

Morningstar Factor Monitor: Q2 2025

Momentum was the best-performing factor in the second quarter, and low volatility was the worst—a sharp contrast to Q1.

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This is the latest installment of the Morningstar Quarterly Factor Monitor, which is designed to highlight factor performance trends. Factors are key drivers of stock returns. These are common security characteristics, like low valuations or small size, that can help explain why one group of stocks performs differently from another. Factors provide an effective lens through which to understand market performance.

This publication tracks the Morningstar Global Factor Indexes, providing insights into their performance drivers and notable facets of their portfolio composition. These indexes are designed to deliver strong, investable exposure to their target factors. They apply a consistent framework, each covering stocks representing 30% of their parent benchmarks by market value, and tilt weighting their constituents (from float market cap) to upweight those with the strongest factor characteristics. The appendix provides additional details on the index construction methodology.

Key Takeaways

- ▶ In a reversal from the previous quarter, momentum dominated globally in the second quarter, while the low-volatility factor lagged. Value and yield also underperformed globally.
- ▶ Factor trends were broadly consistent across regions.
- ▶ All factors experience performance cyclicalities. Because of their volatility, it is difficult to effectively time factor exposures.
- ▶ Factors are lowly correlated with each other, so they are complementary and can offer strong diversification benefits when combined in a portfolio.
- ▶ At the June reconstitution, the Morningstar Global Momentum Factor and Morningstar Global Low Volatility Factor indexes both trimmed their exposure to the technology sector.
- ▶ Regardless of the market conditions, the Morningstar Global Factor Indexes are effective tools for monitoring factor trends.

Performance (Q2 2025)

Global

Factor performance in the second quarter of 2025 was markedly different from the results in the first quarter. Momentum led the pack by a wide margin, while low volatility and value were the worst-performing factors globally. The yield factor also struggled during this period. That's in sharp contrast to the first-quarter results, when momentum was the second-worst-performing factor globally (after quality), and the defensive low volatility and yield factors led.

Exhibit 1 Global Performance Summary

	Q2 2025		1 Year		5 Year		10 Year		Since Inception		
	Rtn	Std Dev	Rtn	Std Dev	Rtn	Std Dev	Rtn	Std Dev	Rtn	Std Dev	SR
Morningstar Global Low Volatility Factor	5.65	17.87	17.30	9.23	11.60	12.04	8.75	11.84	7.90	12.35	0.58
Morningstar Global Momentum Factor	21.32	27.90	22.38	14.52	16.05	18.06	13.58	16.83	8.95	18.44	0.49
Morningstar Global Quality Factor	13.01	25.70	10.74	11.93	13.14	17.11	10.83	15.77	9.42	16.46	0.55
Morningstar Global Size Factor	10.07	25.21	16.66	12.15	12.65	16.47	8.40	16.43	7.78	18.22	0.43
Morningstar Global Value Factor	6.86	22.79	15.12	11.21	15.19	15.45	8.96	15.25	7.65	17.08	0.44
Morningstar Global Yield Factor	8.06	22.46	21.10	9.27	18.02	14.89	11.06	15.10	9.55	16.56	0.56
Morningstar Global Multifactor	10.87	21.31	16.80	9.52	15.15	13.77	10.75	13.11	9.66	13.97	0.64
Morningstar Global TME	11.57	25.24	16.23	10.34	14.15	15.28	10.53	14.84	8.44	16.37	0.50

Source: Morningstar Indexes. Performance is gross return in US dollars. Data as of June 30, 2025.

Exhibit 2 Global Risk Summary (Since Inception)

	Tracking Error	Beta	Max Drawdown	Down-Capture Ratio	Up-Capture Ratio
Morningstar Global Low Volatility Factor	6.77	0.70	-30.68	68.25	75.59
Morningstar Global Momentum Factor	6.69	1.05	-53.92	106.70	106.64
Morningstar Global Quality Factor	3.43	0.98	-41.50	96.43	100.96
Morningstar Global Size Factor	3.73	1.09	-49.07	108.54	103.73
Morningstar Global Value Factor	4.91	1.00	-47.38	99.86	97.04
Morningstar Global Yield Factor	3.93	0.98	-45.44	94.15	99.80
Morningstar Global Multifactor	4.52	0.83	-36.90	80.76	90.67
Morningstar Global TME	0.00	1.00	-46.15	100.00	100.00

Source: Morningstar Indexes. Performance is gross return in US dollars. Data as of June 30, 2025.

Exhibit 3 Global Attribution

Top Contributors		Top Detractors						
	Name	Active Weight	3M Returns	Effect	Name	Active Weight	3M Returns	Effect
Morningstar Global Low Volatility Factor	Microsoft	3.13	32.75	2.16	Berkshire Hathaway	1.88	-8.79	-0.28
	Commonwealth Bank of Australia	0.68	28.73	0.24	Johnson & Johnson	1.44	-7.11	-0.15
	Reliance Industries	0.99	17.29	0.19	PepsiCo	0.89	-10.97	-0.14
	Novartis AG	1.78	9.25	0.19	Fiserv	0.31	-21.93	-0.12
	Allianz SE	1.56	10.71	0.18	Exxon Mobil	0.51	-8.53	-0.11
Morningstar Global Momentum Factor	Nvidia	3.29	45.78	3.10	Meituan	0.38	-20.29	-0.12
	Broadcom	2.27	65.02	2.01	AbbVie	0.55	-10.59	-0.12
	Meta Platforms	2.49	28.16	1.22	Fiserv	0.24	-21.93	-0.10
	Taiwan Semiconductor Manufacturing	1.80	32.97	0.89	Eli Lilly	0.76	-5.43	-0.09
	Palantir Technologies	0.93	61.52	0.61	Texas Pacific Land	0.24	-20.16	-0.06
Morningstar Global Quality Factor	Nvidia	3.78	45.78	3.22	Berkshire Hathaway	3.27	-8.79	-0.41
	Microsoft	2.68	32.75	2.05	Texas Pacific Land	0.73	-20.16	-0.17
	Taiwan Semiconductor Manufacturing	3.54	32.97	1.42	Copart	0.63	-13.29	-0.10
	Meta Platforms	1.90	28.16	1.02	Regeneron Pharmaceuticals	0.37	-17.10	-0.09
	Alphabet	4.39	14.10	0.78	Lululemon Athletica	0.40	-16.07	-0.07
Morningstar Global Size Factor	Palantir Technologies	0.16	61.52	0.23	Fiserv	0.10	-21.93	-0.06
	Cloudflare	0.23	73.78	0.18	Texas Pacific Land	0.19	-20.16	-0.05
	Coinbase Global	0.13	103.50	0.16	Enphase Energy	0.10	-36.10	-0.05
	Snowflake	0.27	53.10	0.16	Halliburton	0.13	-18.99	-0.04
	Axon Enterprise	0.23	57.42	0.14	Global Payments	0.13	-17.99	-0.03
Morningstar Global Value Factor	JPMorgan Chase	2.03	18.97	0.54	UnitedHealth Group	0.44	-40.01	-0.47
	SK Hynix	0.56	67.36	0.42	Bristol-Myers Squibb	1.18	-23.25	-0.35
	International Business Machines	1.43	19.35	0.33	Chevron	0.91	-13.35	-0.18
	Cisco Systems	2.11	13.23	0.32	Exxon Mobil	0.90	-8.53	-0.14
	Bank of America	1.77	14.05	0.30	Johnson & Johnson	1.20	-7.11	-0.12
Morningstar Global Yield Factor	Broadcom	0.96	65.02	1.18	Alibaba Group Holding	2.50	-13.57	-0.41
	The Toronto-Dominion Bank	1.37	24.14	0.34	Fiserv	0.50	-21.93	-0.16
	Wells Fargo	2.13	12.22	0.30	AbbVie	0.64	-10.59	-0.12
	Cisco Systems	1.56	13.23	0.25	Chevron	0.45	-13.35	-0.12
	RTX	1.76	10.80	0.22	Johnson & Johnson	0.49	-7.11	-0.07

