BARCLAYS

Morningstar Wide Moat Barclays VC Index

The Morningstar Wide Moat Barclays VC Index[1] is a multi-asset class index that aims to provide stable returns across different market environments.

The Morningstar Wide Moat Barclays VC Index (the "Index") creates a diversified portfolio by combining U.S. stocks selected based on the Economic Moat investment philosophy[2] with a portfolio of four Barclays US Treasury futures indices. The Index seeks to enhance return and manage risk exposure by adjusting the portfolio's asset allocation on a monthly basis using techniques from the Modern Portfolio Theory[2].

To further control risk, the Index aims to maintain its annual volatility[3] level at or below 7% using a procedure called volatility control.

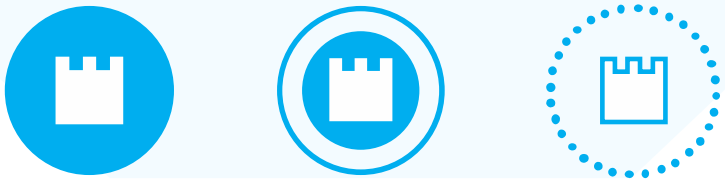
The Equity Component

The "Equity Component" of the Index is a rules based stock index published by Morningstar, Inc., called the Morningstar® Wide Moat Focus Index℠. It is designed to provide exposure to a portfolio of the most undervalued U.S. stocks with a "wide" Economic Moat rating covered by Morningstar's Equity Research team.

What is an Economic Moat?

Popularized by Warren Buffet, the term Economic Moat refers to a company's ability to maintain a competitive advantage in the long term over competing firms. Morningstar believes there are five sources of Economic Moats:

Intangible Assets	Switching Costs	Network Effect	Cost Advantage	Efficient Scale
Things such as brands, patents, and regulatory licenses that block competition and/ or allow companies to charge more	Whether in time or money, the expenses that a customer would incur to change from one producer/provider to another	Present when the value of a service grows as more people use a network	Allows firms to sell at the same price as competition and gather excess profit and/or have the option to undercut competition	When a company serves a market limited in size, new competitors may not have an incentive to enter



Wide Narrow None

Source: Morningstar. Included with permission from Morningstar.

[1] The official name of the Morningstar Wide Moat Barclays VC Index is "Morningstar Wide Moat Focus Barclays VC 7% Index ER"
[2] As further described herein
[3] Volatility is a measure of the degree to which the price of an asset fluctuates. It is widely used as an indicator of investment risk.

What is a wide-moat stock?

To help investors identify companies that possess an Economic Moat, Morningstar assigns one of three Economic Moat ratings: none, narrow or wide. A "wide-moat" rating is assigned if the Morningstar Equity Research team believes that a company's return on invested capital will be greater than their cost of capital for the next 20 years. These can also be thought of as stocks with a long-term competitive advantage.

Examples of wide, narrow, and no moat companies

	Intangible Assets	Switching Costs	Network Effect	Cost Advantage	Efficient Scale
Wide	**Coca Cola** Not the only soft drink, but consumers pay a premium	**Oracle** Migrating critical data away from Oracle's relational databases to other vendors is costly, time-consuming, and must be done carefully.	**MasterCard** Each additional user of the MasterCard brand increases its value to others.	**UPS** Ground delivery network has low marginal costs and high returns on capital.	**Canadian National** Cost advantages, efficient scale, and network effect form a steep barrier to entry
Narrow	**Dunkin' Brands** Well-known brand name and generally cohesive franchisee system.	**Workday** Switching costs with initial product set, but still need to see success integrating a large number of products.	**Lyft** Operates a powerful network connecting drivers and riders in a virtuous cycle.	**FedEx** Extensive international shipping network would be difficult and costly to duplicate	**Southern Company** Utilities have natural geographic monopolies, but regulations restrain returns
None	**United Continental** Name recognition doesn't result in sufficient pricing power	**Macy's** Consumers easily pick and choose among many retailers	**Deutsche Telekom** Despite its scale, it has not been able to generate returns above its cost of capital	**Alcoa** Low-cost bauxite resources can't offset industry oversupply	**Sprint** Lacking scale versus AT&T and Verizon eliminates economic profit

Source: Morningstar. Included with permission from Morningstar.

