Multifactor Indexing at its Best: The Nasdaq Victory Value Momentum Index Family™

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- The Nasdaq Victory Value Momentum Index Family provides investors a unique multifactor solution
- Individually, both Value and Momentum have demonstrated long-running outperformance across most equity markets, while exhibiting generally low to negative correlation with each other
- Combining the factors in a bottom-up approach to portfolio construction preserves both factors' potential for generating outperformance, while enhancing diversification of return streams and limiting certain risks
- Introducing volatility-weighting to portfolio construction adds an extra layer of risk optimization

Different Factors Work in Different Regimes

US Large Cap Factor Performance by Calendar Year (Total Returns, Ranked Best to Worst)

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Low Volatility	Value	Momentum	Quality	Momentum	Value	Low Volatility	Growth	Value	Growth	Quality	Quality	Growth	Value	High Yield
-21.94%	47.78%	40.65%	11.01%	27.54%	47.73%	17.91%	9.34%	25.16%	25.00%	3.01%	37.46%	45.20%	39.70%	-9.49%
Quality	Growth	Growth	Low Volatility	Growth	US Benchmark	High Yield	Quality	High Yield	Quality	Low Volatility	Momentum	Momentum	Quality	Value
-33.54%	41.06%	26.97%	10.49%	26.60%	33.48%	15.70%	5.96%	19.07%	24.11%	1.64%	33.83%	39.98%	30.76%	-13.39%
US Benchmark	Quality	High Yield	High Yield	US Benchmark	Momentum	Momentum	Momentum	Low Volatility	Momentum	High Yield	US Benchmark	US Benchmark	High Yield	Low Volatility
-36.32%	34.83%	24.20%	9.32%	16.43%	32.96%	15.36%	5.20%	15.87%	22.84%	-3.62%	31.17%	21.27%	30.25%	-19.31%
High Yield	US Benchmark	Value	US Benchmark	Quality	Quality	Growth	Low Volatility	US Benchmark	US Benchmark	US Benchmark	Low Volatility	Quality	Low Volatility	Momentum
-37.78%	29.26%	20.03%	0.31%	15.61%	31.07%	14.57%	1.65%	13.01%	21.38%	-5.44%	30.29%	19.07%	28.46%	-22.96%
Value	Low Volatility	US Benchmark	Momentum	Value	Low Volatility	Value	US Benchmark	Quality	Low Volatility	Value	High Yield	High Yield	US Benchmark	US Benchmark
-46.45%	19.60%	17.55%	-2.18%	14.34%	28.60%	14.10%	0.48%	5.88%	18.43%	-11.39%	26.99%	5.14%	25.89%	-24.90%
Momentum	High Yield	Quality	Value	Low Volatility	Growth	US Benchmark	High Yield	Growth	Value	Momentum	Growth	Low Volatility	Momentum	Quality
-51.84%	15.62%	12.83%	-6.44%	13.04%	27.91%	12.46%	0.23%	0.29%	15.84%	-11.85%	24.58%	-0.34%	13.05%	-27.22%
Growth	Momentum	Low Volatility	Growth	High Yield	High Yield	Quality	Value	Momentum	High Yield	Growth	Value	Value	Growth	Growth
-56.04%	5.42%	4.84%	-7.46%	11.00%	26.38%	9.43%	-4.58%	-0.49%	14.28%	-16.83%	20.50%	-2.55%	7.89%	-31.23%

As of September 30, 2022

If there is one particularly powerful selling point for going with a multifactor approach vs. single-factor, it is the instability of factor leadership over time. Using Nasdaq's Factor Family US Index™ suite, which tracks returns of the top decile of US large cap securities across six individual factor rankings, we can visualize how starkly factor leadership rankings change year over year. Across 15 calendar years since 2008, no single factor has ranked first in performance more than four times. Value (NQFFUSV™) achieved that feat alone in 2009/2013/2016/2021, and only Quality (NQFFUSQ™) achieved the top spot in consecutive years (2018/2019). While Momentum (NQFFUSM™) ranked first only twice (2010/2012), it was ranked in the Top 3 more than half the time; it was also tied for least number of appearances in the bottom half of rankings (four, along with High Yield / NQFFUSHY™). And while Low Volatility (NQFFUSLV™) was ranked first only twice (2008/2014), it did so during the worst year of performance for the market overall, when the Nasdaq US Benchmark Index™ was down more than 36% in 2008.

This "volatility" of factor leadership dovetails with the differing correlations across factors, shown in detail at the bottom of this page. Notably, the US Benchmark Index never ranked first, demonstrating the appeal of factor-based investing as a high-probability approach to outperforming the market. Overall, in 12 of the last 15 years, either Value, Momentum, or both have outperformed the broader market. In 2022, Value, Momentum, and Low Vol are all outperforming.

