Morningstar Wide Moat Focus Index: Year in Review

A four-year string of outperformance was interrupted in 2020, although long-term results remain compelling.

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Contents

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See last page for continued disclosures.

Executive Summary

The Morningstar Wide Moat Focus Index underperformed the broader U.S. equity market in 2020, ending a four-year period of annual excess returns. However, the strategy's long-term performance remains very impressive as it closes in on a 14-year live track record.

An underweight position in the FANMAG stocks (Facebook, Amazon, Netflix, Microsoft, Apple, and Google/Alphabet) represented a pressing headwind as these stocks drove a significant portion of broad market returns during the year. Of this group, Facebook, Amazon, Microsoft, and Alphabet were each held in the Wide Moat Focus Index for at least a portion of the year. Apple and Netflix were not held, as they each have only a narrow economic moat rating and are therefore excluded.

The index also exhibited a value style bias over the course of 2020, a positioning that proved adverse as growth materially outperformed value. Although the portfolio typically operates in the core category from a style perspective, a notable lean toward value emerged after the March 2020 reconstitution. This particular reconstitution coincided almost to the day with the market bottom from the COVID-19-related sell-off. As a result, a number of value-oriented stocks that Morningstar equity analysts viewed as having been unjustly punished were added to the portfolio at the expense of more growth-oriented holdings. With value underperforming relative to growth thereafter, a style orientation toward value remains in place.

2020 was a year in which stock selection proved disappointing even aside from being underweight the FANMAG stocks. For any strategy that involves the active element of analyst-driven valuation assessments, unfavorable stock selection is certain to rear its head from time to time. However, despite underwhelming stock-picking results in 2020, favorable stock selection has been the driving force behind the strategy's impressive excess returns since its live inception date. Thanks to this dynamic, the Wide Moat Focus Index has outperformed its benchmark by roughly 300 basis points annually since its live inception. This represents a highly attractive track record over a lengthy period.

Morningstar Wide Moat Focus Index Performance vs. Benchmark (% total returns)

	2020	Trailing 3-Yr	Trailing 5-Yr	Trailing 10-Yr	Live Inception
Morningstar Wide Moat Focus Index	15.09%	15.72%	18.61%	15.70%	12.64%
Morningstar US Market Index	20.90%	14.63%	15.52%	13.90%	9.58%
Out/Underperformance vs. Benchmark	*-5.81%*	*1.09%*	*3.09%*	*1.80%*	*3.06%*

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

The Wide Moat Focus Index Has Established an Impressive Long-Term Track Record

Although this report focuses primarily on Wide Moat Focus Index performance in 2020, it is important to contextualize recent results within observations on long-term performance. Indeed, the strategy's live track record spanning nearly 14 years remains highly favorable.

Long-Term Risk-Adjusted Return Metrics Remain Favorable

In addition to attractive total returns, the Wide Moat Focus Index has performed well on a risk-adjusted basis. Our research indicates a Sharpe ratio of 0.74 and an information ratio of 0.55 since live inception, based on a quarterly data frequency. Perhaps most noteworthy is the index's up capture ratio of 108 and down capture of 86. These figures indicate that the strategy has, on average, outperformed in periods when its benchmark has risen and also outperformed in periods when its benchmark has declined. It is rare to see versatility of this nature, particularly over such a lengthy assessment period.

Exhibit 1 The Wide Moat Focus Index Has Delivered Attractive Risk-Adjusted Returns Over the Long Term

Index	Return (Annualized)	St. Dev. (Annualized)	Beta	Sharpe Ratio (Annualized)	Information Ratio (Annualized)	Sortino Ratio (Annualized)	Up Capture Ratio	Down Capture Ratio	Max Drawdown
Morningstar Wide Moat Focus Index	13.05	27.45	1.02	0.74	0.55	0.88	107.83	86.46	-35.10
Morningstar US Market Index	9.82	25.49	1.00	0.61	-	0.71	100.00	100.00	-45.54

Source: Morningstar Direct. Data from April 1, 2007, to Dec. 31, 2020.
Benchmark: Morningstar US Market Index.
Data frequency: Quarterly.

2020 Results Ended Four Consecutive Years of Outperformance

From a total return perspective, the Wide Moat Focus Index has outperformed its benchmark in 8 of the 14 years since its live inception date. However, in 2020, we observed the highest degree of single-year relative underperformance since 2010.

Exhibit 2 2020 Ended a Four-Year String of Excess Returns

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
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%	15.09%
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%	20.90%
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%*	*-5.81%*

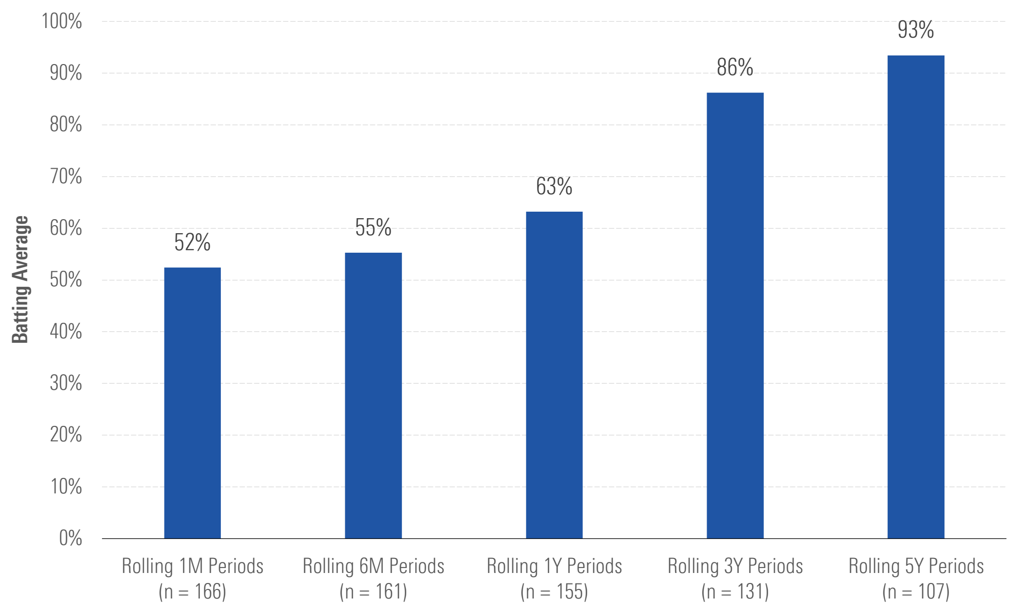
Source: Morningstar Direct. Data as of Dec. 31, 2020.
Benchmark: Morningstar US Market Index.
Note: 2007 performance data spans the Feb. 14, 2007, live inception date through year-end.

