Wide Moat Focus Index: Strong Performance After Market Declines

The strategy has provided downside protection amid painful market declines and impressive outperformance thereafter.

Morningstar Equity Research
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Contents

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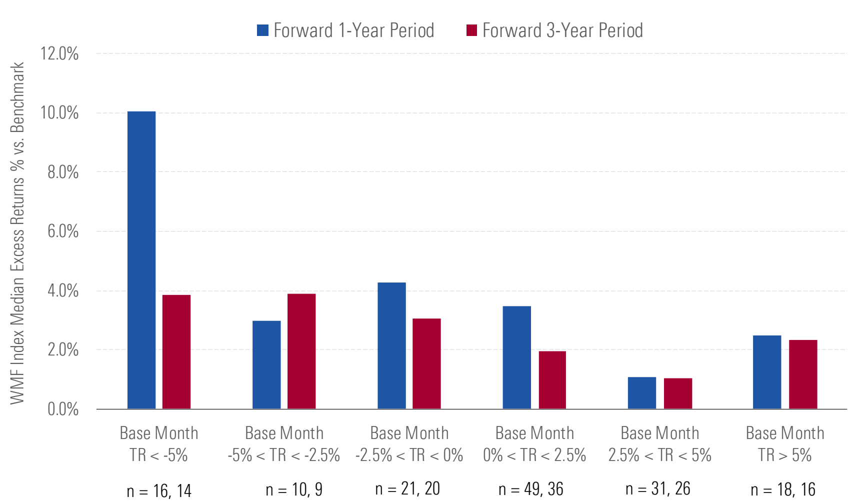
Executive Summary

In this report, we analyze the performance of the Morningstar Wide Moat Focus Index, a portfolio of wide-moat companies trading at attractive valuations. The sharp sell-off across global equity markets in February and March warrants an investigation into how the index has performed following down markets. Although many active and strategic-beta equity strategies deliver impressive total returns when bouncing back with the market after periods of weakness, here we explore the degree to which the index has generated excess returns versus its Morningstar US Market Index benchmark.

The Wide Moat Focus Index has generated average annual outperformance of 363 basis points versus its benchmark since its early 2007 inception date. In doing so, the strategy has delivered excess returns in most market environments. However, our research indicates that the bigger the sell-off in a given month, the higher the excess returns the Wide Moat Focus Index has earned over the next three years. This observation suggests that market volatility helps create valuation dislocations that aren't typically present. In these situations, the index has been able to capitalize on the presence of mispriced wide-moat companies than normal market conditions might allow. Additionally, the strategy has tended to hold up better than the broader market during sharp declines, thereby preserving capital to maximize the benefit of the subsequent outperformance it has delivered.

Exhibit 1 Sizable U.S. Equity Market Declines Have Preceded Elevated Excess Returns (Median)



Source: Morningstar Direct. Data as of March 31, 2020.

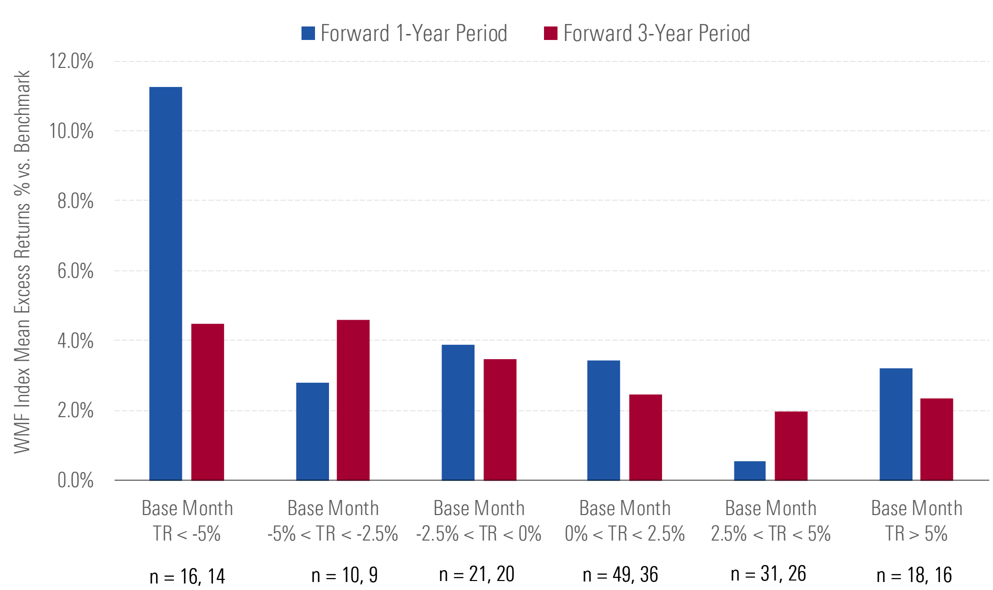
The Morningstar Wide Moat Focus Index Has Performed Well After Market Declines