The rise of systematic factor investing has transformed the passive investment landscape over the past three decades. Academic financial research has repeatedly confirmed the existence of long-run factor-based sources of equity returns, perhaps most famously with Fama & French's original three-factor asset pricing model described in their seminal 1992 publication in the Journal of Finance, "The Cross-Section of Expected Stock Returns."[1] The Value factor in particular has led to a proliferation of indexed smart beta strategies, employing various levels of complexity to deliver a simple outcome: undervalued companies, all else equal, tend to outperform overvalued companies over time. Intuitively, this makes sense from both a statistical and behavioral perspective. Statistically speaking, equity investors must receive a higher rate of return from cheaper companies as compensation for the incremental risk-taking associated with investing in them. Behaviorally speaking, highly-valued companies tend to have loftier growth expectations, which are prone to a higher rate of inaccuracy (i.e., more mean reversion) in investor forecasts than those of more stable, low-growth companies.[2] Recent research has even suggested that "on average, growth stocks' earnings do not grow any faster than value stocks'."[3]

Despite the intuition around a value "premium," Value as a "factor" has been perceived to be at or near the bottom of the suite of single-factor strategies in the smart beta universe for the better part of a decade and a half, leading many investors and academics to question its continued relevance. Notwithstanding recent reversion away from historical extremes of Value's "cheapness" relative to Growth, Value continues to be prone to shortcomings as a single, standalone factor for security selection. Different companies (and sectors) can attain cheap valuations for varied reasons; sometimes, the reasons are legitimate. A poorly-run company in a shrinking industry may very well deserve a valuation in the lowest decile of the equity market, and may not merit inclusion in a well-constructed portfolio. For this reason, an overlay with the Momentum factor offers a strong factor pairing, by minimizing the likelihood of "value traps" and introducing an uncorrelated source of return. Unlike Value – with its focus on valuation metrics such as the book-to-market ratio (i.e., "Price/Book") – Momentum is a purely market technicals-driven factor, acting independent of financial fundamental data. It reflects real-world market behavior that has a tendency to persist, especially in the short-to-medium term, and helps screen out otherwise high-scoring value stocks that have entered into an unfavorable downtrend. When judged against the other five factors in the Nasdaq Factor Family US Index suite, Momentum exhibits the weakest (i.e., most negative) correlation with Value.

Value + Momentum = A Winning Combination

Correlation Matrix for Nasdaq US Factor Family Indexes

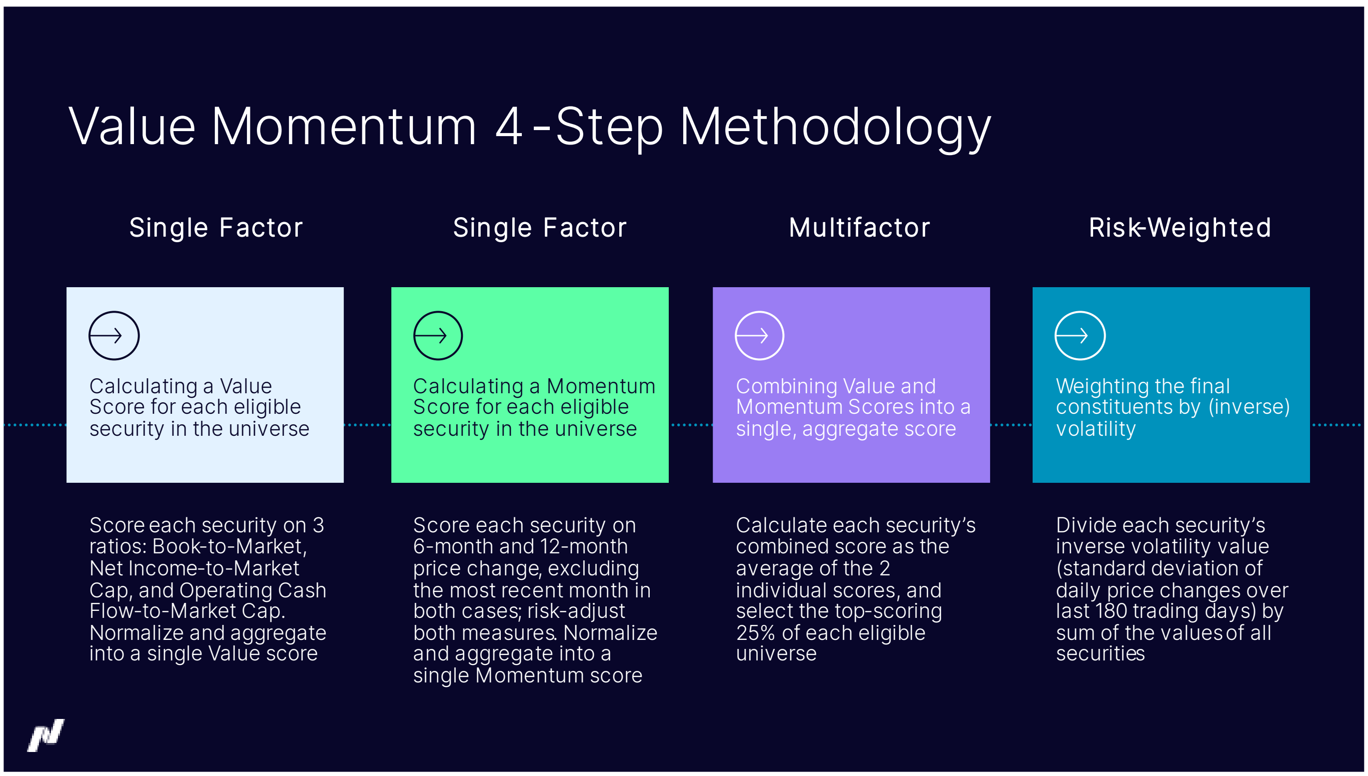
	Value	Momentum	High Yield	Low Volatility	Growth	Quality
Value	1.00					
Momentum	**-0.47**	1.00				
High Yield	0.68	-0.55	1.00			
Low Volatility	0.02	-0.14	0.44	1.00		
Growth	-0.38	0.71	-0.56	-0.41	1.00	
Quality	0.33	-0.34	0.51	0.41	-0.33	1.00

As of July 29, 2022. Measured as the 5-year correlation of daily excess returns, relative to the Nasdaq US 500 Large Cap Index™.