We Observe a Positive Correlation Between Holding Period Length and Batting Average

The Wide Moat Focus Index's historical performance looks better and better as the implied holding period lengthens. Here, we consider the strategy's "batting average"—the percentage of time periods in which it has outperformed its benchmark—across various holding period lengths. The batting average metric doesn't account for the magnitude of excess returns in a given month; instead, it reflects only whether the index outperformed or underperformed its benchmark.

Exhibit 3 indicates that the Wide Moat Focus Index has outperformed its benchmark in 52% of the 166 months since its live inception. However, its batting average rises to 93% over the 107 five-year holding periods on a monthly rolling basis since live inception.

Exhibit 3 Wide Moat Focus Index: Batting Average % vs. Benchmark Since Live Inception

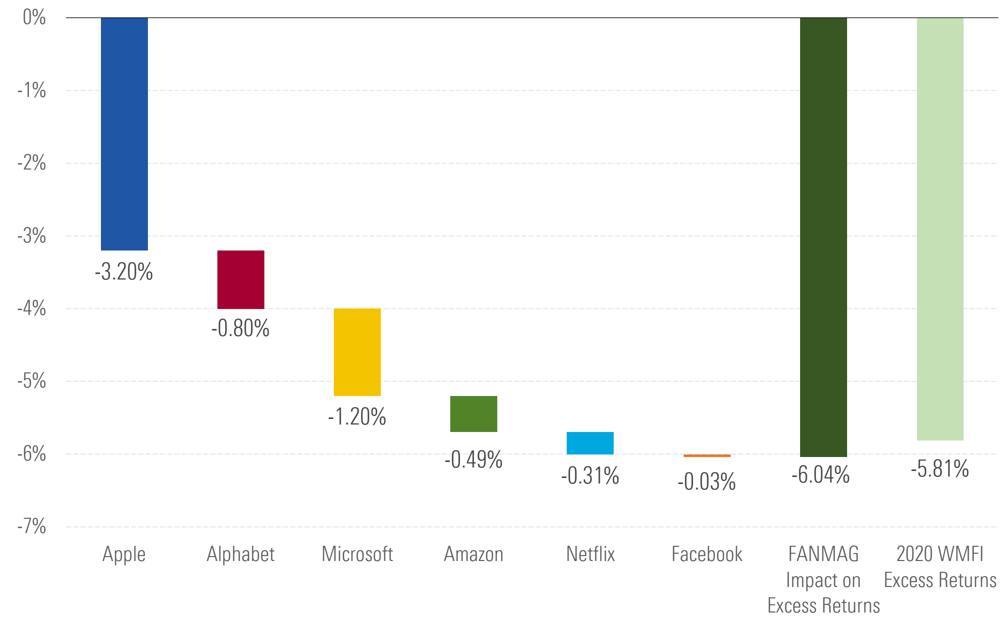


Source: Morningstar Direct. Data from March 1, 2007, to Dec. 31, 2020.
Benchmark: Morningstar US Market Index.
Data frequency: Monthly.

Being Underweight the FANMAG Stocks Represented a Pressing Headwind in 2020

We now shift our focus to the Wide Moat Focus Index's performance in 2020 alone. In recent years, the index has maintained an underweight position in the FANMAG stocks. This proved challenging from a performance perspective in 2020, as the impact of being underweight these six stocks explained effectively all of the broader strategy's underperformance versus the benchmark.

Exhibit 4 FANMAG Impact on Wide Moat Focus Index Performance vs. Benchmark in 2020



Source: Morningstar Direct. Data from Jan. 1, 2020 to Dec. 31, 2020.
Benchmark: Morningstar US Market Index.

Indeed, the FANMAG stocks drove a considerable portion of broader U.S. equity market returns over the course of the year. Each of these six stocks generated a higher total return than both the Wide Moat Focus Index and the broader U.S. equity market in 2020.

