

Factors in Focus

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In the realm of investing, a factor is any characteristic that helps explain the longterm risk and return performance of an asset. MSCI factor indexes are designed to capture the return of factors which have historically demonstrated excess market returns over the long run.

MSCI factor indexes are rules-based, transparent indexes targeting stocks with favorable factor characteristics, backed by robust implementation, replicability and use for both traditional passive and active mandates.

The MSCI Minimum Volatility, Sector Neutral Quality, Momentum and Enhanced Value Indexes represent four of MSCI's flagship factor indexes. Each is designed to capture well-documented, persistent factors - low volatility, quality, momentum and value.

Factor

VOLATILITY



Sound balance sheet stocks MSCI Sector Neutral Quality Indexes aim to reflect the performance of high quality stocks by weighting based on debt-to-equity, return-on-equity and earnings variability. They are designed to reflect the performance of a quality growth investment strategy, and control for sector weights relative to the market

Rising stocks MSCI Momentum Indexes are designed to target securities based on riskadjusted performance, with the goal of mitigating momentum crashes and reducing unnecessary turnover

Relatively inexpensive stocks MSCI Enhanced Value Indexes are based on research that has found that combining value ratio descriptors has captured the value factor better than using any individual ratio descriptor alone



MOMENTUM



2 msci.com

academic findings and empirical results – and are designed for simple

MSCI factor index

Lower risk stocks

MSCI Minimum Volatility Indexes aim to reflect the performance characteristics of a minimum volatility strategy by optimizing towards the lowest absolute risk within a given set of constraints to minimize unintended risks and exposures

Defining **W minimum** volatility

A minimum volatility strategy involves buying stocks based on the estimate of their volatility and correlations with other stocks. Minimum volatility is categorized as a "defensive" factor, meaning it has tended to benefit during periods of economic contraction. This type of strategy is more concerned with volatility management than with maximizing gains.

Paradoxically, the strategy has produced a premium over the market for long periods, contravening the principle that investors should not be rewarded with higher risk-adjusted returns for taking less than market risk.

The key objective of a minimum volatility strategy is to capture regional and global exposure to stocks with potentially less risk. Historically, the MSCI Minimum Volatility Indexes, for example, have realized lower volatility and lower drawdowns (peak-to-trough declines) relative to their parent index during significant market downturns.

Why institutional investors have used minimum volatility strategies

Tactical investors have used MSCI Minimum Volatility Indexes to reduce risk during market downturns, while retaining equity exposure. Strategic investors have recognized (1) the benefits of minimum volatility strategies in asset allocation and (2) that minimum volatility strategies have tended to outperform high volatility strategies on a risk-adjusted basis in the long run.

There are several behavioral explanations for the minimum volatility premium, which was identified in the early 1970s by economist Fischer Black and elaborated on by others since ther One theory posits that investors underpay for low volatility stock viewing them as less rewarding, and overpay for high volatility stocks that are seen as long shot opportunities for higher return In terms of methodology, the main approaches to implementing a minimum volatility strategy fall into two groups: (1) simple ran and selection and (2) optimization-based solutions.

A simple approach ranks the universe of stocks by their expected volatility, selects a subset of the constituents from the universe and then applies a weighting method. These approaches

Rolling performance and factor exposure

As mentioned above, minimum volatility strategies have demonstrated a premium over longer periods. Figure 1 below illustrates the rolling performance of the MSCI USA Minimum Volatility Index (CAD) over 1, 3, 5 and 10 year periods between the years 2000 and 2019. As seen below, the index and at a higher percentage over longer time horizons. Figure 2 on the right, illustrates the current factor exposure of the index, as measured by MSCI FaCS. As seen, the index has a large exposure to Low Volatility, in line with its objective.

Figure 1: Percentage of periods the MSCI USA Minimum Volatility Index (CAD) out/underperformed the MSCI USA Index (CAD) on a 1, 3, 5 and 10 year rolling basis , between Dec 2000 and June 2019



	generally ignore the correlation between stock returns, which can
	have a significant impact on the overall volatility strategy.
1. KS, S.	Optimization-based approaches account for both volatility and correlation effects, i.e., the magnitude and the degree to which stocks move in tandem.
k	The MSCI Minimum Volatility Indexes are calculated using an optimization based approach, and are designed to produce an index with the minimum overall volatility, while controlling for
ed	sector, country and non-target factor exposures, in addition to ensuring index replicability and investability.

