

Construction Rules for the Morningstar Exponential Technologies ESG Screened Select Index

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Overview

The Morningstar Exponential Technologies ESG Screened Index provides exposure to companies identified by Morningstar's Equity Research team as positioned to experience meaningful economic benefits as a user or producer of promising technologies. The Index also removes companies that belong to the "Severe" ESG Risk Rating Category or have controversial product involvements.

The Morningstar Exponential Technologies ESG Screened Target Volatility 7% Select Index is then designed to provide exposure to the Morningstar Exponential Technologies ESG Screened Index (the base index) so as to target a 7% volatility for the index.

To assess sustainability company risk, Morningstar uses company-level ESG Risk Ratings from Sustainalytics. For more information on the Sustainalytics environmental, social, and governance and controversy scores and Morningstar Portfolio Sustainability Score and Rating, refer to the [Morningstar Sustainability Rating methodology](#).

Index Inception and Performance Start Date

The inception date of Morningstar Exponential Technologies ESG Screened Index and Morningstar Exponential Technologies ESG Screened Target Volatility 7% Select Index is February 18, 2022, and the performance inception date, when the first back-tested index value was calculated, is December 20, 2013, for base index and March 18, 2014, for Morningstar Exponential Technologies ESG Screened Target Volatility 7% Select Index.

Index Construction

Methodology Summary

Starting Universe

- Select constituents from the Morningstar Exponential Technologies Index.

Eligibility

- Eliminate constituents with “Severe” ESG Risk Rating Category and which are non-compliant with the principles of UNGC
- Apply product involvement screens.
- Apply a controversy screen of 5
- Apply weighting using inverse volatility and liquidity of the securities.

Portfolio Construction

- Apply Target Volatility Overlay on Base Index

Morningstar Exponential Technologies ESG Screened Target Volatility 7 % Select Index

Starting Universe

At each reconstitution, constituents of Morningstar Exponential Technologies ESG Screened Select Index are derived from the Morningstar Exponential Technologies Index as a starting universe. For more details on benchmark construction, refer to the construction rules of the [Morningstar Exponential Technologies Index](#).

Eligibility

To be eligible for the base index, all constituents must meet the following criteria:

- Exclude securities having country of classification in Belgium, Brazil, Chile, Finland, India, Israel, Italy, Luxembourg, New Zealand, Norway, Portugal, Russia, or Singapore.
- Security must have free float market capitalization greater than or equal to 2 billion Euros.
- Company must not belong to “Severe” ESG Risk Rating Category.
- The company must be compliant with the principles of the United Nations Global Compact.
- Securities must not have a controversy rating of 5.

Product Involvement Exclusions:

The company must -

- not have any revenue involvement from production of tobacco.

- not have more than 10% of its revenue from distribution of tobacco.
- not have any revenue involvement from thermal coal extraction.
- not have more than 10% of its revenue from thermal coal fuel power generation.
- not have any revenue involvement from oil sands extraction.
- not have more than 5% of its revenue from shale energy extraction.
- not have more than 10% of its revenue from oil and gas production.
- not have more than 10% of its revenue from electricity generation from oil and gas.
- not have any involvement in the manufacturing and sale of firearms (assault and non-assault) to civilian customers.
- not have any evidence of activity in Anti-Personnel Mines, Biological and Chemical Weapons, Cluster Weapons, Depleted Uranium, nuclear weapons, or White Phosphorus.

Portfolio Construction

All the remaining securities after applying above exclusions are included in the base index.

Number of Stocks

The number of stocks in the base index are subject to the selection and eligibility criteria at the time of reconstitution.