Exhibit 5 2020 Total Returns: FANMAG Stocks vs. WMFI and Benchmark

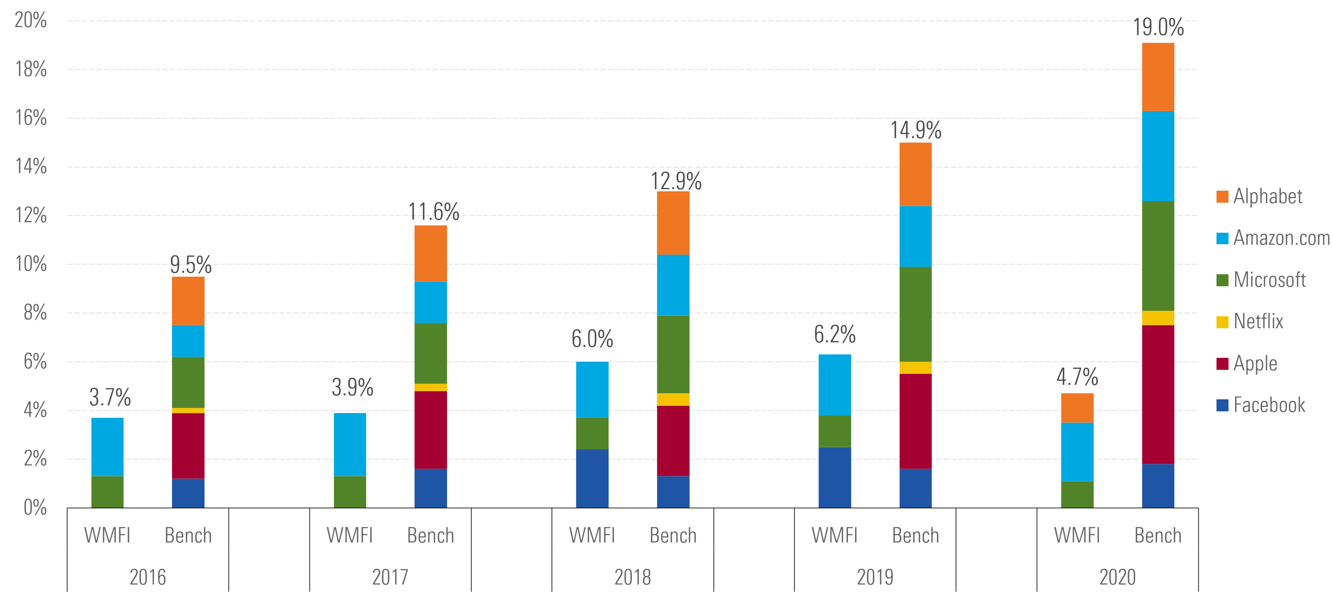
Investment	**2020 Total Return %**	**Benchmark Weighting %**
Apple Inc	82.3	5.7
Amazon.com Inc	76.3	3.7
Netflix Inc	67.1	0.6
Microsoft Corp	42.6	4.5
Facebook Inc A	33.1	1.8
Alphabet Inc A	30.9	2.8
	Combined Weighting:	19.0

	2020 Total Return %
Morningstar US Market Index	20.9
Morningstar Wide Moat Focus Index	15.1

Source: Morningstar Direct.
Total return data from Jan. 1, 2020, to Dec. 31, 2020; benchmark weighting data as of Dec. 31, 2020.

Further weighing on the Wide Moat Focus Index's relative performance is the fact that these six stocks combine to account for a significant portion of the benchmark's overall weighting. As reflected by Exhibit 6, FANMAG stocks have accounted for only about a 5% weighting in the Wide Moat Focus Index, on average, over the last five years while the benchmark's FANMAG weighting has steadily increased. This has led to a growing underweight position over time, with this underweight position increasing materially in 2020. The weighting of FANMAG stocks in the benchmark reached 19% at year-end 2020, up from just 9.5% at year-end 2016.

Exhibit 6 The Wide Moat Focus Index Has Grown Increasingly Underweight the FANMAG Stocks



Source: Morningstar Direct. Data as of year-end.
Benchmark: Morningstar US Market Index.

For more information on index and benchmark weightings for the individual FANMAG stocks over the last five years, please see Exhibit 1A in the appendix.

The Wide Moat Focus Index Is Likely to Remain Underweight the FANMAG Stocks

The Wide Moat Focus Index's underweight position in the FANMAG stocks has become structural in nature. This holds true for three main reasons.

First, only four of the six FANMAG stocks currently have a wide moat rating. Apple and Netflix command only a narrow moat rating, which excludes them from the index. Apple's exclusion is particularly noteworthy from a relative weighting perspective, as it accounted for 4.5% of the benchmark's weighting alone at year-end 2020.

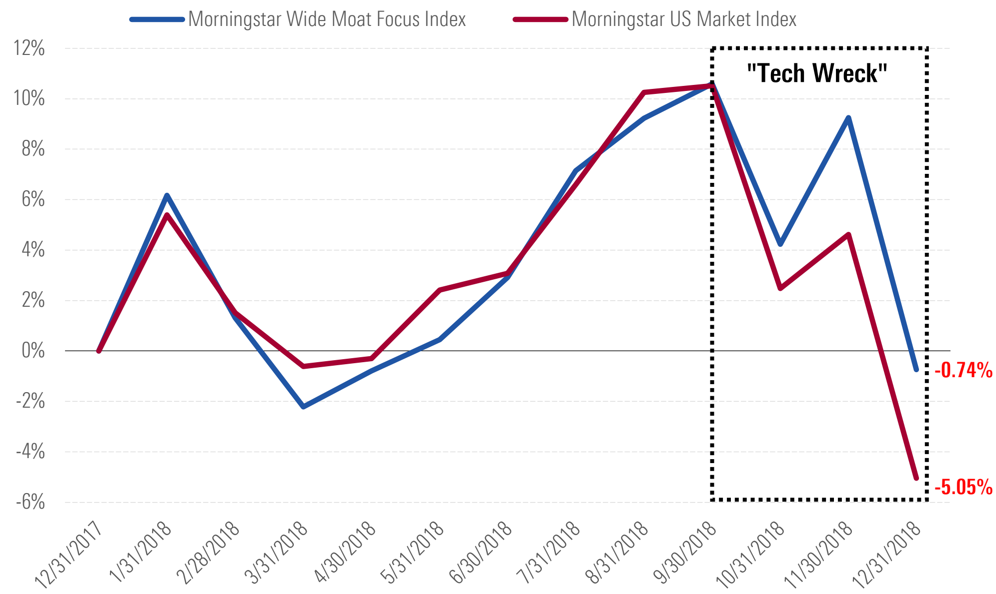
Second, the Wide Moat Focus Index is equal-weighted, which obviously limits the contribution of any single holding. Therefore, even if the four wide-moat-rated FANMAG stocks were each held at a full

~2.5% weighting in the Wide Moat Focus Index, the portfolio would still remain materially underweight the FANMAG stocks at a roughly 10% combined weighting versus the benchmark's 19% combined weighting for the group. We'd also note that at year-end 2020, Apple, Amazon, Microsoft, and Alphabet each commanded a benchmark weighting above the ~2.5% maximum weighting that they could conceivably have in the Wide Moat Focus Index. Phrased differently, even a full weighting in one of these stocks would represent a relative underweight position in that stock, given its outsize representation in the benchmark. On the other side of the coin, Facebook and Netflix had benchmark weightings of "only" 1.8% and 0.6% at year-end 2020, meaning that the Wide Moat Focus Index could theoretically be overweight these two stocks if they were held at a full ~2.5% weighting.