[1] https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1540-6261.1992.tb04398.x
[2] https://onlinelibrary.wiley.com/doi/10.1111/1540-6261.00540
[3] https://www.marketwatch.com/story/breakthrough-research-says-growth-companies-dont-actually-grow-faster-than-their-value-counterparts-do-11666366586

Combining Value and Momentum thus provides investors a unique multifactor solution to screen the equity market for two of the strongest and best-known return factors, and that is exactly what the Nasdaq Victory Value Momentum Index Family set out to deliver when it was launched on September 19, 2022. As an added benefit, each Index in the Family utilizes a modified volatility-weighted approach, further enhancing its risk-return profile and diversification. Recent research on factor performance has established that "low-beta and low-volatility stock portfolios consistently have more attractive Sharpe ratios than high-beta portfolios" that are "economically and statistically significant" and are "proven to be a robust source of risk-adjusted performance."[4] Crucially, the authors of this same research tested the robustness of Value ratios including book-value-to-price, earnings to price, cash flow to price, and dividends to price, finding "economically significant differences in returns between value and growth stocks" across all of them. They also found that "the standard definition of momentum produces statistically significant benefits everywhere except in Japan, where value investing predominates." The Nasdaq Victory Value Momentum Indexes therefore reflect some of the leading findings on factor investing, pairing two of the strongest individual factors with a weighting mechanism that works predictably in limiting portfolio risk.

Index Methodology



Each of the four indexes in the family references a benchmark Nasdaq index to select its constituents:

1) The Nasdaq Victory US Value Momentum Index™ (Ticker: VMULC™) selects securities from the Nasdaq US 500 Large Cap Index™ (NQUS500LC™)
2) The Nasdaq Victory US Small Mid Cap Value Momentum Index™ (VMUSM™) selects securities from the Nasdaq US 600 Mid Cap Index™ (NQUS600MC™) or Nasdaq US 700 Small Cap Index™ (NQUS700SC™)
3) The Nasdaq Victory International Value Momentum Index™ (VMILM™) selects securities from the Nasdaq DM Ex United States Large Mid Cap Index™ (NQDMXUSLM™)
4) The Nasdaq Victory Emerging Markets Value Momentum Index™ (VMELM™) selects securities from the Nasdaq Emerging Markets Large Mid Cap Index™ (NQEMLMC™)

[4] https://www.researchaffiliates.com/publications/journal-papers/312_will_your_factor_deliver_an_examination_of_factor_robustness_and_implementation_costs_factor_zoology

For the eligible securities in each respective index's universe, a Value Score and Momentum Score are calculated to produce an overall Value Momentum Score. For the Value Score, three ratios are used:

1) Book-to-Market ratio (i.e. "book-value-to-price")
2) Net Income to Market Capitalization ratio (i.e. "earnings to price")
3) Operating Cash Flow-to-Market Capitalization ratio (i.e. "cash flow to price")

For the Momentum Score, two price changes are used:

1) Six-month price change, excluding the most recent month
2) 12-month price change, excluding the most recent month

Finally, each security's combined Value Momentum Score is calculated as the average of its Value and Momentum Scores. The resulting values are used to select the top 25% of the eligible universe for inclusion in each of the four indexes, following these steps:

1) Any security with a Value Momentum Score ranked outside the top 40% of scores is excluded
2) Any security with a Value Momentum Score ranked inside the top 10% of scores is automatically included
3) Securities not selected in Step 2 are ranked by Value Momentum Score, and 15% of the eligible universe are considered for inclusion in order of their score strength, with preference given to those already in the index as of the most recent reconstitution reference date.

In terms of constituent weighting, each index security's initial weight is determined by dividing its inverse volatility value (standard deviation of daily price changes over the most recent 180 trading days) by the sum of the inverse volatility values of all securities. In other words, each index in the family is volatility-weighted, such that securities with lower volatility receive the highest weights, and vice versa.