Source: Morningstar Indexes. Performance is gross return in US dollars. Data as of June 30, 2025.

This reversal in performance isn't surprising considering how different the market environment was in the second quarter compared with the first. While the market had been anticipating a rise in protectionism, the risk became more tangible when the US government announced a new series of tariffs on April 2, 2025. This, and the subsequent pause on certain tariffs, created significant uncertainty, elevating market volatility. Yet, despite the uncertainty, stocks rallied toward the end of the quarter, in

contrast to the weak performance of the Morningstar Global Target Market Exposure Index in the first quarter, when it dropped 1.25%.

The heightened volatility of the second quarter makes the strong performance of the momentum factor even more remarkable. Momentum often struggles during periods of market turbulence or sharp reversals, as market leadership is more fluid in those environments. Yet, momentum topped the leaderboard in every region covered in this report in the second quarter.

The Morningstar Global Momentum Factor Index benefited from strong stock exposure in the technology and industrials sectors, such as overweighting Broadcom and Nvidia, as well as excluding Apple. Sector tilts relative to the parent benchmark (Morningstar Global TME) did not significantly impact performance.

Value and momentum tend to perform well at different times, so it's not surprising to see value toward the bottom of the leaderboard in a period where momentum is at the top. The Morningstar Global Value Factor Index was primarily hurt by poor stock exposure within sectors, rather than from sector tilts, which are tightly constrained relative to the parent benchmark. Unfavorable exposure within the technology, communication-services, and healthcare sectors was a notable performance detractor. This included the omission of Nvidia and Microsoft and the overweighting of Verizon and AT&T.

The defensive low-volatility factor posted even lower returns during the second quarter, as it often does when the market moves sharply higher. However, it lived up to its name, delivering a smoother ride than the market and any other factor during the turbulent quarter. Unfavorable stock exposures in several sectors, including financial services, technology, and industrials, hurt performance. Sector tilts also contributed to the index's underperformance, including its underweighting of the strong-performing technology sector and overweighting of the poor-performing consumer defensive sector.

US

The results in the US mirrored the global trends, with momentum on top and value and low volatility at the bottom of the rankings. Those trends also held among US small caps, though in that segment, yield replaced value as the second-worst performer.

Exhibit 4 US Performance Summary

	Q2 2025		1 Year		5 Year		10 Year		Since Inception		
	Rtn	Std Dev	Rtn	Std Dev	Rtn	Std Dev	Rtn	Std Dev	Rtn	Std Dev	SR
Morningstar US Low Volatility Factor	1.50	24.17	16.14	11.29	12.55	13.66	10.88	12.93	10.22	12.37	0.75
Morningstar US Momentum Factor	21.37	44.09	24.28	18.90	18.39	20.31	16.61	18.37	12.23	18.81	0.64
Morningstar US Quality Factor	13.36	37.30	13.43	14.11	17.11	18.87	14.39	16.99	13.35	16.35	0.77
Morningstar US Size Factor	8.06	36.27	15.10	14.83	13.21	17.69	10.09	17.40	10.57	18.32	0.57
Morningstar US Value Factor	5.24	31.90	12.75	14.25	14.97	17.20	9.93	16.87	9.82	17.35	0.56
Morningstar US Yield Factor	5.77	33.41	18.87	11.79	18.92	16.11	12.40	16.31	11.98	16.39	0.70
Morningstar US Multifactor	8.40	30.88	14.47	11.67	16.54	15.16	13.17	14.25	12.35	13.99	0.81
Morningstar US TME	11.32	35.97	15.55	12.78	16.42	16.56	13.57	15.72	11.89	15.95	0.71
Morningstar US Small Low Volatility Factor	2.09	26.79	11.51	13.79	10.18	15.05	8.64	14.56	10.26	14.27	0.67
Morningstar US Small Momentum Factor	19.33	46.77	37.39	30.33	19.16	25.79	12.85	23.06	9.88	23.03	0.47
Morningstar US Small Quality Factor	6.36	35.53	4.76	17.72	11.75	19.22	10.45	17.74	10.76	17.57	0.60
Morningstar US Small Cap Size Factor	7.80	38.95	7.75	22.87	11.20	23.43	7.46	22.18	9.94	22.46	0.48
Morningstar US Small Value Factor	6.19	41.46	9.59	20.67	15.55	23.62	8.23	22.85	10.01	23.17	0.47
Morningstar US Small Yield Factor	4.34	36.87	11.22	18.24	16.88	21.11	10.08	20.87	12.18	20.23	0.61
Morningstar US Small TME	8.65	38.85	11.63	19.90	11.79	20.59	8.69	19.89	9.80	20.01	0.51

Source: Morningstar Indexes. Performance is gross return in US dollars. Data as of June 30, 2025.

