

Construction Rules for the Morningstar Treasury Bond Sustainability Indexes



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Overview

The Morningstar Treasury Bond Sustainability Indexes are designed to achieve a superior country sustainability risk profile by providing higher exposure to treasury bond securities of countries that have low country sustainability risk ratings compared with those of its parent index. This is accomplished by tilting the index weights toward countries with lower (better) Country Risk Ratings. To assess country environmental, social, and governance risk, Morningstar uses the Country Risk Ratings from Sustainalytics.

The following indexes are covered in this rulebook:

- Morningstar Global Treasury Bond Sustainability Index
- Morningstar Global Treasury ex-Japan Bond Sustainability Index
- Morningstar Global Treasury ex-US Bond Sustainability
- Morningstar Eurozone Treasury Bond Sustainability Index

Index Inception and Performance Start Date

The inception dates of the Morningstar Treasury Bond Sustainability Indexes and the performance start dates, when the first back-tested index values were calculated, are provided in [Appendix 2](#).

Index Construction

Methodology Summary

Starting Universe

- Securities are identical to the securities in the respective Treasury Bond parent index

Country Risk Weights

- All countries are mapped to a Sustainalytics Country Risk Rating
- Country Risk Z-Scores are calculated
- Country Risk Z-Scores are converted to country risk weights using the cumulative normal distribution

Portfolio Construction

- Constituents are weighted according to Country Risk Weights
- Weighting constraints are applied

**Morningstar Treasury
Bond Sustainability
Indexes**

Starting Universe

At each reconstitution, constituents of the Morningstar Treasury Bond Sustainability Indexes are identical to constituents from their respective parent index provided that all countries have current Country Risk Ratings. The indexes are composed of the domestic treasury debt publicly issued by each eligible sovereign government in its home currency or in the case of

eurozone countries, eligible treasury debt issued in Euros. The indexes and their starting universe are included in the table below:

Index	Parent Index
Morningstar Global Treasury Bond Sustainability Index	Morningstar Global Treasury Bond Index
Morningstar Global ex-Japan Treasury Bond Sustainability Index	Morningstar Global Treasury ex-Japan Bond Index
Morningstar Global ex-US Treasury Bond Sustainability Index	Morningstar Global Treasury ex-US Bond Index
Morningstar Eurozone Treasury Bond Sustainability Index	Morningstar Eurozone Treasury Bond Index

Rules governing security inclusion into the above listed indexes, are detailed in the [Construction Rules for the Morningstar Bond Indexes](#).

Country Risk Weights

For each country represented in the parent index, the respective Country Risk Ratings are used to construct a set of Country Risk Weights in the following steps:

Country Risk Z-Scores

The latest Country Risk Ratings (rs) are mapped for all constituent countries. Country Risk Z-Scores (Zx) are derived for each country:

$$Zx = \frac{(rs - \mu)}{\sigma}$$

Where:

μ	=	Mean of the cross-sectional set of real values rs
σ	=	Standard deviation of the cross-sectional set of real values rs

Country Risk Weights

The Z-Scores are converted into country risk weights through the application of the cumulative normal distribution (CND). Each country Z-Score (Zx) is associated with a point on the CND, CND(Zx).

$$CND(Zx) = \frac{e^{-\frac{(x - \mu)^2}{2\sigma^2}}}{\sigma\sqrt{2\pi}}$$

Where $0 < CND(Zx) < 1$

The function P(Zx) transforms the CND values (with upper and lower bounds of one and zero) into two quadrants with symmetrical values whose limits are 0.5 to 0 and 0 to -0.5.

$$P(Zx) = 0.5 - CND(Zx)$$

The country sustainability risk weights, crw , referred to as country risk weights, are the factors that are applied to the benchmark index weights, w , to increase the index weights of lower-risk countries and reduce the weights of higher-risk countries.

$$CRW_x = 1 + P(Zx)$$

Where CRW_x is the risk weighting for country x

At the mean of the CN distribution, $P(Z) = 0$ and $CRW = 1$.

This is a neutral (or inflection) point at which country and security weights are unchanged.