This information is presented for illustrative purposes only and is not a recommendation to invest in any specific security. Data presented may not be current and is subject to change.

The Morningstar® Wide Moat Focus Index℠

The Morningstar® Wide Moat Focus Index℠ (the "Equity Component Index") selects wide-moat stocks representing the best value as determined by the ratio of Morningstar's estimate of fair value to the stock price. Index constituents therefore represent the most compelling values among the wide-moat universe, according to Morningstar analysts.

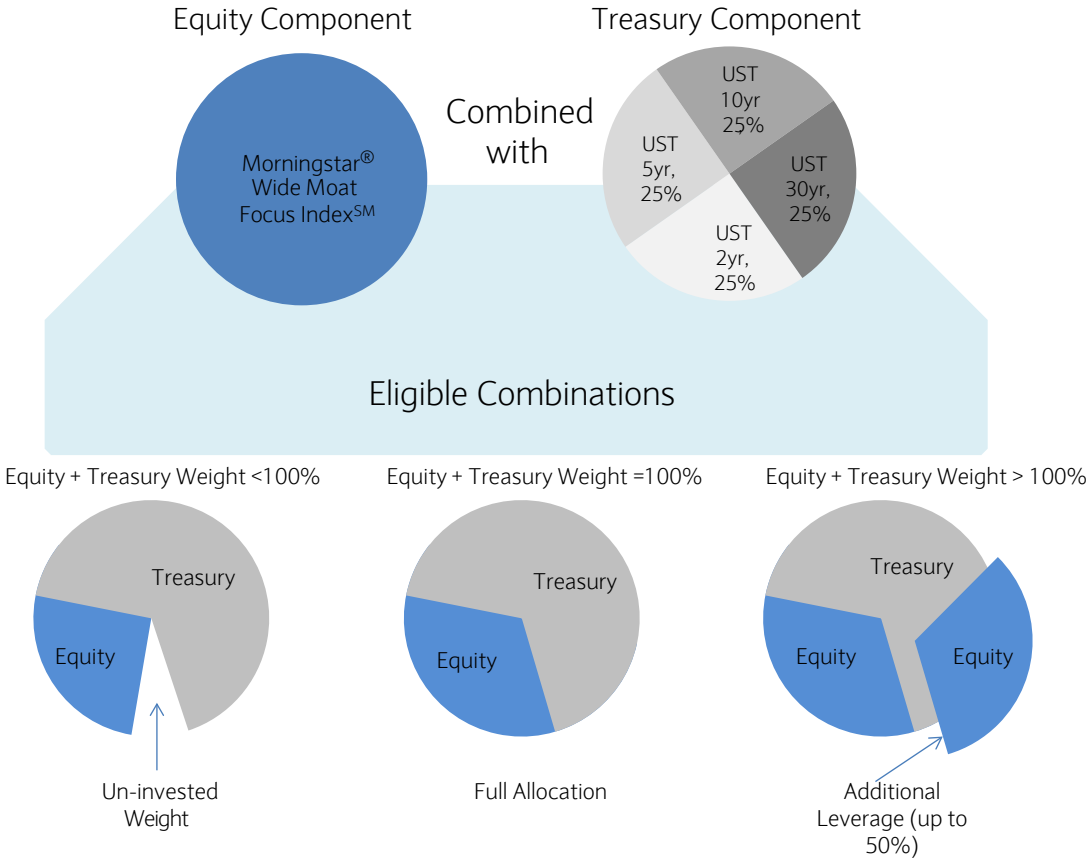
The Equity Component Index holds 40 or more stocks and reconstitutes semi-annually on a staggered quarterly schedule. Therefore, half of the Equity Component Index reconstitutes quarterly. The Equity Component Index seeks to assign equal weights to the selected companies while limiting the exposure to any given industry sector for diversification purposes. Index levels are calculated assuming that dividends are reinvested in the Equity Component Index.

