

Construction Rules for the Morningstar® Global Next Generation Artificial Intelligence Index



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Overview

The Morningstar® Global Next Generation Artificial Intelligence IndexSM is designed to deliver unparalleled, thematically pure exposure to companies involved with leading-edge artificial intelligence technologies, including generative artificial intelligence and adjacent products and services by drawing on the in-depth knowledge and forward-looking insights of Morningstar's equity research team. The index is adjusted so that the generative AI theme represents at least 80% of the portfolio at each rebalance.

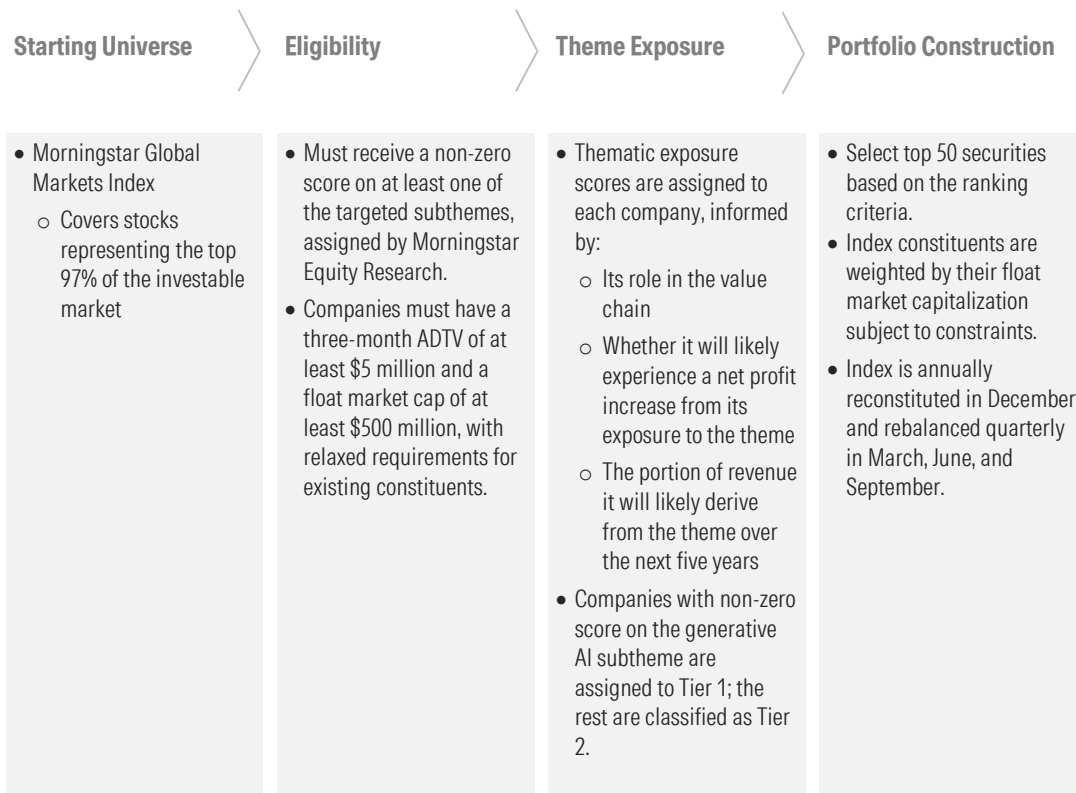
This index does not incorporate environmental, social, or governance criteria.

Index Inception and Performance Start Date

The index inception date is Aug 29, 2023 and the performance start date, when the first back-tested index value was calculated, is Dec. 17, 2021.

Index Construction

Methodology Summary



Morningstar®
Global Next
Generation
Artificial
Intelligence
Index

Starting Universe

At each reconstitution, constituents of the Morningstar® Global Next Generation Artificial Intelligence Index are derived from the Morningstar Global Markets Index (benchmark). For more details on benchmark construction, refer to the construction rules for the [Morningstar Global Markets Index](#).

Eligibility

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

- Companies must have a valid non-zero (4, 3, 2, or 1) exposure score to at least one of these subthemes:
 - Generative AI
 - AI data and infrastructure
 - AI services
 - AI software
- Companies must have an average three-month trailing daily trading volume of at least \$5 million and a free-float market capitalization of at least \$500 million.

- Buffer rules: Current index constituents must have an average three-month daily trading volume of at least \$4 million and a free-float market capitalization of at least \$400 million.

