Construction Rules for the Morningstar® US Style Indexes

May 2025

MORNINGSTAR Indexes

Overview

The Morningstar US Style Indexes are designed to accurately represent size and style segments of the US equity market using transparent, rules-based methodology. Size assignments are determined targeting a fixed percentage of the market capitalization, which maintains consistency over time. Style assignments are underpinned by a 10-factor model that paints a holistic picture of style and aligns with the Morningstar Style Box.

The US Style Index Family consists of:
- Seven composite style indexes: US Value, US Core, US Growth, US Large-Mid Value, US Large-Mid Growth, US Small-Mid Value and US Small-Mid Growth.
- Nine style indexes: Large Value, Large Core, Large Growth, Mid Value, Mid Core, Mid Growth, Small Value, Small Core, and Small Growth.

This diagram summarizes the index family:

US Market	US Value	US Core	US Growth

Large Cap	Large Value	Large Core	Large Growth
Mid Cap	Mid Value	Mid Core	Mid Growth
Small Cap	Small Value	Small Core	Small Growth
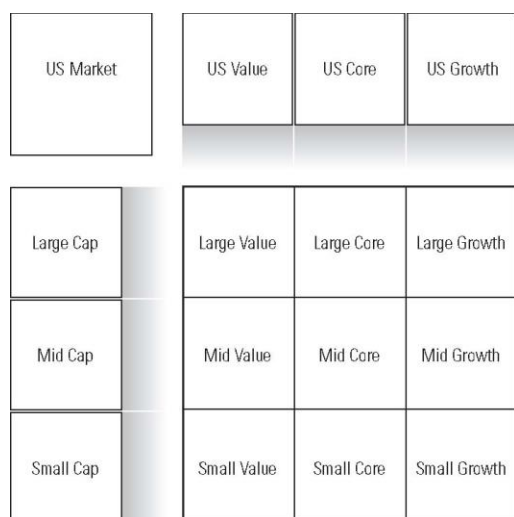
This index family does not incorporate Environmental, Social, or Governance (ESG) criteria.

Index Inception and Performance Start Date

The inception dates of the indexes as well as performance inception dates, when the first back-tested index value was calculated, are provided in Appendix 7.

MORNINGSTAR Indexes

Index Construction

Methodology Summary

Starting Universe → **Eligibility** → **Portfolio Construction**

Starting Universe	Eligibility	Portfolio Construction	
• Select constituents from the appropriate size parent, derived from the US Market index (which is, in turn, a member of the Morningstar Global Markets index family): 　○ US Large Cap 　○ US Large-Mid Cap 　○ US Mid Cap 　○ US Small-Mid Cap 　○ US Small Cap	• Style score must be available.	• Rank stocks in ascending order (pure value to pure growth) according to style score. • Stocks in the pure value, pure growth, and blend regions have their entire float-adjusted market capitalization allocated to the value, growth, and blend indexes, respectively, subject to buffer rules. • 4-20-20 capping rules are applied.	Morningstar US Style Indexes

Starting Universe

At each reconstitution, securities for the Morningstar US Style Index Family are derived from the Morningstar US Market Index (benchmark). For more details on benchmark construction, refer to the Construction Rules for Morningstar US Market Index.

Three market-capped indexes are constructed using the guidelines described in the benchmark construction. Within each of these cap indexes, index constituents are assigned to one of three style indexes:

- The value-oriented index contains stocks that, within the relevant cap index, have a stronger value orientation than growth orientation. For more details, refer to Appendix 3.
- The growth-oriented index contains stocks that, within the relevant cap index, have a stronger growth orientation than value orientation. For more details, refer to Appendix 4.
- The core index contains stocks that have similar value and growth characteristics.

Assigning Stocks to a Size Segment

Stocks from the Morningstar US Market Index are categorized into one of three market-capitalization bands - large, mid, or small – as follows:

Assigning Large-Cap Band Constituents

- The stocks in the investable universe that meet eligibility criteria are ordered by market-cap size in descending order.
- Selecting by size in descending order, the stocks that, in aggregate, account for 69% of the total market capitalization of the investable universe are assigned to the large-cap band.