Although the Wide Moat Focus Index has delivered impressive long-run returns, finding wide-moat stocks that are on sale can be challenging. Great businesses with long-lasting competitive advantages tend to trade at premium multiples and are often fully valued. Accordingly, over a full market cycle, we wouldn't expect wide-moat companies to outperform the broader market. For example, the Wide Moat Index, a cap-weighted basket of all U.S. wide-moat stocks we cover, has only slightly outperformed the Morningstar US Market Index over the trailing decade though year-end 2019. Therefore, the Wide Moat Focus Index requires a sharpened focus on valuation in the pursuit of excess returns.

In looking at the Wide Moat Focus Index's performance after U.S. equity markets have declined, we observe sizable excess returns over the following three-year periods. Although the data indicates that excess returns have been positive following a base month of any return variety, down months for the broader market have set the stage for far higher excess returns.

The data might even suggest that volatility in general, rather than just weak market performance, can provide a supportive backdrop for excess returns thereafter. We observe an uptick in forward excess returns for periods following base month returns above 5% versus periods following base months in which the market appreciated more modestly. However, we hesitate to make this claim, given a limited number of observations within this cohort. Additionally, this dynamic becomes less evident when we consider mean excess returns reflected below rather than the median excess returns reflected on the prior page.

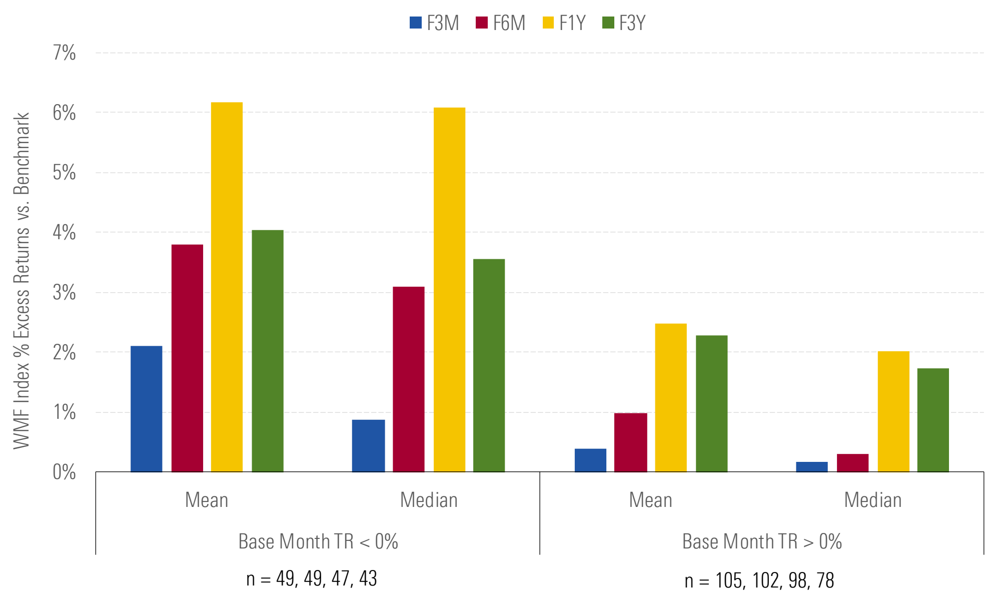
Exhibit 2 Sizable U.S. Equity Market Declines Have Preceded Elevated Excess Returns (Mean)



Source: Morningstar Direct. Data as of March 31, 2020.

Slicing the data a bit differently, we also analyze mean and median excess returns across various forward time periods after base months when the benchmark fell versus base months when the benchmark rose. For all time periods considered, excess returns are materially higher following base months reflective of a down market compared with base months when the market rose.

Exhibit 3 Excess Returns Have Been More Favorable Following Down Months Than Up Months



Source: Morningstar Direct. Data as of March 31, 2020.

This data inspires optimism that the market sell-off stemming from the COVID-19 outbreak will set the table for excess returns in the short term and possibly even more favorable excess returns over a longer time horizon.

The Wide Moat Focus Index Has Provided Downside Protection During Market Declines

While the results discussed above reflect the index's forward performance from various market environments in a base month, we also monitor how the strategy has performed concurrently with different market environments. Of course, strong performance after sharp market sell-offs is only beneficial for investors if the strategy can preserve capital relative to its benchmark when blood was in the water.