Portfolio Construction

- Eligibility is determined at the company level. If a company has more than one eligible share class:
 - The current index constituent share class is favored.
 - Otherwise, the most liquid share class is used, as determined by Morningstar Indexes.
- Qualifying potential securities are assigned a Tier 1 or Tier 2 rating based on the following criteria:
 - Tier 1: Companies with non-zero exposure scores on the generative AI subtheme are assigned to Tier 1.
 - Tier 2: All companies with a score of zero on the generative AI subtheme and a non-zero score on one of the other targeted subthemes (Tier 2 subthemes) are assigned to Tier 2.
- Companies are then ranked to emphasize thematic purity and exposure to the generative AI subtheme. The ranking criteria are given below by descending order of absolute preference:
 - Generative AI score (highest to lowest): 4,3,2,1
 - Highest Tier 2 aggregate score (sum of scores for Tier 2 themes)
 - Number of Tier 2 subthemes in which constituent scores 4
 - Number of Tier 2 subthemes in which constituent scores 3
 - Number of Tier 2 subthemes in which constituent scores 2
 - Number of Tier 2 subthemes in which constituent scores 1
 - Current index constituents are given preference
 - Company total market cap, preferring smaller over larger
- Companies ranked in the top 50 are targeted for inclusion in the index.

Number of Stocks

The index targets 50 stocks based on a transparent ranking system subject to selection and eligibility criteria at reconstitution. However, if securities fall short of the selection and eligibility criteria, or if securities are added or deleted as a result of corporate actions after reconstitution, the indexes can have more or fewer than the targeted number. During reconstitution, if the number of securities is less than the target, all eligible securities would be selected, and the weight of the constituents will be determined based on the index weighting scheme. The reconstitution schedule is available in the "Index Maintenance and Calculation" section.

Index Weighting

- Step 1: The index is float market-capitalization-weighted.
- Step 2: Capping of 5-10-40 is applied across the entirety of the portfolio. This means no single constituent can have a weight greater than 10%, and the sum of those with weights greater than or equal to 5% cannot exceed 40%.
- Step 3: If the weight of Tier 1 securities is less than 80%, a minimum of 80% weight is allocated to Tier 1 constituents proportionally to their weight.
- Step 4: If the 5-10-40 capping condition is violated, those caps are reapplied across the entirety of the portfolio.
- Step 5: If the condition of Step 3 is violated, repeat the process from Step 3 up to 100 times, until a solution has been reached.
- Step 6: If no solution is feasible in Step 5, relax the Tier 1 minimum aggregate weight by 1% and repeat the process from Step 2 until both constraints are satisfied.

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

Index Maintenance and Calculation

Scheduled Maintenance

The index is reconstituted—where the membership is reset—annually in December. Adjustments are made on the Monday following the third Friday of December. If the Monday is a holiday, reconstitution occurs on the next business day.

The index is rebalanced quarterly and implemented after the close of business on the third Friday of March, June, and September and is effective the following Monday. If Monday is a holiday, rebalance is effective on the next business day. During each rebalance, membership in the parent index (Morningstar Global Markets Index) is checked at the company level and the weights are rebalanced as per the weighting scheme using updated float market capitalization data.

The market data used for reconstitution and rebalancing is as of the last trading day of February, May, August, and November. The theme scores used for reconstitution are those available on the last trading day of November.

Because the reconstitution of the Morningstar Global Next Generation Artificial Intelligence Index is less frequent than the parent index (Morningstar Global Markets Index), the securities excluded from the parent index (Morningstar Global Markets Index) at the reconstitution effective date are also deleted from the Morningstar Global Next Generation Artificial Intelligence Index. This means that any constituent excluded from the parent index during its reconstitution is also excluded from the Morningstar Global Next Generation Artificial Intelligence Index at the same date. It will not be replaced, and its weight is reallocated among existing constituents in proportion to its existing weight.

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 will be as per the float market-capitalization-weighted indexes. For more details, please refer to the [Morningstar Indexes Corporate Actions Methodology rulebook](#).

Index Calculation and Price Data

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

Methodology Review and Index Cessation 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 Indexes Methodology Change Policy](#).

Morningstar also notifies all subscribers and stakeholders of the index that circumstances might arise that require a material change to the index or a possible cessation of the index. Circumstances that could lead to an index cessation include, but are not limited to, market structure change, product definition change, inadequate supply of data, insufficient revenue associated with the index, insufficient number of clients using the index, or other external factors beyond the control of the Morningstar Indexes Methodology Committee.