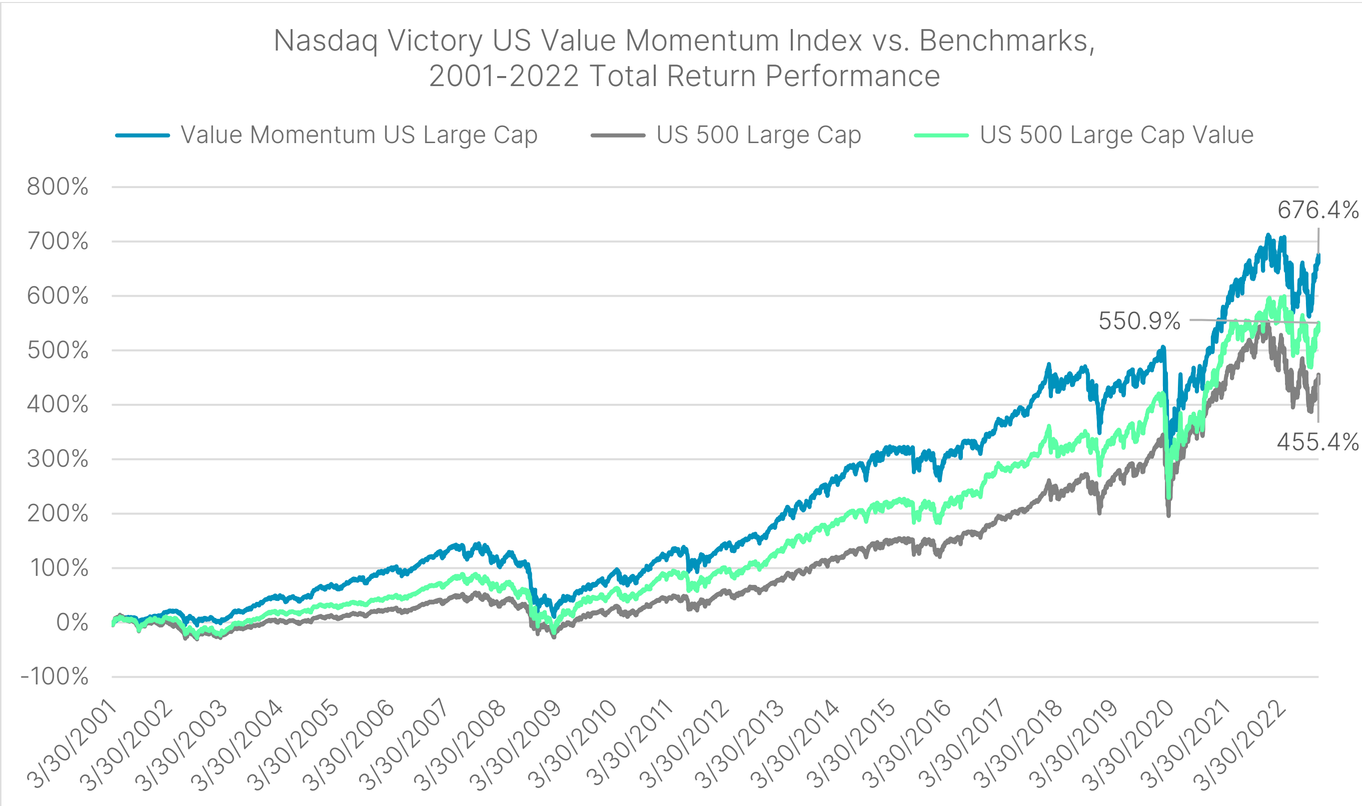
Each index is rebalanced and reconstituted on a quarterly schedule every March, June, September, and December. For more technical details on the methodology, please refer to the index methodology document.

Index Performance

Based on long-run historical (backtested) index data, one can clearly observe the outperformance potential of this strategy using the US Large Cap space as an example. Despite periodic underperformance of the Value factor over the past decade and a half, the Nasdaq Victory US Value Momentum Index generated total returns of 676% from March 30, 2001 thru November 30, 2022, or 9.9% annualized – substantially better than the performance of Nasdaq's US 500 Large Cap Index which was up 455%, or 8.2% annualized, over the same timeframe. In addition, the Nasdaq US 500 Large Cap Value Index was up 551% or 9.0% annualized, indicating approximately 90 bps of incremental annual outperformance, on average, as a result of adding a Momentum overlay. This boost to performance was almost equivalent in magnitude to that of Value's outperformance vs. the broad large cap market benchmark (approximately 80 bps annualized). A substantial portion of the outperformance was observed from May 2001 thru April 2007, then again from March 2009 thru March 2015, and from February 2016 thru February 2018. The current period of strong outperformance dates back to late October 2020 and is ongoing.

Index Performance (Mar 30, 2001 – Nov 30, 2022)	*Cumulative Return*	*Annualized Return*	*Annualized Vol*
Nasdaq Victory US Value Momentum Large Cap	676.4%	9.9%	18.7%
Nasdaq US 500 Large Cap	455.4%	8.2%	19.6%
Nasdaq US 500 Large Cap Value	550.9%	9.0%	20.2%

In terms of the tradeoff between return and risk, the Nasdaq Victory US Value Momentum Index demonstrates that better performance can be achieved in conjunction with a reduction in risk. Its annualized volatility over the 20+ year period was 18.7% vs. 19.6% for the Nasdaq US 500 Large Cap Index, and 20.2% for the Nasdaq US 500 Large Cap Value Index™.