MORNINGSTAR Indexes

- Among the stocks that fall between 69% and 70% of the capitalization of the investable universe (the upper end of the large-cap/mid-cap buffer zone), those that were classified as mid-cap or small cap and ranked below 70% of the capitalization of the investable universe at the previous reconstitution date are assigned to the mid-cap band. The rest are assigned to the large-cap band.

Assigning Mid-Cap Band Constituents

- Among the stocks that fall between 70% and 71% of the investable universe (the lower end of the large-cap/mid-cap buffer zone), those that were classified as large cap and ranked within the top 70% of the capitalization of the U.S. equity market at the previous reconstitution date are reassigned to the large-cap band. The rest are assigned to the mid-cap band.
- Among the stocks that fall between 90% and 90.5% of the investable universe (the lower end of the mid-cap/small-cap buffer zone), those that were classified as mid-cap or large cap and were ranked within the top 90% of the capitalization of the U.S. equity market at the previous reconstitution date are assigned to the mid-cap band. The rest are assigned to the small-cap extended band.
- Among the stocks that fall between 89.5% and 90% of the capitalization of the investable universe (the upper end of the mid-cap/small-cap buffer zone), those that were classified as small cap and ranked below 90% of the capitalization of the investable universe at the previous reconstitution date are reassigned to the small-cap band. The rest are assigned to the mid-cap band.

Assigning Small-Cap Band Constituents

- Among the stocks that fall between 90% and 90.5% of the investable universe (the lower end of the mid-cap/small-cap buffer zone), those that were classified as mid-cap or large cap and were ranked within the top 90% of the capitalization of the U.S. equity market at the previous reconstitution date are assigned to the mid-cap band. The rest are assigned to the small-cap extended band.
- Selecting from the remaining stocks by size in descending order, the stocks that fall between 90.5% and 99.45% of the capitalization of the investable universe are assigned to the small-cap extended band.
- Among the stocks that fall between 96.75% and 97% of the capitalization of the investable universe (the upper end of the small-cap/micro-cap buffer zone), those that were classified as small cap and ranked below 97% of the capitalization of the investable universe at the previous reconstitution date are reassigned to the small-cap band. The rest are excluded from the index.
- Among the stocks that fall between 97% and 97.25% of the investable universe (the lower end of the small-cap/microcap buffer zone), those that were classified as small-cap, mid-cap, or large-cap and were ranked within the top 97% of the capitalization of the U.S. equity market at the previous reconstitution date are assigned to the small-cap band. The rest are excluded from the index.

Eligibility

Assigning Stocks to a Style Index

Each index constituent within the Large Cap Index is assigned to the Large Value, the Large Core, or the Large Growth index. Style assignment is based on a stock's style orientation score and the threshold levels between value and core and core and growth.

Determining a Stock's Style Orientation Score

Each stock is assigned a value orientation score and a growth orientation score between zero and 100 (see the "Measuring Stock Value Orientation" and "Measuring Stock Growth Orientation" sections for how stock style scores are calculated). The

MORNINGSTAR Indexes

style score is calculated for each stock by subtracting the stock's value orientation score from its growth orientation score. The result can range from 100 (for low-yield, extremely growth-oriented stocks) to negative 100 (high-yield, low-growth stocks).

Portfolio Construction

Determining the Threshold Levels

Stocks in each parent index are divided into three groups that represent their style characteristics along the growth/value spectrum: pure growth, blend, and pure value. Each range is targeted to account for one third of the float market capitalization of the parent index. The breakpoints, or thresholds, that separate these ranges are determined as follows:

- Rank stocks within the parent index by their style score in ascending order.
- Calculate the cumulative free-float market cap for stocks in the parent index.
- The current value threshold, or CVT, is equal to the style score for the stock corresponding to the cumulative free-float market cap equal to or just greater than the target weight for the pure value range.
- The current growth threshold, or CGT, is equal to the style score for the stock corresponding to the cumulative free-float market cap equal to or just greater than the target weight for the pure value range plus the target weight for the blend range.