Index Weighting

The final, derived country risk weights are applied to the index constituent market values to determine the weight of each index constituent and create the sustainability overlay in the following steps:

The new index weights, nw , are calculated as:

$$nw = \frac{crw * w}{\sum(crw * w)}$$

The country risk weights, crw , are applied to the beginning-of-month market values of each security.

$$crw * bom_mv_lc.$$

The new security market values are “adjusted” by multiplying by the ratio of the benchmark portfolio market value to the sustainability portfolio market value. This equates the portfolio market value of the sustainability index to the market value of the index.

Constraints on Country Index Weights

The sum of all countries with market values greater than 15% of the market value of the index portfolio is capped at 70%. The excess weight due to capping is redistributed on a market-weighted, pro-rata basis to the remaining countries.

At each rebalancing, the absolute change in country index weights is capped at 3%¹. The excess weight due to capping is redistributed on a market-weighted, pro-rata basis to the remaining countries.

Derivation of Risk Weights and Index Weights for the Regional Treasury Bond Sustainability Indexes

- Morningstar Global Treasury ex-Japan and ex-US Bond Sustainability Indexes:
 - The country risk weights for these indexes are constructed by setting the par value of securities with the country code for Japan or the United States to zero after the Country Risk Weights are constructed but prior to the imposition of any caps.
 - The excess weight resulting from the country exclusion is redistributed on a market-weighted, pro-rata basis to the remaining countries.
- Morningstar Eurozone Treasury Bond Sustainability Index:

¹ The change in country weights is computed as of the month end date at each rebalance between the drifted and rebalanced weights.

- The country risk weights for this index are constructed by using the Sustainalytics Country Risk Ratings of the constituent countries in the Morningstar Eurozone Treasury Bond Index.

Portfolio Construction

Number of Securities

The number of securities in the index is variable, subject to the selection and eligibility criteria at the time of rebalance/reconstitution.

Index Maintenance and Calculation

Scheduled Maintenance

Rebalances occur monthly and are implemented after the last calendar day of each month, based on information available up to and including the rebalancing lockout date, which is the third business day before the last business day of the month. The term information available includes information received and/or processed after the rebalancing lockout date but that was announced or publicly available before the rebalancing lockout date.

Sustainalytics Country Risk Ratings are refreshed quarterly; quarterly updates to Country Risk Ratings will be reflected in the nearest monthly rebalancing.

Except as otherwise noted, no changes will be made to the index constituents after the rebalancing lockout date unless Morningstar considers a change to be necessary to be consistent with changing market conditions. Changes that occur after the rebalancing lockout date will be deferred until the following month-end rebalancing. This includes new issues, rating changes, balance changes, and noncritical corporate actions.

New index eligible bonds will be included in the index at the rebalance immediately after the date when pricing is available for these bonds. Changes to the portfolio reflect repayments, new issuance, exchanges, exercised options, or rating changes. The beginning of month weights for the forward month are fixed, after the close, on the last calendar day of each month.

A preliminary rebalancing report, or pro forma, indicating expected changes to the composition of the index will be available for review from the fifth business day before the day before the last business day of the month (T-5), until the business day before the last day of the month. T refers to the last business day of the month. The pro forma reports and portfolios may differ from the actual rebalanced index. The portfolio as of the first business day of each month reflects all changes and is frozen for the month.

File Delivery Schedule

Index and constituent files are delivered daily on weekdays. However, if the month-end falls on a Saturday or a Sunday, then daily index and constituent files will be delivered on Saturday but not Sunday. All prices are carried forward (rolled) from the last business day and accrued interest is calculated for the new settlement date. One or two days of interest will be accrued depending on whether Saturday or Sunday is the last day of the month. The rebalanced portfolio for the forward month will also be delivered on Saturday if the last calendar day of the month falls on a weekend.

Tenor

For the application of the index inclusion and tenor rules, the term of a security is measured from the effective date of the rebalanced portfolio to maturity. The tenor is set on the lockout date of the rebalanced portfolio.

