



An Overview of Factor Investing

The merits of factors as potential building blocks for portfolio construction

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Key Takeaways

- Factors such as size, value, momentum, quality, and low volatility are at the core of “smart” or “strategic” beta strategies, and are investment characteristics that can enhance portfolios over time.
- Factor performance tends to be cyclical, but most factor returns generally are not highly correlated with one another, so investors can benefit from diversification by combining multiple factor exposures.
- Factor-based strategies may help investors meet certain investment objectives—such as potentially improving returns or reducing risk over the long term.

Factor investing has received considerable attention recently, primarily because factors are the cornerstones of “smart” or “strategic” beta strategies that have become popular among individual and institutional investors. In fact, these strategies had net inflows of nearly \$250 billion during the past five years.¹ But investors actually have been employing factor-based techniques in some form for decades, seeking the potential enhanced risk-adjusted-return benefits of certain factor exposures.

In this article, we define factor investing and review its history, examine five common factors and the theory behind them, show their performance and cyclicity over time, and discuss the potential benefits of investing in factor-based strategies. Our goal is to provide a broad overview of factor investing as a framework that incorporates factor-exposure decision-making into the portfolio construction process. This article is the first in a series on factor investing.

A brief history of factor investing

Beta is born

The seeds of factor investing were sown in the 1960s, when the capital asset pricing model (CAPM) was first introduced.² The CAPM posited that every stock has some level of sensitivity to the movement of the broader market—measured as beta. This first and most basic factor model suggested that a single factor—market exposure—drives the risk and return of a stock. The CAPM suggested that beyond the market factor, what are left to explain a stock's returns are idiosyncratic, or company-specific, drivers (e.g., earnings beats and misses, new product launches, CEO changes, accounting issues, etc.).

Beta gets "smart"

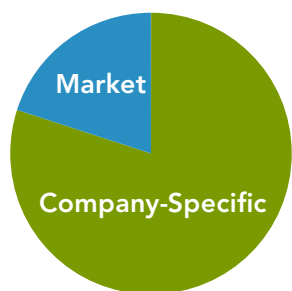
In the decades that followed, academics and practitioners discovered other factors and exposures that drive the returns of stocks.³ Stephen Ross introduced an extension of the CAPM called the arbitrage pricing theory (APT) in 1976, suggesting a multifactor approach may be a better model for explaining stock returns.⁴ Later research by Eugene Fama and Kenneth French demonstrated that besides the market factor, the size of a company and its valuation are also important drivers of its stock price.⁵

Factors can also be considered anomalies, since they are deviations from the "efficient market hypothesis," which suggests it is impossible to consistently outperform the market over time because stock

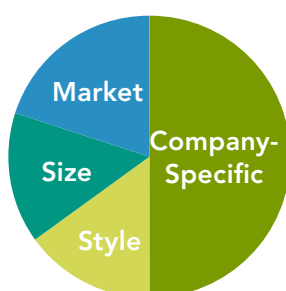
How can investors gain exposure to factors?

Factor-based investment strategies are founded on the systematic analysis, selection, weighting, and rebalancing of portfolios, in favor of stocks with certain characteristics that have been proven to enhance risk-adjusted returns over time. Most commonly, investors gain exposure to factors using quantitative, actively managed funds or rules-based ETFs designed to track custom indexes.

The Evolution of Factor Investing



CAPM: Stock returns are driven by exposure to the market factor (beta) and company-specific drivers



Fama and French account for additional factors: size and style



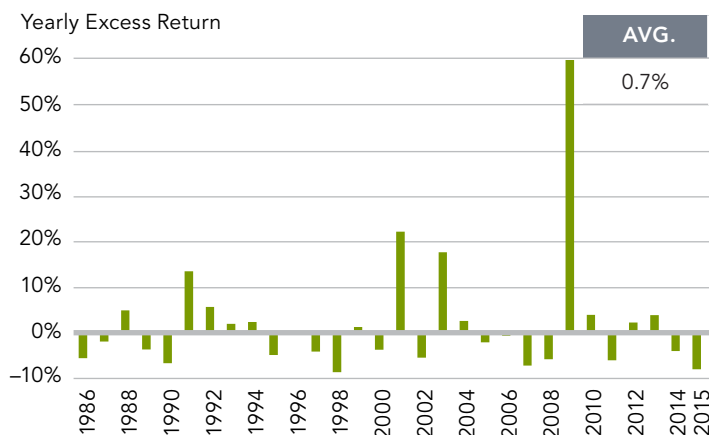
Research proves the case for multiple factors as components of stock returns and risk

prices immediately incorporate and reflect all available information. And while some factors can, indeed, generate excess returns over time, other factors explain the risk of stocks but do not necessarily provide a return premium. As an example, many would argue that CAPM beta, almost by definition, does not deliver excess returns over time; it measures only a stock's sensitivity to market movement and may instead be a risk factor. Therefore, exposure to market beta alone is not a way to outperform. Investors seeking returns in excess of the market may consider exposure to other factors (or betas) that have exhibited long-term outperformance: "smart" or "strategic" betas.

