on Dealing with Sustainability Risks for handling ESG-related risks as an external sustainability standard. Further, the SD-KPI Standard 2016-2021 has been recommended in the guidelines of the 2020 German Sustainability Code (DNK), which allows companies to demonstrate to investors and consumers their commitment to sustainability in a way that is transparent, comparable and thus clear.²

The constituent weights of the established iBoxx € Corporates are adjusted based on the SD-KPIIntegration[®] score to create the iBoxx SD-KPI EUR Corporates. The iBoxx SD-KPI EUR Corporates is designed to reflect the performance of EUR-denominated investment grade corporate debt. The index aims to offer a broad coverage of the EUR corporate bond universe with adjusted weights, by allocating

¹ Sustainable Development Management, "[SD-KPI Standards](#)," 2021.

² Council for Sustainable Development, "[Guide to German Sustainability Code](#)," 2020; English version: [https://www.deutscher-nachhaltigkeitskodex.de/de-DE/Documents/PDFs/Sustainability-Code-\(1\)/SustainabilityCode_brochure_2020_A5_EN.aspx](https://www.deutscher-nachhaltigkeitskodex.de/de-DE/Documents/PDFs/Sustainability-Code-(1)/SustainabilityCode_brochure_2020_A5_EN.aspx).

higher weights to issuers with higher SD-KPI Integration scores and reducing weights for those with lower scores. The index aims to uphold minimum standards of investability and liquidity and showed a higher total return than the iBoxx € Corporates in the long term. The iBoxx SD-KPI EUR Corporates is further broken down into two subindices based on financial or non-financial corporate sectors. The iBoxx SD-KPI EUR Corporates had an improved risk-adjusted total return compared with the iBoxx € Corporates over the full index history.

Contextual Background

Investing sustainably and ESG integration need not be at odds with achieving an adequate risk/return ratio. While some may argue otherwise, sustainable investing and financial returns can be in harmony. However, there is still an ongoing debate on whether and to what extent the consideration of sustainability criteria affect investment performance. Nonetheless, it is important for asset owners, managers and financial advisors to apply relevant sustainability indicators, which can significantly affect the performance of financial investments, in compliance with EU regulations. Several macroeconomic factors such as persistent inflation, rising interest rates, a looming recession and political uncertainties are weighing on tactical allocation decisions for many stakeholders.

The COVID-19 crisis has shown a transition path to a circular, productivity-increasing, inclusive and clean economy that can be accelerated through a green economic recovery. This will be essential to create a more resilient economy and sustainable returns. Like investors, consumers are also demanding more corporate social responsibility in the current crisis. This underlines the growing importance of the three-pillar principle, the balance between social, ecological and economic goals. When it came to the publicly funded rescue packages to mitigate the economic impact of the COVID-19 crisis, sustainability was initially given little consideration globally. But there was increasing pressure on governments from different parties to combine stimulus packages with a green recovery. One example is the group of 178 investors who wrote a letter to the EU heads of state and government calling for sustainable reconstruction.³ In total, they manage over USD 103 trillion in assets. The fact that the demands of consumers and investors have been successful can be seen, for example, in companies such as Microsoft, BP and Shell, which are shifting directions to align themselves with the goals of the Paris Agreement. Politicians are also waking up to this trend. At the European level, the Green Deal was passed,⁴ and Germany and France passed low-carbon economic stimulus packages to tackle the COVID-19 crisis.⁵

³ The Institutional Investors Group on Climate Change, "[Investor groups Call on Companies to Reflect Climate-Related Risks in Financial Reporting](#)," September 2020.

⁴ For more information, see https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en.

⁵ Carbon Brief, "[Coronavirus: Tracking how the world's 'green recovery' plans aim to cut emissions](#)," June 16, 2020.

Additionally, the Russia-Ukraine conflict has exposed a critical fossil fuel energy dependency on Russia in the EU, and especially in Germany. The search for alternative sources of energy is another driving force to accelerate the transition and adoption of alternative sources. Two priorities highlighted under the RePower EU concept are ramping up renewables and boosting energy efficiency, which require further investments into ecological and economic sectors. In 2021, the European Commission increased the goal of greenhouse gas emissions reduction by 2030 from 40% to 55% under the Paris Agreement. In November 2022, the commission published a recommendation on fast permitting for renewable energy projects.⁶

Information regarding the sustainability risks of companies is needed to make adequate investment decisions. There are different sustainability strategies. The "exclusion criteria" strategy can limit a possible investment universe. For example, due to the strict regulations of the Paris Agreement or the Green Deal, a large amount of issued corporate bonds are not compatible with that type of index. A trackable and investable ESG index still needs to cover a large universe of the bond market to be part of an attractive and diversified strategy. This is exactly the approach taken by the iBoxx SD-KPI Corporates Indices.