Corporate Actions

Securities that are announced as fully called are removed from the indexes at the rebalancing following the effective date of the call. Partial calls, tenders and exchanges occur in the month-end rebalancing following the announcement provided that the announcement is made on or before the rebalancing lockout date. Otherwise, the corporate action is deferred until the following month-end rebalancing.

Defaulted Securities

Corporate issues in legal default will be removed at the next rebalancing following the default event, provided this occurs on or before the rebalancing lockout date. An issuer filing bankruptcy papers, or the local market equivalent, is in default. Defaulted securities that are restructured will be reinstated or included in an index as a new security when issued.

Illiquid Securities

Illiquid bonds are excluded or eliminated from the index. A bond is deemed illiquid when consistent pricing is unavailable or becomes unavailable. Bonds with limited liquidity may be removed at the discretion of the index committee. If a bond is removed due to lack of pricing, it will not qualify for any index thereafter, even if adequate pricing subsequently becomes available.

Composite Rating

Index constituent composite ratings are updated once a month as part of the rebalancing process. Composite rating changes take effect on the last calendar day of the month based on information available up to and including the rebalancing lockout date.

Index Calculation and Price Data

Overview

Morningstar partners with a third-party calculation agent, ICE Data Indices, to calculate the indexes. This agency calculates the actual change in all measured characteristics of the respective indexes daily. All of the index measures are calculated for all levels of the aggregate indexes, including the individual bonds that make up the indexes.

Market value weighting is used for all index characteristics. The rebalanced weights are determined as of the last business day of each month.

Pricing, Trading, Settlement, and Transaction Costs

Indicative bid side prices are used for all index calculations and are provided daily by outside pricing sources. Bid prices are used when securities are added to an index. Transaction costs and tax consequences are ignored.

Index Calculations

Details on index calculations can be found in the [Morningstar Global Bond rulebook](#).

Trading and settlement of these securities follow local market conventions. The indexes do not take transaction costs (bid-offer spreads) or tax withholdings into account.

Holiday Rules

Weekdays on which WM Reuters does not publish closing foreign exchange rates are treated as “global holidays.” Indexes are not published on Global Holidays unless they fall on the last calendar day of the month. In that case, prices are updated in all local markets that are open. In markets that are closed, prices will be carried forward (rolled) from the prior business day and accrued interest will be calculated for the new settlement date.

Effective September 30, 2023, indexes will be calculated on days designed as Global Holidays when there is a Securities Industry and Financial Markets Association (SIFMA) recommendation of trading in fixed income securities in the US. On certain occasions around the timing of key economic data releases, SIFMA will recommend a partial trading day for US fixed income on what would otherwise be a Global Holiday. Since FX fixing rates would not be available from the source on these days, the FX spot and forward rates would be rolled from the prior Global Business Day.

Index files will not be delivered on New Year's Day, Christmas Day, or Good Friday.

Methodology Review and Index Decommissioning Policy

The index methodology is continually reviewed to ensure it achieves all stated objectives. These reviews consider corporate action treatment, selection, and maintenance procedures. Subscribers to the index will be notified before any methodology changes are made. For more details, refer to the [Morningstar Index Methodology Change Policy](#).

Morningstar Indexes notifies all subscribers and stakeholders of the index that circumstances might arise that require a material change to, or a possible cessation of, the index. These circumstances are generally not within Morningstar's control and may include significant changes to the underlying market structure, inadequate access to necessary data, geo-political events, and regulatory changes. In addition, factors such as low usage or methodology convergence may result in the cessation of an index.

Because the cessation of the index or benchmark index could disrupt subscriber products that reference this index, all subscribers are encouraged to have robust fallback procedures if an index is terminated. For more details, refer to the [Morningstar Index Decommissioning Policy](#).

Data Correction and Precision

Intraday Index Data Corrections

Commercially reasonable efforts are made to ensure the accuracy of data used in real-time index calculations. If incorrect price or corporate action data affects index calculations, corrections are applied prospectively.