Third, a wide moat rating is only the first criterion that needs to be met for a company to be considered for Wide Moat Focus Index inclusion. To become a constituent, a stock must also pass a valuation screen. Of the 140 U.S. wide-moat-rated stocks eligible for potential index inclusion at year-end 2020, the index's holding count was still just 50 due to the impact of the valuation screen. The highest combined year-end weighting we've observed for Facebook, Microsoft, Amazon, and Alphabet since 2016 was only 6.2% in 2019. This, of course, was well below the benchmark's combined 14.9% weighting to the FANMAG stocks at that time. For more details on the historical performance effects of the index's individual screening criteria, please see our August 2020 report, Wide Moat Focus Index: The Impact of Moat and Valuation Screens.

While a consistent underweight position in the FANMAG stocks would continue to represent a headwind when this group of stocks provides narrow market leadership, the more diversified return stream provided by the Wide Moat Focus Index can still prove highly desirable. For example, the Wide Moat Focus Index held up very well versus the broader market amid the "tech wreck" in the fourth quarter of 2018, given its prevailing underweight position in FANMAG stocks.

Exhibit 7 Being Underweight FANMAG Stocks Drove Favorable Relative Performance in Q4 2018



Source: Morningstar Direct. Data from Jan. 1, 2018, to Dec. 31, 2018.
Benchmark: Morningstar US Market Index.
Data frequency: Monthly.

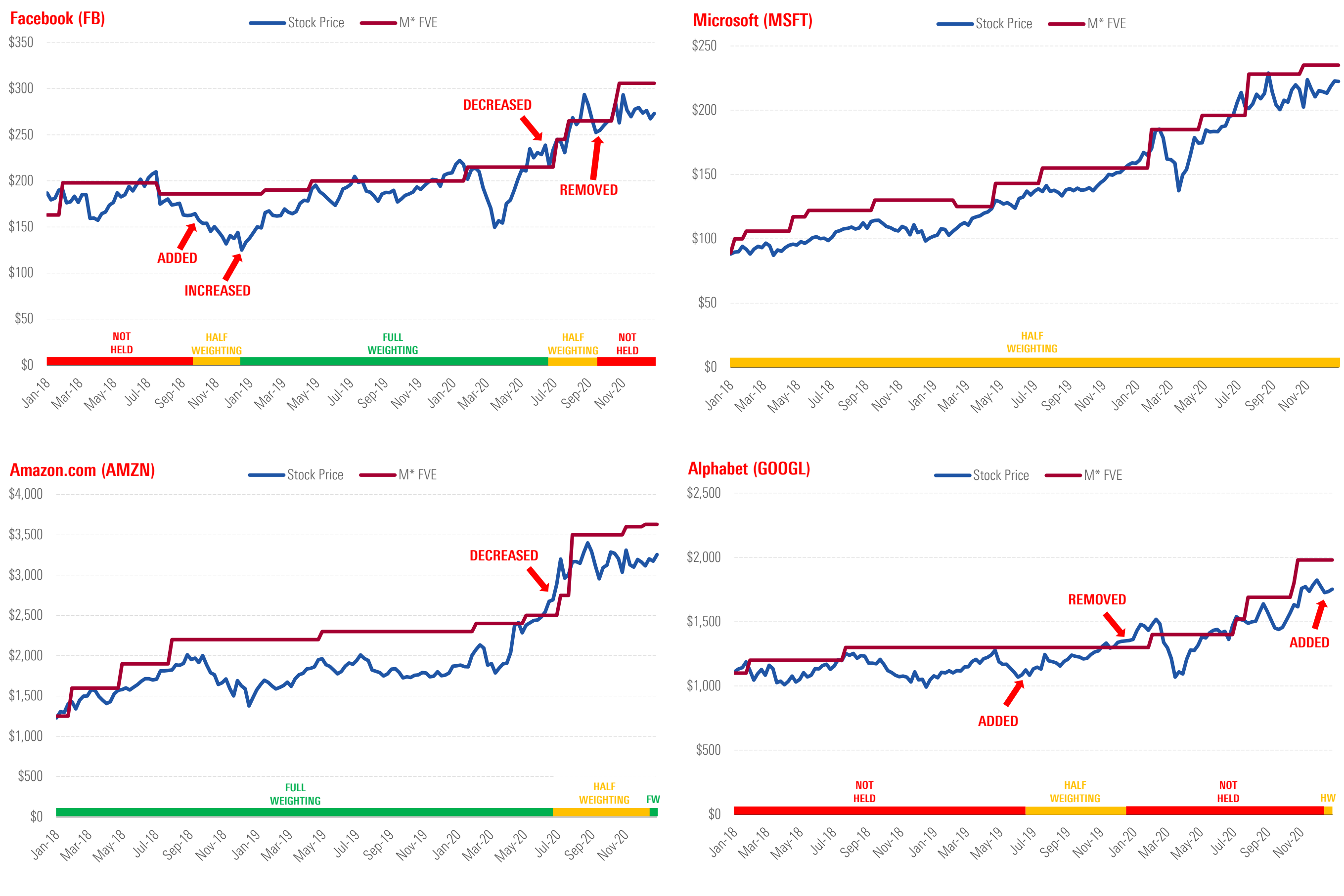
We'd note that as FANMAG valuations declined sharply during the tech wreck of 2018, our fair value estimates for these stocks were largely unchanged. Accordingly, the December 2018 reconstitution increased the strategy's weighting in Facebook, which turned out to be one of the best-performing holdings in 2019.

Along these lines, the Wide Moat Focus Index's focus on valuation has proved opportunistic in helping increase FANMAG exposure when valuations are attractive and reduce exposure amid lofty valuations. This dynamic has helped offset the headwind from being consistently underweight a group of stocks that has performed so well in recent years. This helps explain why the Wide Moat Focus Index still outperformed its benchmark each year from 2016 to 2019 despite periods of elevated returns from the FANMAG stocks.

