

Digging into African Debt with the iBoxx LSF USD African Sovereigns

Contributors

Jessica Tan

Principal
Fixed Income Indices
Asia Pacific
jessica.tan@spglobal.com

Benedek Vörös, CFA

Director
Index Investment Strategy
benedek.voros@spglobal.com

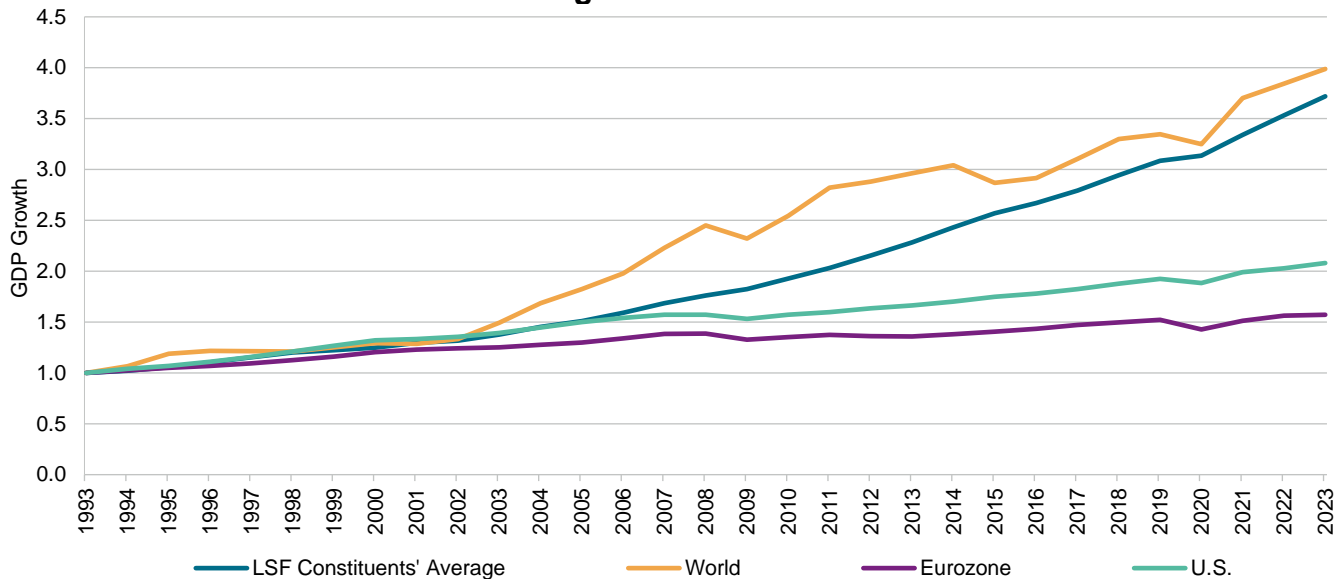
Introduction

Launched in June 2024, the [iBoxx LSF USD African Sovereigns](#) measures the performance of USD-denominated bonds issued by sovereign African entities that are domiciled in the African countries eligible for the Liquidity & Sustainability Facility (LSF) repo facility. The partnership index aims to aid the LSF in its objective to improve African sovereign eurobonds' liquidity and sustainability by leveraging S&P Dow Jones Indices' fixed income capabilities.

Development of Africa

Africa is the second-largest continent by size and has 54 countries, the highest number among all continents. Although gross domestic product (GDP) per capita is currently the lowest of all continents, Africa has plenty going for it in the decades ahead: rapid population growth, high fertility rates and a low median age, which could be engines of future economic growth. The current population is over 1.4 billion, the second-highest continent after Asia.

Looking at the last three decades up to 2023, the GDP of the countries that comprise the iBoxx LSF USD African Sovereigns has almost quadrupled, roughly in line with the world's GDP growth and significantly better than the eurozone and the U.S.

Exhibit 1: GDP Growth in Selected Regions

Source: World Bank. Data from Dec. 31, 1993, to Dec. 31, 2023. LSF Constituents' Average refers to the average GDP growth of all constituent countries in the iBoxx LSF USD African Sovereigns. GDP level rebased to 1 on Dec. 31, 1993. Chart is provided for illustrative purposes

African development in the past two decades has been supported by population growth: the annual growth rate of the population has remained above 2% over recent decades, resulting in the continent's population doubling from fewer than 700 million in 1993 to about 1.4 billion at the end of 2023. While the growth rate has been declining slightly in recent years, the population continues to increase. The continent is forecast to reach nearly 2.5 billion inhabitants by 2050¹ with rapid population growth, high fertility rates, low median age, increasing life expectancy, large households, and widespread poverty being the main features of Africa's current demographics.

While Africa has the potential to realize a significant demographic dividend, the continent needs to find ways to reap those benefits and fulfil its potential. Major investment in infrastructure, healthcare and education, as well as improved governance, are likely to be key to unlock the continent's potential.

There remains plenty to do with respect to the former and the latter. According to the Human Sciences Research Council,² political stability across the continent overall has not improved, and it declined slightly in the five years between 2016 and 2021, although there has been wide divergence across individual countries. Apart from better governance, significant investment is also needed in Africa's physical and human capital, which requires stable, reliable and low cost funding in the decades ahead.

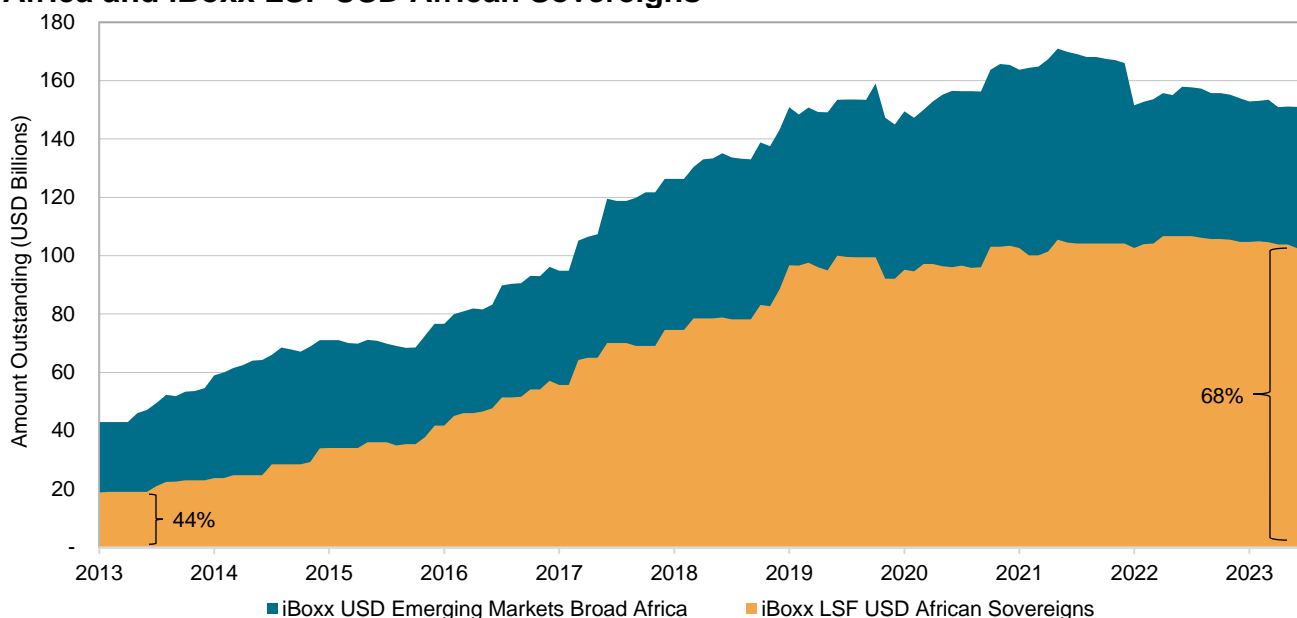
¹ Statista Research Department, "[Forecast of the total population of Africa 2020-2050](#)," March 22, 2024.