By applying the SD-KPIs to the iBoxx € Corporates Index, the iBoxx SD-KPI EUR Corporates was formed, which pursues exactly these objectives. The index is liquid and broad based, while the weighting of the different components by SD-KPI value emphasizes companies with stronger sustainability performance. The main difference from a "best-in-class" index strategy is that no corporate bonds are excluded due to a low ESG score. A large and diversified bond universe is overweighted or underweighted by applying the SD-KPIs instead of heavily reducing or excluding issuers altogether. This approach allows: (1) support of sustainable companies; (2) benefits from new sustainable investments or EU regulations; (3) participation in a continuously increasing demand for sustainable bonds; and (4) reflection of liquid instruments with low transaction costs. Avoiding blanket exclusions creates incentives for companies to move toward a sustainable orientation. This is significant because companies with a low sustainability profile have the greatest potential for improvement. To achieve true change, it is critical to engage and convince the broader society of this goal. A narrow focus on "best in class" and "pioneer" companies, which exists in several sustainability approaches, may set unachievable thresholds for ESG laggards and could arguably discourage costly process improvements.

Investments that incorporate SD-KPIs have demonstrated an increased total return impact due to considering sustainability criteria over a 10-year period in broad-based stock market barometers.⁷

⁶ Council of the European Union, "[EU to speed up permitting process for renewable energy projects](#)," Nov. 24, 2022.

⁷ For more information on index performance, please see [the factsheet](#).

SD-M GmbH

Dr. Axel Hesse has been working on the topic of sustainable finance for more than 25 years. Over the past 15 years, he has been working on behalf of the German Federal Government on the problem of widespread individual consideration in this area to develop a standard for measuring sustainability that is as broad based as possible.

SD-M GmbH was founded in 2012 by Dr. Hesse, who has since been its managing partner, and has become a global pioneer for standardized ESG integration. The company's philosophy is based on the fundamental view that sustainable investments should be primarily focused on standardized core challenges and at the same time lead to financial outperformance. The company believes this is the only way to achieve overall market penetration and the mainstreaming of sustainable investments, which enables a sufficient steering effect on the real economy and sustainable development in the 21st century.

Industry-Specific SD-KPI Standards

Since 2010, SD-M has been working on behalf of the German government, and since 2016 it has also had the support of the Sustainability Accounting Standards Board (SASB) to develop global standards for key sustainability indicators. For this purpose, three industry-specific sustainability indicators were defined for a total of 68 different GICS® industries in the SD-KPI Standard 2010-2015.⁸ These indicators are not only essential for their respective business activities, but they also reflect the financial performance of the companies. These SD-KPIs show the concrete development opportunities and risk potentials of companies. Sustainability indicators should be quantitatively measurable and create comparability within an industry. This was the finding of the "Sustained added value" study sponsored by Deloitte and the German Federal Environment Ministry, which surveyed analysts and investors across Europe, as well as 23 of the DAX 30 companies.⁹ The results of the study also provided an approach for a first international standardization process for the presentation of SD-KPIs in annual and management reports, which has been mandatory under EU law since 2005.

SD-KPIs that are significant for business performance, position and expected development have had to be explained in the annual and management report and have therefore been relevant for the audit since 2005. References to a separate environmental, corporate social responsibility (CSR) or sustainability report are no longer sufficient, as these factors are becoming increasingly important for assessing the respective business success of a company due to worldwide resource scarcity as well as global and social imbalances. The European Securities and Markets Authority (ESMA), the European Insurance and Occupational Pensions

⁸ SD-M GmbH, "[SD-KPI Standard 2010–2015](#)," 2015.

⁹ Hesse, Axel, "[Sustained added value](#)," Deloitte, 2007.