Style Assignment and Buffering
- Selecting by style score in ascending order, the stocks that, in aggregate, account for the CVT-5% of the free float of the cap index are assigned to the value Index.
- Selecting by score in ascending order, the stocks that fall between CVT-5% and CVT are classified as either value or core. Among these, stocks that were classified as core and fell between the CVT and the CGT or stocks that were classified as growth at the previous reconstitution date are reassigned to the core Index. The rest are assigned to the value Index.
- Selecting by score in ascending order, the stocks that fall between CVT and CVT+5% are classified as either value or core. Among these, stocks that were classified as large value and fell below the CVT at the previous reconstitution date are reassigned to the value Index. The rest are assigned to the core index.
- Selecting by score in ascending order, the stocks that fall between CVT+5% and CGT-5% are assigned to the core index.
- Selecting by score in ascending order, the stocks that fall between CGT-5% and CGT are classified as either core or growth. Among these, stocks that were classified as large growth and fell above the CGT at the previous reconstitution date are reassigned to the growth index. The rest are assigned to the core index.
- Selecting by score in ascending order, the stocks that fall between CGT and CGT+5% are classified as either core or growth. Among these, stocks that were classified as large core and fell between the CVT and the CGT or stocks that were classified as large value at the previous reconstitution date are reassigned to the core index. The rest are assigned to the growth index.
- Selecting by score in ascending order, the stocks that fall beyond the CGT+5% are assigned to the growth index.

Splitting the Blend Range Between Value and Growth
The US Value, US Core, and US Growth indexes are simple aggregates of the style indexes. For example, the US Value Index comprises all securities from the Large, Mid, and Small Value indexes.

MORNINGSTAR Indexes

Number of Stocks

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

Index Weighting

The index family is float market capitalization weighted, subject to 4-20-20 capping. This means when the indexes are rebalanced the top constituent weighting is capped at 20% and constituents with weightings greater than 4% in weight cannot sum to over 20% of the portfolio1.

For more details, refer to Appendix 2 and the Morningstar Indexes Calculation Methodology rulebook.

---

[1] The capping is implemented from the March 2018 rebalance onwards.

MORNINGSTAR Indexes

Index Maintenance and Calculation

Scheduled Maintenance

The indexes are reconstituted, where the membership is reset, semi-annually on the third Friday of June and December. Adjustments are implemented after Friday's market close and reflected the following Monday. If Monday is an index holiday, reconstitution is reflected the next business day. The market data used for reconstitution is as of the last trading day of April and October.

The indexes are rebalanced quarterly on the third Friday of March, June, September, and December. Adjustments are implemented after Friday's market close and reflected the following Monday. If Monday is an index holiday, the rebalance is reflected the next business day. The market data used for rebalancing is as of the last trading day of February, May, August, and November.

Refer to Appendix 2 for details on reconstitution and rebalancing.

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 "Treatment for float market capitalization indexes" section in the Morningstar Indexes Corporate Actions Methodology rulebook.

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.

MORNINGSTAR Indexes

Methodology Review and Index Cessation Policy

The index methodology is continually reviewed to ensure it achieves all stated objectives. These reviews take into account 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 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, and/or other external factors beyond the control of the Morningstar Index 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.

MORNINGSTAR Indexes

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.

Exceptions

While Morningstar will seek to apply the method described above, it cannot be excluded that 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 Methodology Committee, and in all instances, the application of a non-standard process will reported to the Morningstar Index Oversight Committee.