² Moeti, Thabiso and Gina Weir-Smith, "[Political stability in Africa. Spatial Insights: Edition 10](#)," Pretoria: eResearch Knowledge Centre, Human Sciences Research Council, 2023.

Evolution of the African U.S. Dollar Debt Market

Over the ten and a half years of the period studied, the size of the African USD-denominated debt market grew by 252%, while the size of the African sovereign USD-denominated debt currently eligible for the LSF grew by 445%, almost double the absolute growth rate of the overall African USD debt market. The amount outstanding of the LSF-eligible African sovereigns' USD debt went from making up 44% of overall African USD debt at the end of 2013 to making up 68% of the market at the end of June 2024 (see Exhibit 2).

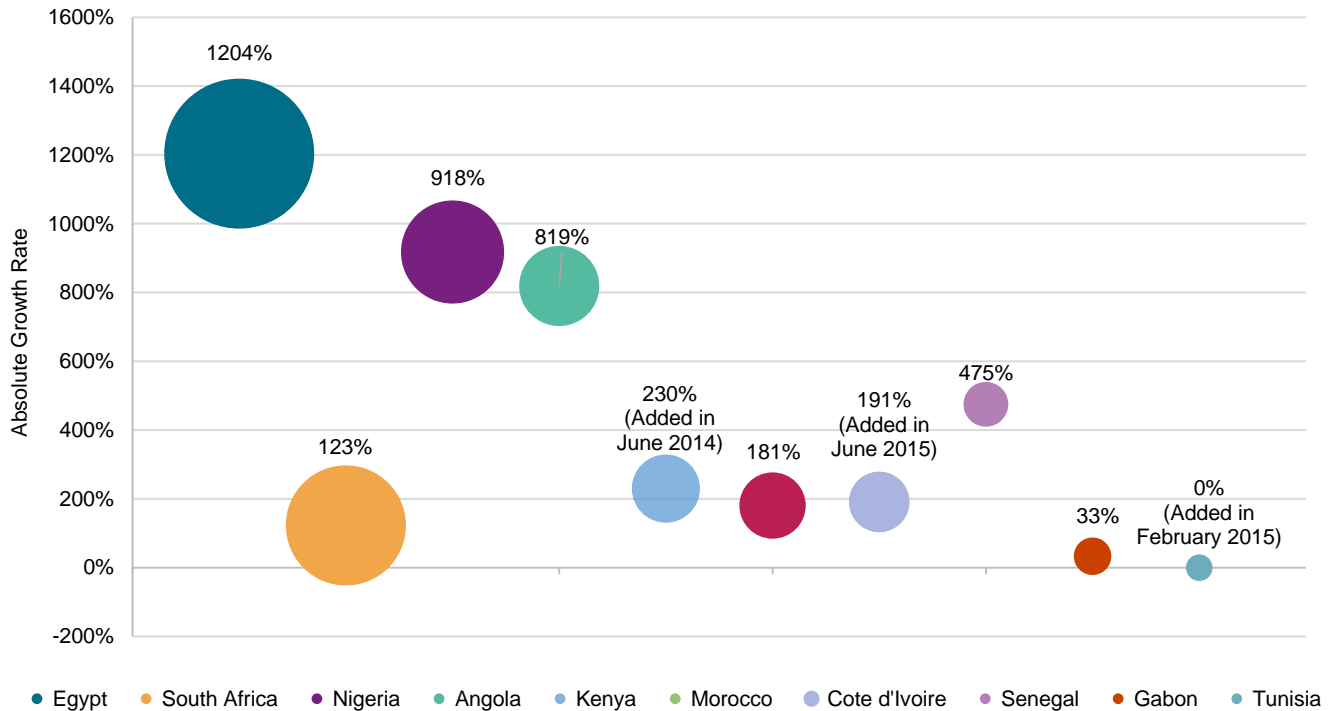
Exhibit 2: Growth in Uncapped Notional of the iBoxx USD Emerging Markets Broad Africa and iBoxx LSF USD African Sovereigns



Source: S&P Dow Jones Indices LLC. Data from Dec. 31, 2013, to June 30, 2024. The iBoxx USD Emerging Markets Broad Africa was launched on Jan. 31, 2024. The iBoxx LSF USD African Sovereigns was launched on June 15, 2024. All data prior to such 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.

In Exhibit 3, among the ten largest issuers captured in the iBoxx LSF USD African Sovereigns, Egypt expanded the most (1,204%) with the greatest number of bond issuances over the period from Dec. 31, 2013, to June 30, 2024, while Tunisia's sovereign debt outstanding remained unchanged, with one bond issuance at USD 1 billion since its addition to the index in February 2015. South Africa, which had the largest market size in 2013, grew at just over one-tenth of the pace of Egypt (123%) and ended up as the second-largest market as of June 2024.

Exhibit 3: Growth of the Top 10 Sovereign Bond Issuers in the iBoxx LSF USD African Sovereigns