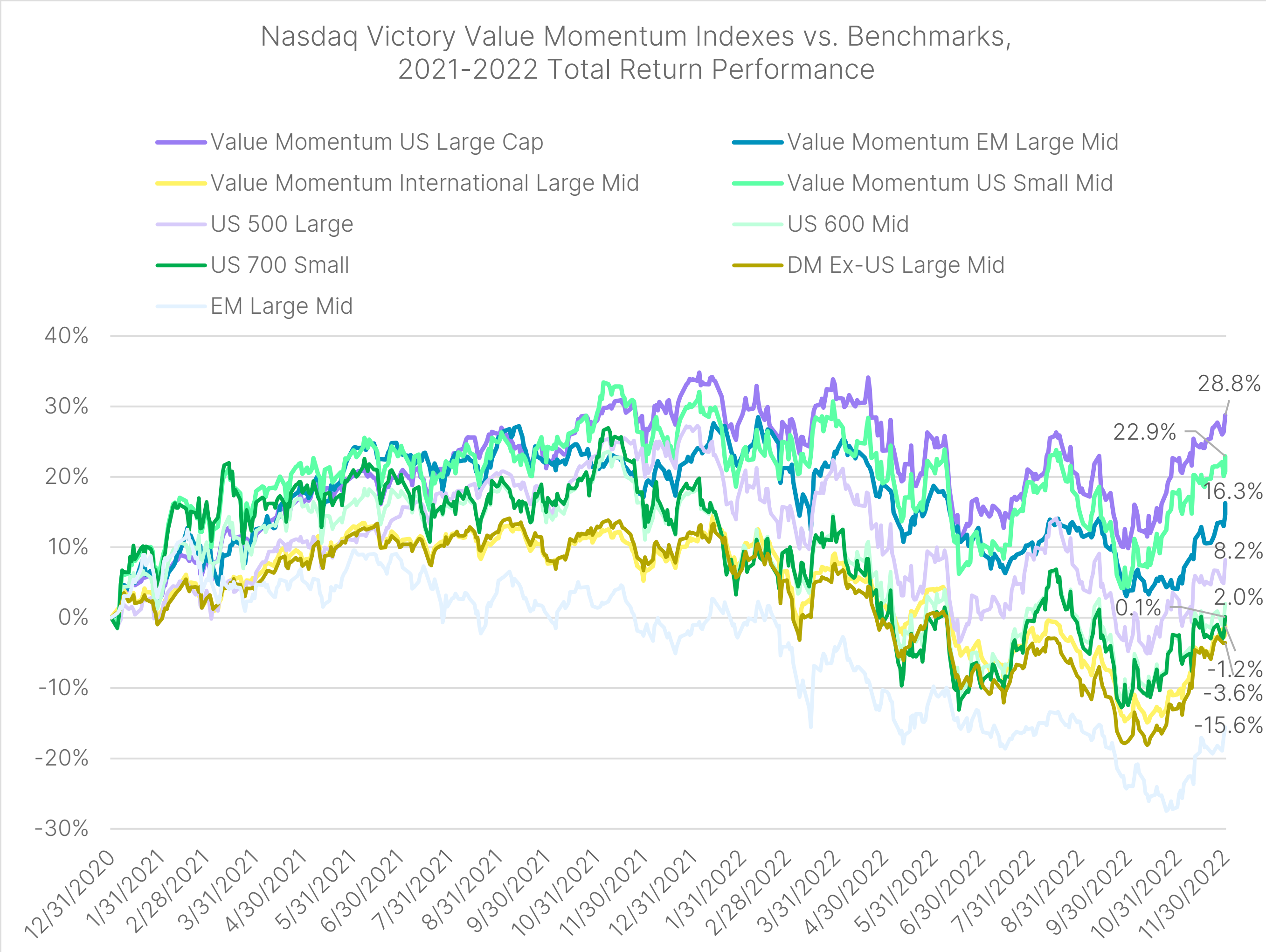


As of November 30, 2022

In terms of the recent performance of the Nasdaq Victory Value Momentum Index Family in 2021-2022, results are very encouraging despite a generally unfavorable macroeconomic environment and widespread losses across most equity markets this year. 2022 is certainly shaping up to be the worst year of performance for broad-based market benchmarks since 2008, with Growth experiencing the sharpest pullback of any single factor.

All four indexes have outperformed their respective benchmarks, with VMILMT (Nasdaq Victory International Value Momentum Index Total Return, referred to going forward as Value Momentum International Large Mid) outperforming NQDMXUSLMT (Nasdaq DM Ex United States Large Mid Cap Index Total Return, referred to going forward as DM Ex-US Large Mid) by 2.4% since Dec 31, 2020; VMELMT (Nasdaq Victory Emerging Markets Value Momentum Index Total Return, referred to going forward as Value Momentum EM Large Mid) outperforming NQEMLMCT (Nasdaq Emerging Markets Large Mid Cap Index Total Return, referred to going forward as EM Large Mid) by 31.8%; VMUSMT (Nasdaq Victory US Small Mid Cap Value Momentum Index Total Return, referred to going forward as Value Momentum US Small Mid) outperforming US Mid Cap (Nasdaq US 600 Mid Cap Index Total Return, referred to as US 600 Mid) by 21.0% and US Small Cap (Nasdaq US 700 Small Cap Index Total Return, referred to going forward as US 700 Small) by 22.8%; and VMULCT (Nasdaq Victory US Value Momentum Index Total Return, referred to going forward as Value Momentum US Large Cap) outperforming the Nasdaq US 500 Large Cap Index Total Return (referred to going forward as US 500 Large) by 20.6%.[5] The existence of recent outperformance across multiple regions and market cap ranges for the value/momentum strategy – after several years of underperformance – suggests a sustained change in factor leadership is likely underway.