MORNINGSTAR Indexes

Appendixes

Appendix 1: Modifications to the Rulebook

Section	Description of Change	Update Date
Entire rulebook	• Moved to new template	June 2023
Index weighting	• 4-20-20 capping applied to all indexes in the family	June 2022
Index weighting	• Implemented 4-20-20 capping to the 9 indexes corresponding to the 9 segments of the style box	March 2018
Multiple share classes	• All eligible trading share classes are considered for the index.	January 2016
Data Correction and Precision	• Computational and Reporting Precision section removed	September 2024

Appendix 2: Glossary

Terms	Description
Reconstitution	Each reconstitution involves the following: • Updating the global market investable equity universe. • Reviewing the economic segment- and country-level size segment breakpoints. • Assigning companies to capitalization bands taking into account the buffer zones. • Changes in index shares (free float, total shares outstanding, index-specific adjustment factor) of each constituent.
Rebalance	During each rebalancing, the following activities are undertaken: • Changes in index shares (free float, total shares outstanding, index-specific adjustment factor) of each constituent. • Addition of U.S. spin-offs/IPOs to the global markets index.
Free Float	The free float is defined as a security's outstanding shares adjusted by block ownership to reflect only truly tradable and investable shares. A security's outstanding shares are adjusted if an entity owns 5% or more of the security through one of the following types of block ownership: • Cross-ownership—shares that are owned by other companies (including banks and life insurance companies). • Government ownership—shares that are owned by governments (central or municipal) or their agencies. • Private ownership—shares that are owned by individuals or families. • Restricted shares—shares that cannot be traded during a certain time period. However, a security's outstanding shares are not adjusted for institutional investors' holdings, which include, but are not limited to, the following categories: • Custodian nominees • Trustee companies • Mutual funds • Investment companies • Pension fund holdings

MORNINGSTAR Indexes

Appendix 3: Determining the Value-Core-Growth Assignment for Common Stocks

A stock's value orientation and growth orientation are separate measures, each of interest to investors. As such, they are estimated using related but separate variables. Once estimated, depending on the purpose, they may be used individually or combined into a single value-core-growth, or VCG, orientation measure. For instance, style-based index construction requires the use of a single VCG measure for each stock.

VCG orientation is calculated within capitalization classes, or cap bands. That is, a stock is assigned to a cap band before its VCG orientation is determined. Two stocks that have similar financial ratios and growth prospects but are in different cap bands may be given different VCG assignments.

A high value orientation score (as defined below) indicates that a stock's price is relatively low, given the anticipated per share earnings, book value, revenue, and so forth that the stock provides to investors. A high price relative to these measures indicates that a stock's value orientation is weak but does not necessarily mean that the stock is growth-oriented.

A high growth orientation score (as defined below) indicates that a stock's per share earnings, book value, revenue, and so on are expected to grow faster than those of other stocks in the same cap band. A weak growth orientation does not necessarily mean that a stock has a strong value orientation.

It follows that an individual stock may have any combination of strong or weak growth and value characteristics. Where one set of characteristics is dominant, the stock can be classified accordingly. Where the stock's growth and value characteristics are similar in strength, the stock will be assigned a blend VCG orientation.

Terminology and Notation

The following short forms relate to the 10 factors used to determine a stock's VCG score:

e_1/p	=	prospective earnings yield (forecast earnings per share for the current fiscal year, divided by current price per share)
r_1/p	=	prospective revenue yield
c_1/p	=	prospective cash flow yield
d_1/p	=	prospective dividend yield
b_1/p	=	prospective book value yield
$g'(e)$	=	forecast growth rate of earnings per share
$g'(c)$	=	forecast growth rate of cash flow per share
$g'(r)$	=	forecast growth rate of revenue per share
$g'(b)$	=	forecast growth rate of book value per share
$g'(e_5)$	=	median long-term earnings growth forecast

MORNINGSTAR Indexes

The following short forms relate to a company's fundamental data (earnings per share, for example):

e1	=	forecast earnings per share for the current fiscal year (the basis for the yield variable defined above).
e0	=	EPS for most recent fiscal year
e-1	=	EPS for the fiscal year prior to e0
e-2	=	EPS for the fiscal year prior to e-1
e-3	=	EPS for the fiscal year prior to e-2
e-4	=	EPS for the fiscal year prior to e-3

As needed to determine the stock's VCG score, the same notations are used for cash flow per share, revenue per share, book value per share, and dividends per share except that "c," "r," "b," or "d," respectively, are substituted for "e" in the example above.