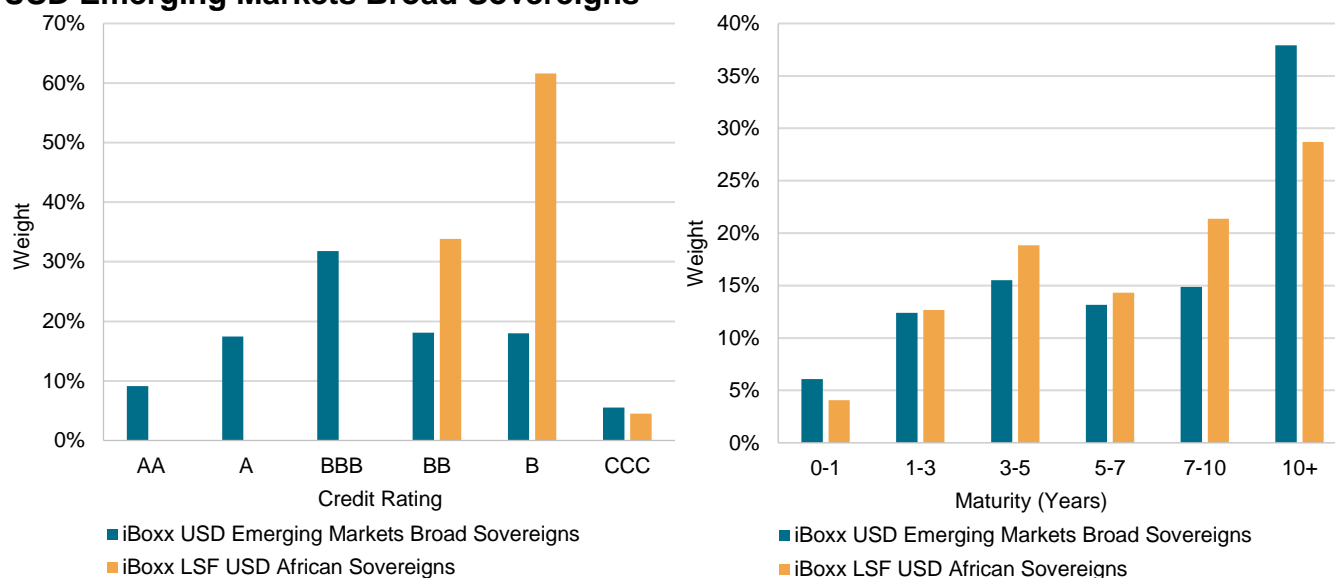
Source: S&P Dow Jones Indices LLC. Data from Dec. 31, 2013, to June 30, 2024. Growth of market size in USD shown as a percentage. The size of the bubbles indicates the size of the bond markets as of June 30, 2024. The iBoxx LSF USD African Sovereigns was launched on June 15, 2024. All data prior to such date is back-tested hypothetical data. Past performance is no guarantee of future results. Chart is provided for illustrative purposes. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Key Index Characteristics

To cope with the disparity in issuance sizes across the different African countries, the iBoxx LSF USD African Sovereigns is designed with a maximum weight of 20% and a floor of 0.5% based on the country of risk. The aim of the additional criteria is to ensure there is sufficient representation of each market while also providing diversification.

Based on the index constituents of the iBoxx USD Emerging Markets Broad Sovereigns and the iBoxx LSF USD African Sovereigns as of June 2024, the broader emerging market sovereigns index constituents were distributed across credit ratings below AAA, whereas the African sovereigns index is a high-yield index and was predominantly made up of B-rated bonds (62%). Consequently, the yield of the iBoxx LSF USD African Sovereigns was also significantly higher, at 9.55%, than the iBoxx USD Emerging Markets Broad Sovereigns' 6.81% (see Exhibit 4).

Exhibit 4: Characteristics of the iBoxx LSF USD African Sovereigns versus the iBoxx USD Emerging Markets Broad Sovereigns



Metric	iBoxx USD Emerging Markets Broad Sovereigns	iBoxx LSF USD African Sovereigns
Amount Outstanding (USD Billions)	1,083.38	84.51
Market Value (USD Billions)	969.96	74.42
Number of Instruments	656	83
Annual Yield (%)	6.81	9.55
Annual Modified Duration (Years)	6.49	5.13

Source: S&P Dow Jones Indices LLC. Data as of June 30, 2024. Past performance is no guarantee of future results. Charts and table are provided for illustrative purposes.

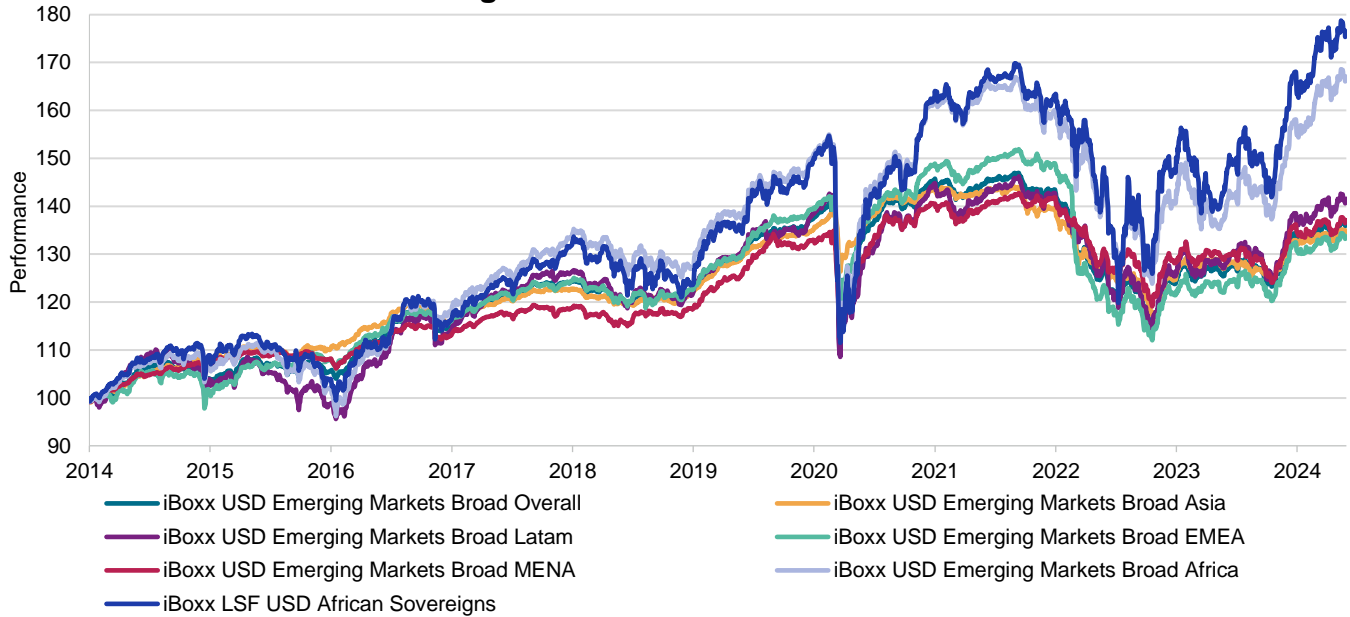
In terms of maturity breakdown, the iBoxx USD Emerging Markets Broad Sovereigns was more heavily weighted in the longer maturity range, with 38% of bonds in the 10+ year maturity bucket compared to 29% for the iBoxx LSF USD African Sovereigns. The duration of the iBoxx LSF USD African Sovereigns was 1.35 years shorter than the iBoxx USD Emerging Markets Broad Sovereigns.

A Look at Index Performance and Yields

As Exhibit 5 illustrates, the emerging market indices mostly moved in tandem between 2014 and late 2015. The [S&P GSCI](#), which measures the performance of global commodities, experienced a 34% loss in 2014 and a 25% loss in 2015. Due to sustained low commodity prices and a global market sell-off during the 2015-2016 period, the commodity-export-reliant African region experienced the largest drawdown among all the emerging regions, while the Asian region, where most countries are commodity importers, not only withstood but even benefited from the commodity market downturn and performed the best in early 2016. The African region rebounded and led the other regions over the next five years until the COVID-19

pandemic in March 2020, when it once again experienced the largest drawdown among all the emerging market regions. However, the African region sprung back the most over the next two years during the period of global market recovery. Africa resumed and extended its lead over the other emerging market regions in 2021 but declined during the global monetary policy tightening period of 2022-2023, alongside other regions. In 2023, the African region widened its lead over the other the emerging market regions and continued to outperform them.