Authority (EIOPA), the European Central Bank (ECB), the European Banking Authority (EBA) and the BaFin recommend taking material ESG risks into account to improve the long-term risk-adjusted earnings situation. Additionally, BaFin recommends considering ESG risks strategically, for example by taking into account the SD-KPI Standard 2016-2021, which is an established alternative to the restrictive EU taxonomy.¹⁰ The detailed list of industry-specific SK-KPIs can be found in the SD-KPI Standard 2016-2021, which is available in English, Japanese, Chinese, Arabic and Russian. The SD-KPI Standard 2016-2021 was revised by SASB, and they found a high degree of overlap in the SD-KPI analysis and the SASB standards. The SASB appreciates the SD-KPI approach and how SD-M ranked and prioritized topics for each industry. This is consolidated into the International Sustainability Standards Board (ISSB).¹¹ The ISSB has committed to building on the industry-based SASB standards and adopting SASB's industry-based approach to standard development.¹²

S&P Dow Jones Indices

S&P Global is the world's foremost provider of credit ratings, benchmarks and analytics in the global capital and commodity markets, offering deep data and insights on critical business factors. S&P Dow Jones Indices (S&P DJI) was established in 1941 as Standard & Poor's Indices in the U.S. In July 2012, S&P Indices and Dow Jones Indexes joined together to become the world's largest provider of financial market indices. Combined, S&P DJI is the largest global resource for essential index-based concepts, data and research, and home to iconic financial market indicators such as the [S&P 500®](#) and the [Dow Jones Industrial Average®](#). In February 2022, S&P Global merged with IHS Markit, a leading global provider of data, research and benchmark indices for fixed income and credit markets. The collaboration brings together two world-renowned brands with best-of-breed indexing capabilities. S&P DJI is the top independent equity index provider, while IHS Markit's indices underpin some of the world's most liquid fixed-income financial products. More assets are invested in products based on S&P DJI indices than products based on indices from any other provider in the world.

iBoxx SD-KPI Indices

S&P DJI and SD-M GmbH collaborated to create three indices per currency for the euro, U.S. dollar, and British pound sterling. Taking the euro currency version as an example, the headline iBoxx SD-KPI EUR Corporates is based on the established iBoxx € Corporates. The iBoxx € Corporates (the benchmark index) is designed to reflect the performance of Euro-denominated investment grade corporate debt. The index rules aim to offer broad coverage of

¹⁰ SD-M GmbH, "[SD-KPI Standard 2016–2021](#)," 2015.

¹¹ <https://www.eba.europa.eu/node/103662/submission/103741>

¹² <https://www.ifrs.org/issued-standards/sasb-standards/>

the EUR bond universe, while upholding minimum standards of investability and liquidity. It is an integral part of the global Markit iBoxx index series, which provides benchmarks by which to assess the performance of bond markets and investments. The iBoxx SD-KPI EUR Corporates is derived by adjusting the constituent weights of the benchmark index, allocating higher weights to issuers with higher SD-KPI Integration scores and reducing weights to those with lower scores. The constituents are ranked into quintiles according to their assigned SD-KPI Integration score (see Exhibit 1).

Exhibit 1: SD-KPI Weight Adjustment Methodology

Quintile	SD-KPI Integration 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

Source: IHS Markit, part of S&P Global. Table is provided for illustrative purposes.

The original weight is multiplied by the respective weight adjustment factor based on the interval the bond falls in. The newly derived constituent weights are normalized to create a complete index with the sum of bond weights equaling 100%. The final notional per bond is derived from the new weights.

The iBoxx SD-KPI EUR Corporates is further broken down into two subindices based on financial or non-financial corporate sectors, creating the iBoxx SD-KPI EUR Financials and iBoxx SD-KPI EUR Non-Financials. The three indices are priced based on multi-source pricing, as described in the document Markit iBoxx Pricing Rules publicly available in the [methodology](#). The setup and calculation of the British pound and U.S. dollar versions of the index follow the same scheme, but only entail bonds issued in the respective currency.

Exhibit 2: iBoxx SD-KPI EUR Corporates: Top and Bottom 10 Issuers

Company	Weight (%)		SD-KPI Integration Score
	iBoxx SD-KPI EUR Corporates	iBoxx € Corporates	
Top Issuers			
Carmila SA	0.027	0.021	100
Covivio	0.096	0.076	100
Covivio Hotels SACA	0.024	0.019	100
Firmenich Productions Participations SAS	0.071	0.056	100
Gecina SA	0.220	0.175	100
ICADE	0.152	0.121	100
Icade Sante SAS	0.042	0.033	100
Inmobiliaria Colonial Socimi SA	0.102	0.081	100
Mercialys SA	0.020	0.016	100
BorgWarner Inc	0.039	0.031	100
Bottom Issuers			
Coentreprise de Transport d'Electricite SA	0.045	0.107	14
easyJet FinCo BV	0.017	0.042	14
easyJet Plc	0.008	0.019	14
Eustream AS	0.006	0.013	14
GAS Networks Ireland	0.008	0.019	14
Emerson Electric Co	0.024	0.057	11
Thames Water Utilities Finance Plc	0.016	0.039	9
Argan SA	0.007	0.018	5
Holding d'Infrastructures et des Metiers de l'Environnement	0.007	0.016	5
MVM Energetika Zrt	0.006	0.015	5