Appendix 4: Measuring Stock Value Orientation

A stock's value orientation reflects the price investors are willing to pay for a share of some combination of the stock's prospective earnings, dividends, sales, cash flow, and book value.

Value orientation is determined using the following three steps:

- Calculate up to five prospective yields (e1/p, d1/p, c1/p, r1/p, and b1/p) for each stock. These values are determined using the process described in the next section.
- Calculate a float market cap-weighted percentile score for each available yield factor, for each stock, within each cap band (large, mid, and small).
- Calculate a weighted average of the individual percentile scores for each stock, using the weighting scheme detailed in "Calculating Overall Value Orientation Scores" below. The weighted average score represents the strength of the stock's value orientation.

Details of each of these steps are provided below.

Calculating Prospective Yields
As many as possible of e1/p, d1/p, c1/p, r1/p, and b1/p are calculated for each stock. Because p is known, the method used to forecast e1, d1, and so on, is key.

If e1, c1, r1, or b1 is forecast to be negative, prospective yield on that factor is excluded for that stock. If no third-party forecast is available and e0, c0, r0, or b0 is positive, then forecast values are calculated as described below (using EPS as an example).

The relationship between prospective and current EPS is straightforward:

$$[1] \qquad e_1 = e_0 * (1 + g(e_1))$$

MORNINGSTAR Indexes

Because e_0 is known, only $g(e_1)$ must be calculated to provide a forecast of e_1. Also, $g(e_1)$ is calculated from historical earnings information.

First calculate as many as possible of four periodic growth rates:

[2] $\qquad g(e)_{-4} = \left(\frac{e_0}{e_{-4}}\right)^{\frac{1}{4}} - 1$

[3] $\qquad g(e)_{-3} = \left(\frac{e_0}{e_{-3}}\right)^{\frac{1}{3}} - 1$

[4] $\qquad g(e)_{-2} = \left(\frac{e_0}{e_{-2}}\right)^{\frac{1}{2}} - 1$

[5] $\qquad g(e)_{-1} = \left(\frac{e_0}{e_{-1}}\right)^{1} - 1$

Where e-1, e-2, e-3, or e-4 is negative, no growth rate is calculated using that data point. Availability for restated cash flow is limited to three years.

When as many as possible of the growth rates defined above have been calculated, average the results:

[6] $\qquad g(e)_1 = \text{Average}\big[g(e)_{-4}, g(e)_{-3}, g(e)_{-2}, g(e)_{-1}\big]$

Thus:
- Estimated earnings growth g(e1) and forecast earnings (e1) are calculated only for stocks where e0 is a positive number.
- In calculating g(e1), recent growth rates are included in more of the averaged terms than are older growth rates; recent growth rates are therefore weighted more heavily than are older growth rates.
- If third-party forecasts are unavailable, e1/p, c1/p, r1/p, and b1/p are calculated in the same way.

The prospective dividend is determined based on the stock's most recent dividend and published frequency:

$$d_1 = d_0 * f_0$$

If d1/p is the only available forecast yield figure, the stock is not given a VCG assignment.

Calculating Percentile Scores for Each Value Factor
When one or more of e1/p, d1/p, c1/p, r1/p, and b1/p values have been calculated, with or without d1/p, each stock is assigned a float market-cap-weighted percentile score for each relevant factor. The percentile scores are calculated within the stock's cap classification.

MORNINGSTAR Indexes

Prospective earnings yield scores for large-capitalization stocks are used in the following example.

To calculate an earnings yield score for each stock in the large cap:
- Order all stocks in the large cap by their e1/p scores.
- Calculate the float-weighted trimmed mean e1/p for all stocks in the large cap band – where the upper and lower 5% of the float is trimmed before the average is calculated. When a stock straddles the 5th percentile point or 95th percentile point, remove it from the investable universe.
- Calculate the ratio of each stocks e1/p to the trimmed mean e1/p for the large cap.
- Assign each stock to an e/p bucket as follows:
  - If the stock's e1/p is equal to or less than 0.75 times the trimmed mean e1/p (the lower value cutoff), the stock is assigned to the low e/p bucket; or
  - If the stock's e1/p is equal to or less than the trimmed mean e1/p, the stock is assigned to the mid-minus e/p bucket; or
  - If the stock's e1/p is equal to or less than 1.25 (the upper value cutoff) times the trimmed mean e1/p, the stock is assigned to the mid-plus e1/p bucket; or
  - The stock is assigned to the high e/p bucket.

