Construction Rules for Morningstar Wide Moat Focus Index

Morningstar Methodology Paper
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Introduction

At Morningstar, the concept of economic moats is a cornerstone of our stock-investment philosophy. We believe that successful stock investing involves more than just identifying solid businesses, or finding businesses that are growing rapidly, or buying cheap stocks. We believe that successful investing also involves evaluating whether a business will stand the test of time.

The term economic moat comes from legendary investor Warren Buffett, whose annual Berkshire Hathaway shareholder letters contain many references to businesses with "economic castles protected by unbreachable 'moats.'" Basic economic theory says that in a perfectly competitive market, rivals will eventually eat up any excess profits earned by a successful business. Only those firms with a competitive advantage--a moat--can withstand these competitive pressures for a long period.

The objective of the Morningstar Wide Moat Focus Index is to offer investors the opportunity to easily invest in companies that have sustainable competitive advantages according to Morningstar analysts. These companies are the crème of the U.S. equity universe. The Wide Moat Focus index focuses on a select group of wide-moat firms: those that Morningstar analysts feel are the most attractively priced at any given time.

Wide Moat Classification

Overview

A wide-moat company has a sustainable competitive advantage that enables it to keep competitors at bay for an extended period of time. Morningstar has embedded the analysis of a firm's "moat" within its research process, and the resulting list of Wide Moat companies includes what are, in our view, the highest-quality companies around. We've created the Wide Moat Focus Index to allow investors to participate in the above-average profits that these firms are expected to earn.

In determining the size of a firm's economic moat, we begin with the premise that all highly profitable firms attract competitors, and only firms that are able to keep competition at bay will earn above-normal profits for a long time. An economic moat—or competitive advantage – allows a company to fend off competitors and earn sustainable excess economic profits. We look at return on invested capital (ROIC) relative to the company's cost of capital to determine profitability, because ROIC shows us the cash return on the capital invested in the business. We think that ROIC is the best measure of economic profitability.

Of course, we have to examine ROIC relative to a firm's cost of capital because money isn't free--those who have capital charge companies for the right to use it, and they charge some companies more than others. A firm that operates pipelines or sells beer has a low cost of capital because it has a stable business, so investors don't ask for much in the way of returns. A small semiconductor or biotech firm would have a very high cost of capital because it's entirely possible that investors might not get their money back, so they ask for a high return to compensate for the higher risk. For example, an ROIC of 14% would be spectacular for a pipeline company relative to its 8% cost of capital, but would barely clear the bar for a small tech or biotech firm.

Wide Moat Classification (Cont.)

Classification Assignment

The first step is called "show me the money," that is, we look at whether ROIC has exceeded the firm's cost of capital in the past. For companies that pass this test, the next step involves further analysis by Morningstar analysts to determine if those high returns will continue. In this step, Morningstar analysts must identify a clear competitive advantage for the company in order to give it a moat rating. One or more of the competitive advantages listed in the following table would qualify a company:

Economic Moat Advantages

Advantage Type	Description	Example
High Switching Cost	High cost to switch to competitor	Bank of America, Stryker
Cost Advantage	Firm contains costs better than competitors	Wall-Mart, Dell
Intangible Assets	Includes patents, trademarks, and regulatory approval	Harley-Davidson, Johnson & Johnson
Network Effect	Firm's services become more valuable as the user base grows	e-Bay Chicago Mercantile Exchange

As an example, think about retailers and restaurant chains--switching costs for consumers are extremely low, so companies in these industries need scale, a well-established brand, or some other defensible advantage to give them a moat. Without some advantage, those high ROICs could dissipate quickly--history is full of hot retail or restaurant concepts that have flopped as quickly as they've become temporary hits, this is why only 40 of the 122 restaurants and retailers we cover have narrow moats, and only five have wide moats

Wide Moat Classification (Cont.)

Wide or Narrow Moat

Finally, if we have evidence of solid returns on capital and confidence that those returns are sustainable, we have to decide whether the firm has a wide or narrow moat. To rate a stock as having a wide moat, we have to be very confident that the firm's competitive advantage will persist. This translates to the requirement that the company have the ability to generate ROIC in excess of its cost of capital for at least 20 years. Thus, we're pretty selective about this--only about 10% of the stocks we cover receive wide-moat ratings.