Exhibit 5 US Risk Summary (Since Inception)

	Tracking Error	Beta	Max Drawdown	Down- Capture Ratio	Up-Capture Ratio
Morningstar US Low Volatility Factor	7.79	0.68	-28.62	65.92	73.66
Morningstar US Momentum Factor	7.46	1.09	-50.93	107.74	105.93
Morningstar US Quality Factor	4.30	0.99	-37.20	96.18	102.40
Morningstar US Size Factor	5.29	1.11	-46.51	112.39	103.39
Morningstar US Value Factor	6.65	1.01	-44.76	104.44	95.94
Morningstar US Yield Factor	4.98	0.98	-42.02	94.13	96.68
Morningstar US Multifactor	4.65	0.84	-32.73	79.49	88.86
Morningstar US TME	0.00	1.00	-41.49	100.00	100.00
Morningstar US Small Low Volatility Factor	8.53	0.66	-32.47	62.47	74.06
Morningstar US Small Momentum Factor	9.71	1.04	-54.37	105.12	104.02
Morningstar US Small Quality Factor	5.00	0.85	-36.42	83.67	90.81
Morningstar US Small Size Factor	6.07	1.12	-49.74	114.29	111.21
Morningstar US Small Value Factor	4.62	0.99	-44.16	92.74	101.56
Morningstar US Yield Factor	5.32	1.10	-46.23	113.24	110.22
Morningstar US Small TME	0.00	1.00	-45.80	100.00	100.00

Source: Morningstar Indexes. Performance is gross return in US dollars. Data as of June 30, 2025.

The strong performance of the Morningstar US Momentum Factor Index was largely due to strong stock exposure within the technology, utilities, and financial-services sectors. Among these were the omissions of stragglers, like Apple and Berkshire Hathaway, as well as overweighting strong performers like Broadcom, Nvidia, Palantir, and Vistra. Sector tilts did not materially impact performance.

While the Morningstar US Low Volatility Factor Index was the strongest-performing US factor index in the first quarter, it finished last in the second quarter. Stock exposure was particularly unfavorable in the financial services, technology, and consumer cyclical sectors. Sector tilts also contributed to the index's underperformance, including underweighting the strong-performing technology sector and overweighting the poor-performing consumer defensive sector.

Developed Markets ex-US

Factor performance trends in developed markets outside the US broadly aligned with the global trends, though the underperformance of the laggards was more muted in this region during the second quarter. As was the case globally, momentum was the top-performing factor in this region, and low volatility was the worst-performing, though yield displaced value as the second worst-performing.

The Morningstar Developed Markets ex-US Momentum Factor Index's strong performance can be traced to favorable stock exposure within the industrials sector, including overweighting Siemens Energy, Mitsubishi Heavy Industries, and Rolls-Royce Holdings.

On the other end of the spectrum, the Morningstar Developed Markets ex-US Low Volatility Factor Index owed most of its underperformance to unfavorable stock exposure in the communication-services and

industrials sectors, such as overweighting Deutsche Telekom and Waste Connections, and underweighting Nintendo and SoftBank Group.

Exhibit 6 Developed-Markets ex-US Performance Summary

	Q2 2025		1 Year		5 Year		10 Year		Since Inception		
	Rtn	Std Dev	Rtn	Std Dev	Rtn	Std Dev	Rtn	Std Dev	Rtn	Std Dev	SR
Morningstar DM xUS Low Vol Ftr GR USD	10.13	24.51	23.42	10.84	11.14	12.78	7.32	12.36	6.30	13.45	0.43
Morningstar DM xUS Mtm Ftr GR USD	21.03	34.93	27.34	12.48	13.23	16.47	8.88	15.81	5.48	18.25	0.32
Morningstar DM xUS Qual Ftr GR USD	12.90	28.80	9.47	12.31	9.45	17.92	8.16	15.95	6.10	17.57	0.35
Morningstar DM xUS Size Ftr GR USD	14.55	26.34	26.06	11.71	11.87	16.78	7.22	16.25	5.77	18.58	0.33
Morningstar DM xUS Value Ftr GR USD	11.63	26.62	26.41	10.56	15.76	17.12	7.20	16.93	5.64	18.95	0.32
Morningstar DM xUS Yield Ftr GR USD	10.56	26.26	23.51	10.15	16.21	15.99	9.22	15.54	7.02	18.13	0.40
Morningstar DM xUS Multifactor GR USD	11.95	26.95	18.92	10.53	13.16	14.26	8.63	13.49	7.24	15.24	0.45
Morningstar DM xUS TME GR USD	12.00	27.30	18.98	10.66	12.14	15.95	7.29	15.19	5.24	17.39	0.31

Source: Morningstar Indexes. Performance is gross return in US dollars. Date as of June 30, 2025.

Exhibit 7 Developed-Markets ex-US Risk Summary (Since Inception)

	Tracking Error	Beta	Max Drawdown	Down-Capture Ratio	Up-Capture Ratio
Morningstar DM ex-US Low Volatility Factor	6.84	0.72	-32.11	70.86	79.90
Morningstar DM ex-US Momentum Factor	6.61	0.98	-52.26	96.82	98.26
Morningstar DM ex-US Quality Factor	4.32	0.98	-46.02	96.44	100.26
Morningstar DM ex-US Size Factor	2.91	1.06	-49.83	102.64	104.19
Morningstar DM ex-US Value Factor	4.83	1.06	-45.20	106.28	106.76
Morningstar DM ex-US Yield Factor	3.52	1.02	-49.58	96.95	104.09
Morningstar DM ex-US Multifactor	4.22	0.85	-39.37	81.59	92.17
Morningstar DM ex-US TME	0.00	1.00	-48.51	100.00	100.00

Source: Morningstar Indexes. Performance is gross return in US dollars. Data as of June 30, 2025.

Emerging Markets

Consistent with global trends, momentum was the best-performing factor in emerging markets in the second quarter, while low volatility was the worst. This was the only region where the value factor outpaced its parent benchmark. The quality factor also had a strong showing in this region, ranking as the second-best-performing factor. Similar to developed markets outside the US, the yield factor ranked as the second-worst-performing factor in this region.

The Morningstar Emerging Markets Momentum Factor Index's strong performance primarily stemmed from favorable intra-sector stock exposure, rather than from sector tilts. Exposure was particularly

helpful in the industrials, technology, financial-services, and consumer cyclical sectors, such as the overweighting of Pop Mart International Group, HD Hyundai Electric, and Hanwha Aerospace, and the exclusion of Alibaba Group.