Index-Related Data and Divisor Corrections

Incorrect pricing and corporate action data for individual issues in the database will generally be corrected upon detection. In addition, an incorrect divisor of an index, if discovered within two days of its occurrence, will be fixed retroactively on the day it is discovered to prevent an error from being carried forward. Commercially reasonable efforts are made to correct an older error subject to its significance and feasibility.

For more details, refer to the [Recalculation Guidelines](#).

Market Events

In the case of a significant market event (default, delayed payment, debt restructuring), any affected securities will not be removed until the next rebalancing date. Market prices and the index team's best estimate of how to treat the securities in question will be used to compute index returns.

Since all bond indexes are calculated using month-to-date returns, errors in return calculations that occur only intramonth are self-correcting over time; that is, the impact on compounded total, excess, and price return levels are isolated to the affected dates and do not affect current index levels or index levels going forward. In this case, in which the error in returns calculations is limited in scope to intramonth dates, the change will generally be considered immaterial.

Exceptions

While Morningstar will seek to apply the methodology as described within this document, the market environment, supervisory, legal, financial, or tax reasons may require an alternative approach to be adopted. A decision to take an alternative approach will be made by the Morningstar Index Methodology Committee, and in all instances, the application of a nonstandard process will be reported to the Morningstar Index Oversight Committee.

Appendixes

Appendix 1: Modifications to the Rulebook

Section	Description of Change	Update Date
Index Construction	Clarified language pertaining to eligible countries for the index	January 2023
Index Construction	Added index construction parameters for the Morningstar Eurozone Bond Sustainability index	September 2022
Entire Rulebook	Moved rulebook to a new brand template and made minor formatting changes Added Exceptions section Removed Computational and Reporting Precision section	June 2025

Appendix 2: Performance Start Date and Inception Date

Index	Performance Start Date	Inception Date
Morningstar Global Treasury Bond Sustainability Index	31-Dec-2013	4-Jan-2021
Morningstar Global ex-Japan Treasury Bond Sustainability Index	31-Dec-2013	4-Jan-2021
Morningstar Global ex-US Treasury Bond Sustainability Index	31-Dec-2013	21-Sep-2022
Morningstar Eurozone Treasury Bond Sustainability Index	31-Dec-2013	21-Sep-2022

About Morningstar Indexes

Morningstar Indexes was built to keep up with the evolving needs of investors—and to be a leading-edge advocate for them. Our rich heritage as a transparent, investor-focused leader in data and research uniquely equips us to support individuals, institutions, wealth managers, and advisors in navigating investment opportunities across major asset classes, styles and strategies. From traditional benchmarks and unique IP-driven indexes to index design, calculation and distribution services, our solutions span an investment landscape as diverse as investors themselves.

Morningstar Index Methodology Committee

The Morningstar Index Methodology Committee oversees all new indexes development, index methodology changes, and cessation of indexes for any indexes where Morningstar owns the intellectual property. This committee is also charged with ensuring that indexes align with Morningstar research principles and values. The group is comprised of members of the index team with index research, product development, product management, client service, index implementation and operation expertise who provide the first layer of governance over index design and methodology.

Morningstar Index Operations Committee

The Morningstar Index Operations Committee governs the processes, systems, and exception handling of the day-to-day management of all live indexes, including index rebalancing and reconstitution, restatements, market classification, and contingency management. The committee oversees the annual review of index methodology (as required by UK & EU Benchmark Regulations “BMR”), ensuring methodologies remain fit for purpose and continue to achieve their stated investment objectives. The group is comprised of members of the index team with data, operations, corporate actions, product development, index launch, client service, and index management experience who provide the first layer of governance over index operations.

Morningstar Index Oversight Committee

The Morningstar Index Oversight Committee is responsible for the index oversight function as per the requirements of the UK & European BMR, providing independent oversight of all aspects of the governance of benchmark administration as required by the relevant BMR. Its remit extends to all calculation and administration-related business activities of Morningstar Indexes including administration of Morningstar-owned benchmarks as well as client-owned benchmarks and index calculation. The oversight function is part of the organizational structure of Morningstar, but is separate and independent from the Index business, Index Management, and the other Index Committees.

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