Combining with the Treasury Component

The Treasury Component of the Index is an equally-weighted portfolio of four Barclays U.S. Treasury Futures indices: 2 year, 5 year, 10 year and 30 year.

Constituents of the Treasury Component
• Barclays US 2-year Treasury Futures Index • Barclays US 5-year Treasury Futures Index • Barclays US 10-year Treasury Futures Index • Barclays US 30-year Treasury Futures Index

The Index creates a monthly rebalanced portfolio that combines the Equity Component and the Treasury Component. This is called the "Index Portfolio". Within the Index Portfolio, the combined weight of the Equity Component and the Treasury Component may range from 0% to 150% any given month.



Hypothetical examples are provided for illustrative purposes only and may not reflect actual weights or allocations.

Finding the Optimal Combination

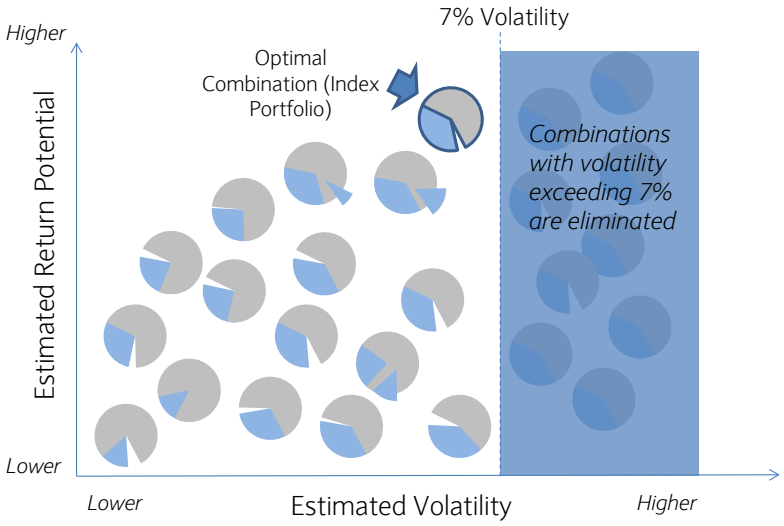
Each month, the Index runs a process called "mean-variance optimization," which aims to determine the optimal weights to be allocated to the Equity Component and the Treasury Component.

The mean-variance optimization process is based on Harry Markowitz's Modern Portfolio Theory, which states that investors can maximize their expected return at any given risk level through diversification. For purposes of the Index, the process works as follows:

1. The process considers all combinations of the Equity Component and the Treasury Component, provided that the combined weight of these components does not exceed 150%.
2. The volatility of each combination is calculated, based on how volatile the two components have been and how they have moved relative to each other.
3. All the combinations with annual volatility exceeding 7% are eliminated.
4. The process selects the combination with the highest estimated return potential, based on the assumption that the risk-adjusted returns offered by the Equity Component and the Treasury Component will be comparable the following month.

This combination will be the Index Portfolio for the following month[4].

Illustration of the mean-variance optimization process



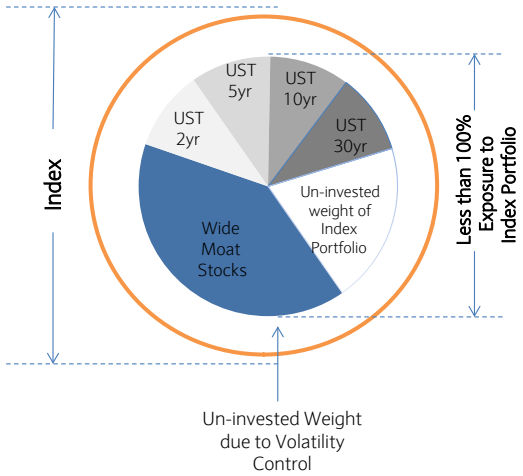
[1] The sum of weights for the Equity Component and the Treasury Component in the Index Portfolio may be less than, equal to or greater than 100%. The combined weight of these components may not exceed 150%.
Hypothetical examples are provided for illustrative purposes only and may not reflect actual weights or allocations.