Figure 2: MSCI FaCS exposure of the MSCI USA Minimum Volatility Index (CAD), as of June 2019



The quality factor is described in academic literature as capturing companies with durable business models and sustainable competitive advantages. Quality is categorized as a "defensive" factor, meaning it has tended to benefit during periods of economic contraction.

The quality factor has helped explain the movement of stocks that have low leverage, stable earnings and high profitability.

The MSCI Sector Neutral Quality Indexes employ three fundamental variables to capture the quality factor:

- » Return on equity which shows how effectively a company uses investments to generate earnings growth
- » Debt to equity a measure of company leverage; and
- » Earnings variability how smooth earnings growth has been

Why institutional investors have used quality strategies

The long-term outperformance of the quality factor against the market is well documented in financial literature. Nobel laureate Eugene Fama and Kenneth French, economists known for their ground breaking work in explaining stock returns, recently revise their signature three factor model (company size, company valu and market risk) to add two quality-related factors (profitability

Rolling performance and factor exposure

Figure 3 below illustrates the rolling performance of the MSCI USA Sector Neutral Quality Index (CAD) over 1, 3, 5 and 10 year periods between the years 2000 and 2019. The index and at a higher percentage over longer time horizons. Figure 4, on the right, illustrates the current factor exposure of the index, as measured by MSCI FaCS. As seen, the index has a large exposure to quality, in line with its objective, and its exposure to Index (CAD)).

Figure 3: Percentage of periods the MSCI USA Sector Neutral Quality Index (CAD) out/underperformed the MSCI USA Index (CAD) on a 1, 3, 5 and 10 year rolling basis, between Dec 2000 and June 2019



	and asset growth). Many active strategies have emphasized
es	quality growth as an important factor in their security selection
	and portfolio construction ¹ . In 2012, Robert Novy-Marx published
ed	a pioneering paper that found profitability and stability were just
le	as useful for explaining returns as traditional value measures ² .

Figure 4: MSCI FaCS exposure of the MSCI USA Sector Neutral Quality Index (CAD), as of June 2019

Defining **momentum**

The momentum factor refers to the tendency of winning stocks to continue performing well in the near term. Momentum is categorized as a "persistence" factor i.e., it tends to benefit from continued trends in markets.

The MSCI Momentum Indexes measure:

- » Risk-adjusted price momentum for 6 and 12 month periods
- » This measures the excess return over 6 and 12 months divided by the 3 year annualized standard deviation

Why institutional investors have used momentum strategies

Academics first identified the momentum premium in 1993, when UCLA scholars Narasimhan Jegadeesh and Sheridan Titman demonstrated that the strategy of buying stocks that have done well and selling stocks that have done poorly generated significant positive returns over 3 to 12-month holding periods.

Many studies since then have found the momentum factor present across equity sectors, countries, and more broadly, asset classes³. Momentum may not be as well understood as other factors, although various theories attempt to explain it.

Rolling performance and factor exposure

Momentum Index (CAD) over 1, 3, 5 and 10 year periods between longer time horizons. Figure 6, on the right, illustrates the current factor exposure of the index, as measured by MSCI FaCS. As objective. It's exposure to momentum is significantly greater than the benchmark (the MSCI USA Index (CAD)).

Figure 5: Percentage of periods the MSCI USA Momentum Index (CAD) out/underperformed the MSCI USA Index (CAD) on a 1, 3, 5 and 10 year rolling basis, between Dec 2000 and June 2019



Some postulate that it is compensation for bearing high risk; others believe it may be a consequence of market inefficiencies produced by delayed price reactions to firm-specific information⁴.

MSCI research shows, on a historical basis, the momentum factor has been one of the strongest generators of excess returns.

The momentum factor has typically outperformed in a macro environment characterized by a long cycle in underlying market trends.

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The foundation of value investing is the notion that cheaply priced stocks outperform pricier stocks in the long term. Value is categorized as a "procyclical" factor, meaning it has tended to benefit during periods of economic expansion

Value has several dimensions: the stock price as a multiple of company earnings, price as a multiple of dividends paid, price as a multiple of book value and other such "ratio descriptors." Academics and investors differ on which best represents a value company, creating opportunity in the marketplace for a variety of investment products.

The MSCI Enhanced Value Indexes apply three valuation ratio descriptors on a sector relative basis:

- » Forward price to earnings (Fwd P/E);
- » Enterprise value/operating cash flows (EV/CFO); and
- » Price to book value (P/B)⁵.