Selection Committee Review

A Selection Committee makes the final determination of which stocks merit a Wide Moat Rating. Only those stocks with one or more of the identifiable competitive advantages, as determined by Morningstar analysts and agreed to by the Selection Committee, receive a Wide Moat Rating. The committee meets on a regular basis and consists of Morningstar's Director of Stock Analysis and chief equities strategist.

Morningstar Fair Value Price

Overview

Morningstar analysts use a standardized, proprietary valuation model to assign fair values. Our model has three distinct periods: the first five years, year six to perpetuity, and perpetuity. By summing the discounted free cash flows from each period, we arrive at an enterprise value for the firm. Then, by subtracting debt and adjusting for any off-balance-sheet assets or liabilities, we arrive at a fair value of the common stock. The model's key features consist of the following:

First Stage

Our analysts make detailed forecasts of each company's performance over the next five years, including revenue growth, profit margins, tax rates, changes in working-capital accounts, and capital spending. This five year period is the first stage of our model.

Second Stage

The length of the second stage depends on the strength of the company's economic moat. Economic moat is a term used by Warren Buffett to describe the predictability and sustainability of a company's future profits. The competitive forces in a free-market economy will tend to chip away at above-average returns on invested capital (ROICs). If a company earns a high ROIC, it attracts competitors, which then capture a portion of those excess returns. Only companies with wide economic moats—something inherent in their businesses that competitors cannot replicate—can hope to keep these competitive forces at bay for a prolonged period.

We define the second stage of our model as the period it will take for the company's marginal ROIC—the return on capital for the last dollar invested—to decline (or rise) to its cost of capital. We forecast this period to be anywhere from five years (for companies with no economic moat) to 20 years (for wide-moat companies). During this period, we forecast cash flows using three assumptions: an investment rate in year five, incremental ROIC in year six, and years to perpetuity. The investment rate and marginal ROIC will decline smoothly until the perpetuity year. In the case of firms not earning their cost of capital, we assume marginal ROICs rise to the firm's cost of capital, and we may truncate the second model period.

Morningstar Fair Value Price (Cont.)

Perpetuity

Finally, once a company's marginal ROICs hit its cost of capital, we assume it remains in this "perpetuity" state forever. At perpetuity, the return on new investment is set equal to the firm's weighted average cost of capital (WACC), which is our discount rate minus inflation. At this point we believe the firm will no longer be able to earn a profit greater or less than its cost of capital. The company could be generating significant free cash flow—the more free cash flow, the higher the fair value—but any additional capital invested in the business adds no value.

Thus, our fair value for a stock is the sum of the cash flows from years 1-5, the cash flows during the interim period, and the perpetuity value, all discounted to present value using the WACC. For financial companies such as banks, insurance firms, and REITs, we use different valuation models. The guiding principles are the same, but the calculations are different.

Discount Rates

In deciding the rate to discount future cash flows, we ignore stock-price volatility (which drives most estimates of beta) because we welcome volatility if it offers opportunities to buy a stock at a discount to its fair value. Instead, we focus on the fundamental risks facing a company's business. Ideally, we'd like our discount rates to reflect the risk of permanent capital loss to the investor. When assigning a cost of equity to stock, our analysts score a company in the following areas:

- Financial leverage — The lower the debt, the better.
- Cyclicality — The less cyclical the firm, the better.
- Size — The smaller the firm, the riskier it tends to be.
- Free cash flows — The higher as a percentage of sales and the more sustainable, the better.

Morningstar Fair Value Price (Cont.)

We set the minimum cost of equity at 8.0%, which corresponds to a risk-free rate of 5.5% (the 10-year rolling average yield on the 10-year Treasury Note) and an equity-risk premium of 2.5%. Based on each company's score on the fundamental risk factors outlined above, we assign it a higher cost of equity. Our cost of equity for domestic, non-financial companies typically ranges from 8% to 16%, with the median at about 11%. Because we are valuing the cash flows to both equity and debt holders, we use the weighted average cost of capital (WACC) for our discount rate. For the cost of debt, we typically use the higher of a) current yields on the firm's outstanding bonds; and b) our estimate of the company's marginal cost to borrow.