When each stock has been assigned to an e/p bucket, it is then scaled relative to other stocks in the same bucket. The low e/p bucket is used as an example here:
- Order the stocks within the low e/p bucket by their raw e1/p scores, from lowest to highest.
- Within the low e/p bucket, assign each stock a value equal to the cumulative float represented by that stock and all stocks with a lower e1/p. Thus, the stocks in the low e/p bucket have values ranging from 0.00+ (the stock with the lowest e1/p in the low e/p bucket) to 100 (the stock with the highest e1/p in the low e/p bucket).
- Where two or more stocks have the same e1/p, they are assigned a value that represents the cumulative float of all stocks with a lower e1/p plus one half of the total float of the stocks that share the same e1/p.
- Rescale the scores in the low e/p bucket to final values between 0.00+ and 33.33. Note: In the case of dividends, zero is considered a valid data point. If d0 is zero, then d1 is set to zero.

Repeat the above four steps for each of the mid-minus, mid-plus, and high e/p buckets; rescale the values as follows:

Bucket	Minimum Score	Maximum Score
Low e/p	0.00+	33.33
Mid-minus e/p	33.34	50.00
Mid-plus e/p	50.01	66.66
High e/p	66.67	100.00

All of the steps in this section are then repeated for each of c1/p, r1/p, and b1/p, and d1/p.

Morningstar Indexes

Calculating Overall Value Orientation Scores
When the steps above are complete for each of the five value factors, a weighted average is calculated for each stock. In calculating the weighted average, e/p scores, if available, are assigned a weight of 50%; each of the other value factors is assigned an equal share of the remaining weight (either 50% or, if e/p is unavailable, 100%). The weighted average result is the stock's overall value orientation score.

Appendix 5: Measuring Stock Growth Orientation

A stock's growth orientation reflects the rates at which its earnings, sales, cash flow, and book value are expected to grow. Forecast dividend growth rates are not used to determine stock growth orientation.

Determining a stock's growth orientation consists of three steps:

- For each stock, calculate as many as possible of the four average growth rates g'(e), g'(c), g'(r), and g'(b) using the process described in the next section.
- Calculate a float-weighted percentile score for each calculated growth rate, for each stock, within each cap band (large and mid), and a float-weighted percentile score for g(e5), if this is available from a third party.
- Calculate a weighted average of the individual growth rate percentile scores for each stock, using the weighting scheme detailed in the "Calculating Overall Growth Orientation Scores" section below.

The weighted average score calculated in Step 3 above represents the strength of the stock's growth orientation.

Calculating Stock Growth Scores
As many as possible of g'(e), g'(c), g'(r), and g'(b) are calculated for each stock. In addition, if g(e5) is available from a third party, it is used as a fifth growth rate indicator. The example growth rate calculation below uses g'(e), but the process is identical for g'(c), g'(r), and g'(b).

If e0 and e–1 are negative, then g'(e) is not calculated. If e0 or e–1 is positive, then g'(e) is calculated as follows:

First calculate as many as possible of five periodic growth rates:

[1] $\qquad g'(e)_{-4} = \left(\dfrac{e_n}{e_{-4}}\right)^{\frac{1}{n+4}} - 1$

[2] $\qquad g'(e)_{-3} = \left(\dfrac{e_n}{e_{-3}}\right)^{\frac{1}{n+3}} - 1$

[3] $\qquad g'(e)_{-2} = \left(\dfrac{e_n}{e_{-2}}\right)^{\frac{1}{n+2}} - 1$

[4] $\qquad g'(e)_{-1} = \left(\dfrac{e_n}{e_{-1}}\right)^{\frac{1}{n+1}} - 1$

MORNINGSTAR Indexes

[5] $\qquad g'(e)_0 = \left(\frac{e_n}{e_0}\right)^{\frac{1}{n}} - 1$

Where:
$\qquad$ n = Latest period (0 or -1) in which EPS is positive

If e0, e–1, e–2, e–3, or e–4 is negative, no growth rate is calculated using that data point. If n=0, up to four rates are calculated and if n=–1, up to three growth rates are calculated.