Source: IHS Markit, part of S&P Global. Data as of Dec. 31, 2022. Table is provided for illustrative purposes.

The weights of the top issuers (SD-KPI score of above 80) were increased by 25.86% and the weights of the bottom issuers (SD-KPI score of 20 or below) were decreased by 58.05%. The over- and underweight percentage values differ from the weight adjustment factor shown in Exhibit 1 due to normalization. The total index weight of all 457 constituents that had a positive weight adjustment increased by 7.24 percentage points, from 67.28% to 74.52%. The total index weight of all 344 constituents with a negative weight adjustment decreased by 7.24 percentage points, from 32.56% to 25.32%.¹³

The weight of bonds issued by Societe Generale SA (SD-KPI: 82), CaixaBank SA (SD-KPI: 84), Credit Agricole SA (SD-KPI: 85) and Deutsche Bahn Finance GmbH (SD-KPI: 90) was

¹³ Please see Exhibit 9 in the Appendix for a list of the 10 issuers with the largest market value in the iBoxx SD-KPI EUR Corporates.

increased by 25.86%. The weight of the other issuers, with an SD-KPI score between 60 and 80, was increased by 4.88% (please see Exhibit 9 in the Appendix).

Exhibits 3-6 further outline the comparison of the constituent weights between the iBoxx SD-KPI EUR Corporates and the benchmark index for the different industry sectors, issuer ratings and the country of risk.

The largest absolute difference in industry sector weights occurred in the core financial and utilities sectors; 37.2% of the iBoxx SD-KPI EUR Corporates market value was derived from issuers in the core financials sector, an increase of 3.0 percentage points compared with the benchmark index. Additionally, 9.3% of the iBoxx SD-KPI EUR Corporates market value was derived from issuers within the utilities sector, a decrease of 1.2 percentage points compared with the iBoxx € Corporates. The highest weight change in relative terms also stemmed from the utilities sector, showing a decrease of 11.9% from the benchmark index weight. These findings indicate that, based on the analyzed issuers, the core financials sector had a relatively higher focus on delivering and reporting positive sustainability-related initiatives, while the opposite was true for the utilities sectors.

Exhibit 3: Industry Sectors – Weights

Sector	iBoxx SD-KPI EUR Corporates (%)	iBoxx € Corporates (%)
Core Financials	37.4	34.5
Consumer Goods	11.9	12.6
Utilities	9.3	10.4
Industrials	8.7	9.5
Health Care	6.3	6.0
Telecommunications	5.5	5.6
Real Estate	5.3	5.5
Oil & Gas	4.5	4.3
Consumer Services	3.6	3.6
Basic Materials	2.7	2.8
Financial Services	2.6	2.8
Technology	2.3	2.4

Source: IHS Markit, part of S&P Global. Data as of Dec. 31, 2022. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Regarding the country of risk, the largest absolute difference in weights between the iBoxx SD-KPI EUR Corporates and the benchmark index occurred for France and the U.S; 21.9% of the iBoxx SD-KPI EUR Corporates market value stemmed from issuers with the country of risk being France, an increase of 1.0 percentage points. Meanwhile 19.7% of the market value stemmed from issuers with the U.S. as the country of risk, a decrease of 0.9 percentage

points. The biggest relative difference of the country list in Exhibit 4 also stemmed from bonds with France as the country of risk. The combined weight for these bonds increased by a total of 4.8%. Of all analyzed countries, bonds with Austria as the country of risk were overweighted the most in relative terms, from 0.70% to 0.82% (16.8% increase), with 36 bonds included in the index. For countries with 20 or more bonds in the index, China was underweight the most in relative terms, from 0.47% to 0.36% (24.6% decrease). Of the largest issuers, bonds with France or Spain as the country of risk had a higher focus on delivering and reporting positive sustainability initiatives compared with issuers from the U.S.