7% Volatility Control

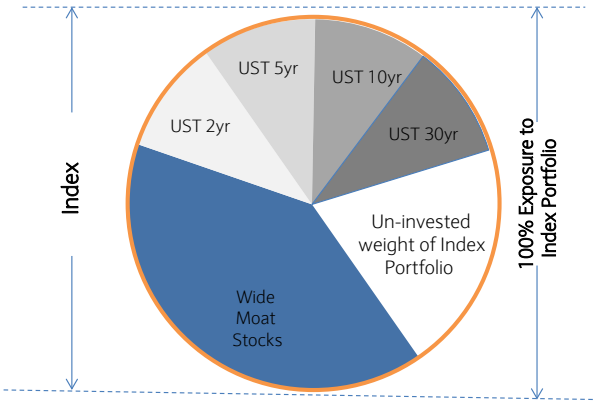
To further control risk, the Index applies an additional volatility control procedure that decreases or increases the Index's exposure to the Index Portfolio when necessary to maintain an annual volatility level at or below 7%.

To achieve this, a "target exposure" level to the Index Portfolio is calculated on a daily basis, by dividing the 7% upper volatility threshold using the recent volatility of the Index Portfolio[5], subject to a maximum level of 100%. As a result:

- If the recent volatility of the Index Portfolio exceeds 7%, the target exposure to the Index Portfolio will be less than 100%, and the residual weight will be un-invested.



- If the recent volatility of the Index Portfolio is below 7%, the target exposure to the Index Portfolio will be equal to 100%,



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If the target exposure level calculated on any trading day differs from the actual exposure level by 5 percentage points or more, the Index will adjust its actual exposure level to the Index Portfolio on the following trading day to match this target level. The purpose of adjusting the Index's exposure to the Index Portfolio is to maintain the level of risk below the upper threshold limit of 7% as the market environment changes.

In Conclusion …

An investment in products linked to the Morningstar Wide Moat Barclays VC Index involves fees, costs, and risks. You should consult with professional advisors before making any investment that is based on the performance of the Index. For more information on the Index, please visit https://indices.barclays/MOAT.

[5] For purposes of calculating Index Portfolio volatility in the volatility control procedure, the daily returns of the Index Portfolio are calculated as the weighted average of component daily returns using weights determined during the most recent monthly rebalance.

Morningstar Wide Moat Barclays VC Index Risk Factors

An investment based on the performance of the Index involves fees, costs and risks. The following is a summary of these fees and costs and certain risks associated with the Index. You should consider the following, consult with your advisors, and read any product documentation carefully before investing in any financial product based on the performance of the Index.

The Index may produce negative returns if the U.S. equity market and/or the U.S. Treasury market have negative performance.

The strategy reflected in the Index may be unsuccessful. The index methodology of the Morningstar® Wide Moat Focus Index℠ may not be successful in identifying undervalued stocks with long term competitive advantage, and the Equity Component may underperform broad equity market benchmarks. In addition, the allocation between stocks and Treasury futures reflected in the Index at any time may not be optimized and may underperform a different allocation between the two asset classes.

Because the Morningstar® Wide Moat Focus Index℠ includes a limitation on the exposure to any given industry sector, the Index may limit exposure to stocks within a sector experiencing positive performance, which may result in the Index underperforming a similar strategy without this limitation.

The Index includes deductions for a fee of 0.5% per year, plus an additional cost equal to the 3-month US dollar LIBOR rate for Equity Component, and a fee of 0.2% per year for the Treasury Component, which may be increased or decreased in the aggregate by the mean variance optimization process and the volatility control mechanism. These deductions will reduce Index performance, and the Index will underperform similar portfolios from which these fees and costs are not deducted.

The volatility control mechanism included in the Index may not achieve its intended goal, and the Index may not be successful in maintaining its volatility at or below 7%.

The mean-variance optimization process and the volatility control mechanism will determine the Index's exposure to the Equity Component and Treasury Component. If the Index's total exposure to the Equity Component and Treasury Component is greater than 100%, any negative performance of the components may be magnified, and the level of the Index may decrease significantly. In addition, if the Index's total exposure to the Equity Component and Treasury Component is less than 100%, the difference will be un-invested and will earn no return.

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