While the momentum factor benefited from its technology constituents, the Morningstar Emerging Markets Low Volatility Factor Index suffered from underweighting the strong-performing technology sector. Unfavorable stock exposure within the technology (such as overweighting Infosys and Tata Consultancy Services) and financial-services sectors hurt performance.

Exhibit 8 Emerging-Markets Performance Summary

	Q2 2025		1 Year		5 Year		10 Year		Since Inception		
	Rtn	Std Dev	Rtn	Std Dev	Rtn	Std Dev	Rtn	Std Dev	Rtn	Std Dev	SR
Morningstar EM Low Vol Ftr GR USD	8.46	16.79	11.88	10.87	12.34	11.51	7.89	12.56	6.69	15.14	0.42
Morningstar EM Mtum Ftr GR USD	20.13	28.40	10.43	13.65	7.77	17.29	7.30	17.76	4.38	21.53	0.25
Morningstar EM Qual Ftr GR USD	17.13	23.23	15.13	13.38	12.28	20.18	6.88	18.02	5.21	21.08	0.29
Morningstar EM Size Ftr GR USD	15.10	25.27	17.74	12.83	10.30	15.79	5.16	17.15	4.36	20.96	0.25
Morningstar EM Value Ftr GR USD	14.05	26.44	21.82	14.72	14.45	16.38	7.66	18.41	5.72	21.35	0.31
Morningstar EM Yield Ftr GR USD	9.76	24.85	17.31	10.50	14.40	14.66	6.86	16.18	5.91	19.16	0.33
Morningstar EM Multifactor GR USD	15.07	22.46	11.96	11.42	10.71	13.75	6.91	14.76	6.52	18.00	0.37
Morningstar EM TME GR USD	12.02	25.83	14.37	11.39	7.69	15.67	5.67	16.67	4.09	20.26	0.24

Source: Morningstar Indexes. Performance is gross return in US dollars. Data as of June 30, 2025.

Exhibit 9 Emerging-Markets Risk Summary (Since Inception)

	Tracking Error	Beta	Max Drawdown	Down-Capture Ratio	Up-Capture Ratio
Morningstar EM Low Volatility Factor	7.58	0.71	-41.20	61.23	74.93
Morningstar EM Momentum Factor	7.68	0.99	-58.53	100.87	101.79
Morningstar EM Quality Factor	13.18	0.83	-46.25	85.01	90.63
Morningstar EM Size Factor	4.44	1.01	-51.16	96.78	98.09
Morningstar EM Value Factor	5.63	1.02	-51.17	96.88	102.94
Morningstar EM Yield Factor	4.71	0.92	-47.43	86.95	94.78
Morningstar EM Multifactor	4.74	0.87	-47.88	80.05	90.80
Morningstar EM TME	0.00	1.00	-53.11	100.00	100.00

Source: Morningstar Indexes. Performance is gross return in US dollars. Data as of June 30, 2025.

Performance Cyclicity

Factor leadership is notoriously volatile, as Exhibit 10 illustrates. For example, momentum was at the top of the global leaderboard in the second quarter of 2025, yet near the bottom in the previous quarter. Momentum is particularly susceptible to poor performance when the market changes direction, but it's

Exhibit 10 Global Quilt Chart

2016	2017	2018	2019	2020	2021	2022	2023	2024	Q1 2025	Q2 2025
Value Factor 15.9	Momentum Factor 34.8	Low Volatility Factor -4.5	Quality Factor 30.0	Momentum Factor 37.5	Yield Factor 22.2	Value Factor -5.1	Quality Factor 31.2	Momentum Factor 32.8	Low Volatility Factor 5.5	Momentum Factor 21.3
Yield Factor 14.4	Quality Factor 29.8	Momentum Factor -6.4	Momentum Factor 27.4	Quality Factor 23.9	Multifactor 22.1	Yield Factor -6.6	Yield Factor 24.0	Quality Factor 22.6	Yield Factor 5.5	Quality Factor 13.0
Size Factor 9.8	Multifactor 26.4	Multifactor -8.4	Global TME 27.1	Global TME 16.4	Value Factor 20.0	Low Volatility Factor -9.1	Global TME 22.7	Multifactor 21.4	Value Factor 4.5	Global TME 11.6
Low Volatility Factor 8.7	Global TME 24.5	Yield Factor -8.5	Size Factor 26.0	Multifactor 11.7	Size Factor 19.4	Multifactor -13.3	Value Factor 18.1	Global TME 17.7	Multifactor 1.6	Multifactor 10.9
Global TME 8.6	Size Factor 22.7	Global TME -8.7	Yield Factor 25.3	Size Factor 10.7	Global TME 19.1	Size Factor -15.0	Size Factor 16.3	Yield Factor 14.4	Size Factor -0.4	Size Factor 10.1
Multifactor 5.7	Low Volatility Factor 21.4	Value Factor -9.1	Multifactor 23.1	Low Volatility Factor 5.9	Quality Factor 18.3	Global TME -17.6	Multifactor 16.0	Low Volatility Factor 12.2	Global TME -1.2	Yield Factor 10.1
Quality Factor 4.4	Yield Factor 21.3	Quality Factor -10.6	Low Volatility Factor 20.9	Yield Factor 5.8	Low Volatility Factor 18.2	Momentum Factor -18.9	Momentum Factor 11.6	Value Factor 10.4	Momentum Factor -2.3	Value Factor 6.9
Momentum Factor 1.2	Value Factor 19.2	Size Factor -11.7	Value Factor 20.7	Value Factor 0.7	Momentum Factor 16.0	Quality Factor -27.4	Low Volatility Factor 10.3	Size Factor 10.4	Quality Factor -4.9	Low Volatility Factor 5.7

Source: Morningstar Indexes. Performance is gross return in US dollars. Data as of June 30, 2025.

not the only factor to thrive in one period and struggle in the next.

The silver lining is that factors are lowly correlated with each other, as Exhibit 11 shows, so they are complementary and can offer strong diversification benefits when combined in a portfolio. For instance, the Morningstar Global Multifactor Index, which combines value, momentum, quality, and low volatility, tended to have lower active risk relative to the Morningstar Global Target Market Exposure Index than its corresponding global single-factor indexes. And it never landed at the top or bottom of the factor leaderboard in any single year. Yet, its return since inception in June 2008 has ranked at the top.