Exhibit 5: Performance of iBoxx USD Emerging Markets Broad Regional Indices and the iBoxx LSF USD African Sovereigns



Index	Return (%)										
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	
S&P GSCI	-34	-25	28	11	-15	17	-6	37	9	-12	

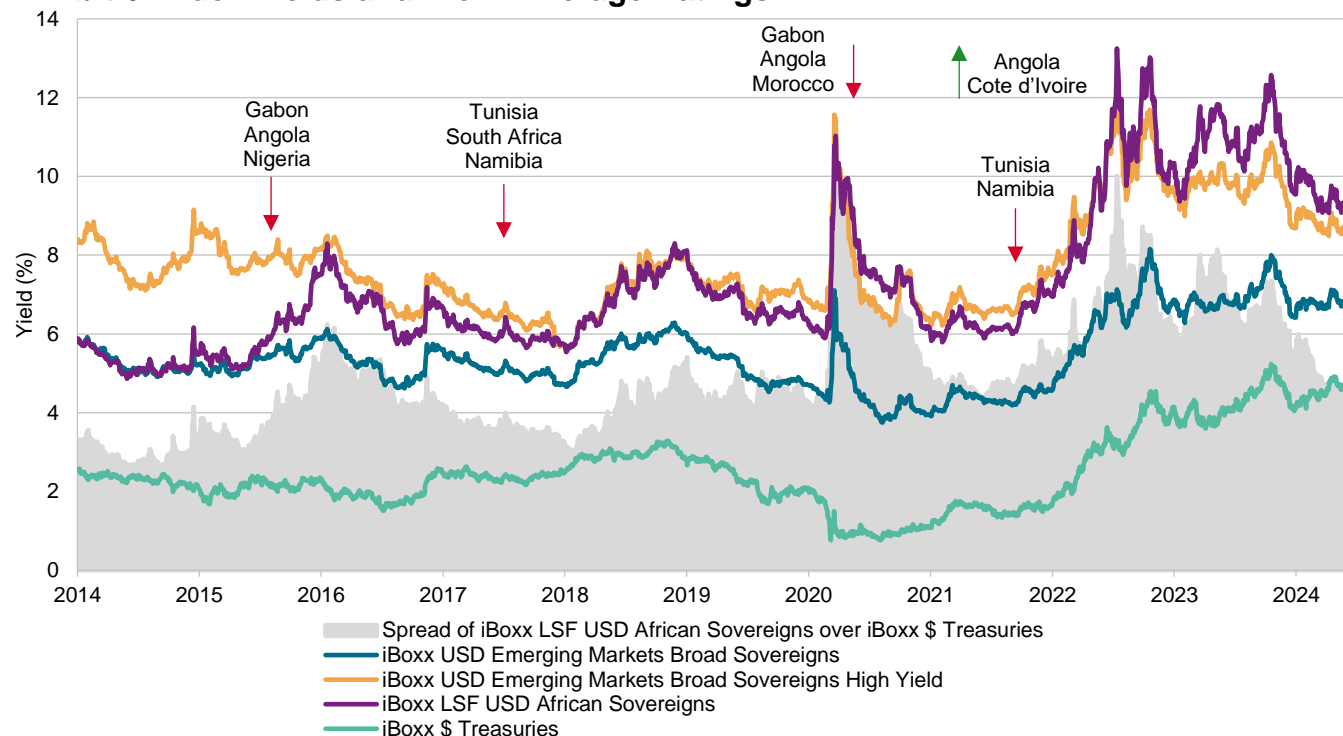
Source: S&P Dow Jones Indices LLC. Data from Dec. 31, 2013, to June 30, 2024. The iBoxx USD Emerging Markets Broad Indices were launched on Jan. 31, 2024. The LSF USD African Sovereigns was launched on June 15, 2024. All data prior to such date is back-tested hypothetical data. Past performance is no guarantee of future results. The 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.

Over the period studied, the iBoxx USD Emerging Markets Broad Africa performed the best (gaining 67%) out of all the regional emerging markets indices. The iBoxx LSF USD African Sovereigns performance stayed close to that of the iBoxx USD Emerging Markets Broad Africa until late 2023 when the performance of the LSF index broke away from the broad Africa index after the continent’s second-most populous country, Ethiopia, defaulted on its single international government debt issue.³ The iBoxx LSF USD African Sovereigns gained 76% over the back-tested period since its base date of Dec. 31, 2013.

³ The iBoxx LSF USD African Sovereigns has not included Ethiopia since its launch, and the index’s country eligibility criteria follow the [LSF eligible collateral list](#).

The yield of the iBoxx LSF USD African Sovereigns moved closely with that of the iBoxx USD Emerging Markets Broad Sovereigns between 2013 and late 2015. Following the rating downgrades of Gabon and Angola in the 2015-2016 period, the yields of the iBoxx LSF USD African Sovereigns converged with those of the iBoxx USD Emerging Markets Broad Sovereigns High Yield in early 2016 and then moved broadly in tandem with the high yield index. The two indices' yields spiked by approximately 400-500 bps during the COVID-19 market downturn in March 2020, while the iBoxx USD Emerging Markets Broad Sovereigns yield rose by slightly more than 200 bps. The yields for the iBoxx LSF USD Africans Sovereigns and iBoxx USD Emerging Markets Sovereigns High Yield continued to stay close to each other and reached a peak of 13.25% and 12%, respectively, in July 2022, before falling below 10% in early 2023. The iBoxx LSF USD African Sovereigns yields started to deviate in 2023 and maintained a spread over the iBoxx USD Emerging Markets Broad Sovereigns High Yield until June 2024.