Performance data indicates that the Wide Moat Focus Index has done just that. When analyzing quarterly performance periods, the strategy has delivered a downside protection ratio of 86, meaning that it has declined only 86% as much as its benchmark during quarters in which the benchmark traded lower. This might seem intuitive, given the index's focus on great businesses that enjoy durable competitive advantages. Indeed, these types of stocks are often viewed as safe havens when markets go haywire, so it might not be particularly surprising that the strategy has held up well during these situations. Additionally, the index's max drawdown has been negative 42.43% versus negative 50.76% for its benchmark.

Perhaps more noteworthy, however, is that the Wide Moat Focus Index has also soundly outperformed its benchmark when the benchmark has risen in a given quarter. This is reflected by its upside capture ratio of 112, meaning that the strategy has outperformed its benchmark by 12% during up quarters.

Exhibit 4 The Wide Moat Focus Index Has Provided Downside Protection When the Market Has Fallen but Also Outperformed When the Market Has Risen

Index Name	Annual Total Return %	Std Dev (%)	Beta	Sharpe Ratio	Information Ratio	Sortino Ratio	Upside Capture	Downside Capture	Max Drawdown (%)
Morningstar Wide Moat Focus Index	10.71	19.23	1.10	0.58	0.44	0.91	111.82	86.46	-42.43
Morningstar US Market Index	6.91	15.64	1.00	0.45	-	0.63	100.00	100.00	-50.76

Source: Morningstar Direct. Data as of March 31, 2020.
Benchmark: Morningstar US Market Index
Data Setting: Quarterly Returns

Ultimately, we believe that the Wide Moat Focus Index's impressive performance across varying market environments is a product of the forward-looking nature of the key screening criteria employed. Of course, deriving a fair value estimate is inherently a forward-looking process. A company's fair value estimate is, quite simply, the present value of all future free cash flow it will generate. However, our economic moat ratings are also forward-looking. A wide-moat company is defined as a business for which excess normalized returns must, with near certainty, be positive 10 years from now and must, more likely than not, be positive 20 years from now. Additionally, this requires that the company faces no substantial threat of major value destruction over that time. Excess normalized returns reflect the spread between returns on invested capital and the company's weighted average cost of capital.

While Morningstar analysts certainly consider a company's historical performance when assessing evidence of competitive advantages, it is solely our projections for the future that inform our economic moat ratings. In short, the forward-looking nature of our research has helped facilitate excess returns during both up and down markets. Investment strategies focused on quality or other factors are typically purely backward-looking, hinging on selection and weighting rules based only on historical metrics.

We'd highlight two companies to help drive home this point. Purely focusing on historical metrics might preclude an investor from classifying Amazon as a company that satisfies the traditional criteria pertaining to quality. As a result, it would typically not be a constituent of other portfolios to which the Wide Moat Focus Index is often compared. In large part, this is due to the company's growth strategy that aims to forgo lofty near-term profits in the name of far larger longer-term gains. On a backward-looking basis, Amazon doesn't score particularly well across some of the key metrics that might otherwise help an investor identify a wide-moat business. However, because of our forward-looking approach to assessing durable competitive advantages, we have very high conviction that Amazon deserves a wide economic moat rating, and it has been one of the top contributors to index performance in recent years. Apple sits on the other side of the coin. Many would assume Apple that should merit a wide economic moat rating and, indeed, its historical performance metrics unequivocally suggest a high loading to quality as a factor. However, we assign only a narrow economic moat. In short, this is predicated on our view that a durable competitive advantage does exist and is likely to last at least 10 years, but we simply don't have sufficient conviction that it will last 20 years. To be clear, this is less an indictment of Apple, which is undeniably a fantastic business, and more a reflection of the very challenging industry in which it operates. Consumer electronics are subject to incredibly rapid technological change, and its graveyard is littered with once kings. Perhaps Apple will prove to be different, as one could fairly argue that its market position is superior to other market leaders that came before it. However, when thinking about competitive dynamics 20 years into the future, this is simply too long a period to otherwise build sufficient conviction that its competitive advantage will persist unscathed amid a constant deluge of new competitors.

While strategies that leverage backward-looking portfolio construction rules can often be counted on to perform a certain way in a certain type of market environment, they typically lack the versatility reflected by the Wide Moat Focus Index's returns. For example, a strategy geared toward quality as a factor that might use historical returns on equity, a track record of historical earnings growth, and low financial leverage might be expected to outperform during down markets but fail to outperform during up markets. The fact that Morningstar Indexes can look beyond historical metrics and employ forward-looking analysis is a unique offering, given our more than 100 equity research analysts covering over 1,500 companies.