Exhibit 11 Global Excess Return Correlation Matrix (10-Year)

1 Morningstar Gbl Low Vol Ftr	1.00							
2 Morningstar Gbl Mtum Ftr	-0.18	1.00						
3 Morningstar Gbl Qual Ftr	-0.33	0.28	1.00					
4 Morningstar Gbl Size Ftr	-0.09	-0.28	-0.34	1.00				
5 Morningstar Gbl Val Ftr	0.33	-0.54	-0.63	0.48	1.00			
6 Morningstar Gbl Yld Ftr	0.31	-0.60	-0.60	0.45	0.90	1.00		
7 Morningstar Global Multifactor	0.74	0.18	-0.08	-0.27	0.16	0.10	1.00	

Source: Morningstar Indexes. Excess return against Morningstar Global Target Market Exposure. Data as of June 30, 2025.

Long-Term Performance

A long investment horizon can reduce timing risk, but even that does not eliminate the risk of underperformance. From their inception in June 2008 through the end of June 2025, three factors (low volatility, size, and value) underperformed their parent benchmark, and three (momentum, quality, and yield) outperformed.

The value factor has generated pain for many investors over its extended dry spell, particularly in the US. The Morningstar US Value Factor Index was the worst-performing factor since its inception, lagging its parent benchmark by 2.07 percentage points annualized. That margin of underperformance was even larger over the past decade. The global value factor also landed toward the bottom of the leaderboard, but it lagged by a smaller margin than the value factor in the US.

While the yield factor is highly correlated with value, it fared considerably better, ranking as the best-performing single factor index globally over its life, as well as in the developed markets ex-US and among US small caps. The yield factor is similar to value in that stocks trading at lower valuations tend to offer higher yields, which the Morningstar yield factor indexes measure based on both net buybacks and dividend distributions. However, it offers distinct portfolio and performance characteristics.

High-yielding stocks tend to generate strong free cash flows, be more mature than their lower-yielding counterparts, and be more defensive. While the value factor may also pick up some of these companies, it also tends to include distressed stocks with weak or deteriorating cash flows. As such, the yield factor tends to exhibit lower volatility and sensitivity to market fluctuations (measured by beta) than the value factor.

High volatility is a trademark of emerging-markets stocks, so it's notable that the low-volatility factor index was the best-performing in emerging markets since inception. Low volatility should not be expected to top the return leaderboards over the long run. If anything, lower-risk portfolios should be expected to deliver lower returns, as investors should be willing to accept lower compensation for lower risk. That said, the low-volatility factor has consistently lived up to its name, providing a smoother ride

than the market, which often sets up more attractive risk-adjusted performance, even if its raw returns do not always impress.

Portfolio Highlights

June Reconstitution

The Morningstar Global Factor Indexes reconstitute twice a year in June and December. The momentum and low-volatility factor indexes often have the highest turnover, and this was observed at the June 2025 reconstitution, as shown in Exhibit 12. These are price-driven factors where leadership tends to rotate more quickly than it does among fundamental factors, like value and quality. The quality and size factor indexes experienced the smallest changes during the June reconstitution.

Exhibit 12 June 2025 Reconstitution Summary: Largest Additions

Index	Additions	Turnover (%)
Morningstar Global Low Volatility Factor Index	Home Depot (1.15%), Unilever (0.96%), Industrial and Commercial Bank of China (0.93%), Ansys (0.68%), Gartner (0.64%)	41.98
Morningstar Global Momentum Factor Index	Tesla (4.95%), Berkshire Hathaway (2.80%), GE Vernova (1.15%), IBM (1.02%), AT&T (0.97%)	50.34
Morningstar Global Quality Factor Index	Uber Technologies (0.62%), Agnico Eagle Mines (0.49%), Franco-Nevada (0.44%), Kinross Gold (0.42%), SK Hynix (0.39%)	12.41
Morningstar Global Size Factor Index	S&P Global (0.26%), Analog Devices (0.24%), Robinhood Markets (0.29%), GE Vernova (0.19%), Flutter Entertainment (0.15%)	11.33
Morningstar Global Value Factor Index	Alphabet (4.24%), Samsung Electronics (0.84%), MicroStrategy (0.76%), Industrial and Commercial Bank of China (0.31%), Northrop Grumman (0.25%)	22.96
Morningstar Global Yield Factor Index	Apple (7.79%), UnitedHealth Group (1.33%), Bank of America (0.94%), JD.com (0.67%), Kroger Company (0.66%)	34.99

Source: Morningstar Indexes. Data as of June 23, 2025.

There were a few notable additions to the Morningstar Global Factor Indexes at the June reconstitution, including Tesla, which was added to the Morningstar Global Momentum Factor Index, despite its sharp selloff in the first quarter of 2025. The momentum factor index measures performance from T-12 months through T-1 month (as of the reconstitution reference date). This means returns were measured from the end of May 2024 through the end of April 2025. During that time, Tesla racked up a 58% return, albeit with considerable volatility, which made it eligible for inclusion in the global momentum index.

Alphabet's recent addition to the Morningstar Global Value Factor Index may have also been surprising. Morningstar has traditionally classified Alphabet as a growth stock, assigning that designation as recently as June 2024. However, in recent years, Alphabet has been migrating leftward in the Morningstar Style Box, shifting between the large blend and large value segments as the firm has matured. By the reconstitution reference date at the end of May, it had moved deep enough into value territory to qualify for inclusion in the Morningstar Global Value Factor Index.

Apple was the largest new addition to the Morningstar Global Yield Factor Index. This was largely driven by an increase in its buyback yield, owing to large share repurchases over the past year. While stocks

with high shareholder yields often also have low valuations, Apple was not included in the Morningstar Global Value Factor Index at the end of the second quarter. UnitedHealth Group was also added to the Global Yield Factor Index because of an increase in both its dividend and buyback distributions.

While the Morningstar Global Low Volatility Factor Index experienced high turnover at the June reconstitution, most new constituents were added at low weights. For example, the largest new addition, Home Depot, joined Lowe's in the index at a 1.18% weight.

Sectors

The Morningstar Global Factor Indexes anchor their regional and sector weightings to those of their parent benchmarks. The slower-moving, fundamental factor indexes, value, quality, size, and yield, apply tighter sector and regional constraints and measure factor exposures on a sector-relative basis within each region to determine eligibility. This is intended to mitigate unintended biases that might otherwise creep into the indexes and facilitate greater comparability. Consequently, these indexes share similar sector exposures to their parent benchmarks, and for the most part, changes in their sector weightings were fairly muted at the June reconstitution.