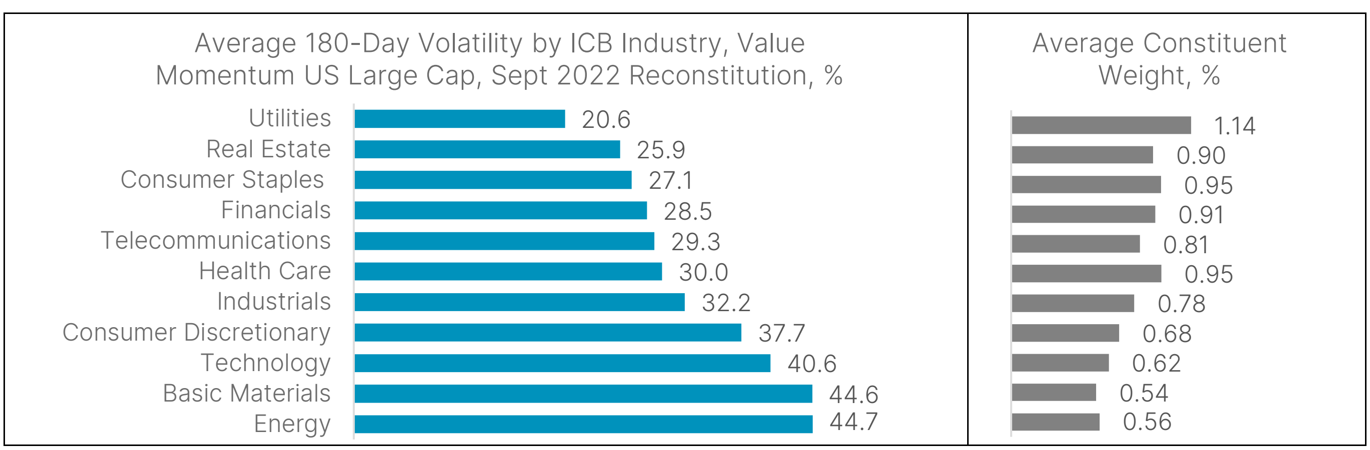
[5] Value Momentum returns based on backtested data through September 16, 2022, with live performance thereafter.



As of November 30, 2022

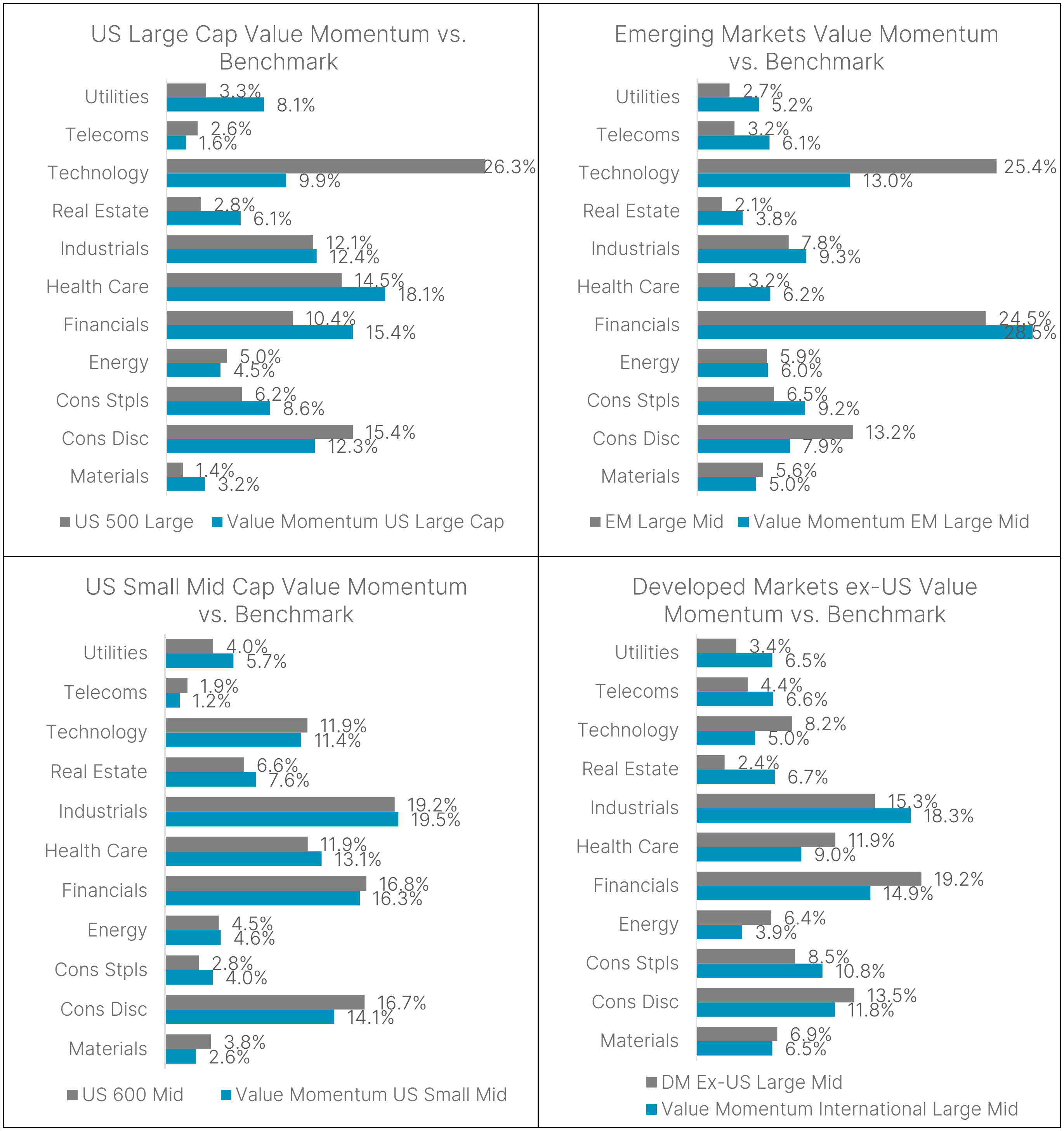
Diversification: A Key Benefit of Volatility-Weighting

The most important benefit of volatility-weighting is equal risk contribution. Stocks with historically higher price volatilities are assigned lower portfolio weights with the goal that each stock will contribute an equal amount of ex-ante (estimated) risk to the portfolio. It appears to be a very intuitive way of reducing portfolio risk through enhanced diversification; it helps minimize exposure to some of the riskiest companies and sectors, especially in risk-off periods such as the current market environment; and it also prevents sector concentration overall.