We include annual returns versus those of the benchmark since inception below. The benchmark has posted a negative annual total return just twice since inception, but the Wide Moat Focus Index delivered sizable excess returns in both of those years. Additionally, the portfolio outperformed in five of the eight years in which the benchmark rose more than 10% (2009, 2012, 2016, 2017, and 2019). Again, this demonstrates impressive versatility historically.

Exhibit 5 Wide Moat Focus Index: Annual Total Return % vs. Benchmark

	2007*	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Morningstar Wide Moat Focus Index	-5.39%	-19.58%	46.93%	8.57%	6.61%	24.50%	31.46%	9.68%	-4.28%	22.37%	23.79%	-0.74%	35.65%
Morningstar US Market Index	2.47%	-37.03%	28.45%	16.80%	1.58%	16.27%	33.13%	12.85%	0.69%	12.44%	21.47%	-5.05%	31.22%
Out/Underperformance vs. Benchmark	*-7.86%*	*17.45%*	*18.48%*	*-8.23%*	*5.03%*	*8.23%*	*-1.67%*	*-3.17%*	*-4.97%*	*9.93%*	*2.32%*	*4.31%*	*4.43%*

Source: Morningstar Direct. Data as of Dec. 31, 2019.
Benchmark: Morningstar US Market Index

YTD Performance Has Been Mixed, but the Strategy Still Provided Downside Protection

Given that the Wide Moat Focus Index has historically held up better than its benchmark during quarters in which the benchmark declined, we now investigate the degree to which this held true during the market sell-off associated with the COVID-19 outbreak. The Morningstar US Market Index fell nearly 35% over the course of just 23 trading days from its recent high on Feb. 19 to its low on March 23.

The relative performance of the Wide Moat Focus Index versus its benchmark during that time period was encouraging, even though absolute returns were still quite painful. With the benchmark down 34.8%, the index was down 33.0%, 183 basis points of relative outperformance. Roughly two thirds of the excess returns were explained by favorable stock selection, while one third was driven by the allocation effect thanks to favorable sector positioning. We'd point to the strategy's healthcare exposure as a highlight. Not only was the strategy's overweight position in healthcare stocks highly beneficial, but stock selection across the index's healthcare holdings was also highly favorable.

The strategy had been trailing its benchmark year to date before the sell-off began. However, the excess returns generated during the sell-off more than offset the underperformance beforehand by the end of the first quarter.

Exhibit 6 Wide Moat Focus Index: Total Return % vs. Benchmark

	1Q-2020	Trailing 1-Yr	Trailing 3-Yr	Trailing 5-Yr	Trailing 10-Yr	Live Inception
Morningstar Wide Moat Focus Index	-20.05%	-4.37%	7.26%	9.81%	12.15%	10.31%
Morningstar US Market Index	-20.57%	-8.62%	4.31%	5.99%	10.30%	6.68%
Out/Underperformance vs. Benchmark	*0.52%*	*4.25%*	*2.95%*	*3.82%*	*1.85%*	*3.63%*

Source: Morningstar Direct. Data as of March 31, 2020.
Benchmark: Morningstar US Market Index.

March Reconstitution Results

As part of its quarterly reconstitution process, the Wide Moat Focus Index's most recent reconstitution fell on March 20. This is noteworthy, as it took place nearly concurrent with the recent March 23 market bottom, a period rife with volatility and negative sentiment. As mentioned above, the Morningstar US Market Index had quickly fallen nearly 35% from its recent peak at this time. Although the sell-off was painful, we're hopeful this reconstitution will help investors harvest benefits from market dislocations provided by the downward move. We've included the March 20 reconstitution results below, as this reflects the portfolio's positioning going forward. M

Exhibit 7 Wide Moat Focus Index: March 20 Reconstitution Results

Morningstar® Wide Moat Focus Index℠
20 March 2020

The Morningstar® Wide Moat Focus Index℠ provides exposure to companies in the Morningstar® US Market Index℠ with Morningstar® US Economic Moat™ ratings of Wide that are trading at the lowest current market price to fair value ratios. The index follows a staggered rebalancing approach in which the index is divided into two sub-portfolios, each containing 40 stocks. One sub-portfolio reconstitutes in December and June; the other sub-portfolio reconstitutes in March and September. The information here pertains only to the subportfolio being reconstituted.

http://indexes.morningstar.com
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Reconstituted Subportfolio Holdings