FANMAG Valuations Have Further Limited the Group's Wide Moat Focus Index Representation

Although Facebook, Microsoft, Amazon, and Alphabet have each been held at one time or another over the last three years, there has only been one period in which all four stocks were concurrent Wide Moat Focus Index holdings (June to December 2019). This is because, as a group, they have rarely passed the index's valuation screen at the same time. In recent years, Facebook and Alphabet have moved in and out of the index while Microsoft and Amazon have remained in the index for the full period (although not always at a full weighting).

Exhibit 8 Valuation Considerations Have Limited the Inclusion of Eligible FANMAG Stocks in the Wide Moat Focus Index

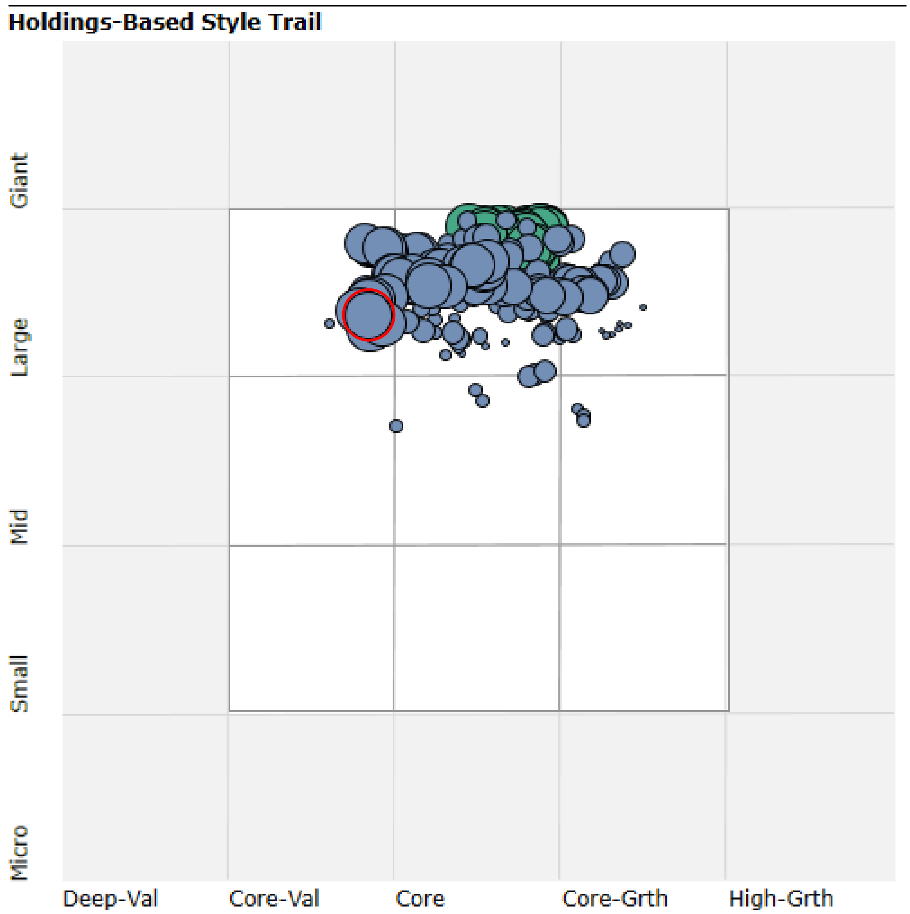


Source: Morningstar Direct. Data from Jan. 1, 2018, to Dec. 31, 2020.

The Index's Emergent Style Bias Toward Value Proved Adverse in 2020

While the Wide Moat Focus Index has typically operated in the large-cap core style box since its February 2007 live inception date, it has sometimes leaned toward a value bias and other times toward a growth bias. In 2020, however, the index was about as heavily skewed toward value as we've ever observed historically.

Exhibit 9 The Wide Moat Focus Index Exhibited a Value Bias in 2020



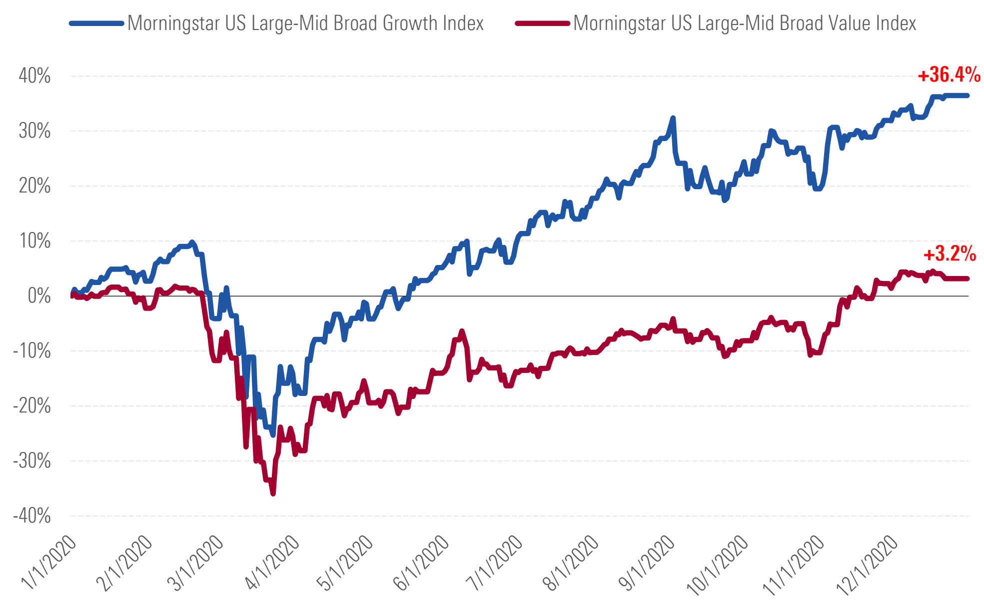
Source: Morningstar Direct. Data from March 1, 2007, to Dec. 31, 2020.
Note: Red outline reflects the index's year-end 2020 positioning.