Exhibit 6: Index Yields and iBoxx Average Ratings



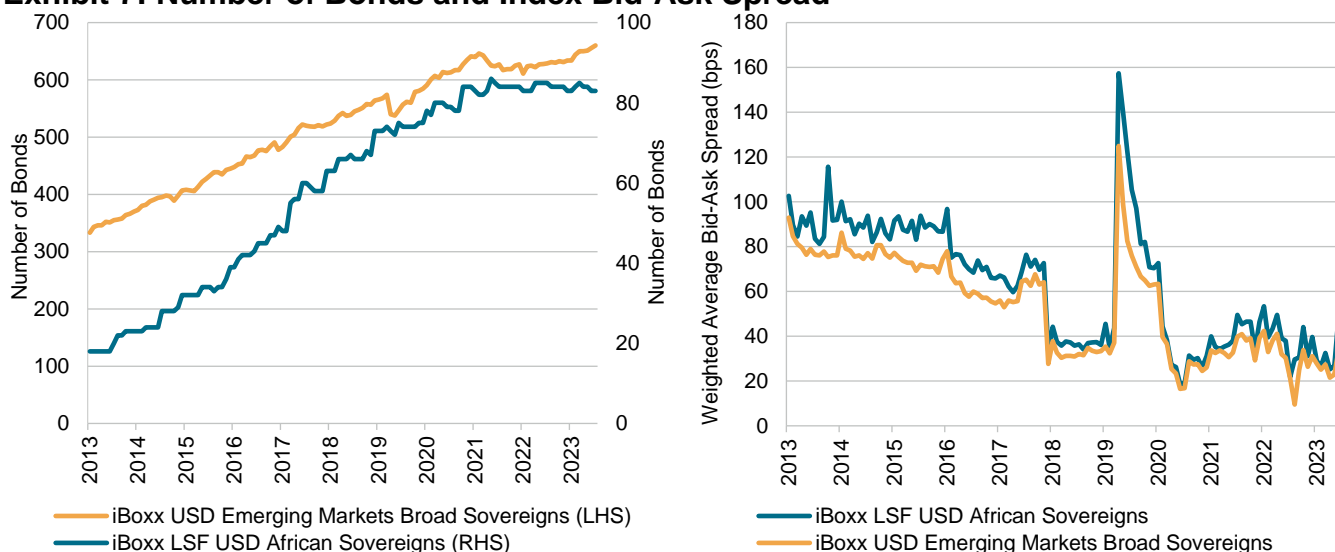
Source: S&P Dow Jones Indices LLC. Data from Dec. 31, 2013, to June 30, 2024. Red arrows pointing down indicate a downgrade of iBoxx Average Rating for the associated regions. Green arrows pointing up indicate an upgrade of iBoxx Average Rating for the associated regions. The iBoxx USD Emerging Markets Broad Indices were launched on Jan. 31, 2024. The iBoxx LSF USD African Sovereigns was launched on June 15, 2024. All data prior to such 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.

During periods of volatility, the spread of the iBoxx LSF USD African Sovereigns over the iBoxx \$ Treasuries tended to widen, often reaching—and during the March 2020 COVID-19 downturn, even exceeding—the level of the iBoxx USD Emerging Markets Broad Sovereigns yields. In fact, during the March 2020 COVID-19 market downturn period, the yield differential

reached a high of more than 10% as investors favored U.S. Treasuries, which are regarded as a safe haven, and steered away from riskier markets like emerging markets sovereigns and African sovereigns.

Exhibit 7 shows that the number of African sovereign bonds, as represented by the iBoxx LSF USD African Sovereigns, increased at a faster rate (4.61 times versus 1.97 times) than the number of emerging markets sovereign bonds, as represented by the iBoxx USD Emerging Markets Broad Sovereigns, during the period between 2013 and 2020. The number of African sovereign bonds plateaued in 2022 as global interest rates were hiked and their yields shot up to double digit figures, leading to a reduction in new issuances from African governments.

Exhibit 7: Number of Bonds and Index Bid-Ask Spread



Source: S&P Dow Jones Indices LLC. Data as of Jun. 30, 2024. The iBoxx USD Emerging Markets Broad Sovereigns was launched on Jan. 31, 2024. The iBoxx LSF USD African Sovereigns was launched on June 15, 2024. All data prior to such 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.

Over the past decade, the weighted average bid-ask spreads of emerging markets sovereign bonds and African sovereign bonds have been on a downtrend, except for the spike during the COVID-19 crisis. The gap between the two markets’ spreads has also closed in the past three to four years.

How African Sovereign Bonds Can Play a Part in a Fixed Income Strategy

Unless required by a specific narrow mandate, fixed income investors typically hold securities from various geographies and risk profiles as part of their strategy. So, how would an investment in African sovereign bonds fit into a diversified USD-denominated bond strategy?

Historical analysis seems to show that incorporating African sovereign bonds could have helped improve the risk/return profiles of a USD bond strategy as different economic and political factors drive these two markets.

Exhibit 8 shows the difference in returns of the two benchmarks as well as the iBoxx USD Emerging Markets Broad Overall over shorter time periods. The six-month horizon is illustrative of this difference; over all half-year periods between January 2014 and June 2024, the correlation between the six-month returns of the iBoxx LSF USD African Sovereigns and the iBoxx \$ Treasuries was 0.36, the average absolute difference between the two six-month returns was 6.6%, and in 43% of periods, their returns moved in opposing directions (one rose while the other fell). The diversification provided by the iBoxx LSF USD African Sovereigns was significantly stronger than that of the iBoxx USD Emerging Markets Broad Overall for all time horizons.

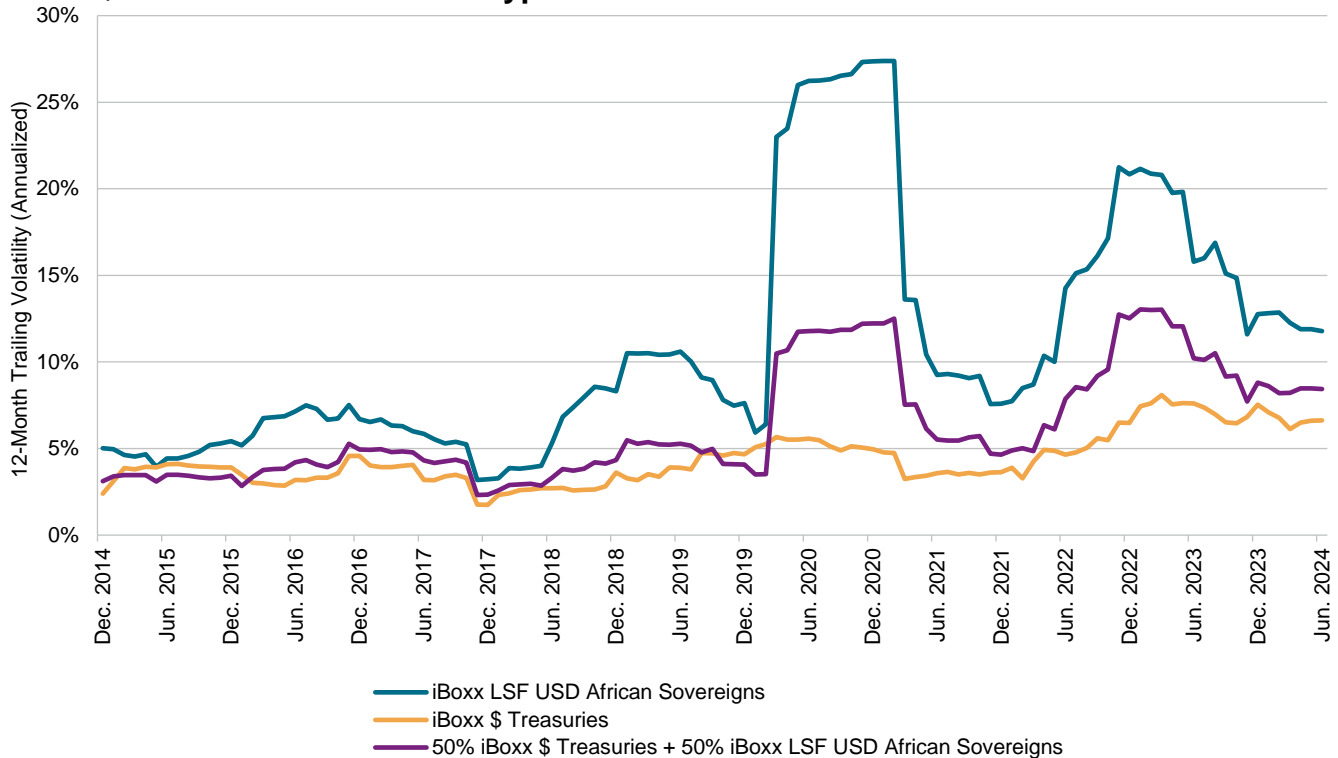
Exhibit 8: Returns Comparison of the iBoxx LSF USD African Sovereigns and the iBoxx USD Emerging Markets Broad Overall versus the iBoxx \$ Treasuries