When all available growth rates defined above have been calculated, average the results:

[6] $\qquad g'(e) = \text{Average}\left[g'(e)_{-4}, g'(e)_{-3,}, g'(e)_{-2}, g(e)_{-1}\right]$

Revenue, cash flow, and book value growth rates are calculated in the same way.

If growth information for at least one factor, spanning at least two separate growth periods, is unavailable for a given stock, the stock is not given a VCG assignment.

Calculating Percentile Scores for Each Growth Factor
As with value orientation factors, the growth orientation factor scores for each stock are next translated into rescaled percentile scores. The percentile scores are calculated within the stock's cap band.

Prospective earnings growth rate scores for stocks within each cap are used in the following example.

To calculate an earnings growth score for each stock in the large-cap band:
- Order all stocks in the large-cap band by their growth rate g'(e) scores.
- Calculate the float-weighted trimmed mean growth rate g'(e) for all stocks in the large-cap band— where the upper and lower 5% of float is trimmed, before the average is calculated.
- Calculate the ratio of each stock's g'(e) to the trimmed mean g'(e) for the large-cap band.
- Assign each stock to a g'(e) bucket as follows:
- If the stock's g'(e) is equal to or less than 0.75 times the trimmed mean g'(e) (the lower growth cutoff), the stock is assigned to the low g'(e) bucket; or
- If the stock's g'(e) is equal to or less than the trimmed mean g'(e), the stock is assigned to the mid-minus g'(e) bucket; or
- If the stock's g'(e) is equal to or less than 1.25 times the trimmed mean g'(e) (the upper growth cutoff), the stock is assigned to the mid-plus bucket; or
- The stock is assigned to the high g'(e) bucket.

When each stock has been assigned to a g'(e) bucket, it is then scaled relative to other stocks in the same bucket. The low g'(e) bucket is used as an example here:
- Order the stocks within each bucket by raw g'(e) score, from lowest to highest.
- Within the low g'(e) bucket, assign each stock a value equal to the cumulative float represented by that stock and all stocks with a lower g'(e). Thus, the stocks in the low g'(e) bucket have values ranging from 0.00+ (the stock with the lowest g'(e) in the low g'(e) bucket) to 100 (the stock with the highest g'(e) in the low g'(e) bucket).

MORNINGSTAR Indexes

- Where two or more stocks have the same g'(e), they are assigned a value that represents the cumulative float of all stocks with a lower g'(e), plus one half of the total float of the stocks that share the same g'(e).
- Rescale the scores in the low g'(e) bucket to final values between 0.00+ and 33.33.

Repeat the four steps immediately above for each of the mid-minus, mid-plus, and high g'(e) buckets, but

rescale the values as follows:Bucket	Minimum Score	Maximum Score
Low g'(e)	0.00+	33.33
Mid-minus g'(e)	33.34	50.00
Mid-plus g'(e)	50.01	66.66
High g'(e)	66.67	100.00

All of the steps in this section are then repeated for each of the other four growth orientation factors, including g(e5).

Calculating Overall Growth Orientation Scores
When the above steps are completed for each of the five growth orientation factors, a weighted average is calculated for each stock. In calculating the weighted average, g(e5) scores, if available, are assigned a weight of 50%; each of the other growth factors is assigned an equal share of the remaining weight (either 50% or, if g(e5) is unavailable, 100%). The weighted average result is the stock's overall growth orientation score.