The index aims to address the pitfalls of value investing, among them "value traps" - stocks that appear cheap but in fact do not appreciate. MSCI analysis shows that using forward earnings has helped provide protection against value traps and that whole-firm valuation measures, such as enterprise value, have reduced concentration in highly leveraged companies, meaning those that have borrowed heavily.

Why institutional investors have used value strategies

Many investors use this approach to identify assets that they expect the market to revalue. The concept of value was first popularized in the 1930s by economists Benjamin

Rolling performance and factor exposure

Figure 7 below illustrates the rolling performance of the MSCI market cap parent index a majority of the time and at a higher percentage over longer time horizons. Figure 8, on the right, in line with its objective. It's exposure to Value is significantly greater than the benchmark (the MSCI USA Index (CAD)).

Value Index (CAD) out/underperformed the MSCI USA Index (CAD) on a 1, 3, 5 and 10 year rolling basis, between Dec 2000 and June 2019



Graham and David Dodd, who advocated owning companies that provide a "margin of safety" - meaning the current stock price is less than it is expected to be under conservative projections of the firm's future earnings⁶.

Examining performance

In the short-term, factor performance has been cyclical. As seen in the figure below, the MSCI factor indexes have generated periods of underperformance.

Figure 9: How the four factor indexes have performed relative to each other

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
7.4%	-13.5%			15.8%	18.5%	-0.5%	-7.7%		11.6%	14.7%				30.4%	11.0%	28.2%	10.0%
-2.6%	-16.7%	5.0%	7.9%	9.7%	14.2%	-7.2%	-14.6%	7.2%	8.8%	9.4%	12.8%	43.0%	26.2%	25.8%	7.1%	13.7%	6.8%
-5.1%	-17.3%	2.8%	5.5%	3.3%	13.8%	-10.6%	-21.8%	5.2%	7.9%	8.1%	11.8%	42.5%	24.5%	24.7%	6.0%	13.3%	3.5%
-6.9%	-22.4%	0.7%	2.1%	2.5%	11.7%	-12.1%	-21.9%	-0.2%	7.5%	3.9%	9.5%	40.6%	22.8%	20.8%	4.9%	13.2%	2.2%
-12.4%	-23.9%	-2.6%	0.2%	2.2%	10.0%	-14.8%	-26.4%	-0.5%	6.2%	-0.9%	7.8%	32.7%	20.0%	11.5%	1.0%	10.6%	
	🔶 Value 🛛 Volatility				Q	Quality Momentum USA											

That said, over a long time horizon, the MSCI USA Sector Neutral Quality, Enhanced Value, Momentum and Minimum Volatility Indexes have all delivered outperformance relative to the market (see chart below).

Figure 10: Performance of MSCI USA factor indexes compared to the MSCI USA Index (2000-2019)



The chart below illustrates the MSCI factor indexes' long term performance along the dimensions of risk and return. As seen, all the factor indexes have outperformed the parent index (MSCI USA) on a risk-adjusted basis. Minimum Volatility and Quality both exhibit lower risk than the parent index, which is expected, given both are defensive factors. Enhanced Value and Momentum, being more pro-cyclical, have demonstrated higher risk, as well as higher returns.

Figure 11: Long term risk and return (December 2000 - June 2019)



Conclusion

The MSCI Sector Neutral Quality, Momentum, Enhanced Value and Minimum Volatility Indexes provide rules-based, transparent methods for capturing four well known factors - quality, momentum, value, and minimum volatility – all of which have demonstrated long term outperformance relative to the broader market. These factor's persistence are grounded in both academic theory and empirical evidence.

Footnotes & references

Asness, C. S., A. Frazzini and L.H. Pederson, L. H. (2013). "Quality Minus Junk," s.l.: Working Paper, AQR Capital Management.
Novy-Marx, R. (2012). "The Other Side of Value: The Gross Profitability Premium." Journal of Financial Economics, Volume 108, pp. 1-28.
Moskowitz, T.J. and M. Grinblatt. (1999). "Do Industries Explain Momentum?" Journal of Finance, Vol. 54, No. 4, pp. 1249–1290.
Jegadeesh, N. and S. Titman. (1993). "Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency."

Journal of Finance, Vol. 48, No. 1, pp. 65–91. 5 Exceptions are Financials: Forward P/E and P/B, Real Estate: EV/CFO

6 Graham, B., D. Dodd, S. Cottle, R. Murray and F. Block. (1989). Graham and Dodd's Security Analysis, McGraw-Hill.

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