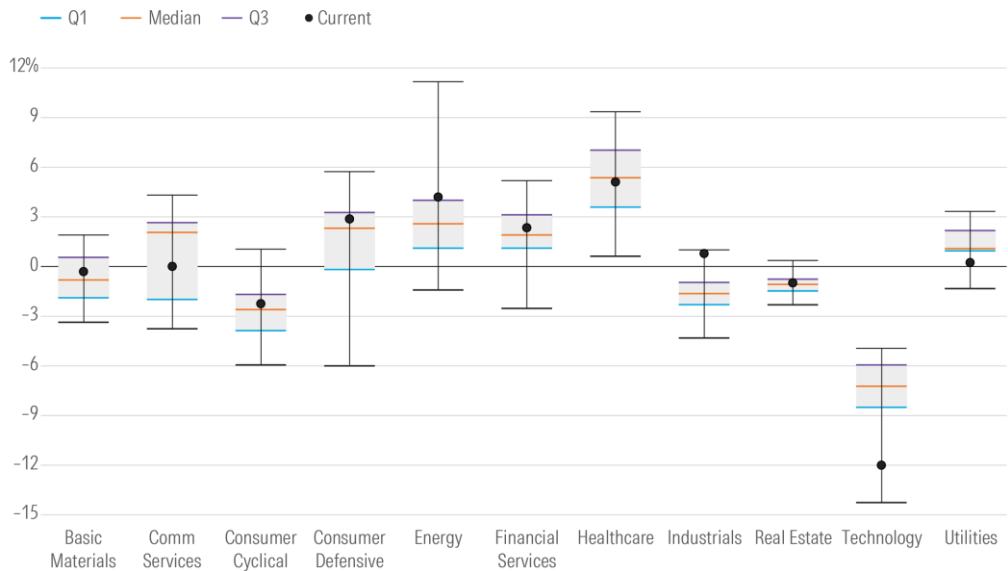
That said, the Morningstar Global Yield Factor Index increased its exposure to the technology sector at the June reconstitution, bringing its technology weighting closer in line with the parent benchmark's. In contrast, the Morningstar Global Value Factor Index remained underweight in this sector.

The faster-moving, price-driven low-volatility and momentum factor indexes apply looser regional and sector constraints and measure factor exposures on a regional-relative basis, without adjusting for sector membership. This is done because these price-driven factors are more comparable across sectors than the fundamental factors and have historically benefited more from their sector tilts.

Not surprisingly, the Morningstar low-volatility factor indexes tend to overweight more defensive sectors, such as utilities, healthcare, and consumer defensive, and underweight technology and industrials. However, some of the low-volatility factor's sector tilts fluctuate over time. For example, financial-services stocks are currently more heavily represented in the Morningstar Global Low Volatility Factor Index than they are in the benchmark. But during the 2008-09 global financial crisis, this sector was one of the more volatile areas of the market and was underweight in the index.

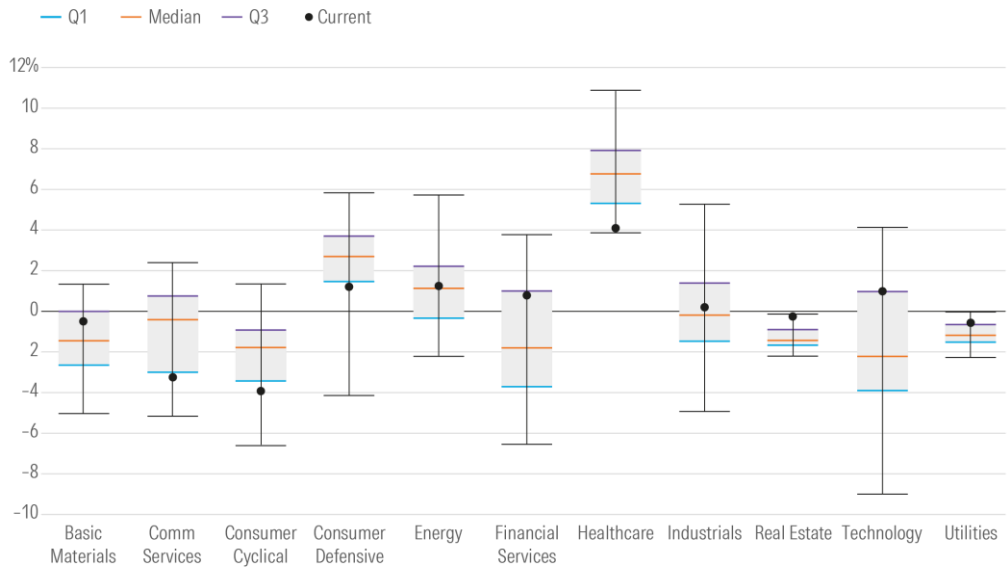
At the June reconstitution, the Morningstar Global Momentum Factor and Morningstar Low Volatility Factor indexes decreased their exposure to the technology sector, as this sector lost steam and became more volatile. The global momentum index increased its exposure to the financial-services and consumer cyclical sectors, though its consumer cyclical weighting was close to its benchmark's at the end of the second quarter.

Exhibit 13 Value Factor Active Sector Weights



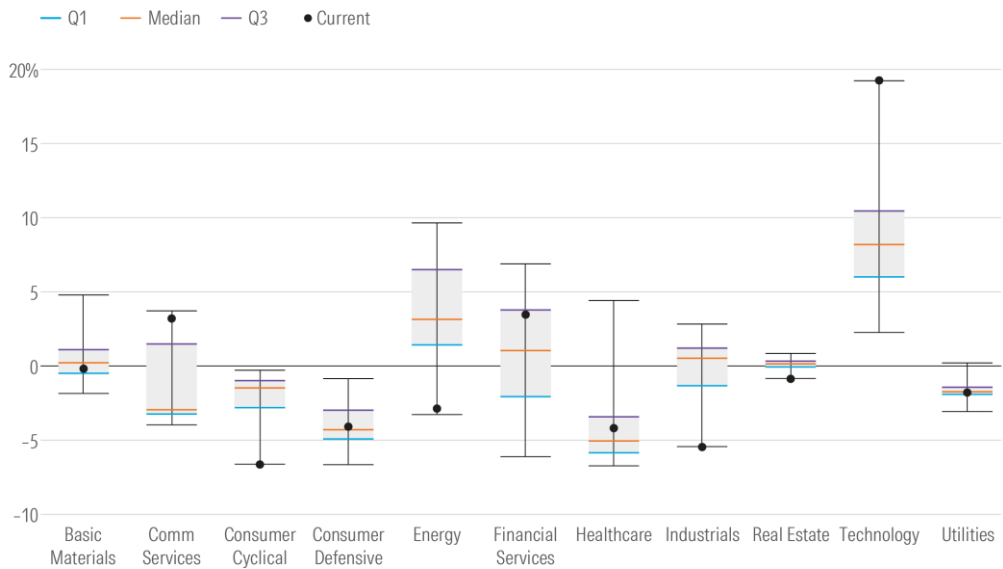
Source: Morningstar Indexes. Data as of June 23, 2025.