Appendix 6: Trimming Algorithm

The following describes two processes related to calculating percentile scores for each of the 10 factors:
- Test whether trimming should be applied to datasets for individual factors.
- If so, determine what values to trim.

w_i' is calculated as: $w_i' = \frac{w_i}{\sum_{j \in \Omega} w_i}$

We define the following statistics,

Weighted mean: $\mu = \sum_{i \in \Omega} w_i' x_i$

Weighted standard deviation: $\sigma = \sqrt{\sum_{i \in \Omega} w_i' (x_i - \mu)^2}$

Minimum and maximum: Min[x] = Min{x_i | i ∈ Ω}
Max[x] = Max{x_i | i ∈ Ω}

Where:
- N = the number of securities
- x_i = the variable in the question for security i
- w_i = the float market cap weight of security i for the full set of N securities within the cap band
- $\underline{\Omega}$ = the set of securities that have not been trimmed
- $\overline{\Omega}$ = the set of securities that have been trimmed
- w_i' = the float market cap weight of security i for Ω

MORNINGSTAR Indexes

Weighted Median

To calculate the weighted median:
- Sort the values of x_i i $\in \Omega$ from lowest to highest. Let M = the number of elements of Ω. Let (m) denote the index for the mth lowest value of x_i so that $x_{(1)} \leq x_{(2)} \leq ... \leq x_{(M)}$.
- Find the smallest value of m* such that $\sum_{\square=1}^{\square*} w'_{(m)} \geq \frac{1}{2}$
- The median is Med Med[x] = $x_{(m^*)}$

Weight in Untrimmed Set

$$p = \sum_{i \in \Omega} w_i$$

We set a threshold for p, p*=0.95

The Algorithm:
1. Set Ω = {1,2,...,N} and $\bar{\Omega}$ = Φ.
2. Calculate μ, σ, Min[x], Max[x], Med[x], and p.
3. If (Min[x] $\geq \mu$ - 3σ and Max[x] $\leq \mu$ + 3σ) or p $\leq$ p*, go to step 6.
4. For each i $\in \Omega$, if x_i < Med[x] - 3σ or x_i > Med[x] + 3σ, move i from $\bar{\Omega}$ to Ω.
5. Go to step 2.
6. For each i $\in \bar{\Omega}$, for replace any x_i < Min[x] with Min[x], and any x_i > Max[x] with Max[x].

Calculating the Score

Using the values of μ and σ from the final interation of the algorithm, the score of each stock is:

$$S_i = 50 * (1 + \frac{Xi - \mu}{3\sigma})$$

Appendix 7: Index Inception and Performance Inception Dates

Index Name	Index Inception Date	Performance Inception Date
Morningstar US Value Index	Jul 03, 2002	Jun 20, 1997
Morningstar US Core Index	Jul 03, 2002	Jun 20, 1997
Morningstar US Growth Index	Jul 03, 2002	Jun 20, 1997
Morningstar US Large-Mid Value Index	Mar 22, 2010	Jun 30, 1997
Morningstar US Large-Mid Growth Index	Mar 22, 2010	Jun 30, 1997
Morningstar US Small-Mid Value Index	Mar 22, 2010	Jun 30, 1997
Morningstar US Small-Mid Growth Index	Mar 22, 2010	Jun 30, 1997
Morningstar US Large Value Index	Jul 03, 2002	Jun 20, 1997

MORNINGSTAR Indexes

Morningstar US Large Core Index	Jul 03, 2002	Jun 20, 1997
Morningstar US Large Growth Index	Jul 03, 2002	Jun 20, 1997
Morningstar US Mid Value Index	Jul 03, 2002	Jun 20, 1997
Morningstar US Mid Core Index	Jul 03, 2002	Jun 20, 1997
Morningstar US Mid Growth Index	Jul 03, 2002	Jun 20, 1997
Morningstar US Small Value Index	Jul 03, 2002	Jun 20, 1997
Morningstar US Small Core Index	Jul 03, 2002	Jun 20, 1997
Morningstar US Small Growth Index	Jul 03, 2002	Jun 20, 1997

MORNINGSTAR Indexes

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 Indexes 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.

www.indexes.morningstar.com

Contact Us

indexes@morningstar.com

MORNINGSTAR Indexes