Hidden Assets/Liabilities: Options, Pensions, Etc.

In arriving at our fair value estimate, we also add back any hidden assets and subtract out hidden liabilities. Hidden assets might include real estate that's undervalued on the firm's books. Hidden liabilities mainly include underfunded pension obligations and the cost of stock-option grants. We believe that employee stock options represent a real cost to existing shareholders and must be deducted from fair value.

Morningstar Wide Moat Focus Index Characteristics

Morningstar Wide Moat Focus Index Structure

The Morningstar Wide Moat Focus Index tracks wide moat securities. The index is a subset of the Morningstar US Market Index, a broad market index representing 97% of U.S. equity market capitalization.

The Wide Moat Focus portfolio is constructed using the 20 wide moat stocks representing the best value as determined by the ratio of Morningstar's estimate of fair value to the stock price. These stocks therefore represent the most compelling values among the wide-moat universe, according to Morningstar analysts. Constituents in the Wide Moat Focus portfolio are assigned an equal weight. Because of the selection and weighting schemes, we would expect the performance of the Wide Moat Focus portfolio to deviate substantially from that of the overall market.

Inception Dates and Base Market Values

The inception date of the Morningstar Wide Moat Focus Index is September 30, 2002. Daily price and total return series are available from this date forward. The index base market value at inception is 1,000.

Calculation and Dissemination of Index Values

Index values for the Morningstar Wide Moat Focus Index are currently calculated real-time at 15 second intervals.

Scheduled Reconstitution Date

The Morningstar Wide Moat Focus Index is reconstituted—i.e., the index membership is reset—quarterly, on the Monday following the third Friday of March, June, September, and December. If the Monday is a holiday, reconstitution occurs on the Tuesday immediately following. Reconstitution is carried out after the day's closing index values have been determined.

Morningstar Wide Moat Focus Index Characteristics (Cont.)

Scheduled Rebalancing Dates

The Morningstar Wide Moat Focus Index is rebalanced—i.e. the security weights are adjusted—four times annually. Adjustments are made on the Monday following the third Friday of March, June, September and December. If the Monday is a holiday, rebalancing occurs on the Tuesday immediately following.

Unscheduled Rebalancing/Reconstitution

In the event a corporate action resulting in deletion of a security from the Wide Moat Focus Index, the security is replaced by the next eligible wide moat company. The new security is assigned the same weight as the security being dropped, as of the effective date of the corporate action.

Assigning Stocks to the Wide Moat Focus Index

Overview

At each reconstitution date, the investable universe and index eligibility are defined based on the criteria described in this section. The investable universe and index eligibility criteria are applied in the sequence in which they appear below. Each criterion is applied only to the "survivors" of the criteria applied previously.

Investable Universe

To qualify for inclusion in the investable universe, a security must meet the following criteria:

1) It must trade on one of the three major exchanges—the NYSE, AMEX, or NASDAQ exchange.
2) The issuing company's country of domicile should be the U.S. or the issuing company's primary stock market activities are carried out in the U.S.
3) Securities that have more than 10 non-trading days in the prior quarter are excluded.
4) The following security types do not qualify:
   - American Depository Receipts and American Depository Shares
   - Fixed-dividend shares
   - Convertible notes, warrants, and rights
   - Tracking stocks
   - Limited Partnerships and holding companies

Index Eligibility

To qualify for inclusion in the US Market Index, a security's liquidity score must be among the top 75% of the companies in the investable universe. A security's liquidity score is the average of its ranks on each of the following measures:

- The average monthly trading volume in $US during the six calendar months immediately prior to reconstitution or, in the case of corporate entities younger than six months, since the security was first issued (partial month periods are prorated by number of trading days in the month)
- The lowest 2 months' total trading volume during the six calendar months immediately prior to reconstitution (the months need not be sequential).

Assigning Stocks to the Wide Moat Focus Index (Cont.)