Name	Ticker	Price/Fair Value	Subportfoli Weight %
Core Laboratories N.V.	CLB	0.24	2.50
Compass Minerals Intl	CMP	0.59	2.50
Wells Fargo & Co	WFC	0.64	2.50
Corteva Inc.	CTVA	0.65	2.50
Zimmer Biomet Holdings Inc	ZBH	0.66	2.50
Charles Schwab Corp	SCHW	0.67	2.50
Boeing Co	BA	0.67	2.50
Caterpillar Inc	CAT	0.68	2.50
Emerson Electric Co	EMR	0.71	2.50
Constellation Brands Inc A	STZ	0.72	2.50
Biogen Inc	BIIB	0.73	2.50
Polaris Inc	PII	0.73	2.50
American Express Co	AXP	0.73	2.50
State Street Corp	STT	0.74	2.50
Bank of America Corp	BAC	0.74	2.50
Blackbaud Inc	BLKB	0.74	2.50
Microchip Technology Inc	MCHP	0.75	2.50
Pfizer Inc	PFE	0.75	2.50
United Technologies Corp	UTX	0.75	2.50
US Bancorp	USB	0.76	2.50
Cheniere Energy Inc	LNG	0.76	2.50
Intel Corp	INTC	0.77	2.50
Guidewire Software	GWRE	0.78	2.50
Altria Group Inc	MO	0.78	2.50
John Wiley & Sons Inc. A	JW.A	0.78	2.50
Amazon.com Inc	AMZN	0.79	2.50
Salesforce.com	CRM	0.80	2.50
Merck & Co Inc	MRK	0.80	2.50
Berkshire Hathaway B	BRK.B	0.80	2.50
Veeva Systems Inc A	VEEV	0.81	2.50
Kellogg Co	K	0.81	2.50
BlackRock Inc	BLK	0.81	2.50
Medtronic plc	MDT	0.82	2.50
Philip Morris International	PM	0.83	2.50
General Dynamics	GD	0.83	2.50
Facebook Inc A	FB	0.83	2.50
NIKE Inc B	NKE	0.83	2.50
ServiceNow Inc.	NOW	0.85	2.50
Gilead Sciences Inc	GILD	0.85	2.50
Microsoft Corp	MSFT	0.87	2.50

Added Holdings

Name	Ticker	Price / Fair Value
Corteva Inc.	CTVA	0.65
Boeing Co	BA	0.67
Constellation Brands Inc A	STZ	0.72
American Express Co	AXP	0.73
Bank of America Corp	BAC	0.74
Blackbaud Inc	BLKB	0.74
US Bancorp	USB	0.76

Removed Holdings

		Failed Screen (Reason for Removal)		
Name	Ticker	Moat	Price / Fair Value	Other
Cerner Corp	CERN		•	
McDonald's Corp	MCD		•	
Bristol-Myers Squibb	BMY		•	
Amgen Inc	AMGN		•	
Dominion Energy Inc	D		•	
Domino's Pizza Inc	DPZ		•	
Unitedhealth Group Inc	UNH	•		

Next 10 Potential Holdings

Name	Ticker	Price / Fair Value
The Bank of New York Mellon Corp	BK	0.76
Harley-Davidson Inc	HOG	0.77
Raytheon Co	RTN	0.78
Yum! Brands Inc	YUM	0.79
Aspen Technology Inc	AZPN	0.79
Walt Disney Co	DIS	0.79
Comcast Corp A	CMCSA	0.80
Northern Trust Corp (IL)	NTRS	0.80
Starbucks Corp	SBUX	0.81
Masco Corp	MAS	0.82