This has contributed to recent outperformance as allocations to Technology and Consumer Discretionary (the worst performing sectors in 2022 in the US and globally) have been kept suppressed, both at the individual constituent level vs. other sectors like Utilities & Consumer Staples, as well as on an aggregate level – with the most pronounced reductions in US Large Cap and Emerging Markets. As a standalone factor, Value can be prone to overweighting certain sectors such as Financials and Energy (together, approximately 50% of NQFFUSV's index weight as of September 30, 2022), while Momentum can be either very concentrated or more dispersed. A quick look at the current sector exposures illustrates how this unique methodology rather naturally prevents overconcentration, improving upon both standalone Value and a basic market cap-weighted benchmark.

Nasdaq Victory Value Momentum Sector Weightings (per ICB Industry) vs. Benchmark Indexes as of 9/30/2022



Another way of understanding the impact of volatility-weighting is by looking at maximum and median constituent-level weights. Here, the benefits of volatility weighting are most noticeable in the US Large Cap space, and within Emerging Markets. Whereas their respective benchmarks' largest constituents attain weightings in excess of 7%, the Nasdaq Victory US Value Momentum Index and the Nasdaq Victory Emerging Markets Value Momentum Index's largest constituents top out at less than 2%. Medians are substantially higher, at 0.79% and 0.58% respectively, vs. 0.09% and 0.05% for their respective benchmarks. As a result, the concentration among the top five largest constituents is around one-third of their benchmarks, and for the top ten, less than one-half. Less dramatic impacts are visible in the DM ex-US Large Mid space, as well as within US Small Mid. Overall though, the main takeaway is that these portfolios tend to be better diversified from both a sector perspective, as well as from a constituent perspective. All else equal, the implied risk of a portfolio with smaller weightings in its largest sectors and constituents should be lower vs. a more concentrated cap-weighted benchmark.

Finally, let's consider the impact when looking at returns-based metrics.[6] As mentioned, YTD returns in 2022 have been impressive on a relative basis vs. each of the four respective benchmarks for the index family. They are even more impressive when factoring in overall lower volatility, with a reduction of 2.5% in annualized standard deviation within DM ex-US, 3.8% within US Mid Cap, 4.6% within US Large Cap, 5.2% within US Small Cap, and 5.4% within EM. Using the average daily closing yield in the US 10-year Treasury as the 2022 risk-free rate, calculated YTD'22 alphas range anywhere from 2.9-9.6%, unannualized, for the eleven-month period ending November 30, 2022.[7] This comes on top of substantial alphas in 2021 for all but DM ex-US. And while Sharpe ratios are not meaningful given widespread negative returns in 2022, significantly higher Sharpe ratios in 2021 (again, except for DM ex-US) illustrate the favorable risk/return tradeoff of this particular suite of volatility-weighted index methodologies.

Index	2022 Return	2022 Volatility	2022 Alpha	2021 Return	2021 Volatility	2021 Alpha	2021 Sharpe	5-Year Beta
Value Momentum US Large Cap	-3.8%	20.6%	9.6%	33.9%	13.9%	8.9%	2.44	0.94
US 500 Large	-14.4%	25.2%		26.5%	13.3%		1.98	
Value Momentum EM Large Mid	-6.8%	16.8%	5.2%	23.1%	14.8%	23.9%	1.56	0.85
EM Large Mid	-14.7%	22.2%		-1.1%	16.0%		-0.07	
Value Momentum International Large Mid	-11.1%	17.0%	2.9%	11.1%	11.7%	-1.0%	0.94	1.00
DM Ex-US Large Mid	-14.0%	19.5%		12.1%	11.5%		1.04	
Value Momentum US Small Mid	-7.2%	24.3%	6.0%	30.1%	20.3%	12.6%	1.47	0.98
US 600 Mid	-13.4%	28.1%		17.8%	17.8%		1.00	
US 700 Small	-15.3%	29.5%		18.1%	22.0%		0.82	

As of November 30, 2022

Summary

Today's macroeconomic environment differs markedly from the backdrop of low-interest rates and stable inflation that dominated much of the period post-2008 Financial Crisis. The long-running outperformance of Growth,

[6] Value Momentum returns based on backtested data through September 16, 2022, with live performance thereafter.
[7] For VMUSM, alpha & beta calculated only with respect to NQUS600MC, given the much higher capitalization of mid cap vs. small cap.