Index Selection

The US Market Index is constructed by selecting the largest stocks that comprise 97% of market capitalization of the investable universe.

To qualify for inclusion in a Morningstar Wide Moat Focus Index, all US Market Index constituents must meet the following criteria:

- Company is assigned a Wide Moat Classification by a Morningstar Analyst
- Company is assigned a Fair Value Price by a Morningstar Analyst

The stocks that meet all of the above criteria are considered for inclusion in a Morningstar Wide Moat Focus Index. At each reconstitution The 20 securities representing the best value by Morningstar Fair Value Price /current market price ratio are selected from the list of eligible securities for inclusion in the Morningstar Wide Moat Focus Index.

Index Calculations

Overview

The value (price) and total return of an index is calculated using a Laspeyres' formula.

$$\text{Index}(t) = \frac{\sum_{i=1}^{n}(p_i(t)*s_i(t))}{C(t)\sum_{j=1}^{n}(p_j(0)*s_j(0)} * \text{BaseIndexValue} = (M(t)/B(t)) * \text{BaseIndexValue}$$

The above formulas can be simplified as: $$\text{Index}(t) = \frac{M(t)}{D(t)}$$

Where:

D(t)	=	divisor at time (t) = B(t)/Base Index Value
N	=	number of stocks in the index
$p_i(0)$	=	closing price of stock i at the base date
$s_i(0)$	=	constructed shares of company i at the base
$p_i(t)$	=	price of stock i at time (t)
$s_i(t)$	=	constructed shares of company i at time (t)
C(t)	=	adjustment factor for the base date market capitalization
T	=	time the index is calculated
M(t)	=	market capitalization of the index at time (t)
B(t)	=	adjusted base date market capitalization of the index at time (t)

It is important to note that the shares ($s_i(t)$) for the index constituents are artificial constructs used for calculation purposes. Consequently, the constructed shares only have relation to the actual shares of the company in terms of the current market price/fair value relationship.

Index Calculations (Cont.)

Constructed Shares and Constituent Weighting

The Morningstar Wide Moat Focus Index is rebalanced on a quarterly basis. The data used to determine new index weights is as of the last business day of the month prior to the effective date of the rebalancing. The Morningstar Wide Moat 100 Index is weighted by float adjusted fair value market cap. Float adjusted fair value market cap is equal to the product of Total Outstanding Shares, Free Float Factor, and Morningstar Fair Value Price. The Morningstar Wide Moat Focus Index is an equal weight index.

Wide Moat Focus Index Weight is determined by:

$$IW_i(q) = \frac{1}{n}$$

And the constructed shares ($s_i(t)$) for each constituent in the index calculation formula are:

$$s_i(t) = \frac{\sum_{j=1}^{n} (s_j(t\text{-}1) p_j(t\text{-}1) * IW_i(q)}{p_i(t\text{-}1)}$$

Where:

n	=	number of stocks in the index
(q)	=	quarter end time the index weights are calculated
(t)	=	time the index is calculated
$p_i(t)$	=	price of stock i at time (t)
$IW_i(q)$	=	company weight in index i at quarterly rebalancing time q
fp(q)	=	Morningstar Fair Value Price of company i at time (t)
ts(q)	=	Total outstanding shares of company i at time (q)
$s_i(t\text{-}1)$	=	constructed shares of company i at time t minus 1*
$f_i(q)$	=	free float factor of company i at time (q)

* At time of index inception the constructed shares are determined by an arbitrary portfolio value, typically $10 Billion.

Index Calculations (Cont.)

Divisor Adjustments

To avoid distortions caused by corporate actions that affect the share capital of index constituents, the divisor of the index is adjusted accordingly. The following formulae will be used for divisor adjustments due to corporate action. Note: No divisor adjustment are necessary for stock splits, since market value does not change and the share number and share price are adjusted prior to the opening of trading on the split's ex-date.

$$D(t+1) = D(t) * \frac{\sum_{i=1}^{n} (p_i(t) * s_i(t)) + [\Delta MV(t+1)]}{\sum_{i=1}^{n} (p_i(t) * s_i(t))}$$

Where:

$D(t)$	=	divisor at time (t)
$D(t+1)$	=	divisor at time (t+1)
$p_i(t)$	=	stock price of company i at time (t)
$s_i(t)$	=	number of shares of company i at time (t)
$\Delta MV(t+1)$	=	aggregate change in market value resulting from corporate actions

Note: If the current trading price of an issue is unavailable, the previous trading session's closing price is used. However, if the issue is affected by any corporate action that requires an adjustment, then the adjusted price is used.

