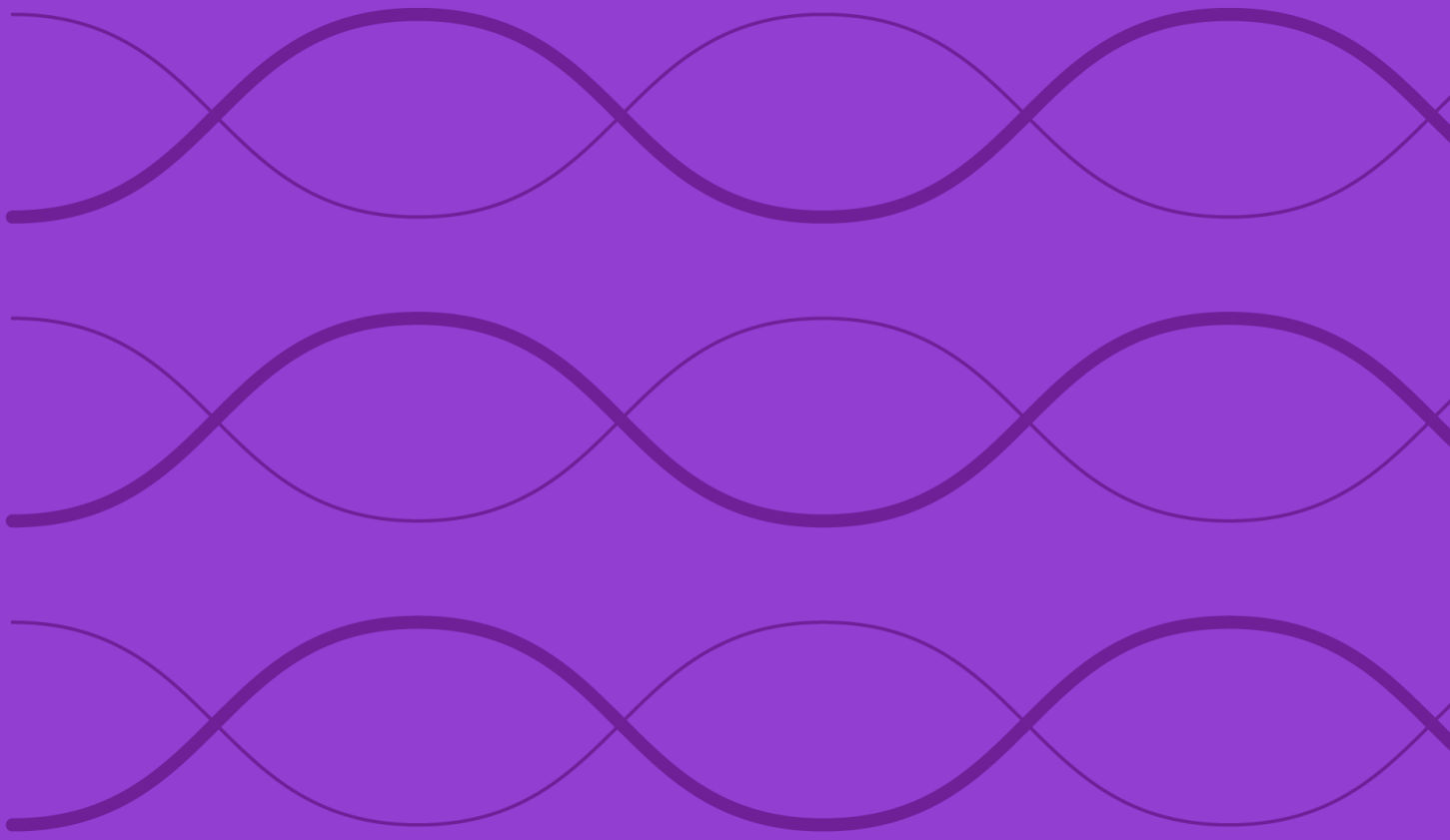
MORNINGSTAR Indexes

Construction Rules for the Morningstar® US Style Indexes℠



September 2024

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MORNINGSTAR®

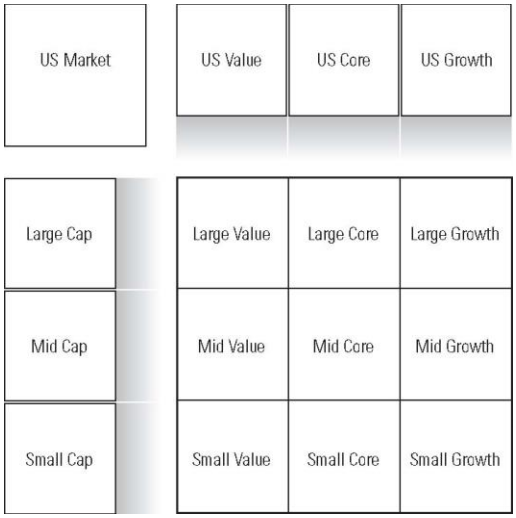
Overview

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:



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.

Index Construction

Methodology Summary

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

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.

- 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

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.

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.

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.

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.

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.

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

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:

e1/p	=	prospective earnings yield (forecast earnings per share for the current fiscal year, divided by current price per share)
r1/p	=	prospective revenue yield
c1/p	=	prospective cash flow yield
d1/p	=	prospective dividend yield
b1/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'(e5)	=	median long-term earnings growth forecast

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] $$e_1 = e_0 * (1 + g(e_1))$$

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

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

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

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

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

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.

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

To calculate an earnings yield score for each stock in the cap band.

- Order all stocks in the cap band by their e1/p scores in ascending order.
- Determine the total float market cap of all stocks in the cap band.
- Calculate the float market-cap-weighted average of e1/p within the cap band.
- If all the stocks are within 3 weighted standard deviations of the weighted mean, no stocks are trimmed.
- If not, trim all stocks that are outside 3 weighted standard deviations outside the weighted median. View Appendix 5 for the trimming algorithm.
- Recalculate the float-weighted average e1/p for the cap band and then calculate the percentile score for each factor according to the following equation:

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

Where:

F_i = Percentile score for individual factor
X_i = Stock factor value
μ = Float market-cap-weighted factor average
σ = Float market-cap-weighted factor standard deviation

- Trimmed stocks are then added back into the cap band and receive the score of lowest- and highest-scoring non trimmed stocks.