Exhibit 7 (Continued) Wide Moat Focus Index: March 20 Reconstitution Results

Morningstar® Wide Moat Focus Index℠

Index Holdings

Name	Ticker	Index Weight %
ServiceNow Inc.	NOW	2.90
Biogen Inc	BIIB	2.89
Amazon.com Inc	AMZN	2.80
Intel Corp	INTC	2.79
Gilead Sciences Inc	GILD	2.77
Philip Morris International	PM	2.75
Kellogg Co	K	2.73
Veeva Systems Inc A	VEEV	2.70
Berkshire Hathaway B	BRK.B	2.64
Pfizer Inc	PFE	2.64
Corteva Inc.	CTVA	2.63
Salesforce.com	CRM	2.62
Facebook Inc A	FB	2.57
BlackRock Inc	BLK	2.54
Merck & Co Inc	MRK	2.53
Compass Minerals Intl	CMP	2.49
Altria Group Inc	MO	2.48
Medtronic plc	MDT	2.44
Guidewire Software	GWRE	2.44
General Dynamics	GD	2.42
United Technologies Corp	UTX	2.42
Charles Schwab Corp	SCHW	2.40
NIKE Inc B	NKE	2.34
Caterpillar Inc	CAT	2.33
Microchip Technology Inc	MCHP	2.33
Polaris Inc	PII	2.29
Blackbaud Inc	BLKB	2.28
Emerson Electric Co	EMR	2.25
Wells Fargo & Co	WFC	2.16
Zimmer Biomet Holdings Inc	ZBH	2.16
Cheniere Energy Inc	LNG	2.02
Dominion Energy Inc	D	1.48
State Street Corp	STT	1.40
T Rowe Price Group Inc	TROW	1.39
Bank of America Corp	BAC	1.37
John Wiley & Sons Inc. A	JW.A	1.37
Comcast Corp A	CMCSA	1.36
American Express Co	AXP	1.35
Microsoft Corp	MSFT	1.33
Core Laboratories N.V.	CLB	1.32
US Bancorp	USB	1.32
Bristol-Myers Squibb	BMY	1.31
Applied Materials Inc	AMAT	1.30
KLA Corporation	KLAC	1.29
CSX Corporation	CSX	1.26
Boeing Co	BA	1.16
Raytheon Co	RTN	1.13
Constellation Brands Inc A	STZ	1.11

Source: Morningstar Direct. Data as of March 20, 2020.

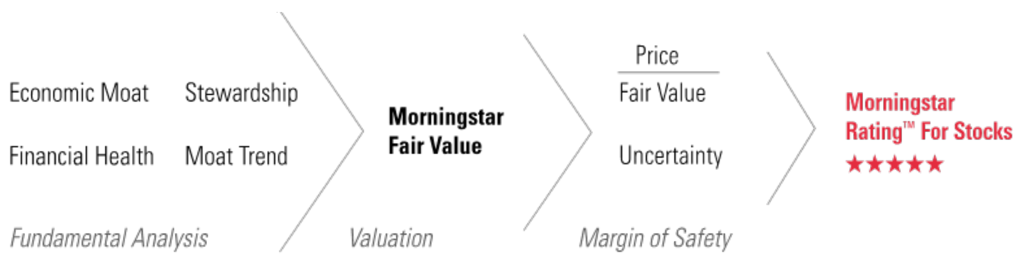
Research Methodology for Valuing Companies

Overview

At the heart of our valuation system is a detailed projection of a company's future cash flows, resulting from our analysts' research. Analysts create custom industry and company assumptions to feed income statement, balance sheet, and capital investment assumptions into our globally standardized, proprietary discounted cash flow, or DCF, modeling templates. We use scenario analysis, in-depth competitive advantage analysis, and a variety of other analytical tools to augment this process. Moreover, we think analyzing valuation through discounted cash flows presents a better lens for viewing cyclical companies, high-growth firms, businesses with finite lives (e.g., mines), or companies expected to generate negative earnings over the next few years. That said, we don't dismiss multiples altogether but rather use them as supporting cross-checks for our DCF-based fair value estimates. We also acknowledge that DCF models offer their own challenges (including a potential proliferation of estimated inputs and the possibility that the method may miss short-term market-price movements), but we believe these negatives are mitigated by deep analysis and our long-term approach.

Morningstar's equity research group (we", "our") believes that a company's intrinsic worth results from the future cash flows it can generate. The Morningstar Rating for stocks identifies stocks trading at a discount or premium to their intrinsic worth—or fair value estimate, in Morningstar terminology. Five-star stocks sell for the biggest risk-adjusted discount to their fair values, whereas 1-star stocks trade at premiums to their intrinsic worth.

Morningstar Research Methodology



Source: Morningstar.

Four key components drive the Morningstar rating: (1) our assessment of the firm's economic moat, (2) our estimate of the stock's fair value, (3) our uncertainty around that fair value estimate and (4) the current market price. This process ultimately culminates in our single-point star rating.

Economic Moat

The concept of an economic moat plays a vital role not only in our qualitative assessment of a firm's long-term investment potential, but also in the actual calculation of our fair value estimates. An economic moat is a structural feature that allows a firm to sustain excess profits over a long period of time. We define economic profits as returns on invested capital (or ROIC) over and above our estimate of a firm's cost of capital, or weighted average cost of capital (or WACC). Without a moat, profits are more susceptible to competition. We have identified five sources of economic moats: intangible assets, switching costs, network effect, cost advantage, and efficient scale.