Exhibit 14 Yield Factor Active Sector Weights



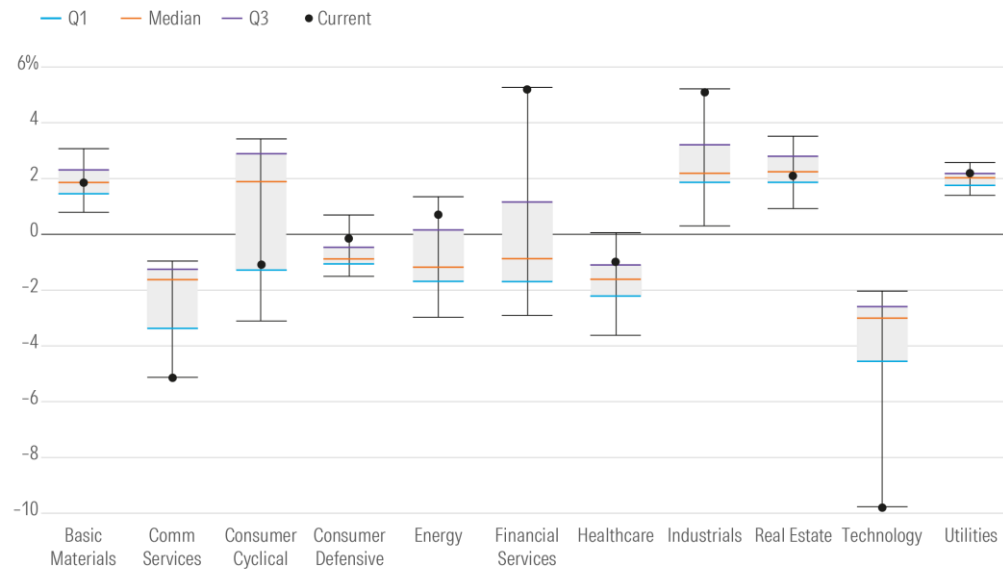
Source: Morningstar Indexes. Data as of June 23, 2025.

Exhibit 15 Quality Factor Active Sector Weights



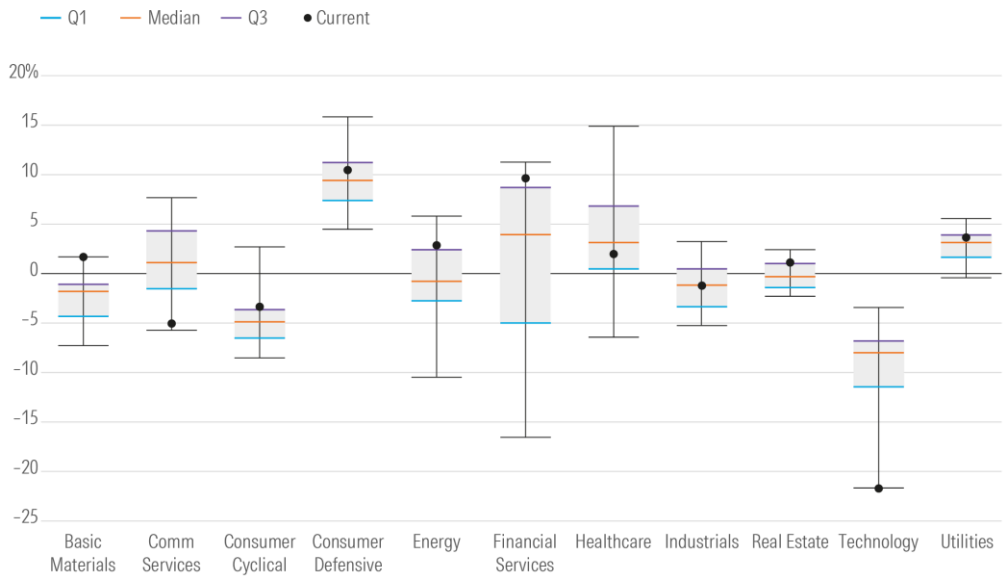
Source: Morningstar Indexes. Data as of June 23, 2025.

Exhibit 16 Size Factor Active Sector Weights



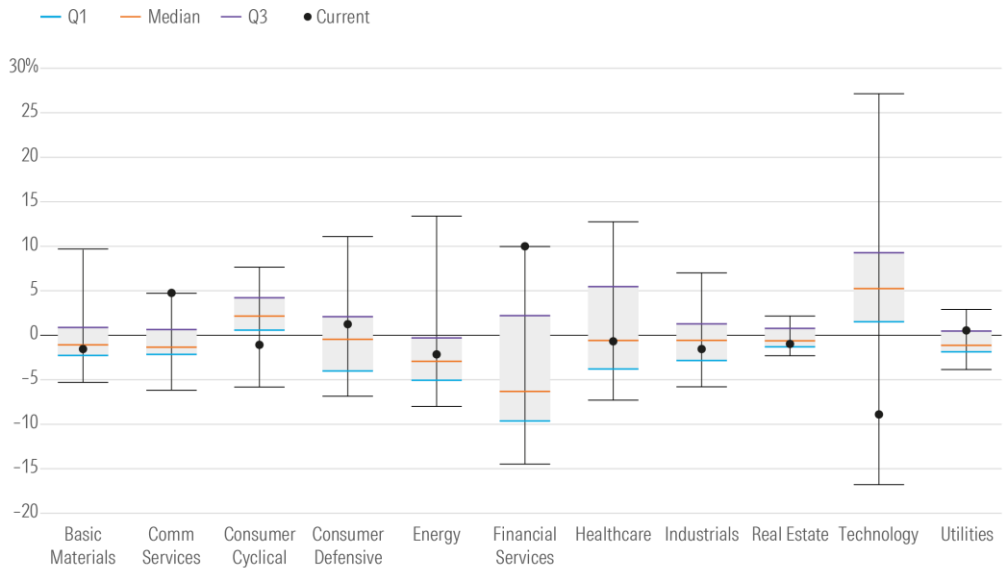
Source: Morningstar Indexes. Data as of June 23, 2025.