Period	Correlation	Average Difference (%)	Time Spent in Inverse Returns (%)
iBoxx \$ Treasuries versus iBoxx LSF USD African Sovereigns			
1-Month	0.14	2.5	43
3-Month	0.06	4.9	36
6-Month	0.36	6.6	43
1-Year	0.73	6.7	30
iBoxx \$ Treasuries versus iBoxx USD Emerging Markets Broad Overall			
1-Month	0.39	1.2	37
3-Month	0.31	2.5	36
6-Month	0.60	3.6	43
1-Year	0.86	3.3	10

Source: S&P Dow Jones Indices LLC. Data from December 2013 to June 2024. The iBoxx USD Emerging Markets Broad Overall was launched on Jan. 31, 2024. The iBoxx LSF USD African Sovereigns was launched on June 15, 2024. "Time Spent in Inverse Returns (%)" refers to the percentage of time periods with returns of opposite signs (positive versus negative). All data prior to such date is back-tested hypothetical data. Past performance is no guarantee of future results. Table is 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.

The short-term objective of diversification is not usually maximizing return. Instead, the hope is generally for a wide range of performances, with different components outperforming at different times and with the result of a smoother ride. Return streams that have low correlation, are strongly different and are frequently inversely correlated can provide the potential for high diversification, and as the analysis suggests, combining the iBoxx LSF USD African Sovereigns with the iBoxx \$ Treasuries reduced volatility in comparison to African sovereign bonds alone. Exhibit 9 shows the trailing 12-month volatility based on monthly returns for each index and the monthly rebalanced combination.

Exhibit 9: Trailing 12-Month Volatility of the iBoxx LSF USD African Sovereigns, the iBoxx \$ Treasuries and a 50-50 Hypothetical Combination



The 50% iBoxx \$ Treasuries + 50% iBoxx LSF USD African Sovereigns combination is a hypothetical composition.

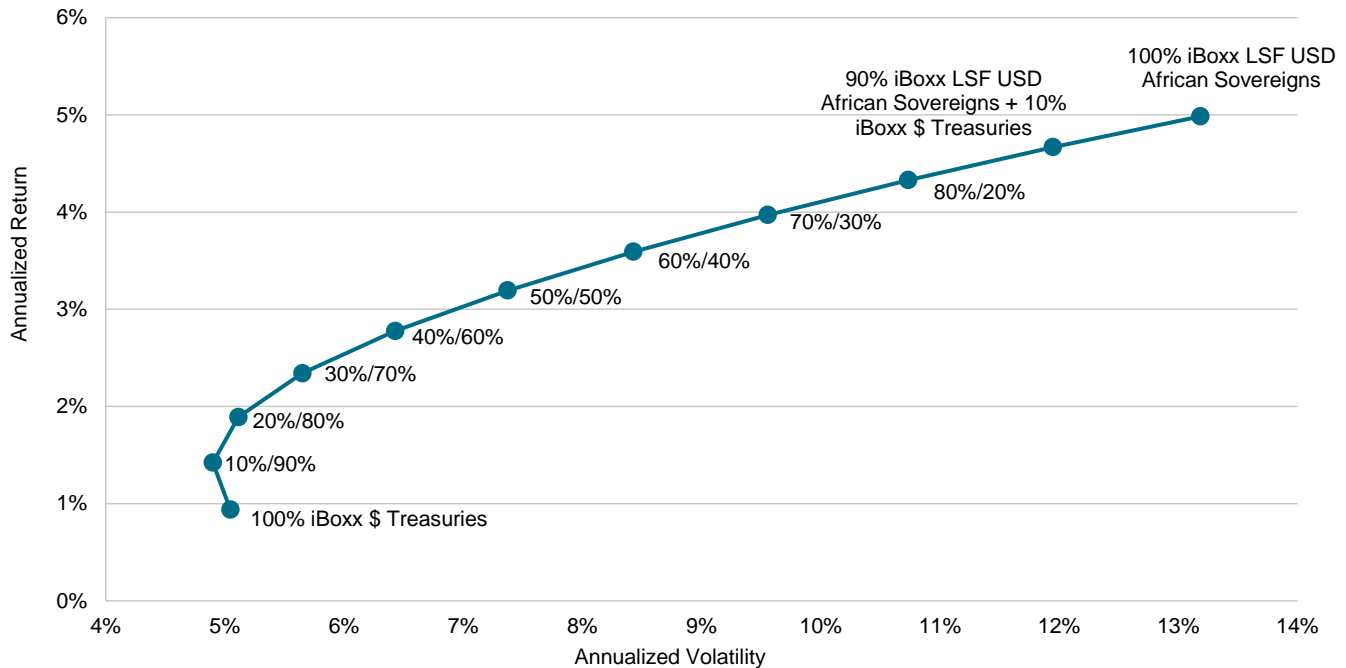
Source: S&P Dow Jones Indices LLC. Data from December 2013 to June 2024. The iBoxx LSF USD African Sovereigns was launched on June 15, 2024. All data prior to such date is back-tested hypothetical data. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and 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 volatility of the iBoxx \$ Treasuries is shown in Exhibit 9 for the purpose of comparison and to illustrate another trick that diversification has up its sleeve. In several periods, a hypothetical combination (50% iBoxx \$ Treasuries + 50% iBoxx LSF USD African Sovereigns) showed a significant dampening of volatility compared to the iBoxx LSF USD African Sovereigns alone. Furthermore, during the periods of December 2014-December 2015 and November 2019-February 2020, the hypothetical portfolio showed the lowest volatility of all three series, even though it was created from combining the less volatile iBoxx \$ Treasuries with the more volatile iBoxx LSF USD African Sovereigns.

To further illustrate the potential impact of incorporating African sovereign bonds into a USD Treasuries strategy, we considered several hypothetical compositions. Each one combines the iBoxx LSF USD African Sovereigns and the iBoxx \$ Treasuries and is rebalanced back to target weights at the end of each month. Target weights start with 100% to the iBoxx \$ Treasuries and move in 10% increments until a 100% weighting to the iBoxx LSF USD African Sovereigns is reached. Exhibit 10 shows the annualized return and volatility for the various hypothetical compositions over the 10-year period between June 2014 and June 2024.

Regardless of the combination, incorporating African sovereign bonds generally helped to improve the risk/return profile, as expressed by the return/risk ratio.