Companies with a narrow moat are those we believe are more likely than not to achieve normalized excess returns for at least the next 10 years. Wide-moat companies are those in which we have very high confidence that excess returns will remain for 10 years, with excess returns more likely than not to remain for at least 20 years. The longer a firm generates economic profits, the higher its intrinsic value. We believe low-quality, no-moat companies will see their normalized returns gravitate toward the firm's cost of capital more quickly than companies with moats.

To assess the sustainability of excess profits, analysts perform ongoing assessments of the moat trend. A firm's moat trend is positive in cases where we think its sources of competitive advantage are growing stronger; stable where we don't anticipate changes to competitive advantages over the next several years; or negative when we see signs of deterioration.

Estimated Fair Value

Combining our analysts' financial forecasts with the firm's economic moat helps us assess how long returns on invested capital are likely to exceed the firm's cost of capital. Returns of firms with a wide economic moat rating are assumed to fade to the perpetuity period over a longer period of time than the returns of narrow-moat firms, and both will fade slower than no-moat firms, increasing our estimate of their intrinsic value.

Our model is divided into three distinct stages:

Stage I: Explicit Forecast

In this stage, which can last five to 10 years, analysts make full financial statement forecasts, including items such as revenue, profit margins, tax rates, changes in working-capital accounts, and capital spending. Based on these projections, we calculate earnings before interest, after taxes (EBI) and the net new investment (NNI) to derive our annual free cash flow forecast.

Stage II: Fade

The second stage of our model is the period it will take the company's return on new invested capital—the return on capital of the next dollar invested ("RONIC")—to decline (or rise) to its cost of capital. During the Stage II period, we use a formula to approximate cash flows in lieu of explicitly modeling the income statement, balance sheet, and cash flow statement as we do in Stage I. The length of the second stage depends on the strength of the company's economic moat. We forecast this period to last anywhere from one year (for companies with no economic moat) to 10–15 years or more (for wide-moat companies). During this period, cash flows are forecast using four assumptions: an average growth rate for EBI over the period, a normalized investment rate, average return on new invested capital (RONIC), and the number of years until perpetuity, when excess returns cease. The investment rate and return on new invested capital decline until a perpetuity value is calculated. In the case of firms that do not earn their cost of capital, we assume marginal ROICs rise to the firm's cost of capital (usually attributable to less reinvestment), and we may truncate the second stage.

Stage III: Perpetuity

Once a company's marginal ROIC hits its cost of capital, we calculate a continuing value, using a standard perpetuity formula. At perpetuity, we assume that any growth or decline or investment in the business neither creates nor destroys value and that any new investment provides a return in line with estimated WACC.

Because a dollar earned today is worth more than a dollar earned tomorrow, we discount our projections of cash flows in stages I, II, and III to arrive at a total present value of expected future cash flows. Because we are modeling free cash flow to the firm—representing cash available to provide a return to all capital providers—we discount future cash flows using the WACC, which is a weighted average of the costs of equity, debt, and preferred stock (and any other funding sources), using expected future proportionate long-term, market-value weights.

Uncertainty around that fair value estimate

Morningstar's Uncertainty Rating captures a range of likely potential intrinsic values for a company and uses it to assign the margin of safety required before investing, which in turn explicitly drives our stock star rating system. The Uncertainty Rating represents the analysts' ability to bound the estimated value of the shares in a company around the Fair Value Estimate, based on the characteristics of the business underlying the stock, including operating and financial leverage, sales sensitivity to the overall economy, product concentration, pricing power, and other company-specific factors.

Analysts consider at least two scenarios in addition to their base case: a bull case and a bear case. Assumptions are chosen such that the analyst believes there is a 25% probability that the company will perform better than the bull case, and a 25% probability that the company will perform worse than the bear case. The distance between the bull and bear cases is an important indicator of the uncertainty underlying the fair value estimate.