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

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

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

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

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

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

Where:

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

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 cap band:

- Order all stocks in the cap band by their g'(e) scores in ascending order.
- Determine the total float market cap of all stocks in the cap band.
- Calculate the float market-cap-weighted average of g'(e) within the cap band.
- If all the stocks are within 3 weighted standard deviations of the weighted mean, no stocks are trimmed.
- If not, trim all stocks that are outside 3 weighted standard deviations outside the weighted median. View Appendix 5 for the trimming algorithm.
- Recalculate the float-weighted average g'(e) for the cap band and then calculate the percentile score for each factor according to the following equation:

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

Where:
F_i = Percentile score for individual factor
X_i = Stock factor value
μ = Float market-cap-weighted factor average
σ = Float market-cap-weighted factor standard deviation

- Trimmed stocks are then added back into the cap band and receive the score of lowest- and highest-scoring non-trimmed stocks.

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: $\mu = \sum_{i \epsilon \Omega} w_i' x_i$

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

Minimum and maximum: $Min[x] = Min\{x_i \mid i \in \Omega\}$
$Max[x] = Max\{x_i \mid i \in \Omega\}$

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
Ω = the set of securities that have not been trimmed
$\bar{\Omega}$ = the set of securities that have been trimmed
w_i' = the float market cap weight of security i for Ω

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 m^{th} lowest value of x_i so that $x_{(1)} \leq x_{(2)} \leq \ldots \leq x_{(M)}$.
- Find the smallest value of m* such that $\sum_{m=1}^{m*} w'_{(m)} \geq \frac{1}{2}$
- 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 $\Omega = \{1,2,\ldots,N\}$ and $\bar{\Omega} = \Phi$.
2. Calculate μ, σ, Min[x], Max[x], Med[x], and p.
3. If ($Min[x] \geq \mu - 3\sigma$ and $Max[x] \leq \mu + 3\sigma$) or $p \leq p^*$, go to step 6.
4. For each $i \in \Omega$, if $x_i < Med[x] - 3\sigma$ or $x_i > Med[x] + 3\sigma$, 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:

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

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 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

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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.

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