Exhibit 10: Risk/Return Characteristics of Hypothetical Combinations of the iBoxx LSF USD African Sovereigns and the iBoxx \$ Treasuries



Composition	1-Year		3-Year		5-Year		10-Year	
	Return (%)	Return/Risk Ratio	Return (%)	Return/Risk Ratio	Return (%)	Return/Risk Ratio	Return (%)	Return/Risk Ratio
100% iBoxx LSF USD African Sovereigns	17.9	1.46	1.8	0.12	4.4	0.25	5.0	0.38
90% iBoxx LSF USD African Sovereigns/ 10% iBoxx \$ Treasuries	16.1	1.40	1.4	0.10	4.0	0.26	4.7	0.39
80% iBoxx LSF USD African Sovereigns/ 20% iBoxx \$ Treasuries	14.4	1.34	0.9	0.07	3.6	0.26	4.3	0.40
70% iBoxx LSF USD African Sovereigns/ 30% iBoxx \$ Treasuries	12.7	1.26	0.4	0.03	3.2	0.26	4.0	0.42
60% iBoxx LSF USD African Sovereigns/ 40% iBoxx \$ Treasuries	11.1	1.17	-0.1	-0.01	2.7	0.25	3.6	0.43
50% iBoxx LSF USD African Sovereigns/ 50% iBoxx \$ Treasuries	9.4	1.07	-0.6	-0.06	2.2	0.23	3.2	0.43
100% iBoxx \$ Treasuries	1.3	0.18	-3.4	-0.52	-0.7	-0.12	0.9	0.19

All compositions are hypothetical compositions.

Source: S&P Dow Jones Indices LLC. Data from June 30, 2014, to June 28, 2024. The iBoxx LSF USD African Sovereigns was launched on June 15, 2024. All data prior to such date is back-tested hypothetical data. Index performance is based on monthly total return in USD. Past performance is no guarantee of future results. Chart and table 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.

Conclusion

Equipped with promising demographics and GDP growth trajectory as well as abundant natural and human resources, Africa is undeniably full of potential to accelerate its development and emulate China's rise. To facilitate the development of the region, political reform, technology developments and more investments would likely be needed. Therefore, financing is instrumental to the region's advancement.

The size of the African eurobond debt market, especially African sovereign debt, has grown significantly over the past decade. As debt issuers from Africa tend to have high yield credit ratings and be perceived to be riskier borrowers, investors expect higher risk premiums to be reflected in the cost of borrowing. The cost of financing has risen significantly, particularly during market turmoil and the recent interest rate hiking cycle. This has posed more challenges to African sovereigns in securing affordable funding in the eurobond market.

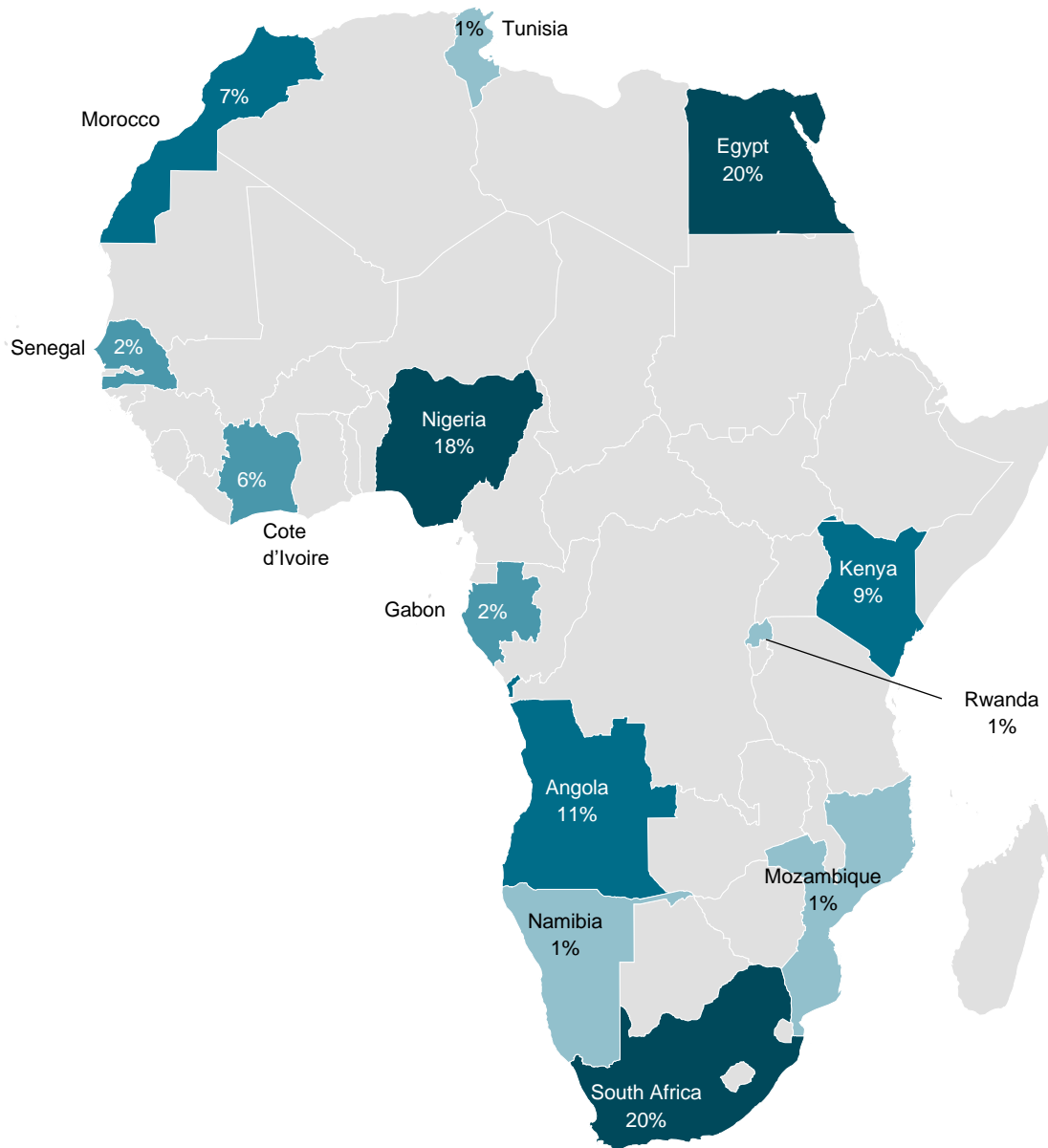
From an investor's standpoint, incorporating USD-denominated African sovereign bonds into a typical U.S. Treasuries-centric bond strategy may provide diversification benefits and enhanced risk-adjusted returns due to the lower correlation with iBoxx \$ Treasuries. If Africa can harness its resources and population growth to drive economic transformation, the region's creditworthiness would likely improve and its credit spreads over U.S. Treasuries could come down.

One of the goals of the LSF is to aid African sovereigns in attracting investments. The iBoxx LSF USD African Sovereigns provides a metric for tracking the market and ultimately may enhance African sovereign eurobonds liquidity and reduce the cost of financing for African sovereigns. Combined with the LSF's collaboration with Euroclear⁴ to offer a repo facility that accepts African sovereign eurobonds as collateral, the iBoxx LSF USD African Sovereigns could help the African sovereign eurobond market develop further and become more liquid, transparent and vibrant.