This style bias toward value at the expense of growth represented another performance headwind. The skew toward a value bias became noteworthy after the March 2020 portfolio reconstitution, which took place only one trading day before the late March market bottom amid the COVID-19 outbreak. At that point, the list of undervalued U.S. wide-moat-rated stocks covered by Morningstar equity analysts tilted more heavily toward a value orientation. Accordingly, these were the types of stocks that were scooped up by the index's passive portfolio construction rules. We'd note that the Wide Moat Focus Index's portfolio reconstitution process is entirely rules-based with no manual involvement. Therefore, the style bias exhibited by the index at any given time reflects solely the result of the bottom-up valuation analysis of individual companies provided by Morningstar equity analysts rather than any sort of top-down portfolio construction process. For this same reason, the index's style bias is always subject to change and can change quite a bit from year to year.

New additions to the index in March included Boeing, which had never previously been an index holding, and Bank of America, which hadn't been held since 2009 amid the financial crisis. The prior exclusion of both stocks stemmed from the index's valuation screen, as both have long been wide moat rated. The other new additions in March were Corteva, Constellation Brands, American Express, Blackbaud, and U.S. Bancorp. A tilt toward value was further accentuated after the June reconstitution as some of new additions in March were brought up to a full weighting. Other new additions in June included Harley-Davidson, Coca-Cola, Cerner, Tiffany, Yum Brands, John Wiley & Sons, and Aspen Technology.

While the Wide Moat Focus Index moved into some great businesses at what Morningstar equity analysts believed to be bargain prices, the index was early in cycling into some of these more value-oriented names. Although growth had only modestly outperformed value from a factor perspective by late March, growth proceeded to materially outperform value over the remainder of the year. This weighed on Wide Moat Focus Index returns relative to those of the benchmark, as the benchmark remained in the core style category with a slight bias toward growth.

Exhibit 10 Growth Soundly Outperformed Value Over the Course of 2020



Source: Morningstar Direct.
Data from Jan. 1, 2020 to Dec. 31, 2020.

Stock Selection Stands Out as a Key Headwind in 2020

In looking at 2020 performance attribution overall, the Wide Moat Focus Index's sector positioning provided a modest performance boost and the stock selection effect explained effectively all of the strategy's relative underperformance. Results from technology sector exposure stand out above all else, as both an underweight sector positioning and technology stock selection proved adverse. Granted, both of these results stem in large part from the index's aforementioned underweight to the FANMAG stocks.

Exhibit 11 2020 Wide Moat Focus Index Performance Attribution

	Rescaled Weights %		Return %		Contribution %		Attribution Effect		
	Portfolio	Benchmark	Portfolio	Benchmark	Portfolio	Benchmark	Sector Weighting %	Selection %	Active Return %
Basic Materials	4.84	2.33	16.46	19.00	1.41	0.46	0.11	-0.03	0.08
Communication Services	4.69	10.20	30.16	25.89	1.12	2.57	-0.25	-0.04	-0.28
Consumer Cyclical	8.70	11.17	53.00	47.91	2.99	4.82	-0.65	0.36	-0.30
Consumer Defensive	9.45	6.96	3.47	13.35	0.82	0.92	-0.27	-1.06	-1.33
Energy	3.44	2.65	-11.07	-33.02	0.15	-1.33	-0.15	1.53	1.38
Financial Services	15.33	13.60	5.68	3.93	2.77	0.56	0.40	0.15	0.55
Healthcare	20.48	14.44	8.89	17.27	1.09	2.43	0.53	-1.40	-0.88
Industrials	11.47	9.06	-2.67	11.34	-0.03	1.07	-0.26	-1.78	-2.04
Real Estate	0.00	3.80		-4.58	0.00	-0.20	1.05	0.00	1.05
Technology	20.05	22.66	31.65	47.84	6.14	9.49	-0.55	-2.74	-3.28
Utilities	1.54	3.13	-5.27	-0.53	-0.20	-0.01	0.51	0.00	0.52
Attribution Total	**100.00**	**100.00**	**16.27**	**20.81**	**16.27**	**20.81**	**0.48**	**-5.01**	**-4.53**
				Residual	-1.18	0.10			
				Reported Total	**15.09**	**20.90**			

Source: Morningstar Direct.
Data from Jan. 1, 2020, to Dec. 31, 2020.
Benchmark: Morningstar US Market Index.

The Wide Moat Focus Index Enjoyed Modest Benefits From Relative Sector Positioning in 2020

Per Exhibit 12, the Wide Moat Focus Index's sector positioning versus that of the benchmark provided a slight tailwind from a relative performance standpoint to the tune of 48 basis points. The index was well served by underweight positions in the real estate and utilities sector and also by overweight positions in healthcare and financial services. Notable headwinds stemmed from the index's underweight positions in consumer cyclical and technology even though the portfolio was only slightly underweight each of these two sectors. With the consumer cyclical and technology sectors generating massive returns of 47.9% and 47.8%, respectively, for the benchmark over the course of the year, even these small underweight positions had a material performance impact.