Exhibit 4: Country of Risk Weights

Country of Risk	iBoxx SD-KPI EUR Corporates (%)	iBoxx € Corporates (%)
France	22.1	21.0
U.S.	19.5	20.5
Germany	14.2	14.0
Netherlands	6.9	7.0%
U.K.	6.8	6.6
Spain	5.8	5.6
Italy	5.5	5.2
Switzerland	3.2	3.4
Sweden	2.6	2.6
Belgium	2.0	1.9
Other	11.4	12.2

Source: IHS Markit, part of S&P Global. Data as of Dec. 31, 2022. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

As shown in Exhibits 5 and 6, the average duration of the iBoxx SD-KPI EUR Corporates was slightly lower and the concentration of bonds with an AAA to A iBoxx rating was slightly higher compared with the benchmark index constituents. The analysis shows that higher-rated issuers had a higher focus on delivering and reporting on positive sustainability initiatives. This reveals that the iBoxx SD-KPI EUR Corporates achieved a higher total return than the benchmark index, while having a higher average issuer rating and a lower risk profile. This finding is further amplified, as the iBoxx SD-KPI EUR Corporates had a slightly lower average duration. It would seem that considering the SD-KPI scores led to a higher total return and lower risk when compared with the benchmark index (see Exhibit 10 in the Appendix for index performance details).

Exhibit 5: Rating – Weights

Rating	iBoxx SD-KPI EUR Corporates (%)	iBoxx € Corporates (%)
AAA	0.3	0.3
AA	8.7	8.4
A	41.9	41.0
BBB	49.1	50.3

Source: IHS Markit, part of S&P Global. Data as of Dec. 31, 2022. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Exhibit 6: Duration – Weights

Duration (Years)	iBoxx SD-KPI EUR Corporates (%)	iBoxx € Corporates (%)
1-3	32.4	32.1
>3-5	32.0	32.0
>5-8	25.0	25.1
>8-10	6.6	6.7
>10-15	3.3	3.4
>15	0.7	0.7

Source: IHS Markit, part of S&P Global. Data as of Dec. 31, 2022. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