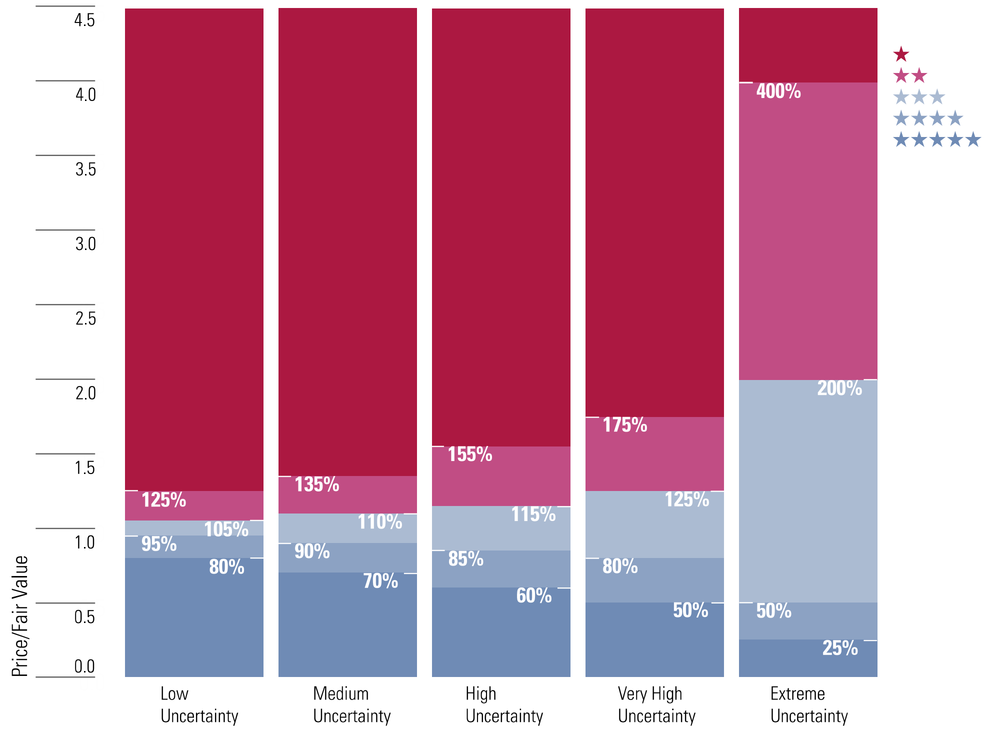
Our recommended margin of safety widens as our uncertainty of the estimated value of the equity increases. The more uncertain we are about the estimated value of the equity, the greater the discount we require relative to our estimate of the value of the firm before we would recommend the purchase of the shares. In addition, the uncertainty rating provides guidance in portfolio construction based on risk tolerance.

Our uncertainty ratings for our qualitative analysis are low, medium, high, very high, and extreme.

- Low–margin of safety for 5-star rating is a 20% discount and for 1-star rating is 25% premium.
- Medium–margin of safety for 5-star rating is a 30% discount and for 1-star rating is 35% premium.
- High–margin of safety for 5-star rating is a 40% discount and for 1-star rating is 55% premium.

- Very High–margin of safety for 5-star rating is a 50% discount and for 1-star rating is 75% premium.
- Extreme– margin of safety for 5-star rating is a 75% discount and for 1-star rating is 300% premium.

Morningstar Equity Research Star Rating Methodology



Market Price

The market prices used in this analysis and noted in the report come from exchange on which the stock is listed which we believe is a reliable source.

For more details about our methodology, please go to https://shareholders.morningstar.com.

Morningstar Star Rating for Stocks

Once we determine the fair value estimate of a stock, we compare it with the stock's current market price on a daily basis, and the star rating is automatically re-calculated at the market close on
every day the market on which the stock is listed is open. Our analysts keep close tabs on the companies they follow, and, based on thorough and ongoing analysis, raise or lower their fair value estimates
as warranted.

Please note, there is no predefined distribution of stars. That is, the percentage of stocks that earn
5 stars can fluctuate daily, so the star ratings, in the aggregate, can serve as a gauge of the broader market's valuation. When there are many 5-star stocks, the stock market as a whole is more undervalued, in our opinion, than when very few companies garner our highest rating.

We expect that if our base-case assumptions are true the market price will converge on our fair value estimate over time, generally within three years (although it is impossible to predict the exact time frame in which market prices may adjust).

Our star ratings are guideposts to a broad audience and individuals must consider their own specific investment goals, risk tolerance, tax situation, time horizon, income needs, and complete investment portfolio, among other factors.

The Morningstar Star Ratings for stocks are defined below:

★★★★★ We believe appreciation beyond a fair risk-adjusted return is highly likely over a multiyear time frame. Scenario analysis developed by our analysts indicates that the current market price represents an excessively pessimistic outlook, limiting downside risk and maximizing upside potential.

★★★★ We believe appreciation beyond a fair risk-adjusted return is likely.

★★★ Indicates our belief that investors are likely to receive a fair risk-adjusted return (approximately cost of equity).

★★ We believe investors are likely to receive a less than fair risk-adjusted return.

★ Indicates a high probability of undesirable risk-adjusted returns from the current market price over a multiyear time frame, based on our analysis. Scenario analysis by our analysts indicates that the market is pricing in an excessively optimistic outlook, limiting upside potential and leaving the investor exposed to Capital loss.

Risk Warning

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