Exhibit 12 2020 Sector Weightings vs. Benchmark

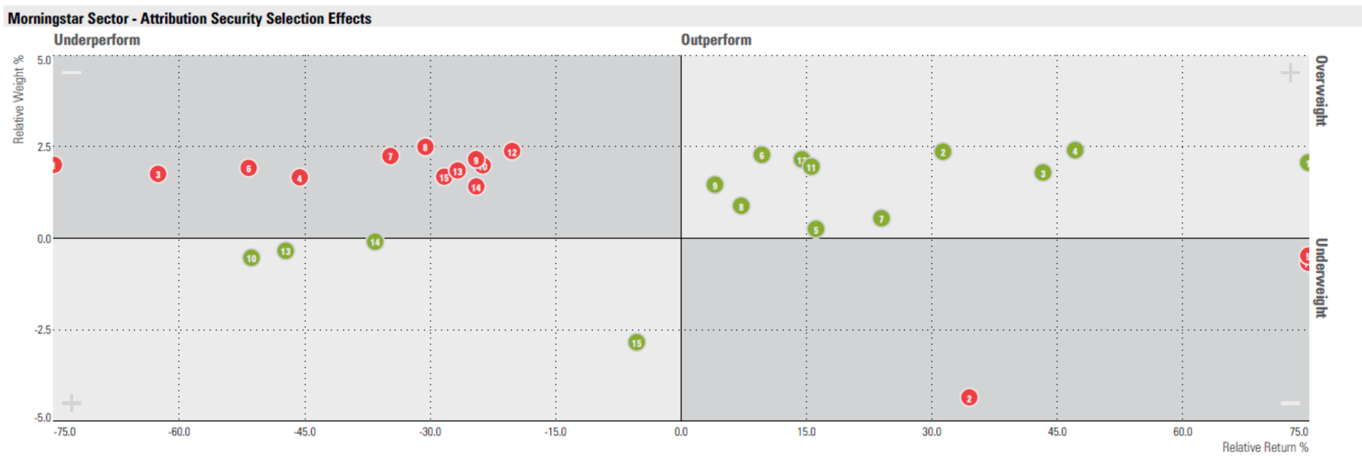
	Rescaled Weights %			Attribution Effect
	Portfolio	Benchmark	+/-	Sector Weighting %
Basic Materials	4.84	2.33	2.51	0.11
Communication Services	4.69	10.20	-5.51	-0.25
Consumer Cyclical	8.70	11.17	-2.47	-0.65
Consumer Defensive	9.45	6.96	2.49	-0.27
Energy	3.44	2.65	0.79	-0.15
Financial Services	15.33	13.60	1.72	0.40
Healthcare	20.48	14.44	6.04	0.53
Industrials	11.47	9.06	2.41	-0.26
Real Estate	0.00	3.80	-3.80	1.05
Technology	20.05	22.66	-2.61	-0.55
Utilities	1.54	3.13	-1.58	0.51
			Total:	**0.48**

Source: Morningstar Direct.
Data from Jan. 1, 2020, to Dec. 31, 2020.
Benchmark: Morningstar US Market Index.

Notable Wide Moat Focus Index Holdings in 2020

With regard to individual holdings, the five most favorable stock selection effects were associated with Veeva Systems, Cheniere Energy, BlackRock, ServiceNow, and Lam Research. The biggest detractors from a stock selection standpoint were Blackbaud, Intel, Apple, Wells Fargo, and Tesla. Of note, Apple and Tesla were not index holdings, as neither commands a wide economic moat rating. However, given their significant contributions to overall benchmark returns, they drove a sizable adverse stock selection effect for the Wide Moat Focus Index.

Exhibit 13 Highest and Lowest Security Selection Effects in 2020



	Best Selections	Morningstar Sector	Weight +/-	Return +/-	Effect
1	Veeva Systems Inc Class A	Healthcare	2.06	76.28	1.87
2	Cheniere Energy Inc	Energy	2.36	31.32	1.03
3	BlackRock Inc	Financial Services	1.79	43.27	0.92
4	ServiceNow Inc	Technology	2.40	47.13	0.89
5	Lam Research Corp	Technology	0.25	16.13	0.39
6	Charles Schwab Corp	Financial Services	2.28	9.66	0.34
7	T. Rowe Price Group Inc	Financial Services	0.54	23.96	0.33
8	Facebook Inc A	Communication Services	0.88	7.19	0.33
9	Constellation Brands Inc A	Consumer Defensive	1.46	4.04	0.30
10	Cisco Systems Inc	Technology	-0.53	-51.38	0.28
11	Caterpillar Inc	Industrials	1.95	15.58	0.27
12	Corteva Inc	Basic Materials	2.15	14.46	0.24
13	AT&T Inc	Communication Services	-0.34	-47.28	0.20
14	McDonald's Corp	Consumer Cyclical	-0.10	-36.59	0.19
15	Microsoft Corp	Technology	-2.84	-5.31	0.18

	Worst Selections	Morningstar Sector	Weight +/-	Return +/-	Effect
1	Blackbaud Inc	Technology	2.00	-75.40	-1.61
2	Apple Inc	Technology	-4.35	34.47	-1.17
3	Intel Corp	Technology	1.75	-62.54	-1.08
4	Wells Fargo & Co	Financial Services	1.66	-45.59	-1.00
5	Tesla Inc	Consumer Cyclical	-0.48	695.53	-0.99
6	Polaris Inc	Consumer Cyclical	1.92	-51.70	-0.85
7	Biogen Inc	Healthcare	2.24	-34.75	-0.80
8	Guidewire Software Inc	Technology	2.49	-30.57	-0.70
9	General Dynamics Corp	Industrials	2.16	-24.51	-0.66
10	Altria Group Inc	Consumer Defensive	1.99	-23.73	-0.57
11	PayPal Holdings Inc	Financial Services	-0.67	112.58	-0.50
12	Kellogg Co	Consumer Defensive	2.38	-20.21	-0.49
13	Raytheon Technologies Corp	Industrials	1.85	-26.71	-0.48
14	Merck & Co Inc	Healthcare	1.41	-24.49	-0.40
15	John Wiley & Sons Inc Class A	Communication Services	1.68	-28.32	-0.38

Source: Morningstar Direct.
Data from Jan. 1, 2020, to Dec. 31, 2020.
Benchmark: Morningstar US Market Index.

Conclusion

Although the Wide Moat Focus Index delivered disappointing relative performance in 2020, its attractive long-term record remains very much intact. The strategy has enjoyed favorable up and down capture ratios and impressive risk-adjusted returns over its nearly 14-year live track record.

Results in 2020 were challenged by an underweight position in the high-performing FANMAG stocks and an unfavorable style bias toward value. Given the use of active inputs provided by Morningstar equity analysts tied to valuation and economic moat ratings, the Wide Moat Focus Index will undoubtedly underperform its benchmark from time to time. However, its disciplined approach in identifying attractively priced companies with durable competitive reflects has proved effective historically. We believe the Wide Moat Focus Index represents a simple and timeless approach toward the goal of outperforming the broader U.S. equity market.