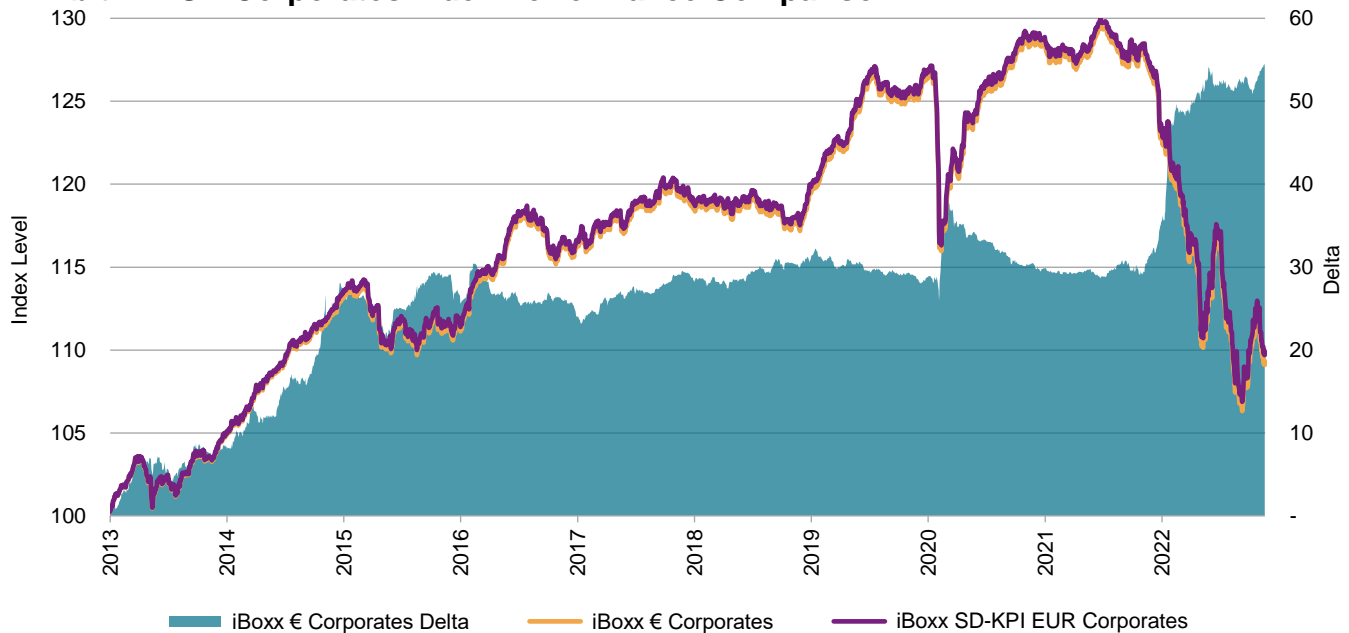
Performance versus the Benchmark Index

The iBoxx SD-KPI EUR Corporates back-test data starts on Feb. 1, 2013, with 1,344 bonds and a total capped market value of EUR 934 trillion (EUR 1,365 trillion uncapped). At the December 2022 rebalance, the number of constituents increased to 3,372 bonds with a total capped market value of EUR 1,960 trillion (EUR 2,435 trillion uncapped).

The iBoxx SD-KPI EUR Corporates achieved an average annual total return of 3.23%, with an average volatility of 1.98% through January 2022. Recent months have been turbulent for European government bonds. Yields have climbed across the board on the back of rising inflation due to energy shortages and political uncertainty. German bund yields with maturities between 7 and 10 years increased by 78 bps in August 2022 alone. These exceptional market conditions should be considered when including the past two years in the bond index performance comparison. Considering the full history through December 2022, which includes the COVID-19 pandemic and the Russia-Ukraine conflict, the index achieved an average annual total return of 0.80% with an average volatility of 2.85%, resulting in a Sharpe ratio of 0.28. The annual total return of the iBoxx SD-KPI EUR Corporates during the full back-tested history was 55 bps higher than the benchmark index. The iBoxx SD-KPI EUR Corporates experienced its maximum drawdown (-17,80%) on October 21, 2022, 20 bps less than the benchmark index (-18.00%). The index experienced the high maximum drawdown due to

rising and persistent inflation, rising interest rates and expectations of future rising interest rates, and the uncertainty around the COVID-19 pandemic and the Russia-Ukraine conflict. Compared to the benchmark index, the average annual total return for the iBoxx SD-KPI EUR Corporates was 8 bps higher and the average volatility was 1 basis point lower between February 2020 and December 2022.

Exhibit 7: EUR Corporates Index Performance Comparison

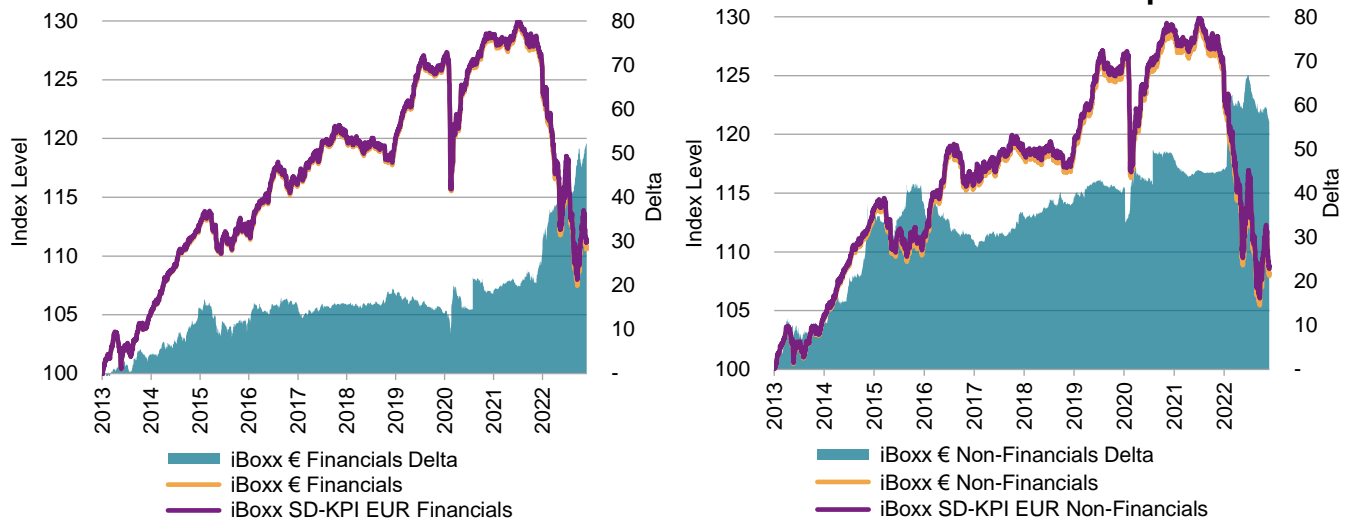


Source: IHS Markit, part of S&P Global. Data as of Dec. 31, 2022. The iBoxx SD-KPI EUR Corporates was launched Oct. 1, 2020. All data prior to index launch date is back-tested hypothetical data. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