Most but not all of the following actions will require the calculation of an adjustment factor which will be included in the pre-market-open index calculation described above in the section titled "Index Calculation." Generally, because the Wide Moat Focus Index is not market cap weighted changes to the share capital structure of index constituents will not affect the component weights.

Index Calculations (Cont.)

Spin-offs
Issues spun off by index holdings (parent company) are not added to the index but will be considered for inclusion at the next reconstitution. The weight of the surviving parent company is maintained. No divisor adjustment is necessary because market value remains unchanged.

Mergers and Acquisitions:
If an index constituent acquires or merges with another constituent of the index, the original entities are replaced by the security of the successor entity. The weight of the new entity is equal to the market value sum of the original index constituents. No divisor adjustment is necessary because market value remains unchanged. This event does not trigger an unscheduled reconstitution.

If an index constituent acquires or merges with company that is currently not a component of the index, then the original entity is replaced by the security of the successor entity, however in this case the weight of the new entity is equal to the market value of the original index constituent. No divisor adjustment is necessary because market value remains unchanged.

If an index constituent is the target of an acquisition or merger by a company that is not an index component, the original index constituent is deleted from the index. This scenario triggers an unscheduled reconstitution. See Unscheduled Reconstitution section for more details.

Stock Dividends / Splits
Stock splits and dividends do not require a divisor adjustment because the market value of the entity remains unchanged.

Index Calculations (Cont.)

Share Repurchase/Offering:
If an index constituent issues or repurchases shares, the new share capital structure is considered at the next rebalancing. No divisor adjustment is necessary.

Delisting, Bankruptcy, and Financial Distress:
If an index constituent is delisted by its principal exchange, enters bankruptcy proceedings, or is under extreme financial distress, the security is removed from the Wide Moat Focus Index and an Unscheduled Reconstitution occurs (see Unscheduled Reconstitution for further details). Exceptions are made on a case-by-case basis. For example, a security might not be removed immediately when a bankruptcy filing is not a result of operating or financial difficulties. Upon deletion a divisor adjustment is made to reflect the decrease in market value.

Change of Principal Exchange:
A security is removed from the index if its principal exchange ceases to be the NYSE, AMEX, or NASDAQ exchange. The deletion triggers an Unscheduled Reconstitution (see Unscheduled Reconstitution for further details).

Change of Domicile:
If a company ceases to meet the company domicile eligibility rule, the company is removed from the index. The deletion triggers an Unscheduled Reconstitution (see Unscheduled Reconstitution for further details).

Loss of Liquidity:
If a constituent accumulates 10 consecutive non-trading days between reconstitution dates, it is removed from the index. Two business days' prior notice of its removal is provided. The deletion triggers an Unscheduled Reconstitution (see Unscheduled Reconstitution for further details).

Data Correction and Precision

Intraday Index Data Corrections

Commercially reasonable efforts are made to ensure the correctness of data used in real-time index calculations. If incorrect price or corporate action data affects index daily high or lows, it is corrected retroactively as soon as feasible.

Index-Related Data and Divisor Corrections

Incorrect pricing and corporate action data for individual issues in the database will be corrected upon detection. In addition, an incorrect divisor of an index, if discovered within five days of its occurrence, will always 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.

Computational and Reporting Precision

All calculated and adjusted data are stored in real numbers. For reporting purposes, index values are rounded to two decimal places and divisors are rounded to appropriate decimal places. The actual number of shares is used to determine the number of shares outstanding for the free float weighting.

Undocumented Events

Any matter arising from undocumented events will be resolved at the discretion of the Morningstar Index Committee.