Exhibit 17 Low Volatility Factor Active Sector Weights



Source: Morningstar Indexes. Data as of June 23, 2025.

Exhibit 18 Momentum Factor Active Sector Weights



Source: Morningstar Indexes. Data as of June 23, 2025.

Factors Drive Performance

Factor leadership is volatile, but factors are key return drivers that can help explain variations in performance across the market. Portfolio factor exposures often have a bigger impact on performance than a manager's stock-selection prowess. As such, factor performance is crucial to understand.

Regardless of the market conditions, the Morningstar Global Factor Indexes are effective tools for monitoring factor trends. These indexes are designed to provide efficient, investable exposure to industry-standard factors with a consistent framework. They can facilitate precise performance benchmarking and efficient asset allocation. For more information, visit

<https://indexes.morningstar.com/factors>. 

Appendix

Factor Definitions

Low Volatility: This factor is the weighted average of idiosyncratic volatility over the past six months (50%), total volatility over the past six months (25%), and MAX5/lottery factor (25%), which is based on the highest five-day returns over the past month where lower values are favored. This composite provides a more complete view of risk than a security's total volatility alone.

Stocks with low past volatility tended to offer better risk-adjusted performance than those with high volatility. Unlike many of the other factors, there isn't a clear risk-based explanation for this effect. The anomaly is typically explained through investor behavior, given leverage and tracking-error constraints. Professional investors overly focused on returns and unable to leverage their portfolios might crowd into volatile stocks, which have greater upside potential than their more-staid counterparts. Retail investors looking for lotterylike upside might do the same. As a result, not only are low-volatility stocks more resilient during "risk-off" market environments, but they may also be priced to offer a more favorable risk/reward trade-off over the long term.

Momentum: This factor is measured as the trailing 12-month total return (in local currency), excluding the most recent month, minus the local risk-free rate. This definition aligns with the momentum factor as defined by the academic literature.

Momentum describes short-term performance persistence. Momentum strategies target stocks with strong recent returns, based on the premise that they are likely to continue to outperform. Prices may adjust more slowly than they should to new information, as investors often initially underreact. This alone can cause performance to persist. Once a trend is established, more investors may continue to buy, further fueling price momentum.

Quality: This is measured as the equally weighted z-score of a company's profitability (trailing 12-month return on assets) and the z-score of its financial leverage (trailing 12-month debt/invested capital).

The shares of companies with strong profitability and balance sheets performed better historically than less profitable and more highly indebted counterparts. They tended to hold up better than the market during downturns, which intuitively wouldn't lead to an expectation of higher returns. However,

investors may have historically underestimated the long-term durability of these firms' strong cash flows, leading to an impressive long-term track record of risk-adjusted returns.

Value: This factor's definition aligns with the Morningstar Style Box methodology, which incorporates historical and forward-looking value and growth metrics. The actual factor is value-growth, where the value inputs include price/earnings (50.0%), price/book (12.5%), price/cash flow (12.5%), price/sales (12.5%), and dividend yield (12.5%).

The value factor targets stocks trading at low multiples on fundamental measures like earnings, book value, cash flow, sales, and dividends. Value investing is backed by strong economic rationale and empirical evidence. Lower valuations should reflect higher expected returns, either as compensation for risk or because investors may be overly pessimistic about these stocks' prospects.

Index Construction

Single-Factor Indexes

The Morningstar Global Factor Indexes are from a corresponding standard parent benchmark from the Morningstar Target Market Exposure Index family, which represents the top 85% of equity market capitalization in its segment. The focus on large- and mid-cap stocks facilitates high-investment capacity. To be eligible for inclusion, each stock must have valid factor exposure scores.

Within each parent index, constituents are ranked by their factor exposure. All factors are measured relative to each broad region. The quality, size, value, and yield factor exposures are also measured on a sector-relative basis. This improves comparability and mitigates persistent sector biases. For low volatility and momentum, no sector relative adjustments are made, as these price-driven signals tend to be more comparable across sectors. The highest ranking 30% of the parent index's float-adjusted market capitalization is targeted for inclusion in each index. Focusing on a percentage of the parent index as opposed to a fixed number of securities ensures that a consistent portion of the market is represented.

Constituents are weighted by the product of their float-adjusted market capitalization and strength of their factor exposure, subject to constraints to limit unintended risk. The indexes are reconstituted and rebalanced semiannually.

For further details, please reference the [Construction Rules for the Morningstar Global Factor Indexes](#).

Multifactor Indexes

The Morningstar Global Multifactor Indexes use optimization to target low volatility, momentum, quality, and value. As a part of this optimization framework, the indexes aim to maximize portfolio-level factor characteristics under constraints to limit unintended risk and transaction costs while offering significant liquidity.

Morningstar Indexes offers multifactor indexes derived from various broad regional parent indexes, and the construction rules that follow are applied similarly for each variant.

Each multifactor index is derived from its corresponding standard parent benchmark from the Morningstar Target Market Exposure Indexes, representing the top 85% of equity market capitalization in its segment. The focus on large- and mid-cap stocks facilitates high-investment capacity.

The portfolios are long-only and enforce a minimum nonzero weight of 1 basis point (0.01%) to avoid economically insignificant allocations. To limit unintended active risk against the parent index, sector and country constraints are enforced. This allows a bit of flexibility for the optimizer to over- and underweight securities relative to the parent indexes while limiting the deviations to mitigate unintended biases. Turnover is also controlled to mitigate transaction costs.

For further details, please reference the [Construction Rules for the Morningstar Global Multifactor Indexes](#).

About Morningstar Indexes

Morningstar Indexes was built to keep up with the evolving needs of investors—and to be a leading-edge advocate for them. Our rich heritage as a transparent, investor-focused leader in data and research uniquely equips us to support individuals, institutions, wealth managers and advisors in navigating investment opportunities across major asset classes, styles and strategies. From traditional benchmarks and unique IP-driven indexes, to index design, calculation and distribution services, our solutions span an investment landscape as diverse as investors themselves.

Please visit indexes.morningstar.com for more information.

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