The iBoxx SD-KPI EUR Corporates achieved a higher average annual return, a higher Sharpe ratio, and a lower maximum drawdown compared with the benchmark index since its inception. Based on these results, considering the SD-KPI Integration score and adjusting the constituent weights accordingly led to a positive impact on society and the environment, while providing a higher average annual total return and a certain protection in times of crisis.

The performance of the iBoxx SD-KPI EUR Financials and the iBoxx SD-KPI EUR Non-Financials is shown in the following charts. The main difference is the higher total return of the iBoxx SD-KPI EUR Non-Financials compared with the iBoxx € Non-Financials—56 bps since inception. The iBoxx SD-KPI EUR Financials had a higher total return of 52 bps compared with the iBoxx EUR Financials since inception.¹⁴

¹⁴ Please see Exhibit 10 in the Appendix for the complete table comparing the performance of the subindices and their respective established iBoxx EUR Benchmark Indices. For further information regarding the performance of the GBP and USD indices, please reach out to florian.guth@spglobal.com.

Exhibit 8: EUR Financials and EUR Non-Financials Index Performance Comparison

Source: IHS Markit, part of S&P Global. Data as of Dec. 31, 2022. The iBoxx SD-KPI EUR Financials and iBoxx SD-KPI EUR Non-Financials were launched Oct. 1, 2020. All data prior to index launch date is back-tested hypothetical data. Past performance is no guarantee of future results. Charts are provided for illustrative purposes and reflect hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Possible Benefits of the iBoxx SD-KPI Indices

In accordance with the latest research, ESG risks should likely be considered when making an informed investment decision. A narrow focus on best-in-class or pioneering companies, which are part of many sustainability concepts, could arguably further impede the access to capital for companies that are perceived as climate polluters, leading to a higher incentive for such companies to circumvent the creation of expensive sustainability standards. A broad-based index strategy, which considers industry-specific key ESG performance indicators, can support specific companies that follow a sustainability-focused company strategy while providing a liquid and diversified investment universe with low transaction costs. The iBoxx SD-KPI EUR Corporates is designed as a liquid and broad-based benchmark. Adjusting the constituent weights according to the SD-KPI Integration score provides a focus on companies with low ESG-related risks. The analysis shows that the integration of the SD-KPI Integration score yielded a positive effect on the risk/return performance of an index and provided a certain protection in times of crisis, while supporting the environment and society.

Appendix

Exhibit 9: Top 10 Companies in the iBovx SD-KPI EUR Corporates, Based on Weights

Issuer	Weight (%)		SD-KPI Integration Score
	iBovx SD-KPI EUR Corporates	iBovx € Corporates	
Banque Federative du Credit Mutuel SA	1.6	1.5	67
BNP Paribas SA	1.5	1.5	76
Societe Generale SA	1.3	1.0	82
ING Groep NV	1.1	1.0	71
Volkswagen International Finance NV	1.1	1.0	69
BPCE SA	1.0	1.0	77
Credit Agricole SA	1.0	0.8	85
CaixaBank SA	1.0	0.8	84
Orange SA	0.9	0.9	71
Deutsche Bahn Finance GmbH	0.8	0.7	90

Source: IHS Markit, part of S&P Global. Data as of Dec. 31, 2022. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Exhibit 10: Index Performance – iBovx SD-KPI EUR Indices