Index Weighting

The constituents within the base index are risk-weighted, and weights are assigned as per the steps below:

Step 1: Calculate Volatility Weights of the constituents as follows:

$$V_{i,t} = \sqrt{252 \times \frac{\sum_{j=0}^{125} (r_{i,t-j} - \bar{r}_{i,t})^2}{126}}$$

$$Volatility\ Weight_{i,t} = \frac{1/V_{i,t}}{\sum_{i=1}^N 1/V_{i,t}}$$

Where:

$$r_{i,t-j} = \frac{Price_{i,t-j}}{Price_{i,t-j-1}} - 1$$

$$\bar{r}_{i,t} = \frac{\sum_{j=0}^{125} r_{i,t-j}}{126}$$

$r_{i,t-j}$: The daily return of stock i in respect of the Business Day falling j Index business days immediately prior to t.

$\bar{r}_{i,t}$: The mean of the daily returns over 126 business days immediately prior to and including t.

$Price_{i,t-j}$: The closing price¹ of stock i (in USD), in respect of the business days falling j business days immediately prior to t.

$Price_{i,t-j-1}$: The closing price¹ of stock i (in USD), in respect of the business days falling j+1 business days immediately prior to t.

$V_{i,t}$: The volatility² of stock i as calculated on t.

N: Number of securities in the index.

Step 2: If the weight of any single constituent exceeds 5% of the index, adjust its weight down to 5% and redistribute the excess weight proportionally among the other constituents.

Step 3: Calculate liquidity factor of the constituents.

$$ADTV_{i,t} = \frac{1}{22} \sum_{j=0}^{21} (volume_{i,t-j} \times price_{i,t-j})$$

$$LF_{i,t} = \min \left[\frac{1}{4} \times \frac{ADTV_{i,t}}{Volatility\ Weight_{i,t} \times ref_{AUM}}, 1 \right]$$

Where:

$ADTV_{i,t}$: The 22-day average daily traded value² of stock i in respect of business day t.

$volume_{i,t-j}$: The traded volume¹ of stock i, in respect of the business days falling j business days immediately prior to t.

$Price_{i,t-j}$: The closing price¹ of stock i (in USD), in respect of the business days falling j business days immediately prior to t.

$LF_{i,t}$: The liquidity factor of stock i as calculated on t.

ref_{AUM} : USD 1000,000,000.

Step 4: Calculate liquidity adjusted weights of the constituents.

$$liquidity\ adjusted\ weight_{i,t} = \frac{Volatility\ Weight_{i,t} \times LF_{i,t}}{\sum_{i=1}^N Volatility\ Weight_{i,t} \times LF_{i,t}}$$

Step 5: If the weight calculated in above step of any single constituent exceeds 5% of the index, adjust its weight down to 5% and redistribute the excess weight proportionally among the other constituents.

For more details, refer to the [Morningstar Indexes Calculation Methodology rulebook](#).

¹ Global Calendar used for price and volume timeseries.

² Calculated on a prorated basis for securities having price history of less than required.

Morningstar Exponential Technologies ESG Screened Target Volatility 7% Select Index

The Morningstar Exponential Technologies ESG Screened Target Volatility 7% Select Index provides variable exposure to the base index in order to target a volatility of 7%. The target exposure is monitored daily and is subject to both an exposure tolerance of 5% and a maximum exposure cap of 150%. For details on how the daily exposure to the base index is determined, please refer to Appendix 3.

Index Maintenance and Calculation

Reconstitution and Rebalancing

The base index is reconstituted annually, implemented after the close of business on the third Friday of December and is effective the following Monday. The ESG Risk Rating and Product Involvement data used for reconstitution is the latest available data as of the last trading day of November.

The base index is rebalanced quarterly, implemented after the close of business on the third Friday of March, June, September, and December and is effective the following Monday. Constituent weights are reset using the index weighting scheme during the rebalance. The market data used for reconstitution and rebalance is as of the last trading day of February, May, August, and November.

The Morningstar Exponential Technologies ESG Screened Target Volatility 7% Select Index contains variable exposure to the base index that is assessed daily and may therefore be rebalanced daily as well. However, daily rebalancing is rare and will occur only during the most turbulent markets. On average, we expect the index to be rebalanced every one to two weeks.

Index files are published according to the global calendar schedule. For more information, please refer to the [Morningstar Indexes Holiday Calendar](#).