Appendix

Exhibit 1A 2016-20 Year-End FANMAG Stocks Weightings: WMFI vs. Benchmark

		Facebook	Apple	Netflix	Microsoft	Amazon.com	Alphabet	Combined FANMAG
	WMF Index Weight%	-	-	-	1.3	2.4	-	3.7
2016	Benchmark Weight %	1.2	2.7	0.2	2.1	1.3	2.0	9.5
	WMF Index Relative Weight %	**-1.2**	**-2.7**	**-0.2**	**-0.8**	**1.1**	**-2.0**	**-5.8**
	WMF Index Weight%	-	-	-	1.3	2.6	-	3.9
2017	Benchmark Weight %	1.6	3.2	0.3	2.5	1.7	2.3	11.6
	WMF Index Relative Weight %	**-1.6**	**-3.2**	**-0.3**	**-1.2**	**0.9**	**-2.3**	**-7.7**
	WMF Index Weight%	2.4	-	-	1.3	2.3	-	6.0
2018	Benchmark Weight %	1.3	2.9	0.5	3.2	2.5	2.6	12.9
	WMF Index Relative Weight %	**1.1**	**-2.9**	**-0.5**	**-1.9**	**-0.2**	**-2.6**	**-7.0**
	WMF Index Weight%	2.5	-	-	1.3	2.5	-	6.2
2019	Benchmark Weight %	1.6	3.9	0.5	3.9	2.5	2.6	14.9
	WMF Index Relative Weight %	**0.9**	**-3.9**	**-0.5**	**-2.6**	**0.0**	**-2.6**	**-8.7**
	WMF Index Weight%	-	-	-	1.1	2.4	1.2	4.7
2020	Benchmark Weight %	1.8	5.7	0.6	4.5	3.7	2.8	19.0
	WMF Index Relative Weight %	**-1.8**	**-5.7**	**-0.6**	**-3.4**	**-1.3**	**-1.5**	**-14.3**

Source: Morningstar Direct.
Data from Jan. 1, 2020, to Dec. 31, 2020.
Benchmark: Morningstar US Market Index.

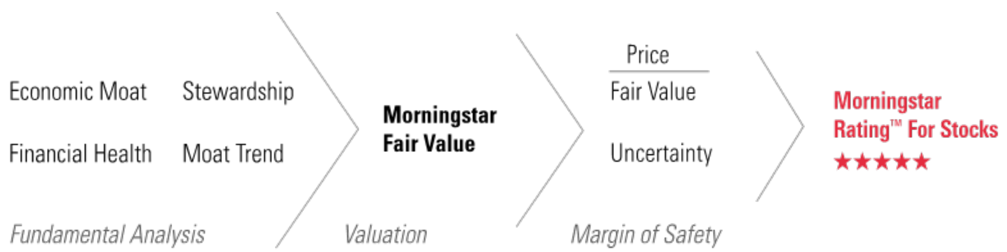
Research Methodology for Valuing Companies

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 (for example, 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, or EBI, and the net new investment, or 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, or 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.

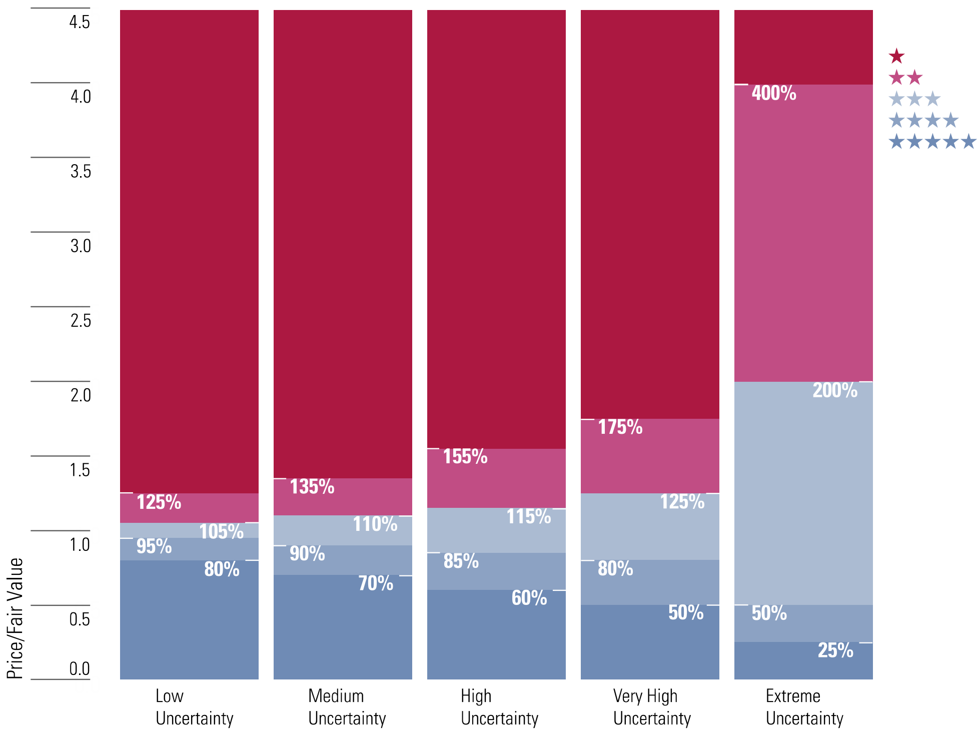
Uncertainty Around That Fair Value Estimate
Morningstar's Uncertainty Rating captures a range of likely potential intrinsic values for a company and uses it to assign the margin of safety required before investing, which in turn explicitly drives our stock star rating system. The Uncertainty Rating represents 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
Please note that investments in securities are subject to market and other risks and there is no assurance or guarantee that the intended investment objectives will be achieved. Past performance of a security may or may not be sustained in future and is no indication of future performance. A security investment return and an investor's principal value will fluctuate so that, when redeemed, an investor's shares may be worth more or less than their original cost. A security's current investment performance may be lower or higher than the investment performance noted within the report. Morningstar's Uncertainty Rating serves as a useful data point with respect to sensitivity analysis of the assumptions used in our determining a fair value price.

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