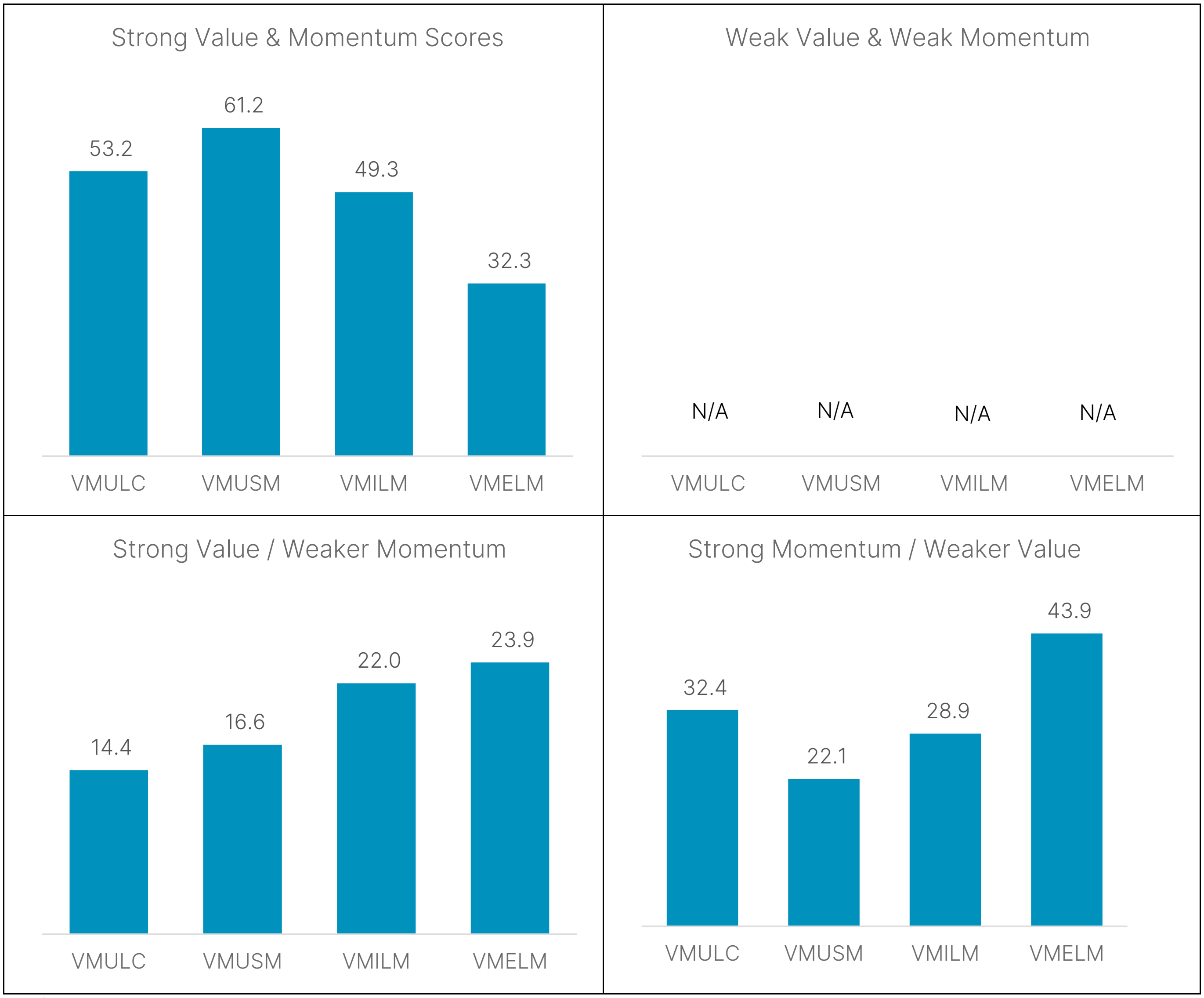
especially among US Large Caps, came at the expense of most other segments of US and International Equity. With its decades-long track record of outperformance supported by academic research, Value is primed for a sustained revival. More recent research has suggested that value investing can be improved by pairing it with Momentum, thanks to its ability to help avoid “value traps” by screening out those securities that are in a sustained downtrend and may be experiencing legitimate discounting as a byproduct of negative news flow; for all four indexes in the family, less than one-quarter of their weight is tied to companies that score strongly on Value but weakly on Momentum.[8] By adding an extra step of weighting constituents by (inverse) volatility, a multifactor Value Momentum index stands to gain further improvement in its risk/return profile. The Nasdaq Victory Value Momentum Index Family has been constructed with all of these considerations in mind and may offer an attractive alternative to market capitalization-weighted benchmark exposure in the coming years.

ETFs tracking the Nasdaq Victory Value Momentum Index Family include VictoryShares US Large Value Momentum ETF (Nasdaq: ULVM), VictoryShares US Small Mid Cap Value Momentum ETF (Nasdaq: USVM), VictoryShares International Value Momentum ETF (Nasdaq: UIVM), and VictoryShares Emerging Markets Value Momentum ETF (Nasdaq: UEVM).

Sources: FactSet, Bloomberg, Nasdaq Global Indexes.

[8] For a more detailed breakdown of the indexes by strength of value and/or momentum scores, see Appendix A.

Appendix A: Decomposition of Index Weight by Value & Momentum Score Strength



As of September 30, 2022. Strong scores are greater than zero, weak scores are less than zero.

VMULC = Value Momentum US Large Cap
VMUSM = Value Momentum US Small Mid
VMILM = Value Momentum International Large Mid
VMELM = Value Momentum Emerging Large Mid