⁴ Euroclear, "[Euroclear and the LSF join forces to launch repo solution](#)," June 12, 2024.

Appendix

Exhibit 11: Weight of Countries in the iBoxx LSF USD African Sovereigns



Powered by Bing
© GeoNames, Microsoft, OpenStreetMap, TomTom

Source: S&P Dow Jones Indices LLC. Data as of June 30, 2024. Chart is provided for illustrative purposes.

Exhibit 12: iBoxx Average Ratings of Markets in the iBoxx LSF USD African Sovereigns

Market	December 2013	June 2019	June 2021	June 2024
Angola	BB	B	CCC	B
Cameroon	-	B	B	-
Cote d'Ivoire	-	B	B	BB
Egypt	B	B	B	B
Gabon	BB	B	CCC	CCC
Kenya	-	B	B	B
Morocco	BBB	BBB	BB	BB
Mozambique	-	-	CCC	CCC
Namibia	BBB	BB	BB	B
Nigeria	BB	B	B	B
Rwanda	-	B	B	B
Senegal	B	B	B	B
South Africa	BBB	BB	BB	BB
Tunisia	-	B	B	CCC

Source: S&P Dow Jones Indices LLC. Data as of June 30, 2024. Cells that have no value mean there is no eligible constituent from the country in the index. Table is provided for illustrative purposes.

Performance Disclosure/Back-Tested Data

The iBoxx USD Emerging Markets Broad Africa, iBoxx USD Emerging Markets Broad Overall, iBoxx USD Emerging Markets Broad Latam, iBoxx USD Emerging Markets Broad MENA, iBoxx USD Emerging Markets Broad Asia, iBoxx USD Emerging Markets Broad Sovereigns and iBoxx USD Emerging Markets Broad EMEA were launched on January 31, 2024. The iBoxx LSF USD African Sovereigns was launched on June 15, 2024. All information presented prior to an index's Launch Date is hypothetical (back-tested), not actual performance. The back-test calculations are based on the same methodology that was 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. Complete index methodology details are available at www.spglobal.com/spdji. Past performance of the Index is not an indication of future results. 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.

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 S&P DJI's 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 Dow Jones Indices maintains the index and calculates the index levels and performance shown or discussed but does not manage actual 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).

General Disclaimer

© 2024 S&P Dow Jones Indices. All rights reserved. S&P, S&P 500, SPX, SPY, The 500, US500, US 30, S&P 100, S&P COMPOSITE 1500, S&P 400, S&P MIDCAP 400, S&P 600, S&P SMALLCAP 600, S&P GIVI, GLOBAL TITANS, DIVIDEND ARISTOCRATS, Select Sector, S&P MAESTRO, S&P PRISM, S&P STRIDE, GICS, SPIVA, SPDR, INDEXOLOGY, iTraxx, iBoxx, ABX, ADBI, CDX, CMBX, LCDX, MBX, MCDX, PRIMEX, TABX, HHPI, IRXX, I-SYND, SOVX, CRITS, CRITR are registered trademarks of S&P Global, Inc. ("S&P Global") or its affiliates. DOW JONES, DJIA, THE DOW and DOW JONES INDUSTRIAL AVERAGE are trademarks of Dow Jones Trademark Holdings LLC ("Dow Jones"). These trademarks together with others have been licensed to S&P Dow Jones Indices LLC. Redistribution or reproduction in whole or in part are prohibited without written permission of S&P Dow Jones Indices LLC. This document does not constitute an offer of services in jurisdictions where S&P Dow Jones Indices LLC, S&P Global, Dow Jones or their respective affiliates (collectively "S&P Dow Jones Indices") do not have the necessary licenses. Except for certain custom index calculation services, all information provided by S&P Dow Jones Indices is impersonal and not tailored to the needs of any person, entity or group of persons. S&P Dow Jones Indices receives compensation in connection with licensing its indices to third parties and providing custom calculation services. Past performance of an index is not an indication or guarantee of future results.

It is not possible to invest directly in an index. Exposure to an asset class represented by an index may be available through investable instruments based on that index. S&P Dow Jones Indices does not sponsor, endorse, sell, promote or manage any investment fund or other investment vehicle that is offered by third parties and that seeks to provide an investment return based on the performance of any index. S&P Dow Jones Indices makes no assurance that investment products based on the index will accurately track index performance or provide positive investment returns. S&P Dow Jones Indices LLC is not an investment advisor, and S&P Dow Jones Indices makes no representation regarding the advisability of investing in any such investment fund or other investment vehicle. A decision to invest in any such investment fund or other investment vehicle should not be made in reliance on any of the statements set forth in this document. S&P Dow Jones Indices is not an investment adviser, commodity trading advisor, commodity pool operator, broker dealer, fiduciary, promoter" (as defined in the Investment Company Act of 1940, as amended), "expert" as enumerated within 15 U.S.C. § 77k(a) or tax advisor. Inclusion of a security, commodity, crypto currency or other asset within an index is not a recommendation by S&P Dow Jones Indices to buy, sell, or hold such security, commodity, crypto currency or other asset, nor is it considered to be investment advice or commodity trading advice.

These materials have been prepared solely for informational purposes based upon information generally available to the public and from sources believed to be reliable. No content contained in these materials (including index data, ratings, credit-related analyses and data, research, valuations, model, software or other application or output therefrom) or any part thereof ("Content") may be modified, reverse-engineered, reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of S&P Dow Jones Indices. The Content shall not be used for any unlawful or unauthorized purposes. S&P Dow Jones Indices and its third-party data providers and licensors (collectively "S&P Dow Jones Indices Parties") do not guarantee the accuracy, completeness, timeliness or availability of the Content. S&P Dow Jones Indices Parties are not responsible for any errors or omissions, regardless of the cause, for the results obtained from the use of the Content. THE CONTENT IS PROVIDED ON AN "AS IS" BASIS. S&P DOW JONES INDICES PARTIES DISCLAIM ANY AND ALL EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, FREEDOM FROM BUGS, SOFTWARE ERRORS OR DEFECTS, THAT THE CONTENT'S FUNCTIONING WILL BE UNINTERRUPTED OR THAT THE CONTENT WILL OPERATE WITH ANY SOFTWARE OR HARDWARE CONFIGURATION. In no event shall S&P Dow Jones Indices Parties be liable to any party for any direct, indirect, incidental, exemplary, compensatory, punitive, special or consequential damages, costs, expenses, legal fees, or losses (including, without limitation, lost income or lost profits and opportunity costs) in connection with any use of the Content even if advised of the possibility of such damages.

S&P Global keeps certain activities of its various divisions and business units separate from each other in order to preserve the independence and objectivity of their respective activities. As a result, certain divisions and business units of S&P Global may have information that is not available to other business units. S&P Global has established policies and procedures to maintain the confidentiality of certain non-public information received in connection with each analytical process.

In addition, S&P Dow Jones Indices provides a wide range of services to, or relating to, many organizations, including issuers of securities, investment advisers, broker-dealers, investment banks, other financial institutions and financial intermediaries, and accordingly may receive fees or other economic benefits from those organizations, including organizations whose securities or services they may recommend, rate, include in model portfolios, evaluate or otherwise address.