Corporate Actions

The treatment of corporate actions can be found in the [Morningstar Indexes Corporate Actions Methodology rulebook](#). For avoidance of doubt, the base Index is a gross return variant and reinvests dividends on a gross basis.

Index Calculation and Price Data

Details about base index calculations and price data can be found in their respective rulebooks: [Morningstar Indexes Calculation Methodology](#) and [Equity Closing Prices Used for Index Calculation](#).

The excess return of the Morningstar Exponential Technologies ESG Screened Target Volatility 7% Select Index is equal to the total return minus the cash borrowing cost associated with holding the Base Index.

To account for higher transaction and portfolio management costs associated with the target volatility strategy, an annual flat adjustment factor of 0.85% is applied to the calculated excess return index level to arrive at the final, published index level.

The excess return calculation equation is shown below.

$$ER_t = ER_{t-1} \times \left[2 - \left(\frac{SOFR_t}{SOFR_{t-1}} \right) \right] \times \left[W_{t-2} \times \left(\frac{B_t}{B_{t-1}} \right) + (1 - W_{t-2}) \times \left(\frac{SOFR_t}{SOFR_{t-1}} \right) \right]$$

Where:

ER_t : Excess return index level on date t

W_{t-2} : Realized exposure on date t-2

B_t : Base index level on date t

$SOFR_t$: Index capitalizing at the Overnight SOFR rate on date t with a base value of 1 on the inception date of the base index, calculated daily using value from date t-1, on an (actual/360) day count basis. The underlying SOFR rates follow the U.S. Fed calendar.

The index uses calculation methodology as detailed in [Morningstar Target Volatility methodology paper](#) with below deviations:

- × The index return on t is calculated using realized exposure of the index on t-2 as outlined in above equation.
- × Overnight SOFR³ in USD used to calculate borrowing cost associated with the leveraged position as well as an approximation of the interest gain on the cash investment.

³ Fed Fund effective rate has been used till 31st October 2021 in the back-test.

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 be corrected upon detection. In addition, an incorrect divisor of an index, if discovered 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](#).

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
Entire Rulebook	Moved rulebook to new template	November 2023
Corporate Action	Updated link to Morningstar Standard Methodology	July 2024
Data Correction and Precision	Computational and Reporting Precision section removed	January 2024

Appendix 2: Glossary

Terms	Description
Reconstitution	During each reconstitution, the steps mentioned in the index construction process are performed, resulting in membership reset.
Rebalance	During each rebalancing, the weights are reset and adjusted for updated free-float and shares outstanding data.

Appendix 3: Target Volatility Index Structure

The objective of the Morningstar target volatility methodology is to provide variable exposure to a given base index so as to maintain a certain volatility target. The balance of exposure to a base index compared with a cash investment is adjusted as the volatility of that base index changes according to the rules outlined in the rest of the document. The methodology may be applied to any base index, and the various parameters such as the volatility target, maximum exposure, and volatility tolerance can all be customized.

Two scenarios may occur in attempting to maintain the given volatility target. An unleveraged position arises when the measured volatility of the base index is higher than the volatility target. In this case, the volatility control mechanism reduces the percentage of the base index held in the target volatility index and increases the percentage of cash. Conversely, a leveraged position arises when the measured volatility of the base index is lower than the volatility target. When this occurs, the volatility control mechanism decreases or removes altogether the amount of cash held in the target volatility index. At the same time, the target volatility index will increase its exposure to the base index up to the maximum exposure limit, usually 150%. All constituents are leveraged proportionally in the base index.

The [Morningstar Target Volatility Methodology Paper](#) provides details on the methodology used to apply the Target Volatility overlay. The standard Target Volatility has been customized using the following data points:

- Volatility target: 7%
- Max. exposure: 150%
- Exposure tolerance: 5%
- Trading cost adjustment factor: 0.85% annually

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 index 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 comprises 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 U.K. and EU benchmark regulations, or BMR), ensuring that methodologies remain fit for purpose and continue to achieve their stated investment objectives. The group comprises 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 U.K. and 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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