Performance Metric	iBovx SD-KPI EUR Corporates	iBovx € Corporates	iBovx SD-KPI EUR Financials	iBovx € Financials	iBovx SD-KPI EUR Non-Financials	iBovx € Non-Financials
February 2013-December 2022						
Annualized Return (%)	0.80	0.74	0.94	0.88	0.69	0.64
Volatility (%)	2.85	2.84	2.68	2.68	3.04	3.03
Sharpe Ratio	0.28	0.26	0.35	0.33	0.23	0.21
Tracking Error (%)	0.04		0.05		0.06	
Maximum Drawdown (%)	-17.8	-18.0	-17.0	-17.2	-18.4	-18.5
Maximum Drawdown Date	Oct. 21, 2022	Oct. 21, 2022	Oct 21, 2022	Oct 21, 2022	Oct 21, 2022	Oct 21, 2022
February 2013-February 2020						
Annualized Return (%)	3.23	3.19	3.25	3.23	3.22	3.16
Volatility (%)	1.98	1.97	1.78	1.77	2.18	2.17
Sharpe Ratio	1.64	1.62	1.83	1.83	1.47	1.46
Tracking Error (%)	0.03		0.03	0.00	0.05	0.00
Maximum Drawdown (%)	-3.72	-3.7	-3.2	-3.1	-4.3	-4.4
Maximum Drawdown Date	Sept. 29, 2015	Sept. 29, 2015	July 10, 2015	July 10, 2015	Sept. 29, 2015	Sept. 29, 2015

Source: IHS Markit, part of S&P Global. Data as of Dec. 31, 2022. The iBovx SD-KPI EUR Corporates, iBovx SD-KPI EUR Financials and iBovx SD-KPI EUR Non-Financials were launched Oct. 1, 2020. All data prior to index launch date is back-tested hypothetical data. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Exhibit 10: Index Performance – iBoxx SD-KPI EUR Indices (cont.)

Performance Metric	iBoxx SD-KPI EUR Corporates	iBoxx € Corporates	iBoxx SD-KPI EUR Financials	iBoxx € Financials	iBoxx SD-KPI EUR Non-Financials	iBoxx € Non-Financials
February 2020-December 2022						
Annualized Return (%)	-4.63	-4.71	-4.23	-4.35	-4.94	-4.98
Volatility (%)	4.21	4.22	4.05	4.06	4.42	4.40
Sharpe Ratio	-1.10	-1.12	-1.04	-1.07	-1.12	-1.13
Tracking Error (%)	0.04		0.07		0.09	
Maximum Drawdown (%)	-17.80	-18.0	-17.0	-17.2	-18.4	-18.5
Maximum Drawdown Date	Oct. 21, 2022	Oct. 21, 2022	Oct 21, 2022	Oct 21, 2022	Oct 21, 2022	Oct 21, 2022
December 2022						
Annual Yield	4.3189	4.3263	4.6949	4.7098	4.0704	4.0599
Annual Modified Duration	4.5681	4.5850	3.9811	4.0036	5.0580	5.0282
Annual Spread	179.74	180.45	218.22	223.91	154.32	157.83
Expected Remaining Life	5.39	5.41	4.60	4.64	6.04	5.98
Coupon	1.61	1.60	1.62	1.61	1.60	1.60
Asset Swap Spread	98.74	99.21	128.73	133.23	78.92	81.30
OAS	178.68	179.37	217.44	227.27	152.96	160.54
Number of Bonds	3533	3533	1429	1429	2104	2104
January 2022						
Annual Yield	0.7653	0.7751	0.7580	0.7502	0.7695	0.7499
Annual Modified Duration	5.2050	5.2756	4.5043	4.6144	5.7313	5.7424
Annual Spread	110.74	111.37	116.18	117.71	107.52	109.11
Expected Remaining Life	5.62	5.70	4.78	4.90	6.26	6.26
Coupon	1.41	1.39	1.37	1.32	1.45	1.44
Asset Swap Spread	62.46	62.87	68.17	68.06	59.09	58.83
OAS	110.11	110.68	116.08	117.96	106.59	108.20
Number of Bonds	3,372	3,372	1,328	1,328	2,044	2,044

Source: IHS Markit, part of S&P Global. Data as of Dec. 31, 2022. The iBoxx SD-KPI EUR Corporates, iBoxx SD-KPI EUR Financials and iBoxx SD-KPI EUR Non-Financials were launched Oct. 1, 2020. All data prior to index launch date is back-tested hypothetical data. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Performance Disclosure/Back-Tested Data

The iBoxx SD-KPI EUR Corporates, iBoxx SD-KPI EUR Financials and iBoxx SD-KPI EUR Non-Financials were launched Oct. 1, 2020. All information presented prior to an index's Launch Date is hypothetical (back-tested), not actual performance, and is based on the index methodology in effect on the index 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. Complete index methodology details are available at www.spglobal.com/spdji. 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.

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. Back-tested performance is for use with institutions only; not for use with retail investors.

S&P Dow Jones Indices defines various dates to assist our clients in 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 Dow Jones Indices 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.

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