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 Cessation Process](#).

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 daily highs or lows, it is corrected retroactively as soon as is feasible.

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](#).

Exceptions

While Morningstar will seek to apply the method described above, 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 relevant 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: Theme Definitions

The Morningstar Equity Research Next Generation Artificial Intelligence steering committee identifies relevant subthemes to help the index effectively represent companies with exposure to leading-edge artificial intelligence technologies. These subthemes are reviewed annually and may change over time as they evolve and new subthemes emerge.

Tier 1

Generative AI

Definition

Two key aspects of AI are training and inference. AI training involves feeding labeled data into an AI model and iterating on the calculations and algorithms required to make more accurate predictions. AI inference is the stage where an AI model receives an unlabeled input and is asked to make a prediction or generate an output based upon the request.

Generative AI is a subset of AI that is used to create new and original content. This compares with “traditional AI” models that are used to solve specific tasks or make predictions based on existing data. Large language models, such as ChatGPT, are a type of generative AI model that focuses on producing humanlike text.

Exposure Examples

- Companies offering generative AI search functions.
- “Hyperscalers” or cloud computing leaders that offer infrastructure as a service and host cloud workloads and/or their own AI models.
- Semiconductor vendors that supply the chips and software needed for AI training and inference.

Tier 2

AI Data and Infrastructure

Definition

Encompasses the various technological components needed to manufacture, design, maintain, host, support, and improve AI models.

Exposure Examples

- Semiconductor processors: chips required in AI training and inference, such as GPUs, CPUs, FPGAs, and/or custom ASICs, including those designed in house by cloud computing vendors.
- Semiconductor supply chain: includes the outsourced chip manufacturers (foundries), chip equipment vendors, and peripheral chipmakers required to support the performance of semiconductor processors.
- Data center infrastructure: includes the servers, storage, networking gear, and connectivity solutions required to route data traffic and connect AI processors into a cohesive system to run AI workloads.
- Data management: includes the databases and related software tools required to store the data required in AI models.

AI Software

Definition

Includes enterprise and consumer software that will include AI models to enhance the user experience and/or improve efficiency and productivity.

Exposure Examples

- Enterprise software: supporting business functions such as sales, marketing, finance, human resources, IT management, customer service, or other business workloads. Also supports enterprise creative applications such as graphic design, engineering design, or other types of product lifecycle management.
- Consumer software: any type of consumer-facing application where AI is used to improve the user experience.

AI Services

Definition

Includes consultancies and outsourced business process companies. Such companies may aid businesses in implementing AI. These companies may also reduce headcount and improve internal efficiencies by using AI to reduce or remove monotonous workloads.

Exposure Examples

- IT services: consulting businesses that advise enterprises how to build or implement AI.
- IT Services: outsourced business process companies that may perform regular, somewhat monotonous tasks that may be replaced by AI in the future.

Appendix 2: Thematic Exposure Scoring Framework

The Morningstar Equity Research Next Generation Artificial Intelligence steering committee trains analysts on the subthemes and scoring framework. Rather than relying solely on historical data points, analysts provide forward-looking data points that translate to thematic exposure scores of 0, 1, 2, 3, or 4 across each subtheme. To garner a thematic exposure score above zero for a given subtheme, a company must be classified as a producer of related goods or services or a supplier of those producers. Additionally, Morningstar equity analysts must classify the company as being highly likely to enjoy a material net profit increase from its exposure to that subtheme over the next five years. Analysts then estimate the percentage of revenue a company will derive from its exposure to each subtheme at a point in time five years forward. These estimates translate into thematic exposure scores in the following manner:

- 0 – less than 10% of revenue of a company
- 1 – 10%-25% of revenue for a producer or supplier company
- 2 – 25%-50% of revenue for a producer or supplier company
- 3 – greater than 50% of revenue for a supplier company
- 4 – greater than 50% of revenue for a producer company

The Morningstar Equity Research Next Generation Artificial Intelligence steering committee then provides a quality control review of each company's thematic exposure scores to optimize internal consistency. During this step, committee members engage in discussions with analysts and directors to test the rationale behind submitted data points. Once the quality control process has been completed, thematic exposure scores are submitted to the Morningstar Indexes team for index reconstitution purposes.

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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