Investment managers—quantitative investors in particular—have employed these factors over the years to build and enhance their portfolios. Once the relevant factors that drive return and risk are identified, exposures can be measured on an ongoing basis to ensure a portfolio is best structured to take advantage of these factors. Fundamental investors also use factors widely,

EXHIBIT 1: Small-Cap Excess Returns

Small caps have beaten larger caps over time, even though this leadership can shift over shorter periods



Small-cap returns shown are yearly returns of the equal-weighted bottom quintile (by market capitalization) of the Russell 1000 Index. All excess returns are relative to the equal-weighted Russell 1000 Index. All factor portfolios are sector neutral, assume dividend reinvestment, and exclude fees and implementation costs. Avg.: compound average of yearly excess returns. Past performance is no guarantee of future results. Source: FactSet, as of Mar. 31, 2016.

either as a means to generate new stock ideas, or to monitor intended or unintended exposures in their funds.

Five key factors

The following five factors have been identified by academics and widely adopted by investors over the years as key exposures in a portfolio.

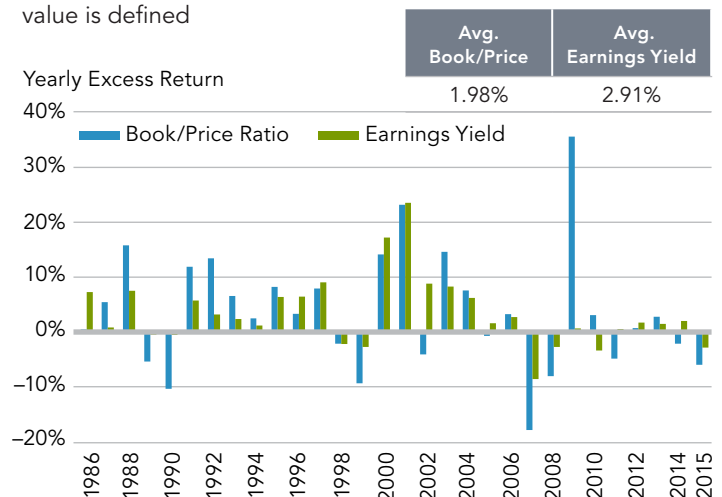
1. Size

In pinpointing the first of their two identified factors, Fama and French demonstrated that a return premium exists for investing in smaller-cap stocks. This could be due to their inherently riskier nature: Smaller companies are typically more volatile and have a higher risk of bankruptcy, and investors expect to be compensated for taking on that additional level of risk. As shown in Exhibit 1, empirical evidence demonstrates that over longer periods of time, small-cap stocks outperform large caps.

Exposure to small-cap stocks can be achieved relatively easily by using standard market capitalizations. For most

EXHIBIT 2: Excess Returns of Two Value Measures

The performance of a value portfolio can vary based on how value is defined



Earnings yield: last 12 months of earnings per share divided by price per share. Book/price ratio: the ratio of a company's reported accumulated profits to its price per share. Returns shown are yearly returns of the equal-weighted top quintile (based on these two value metrics) of the Russell 1000 Index. Past performance is no guarantee of future results. Source: FactSet, as of Mar. 31, 2016.

investors, holding a small-cap fund or ETF, for example, is a straightforward and relatively efficient way to harvest the small-cap premium. However, the inherently riskier nature of investing in smaller companies is important to bear in mind.

2. Value

The second factor introduced in the Fama–French model is value, suggesting that inexpensive stocks should outperform more expensive ones. Research on the field of value investing stretches back many decades. In 1949, Benjamin Graham urged investors to buy stocks at a discount to their intrinsic value.⁶ He argued that expensive stocks with lofty expectations leave little room for error, while cheaper stocks that can beat expectations may afford investors more upside. (For further details about the potential benefits of value investing, see Fidelity *Leadership Series* article, “Value Investing: Out of Favor, but Always in ‘Style,’” Jun. 2016.)

With this in mind, one view is that value investing works because stocks follow earnings over time. Investors tend to be overly optimistic about expensive, high-growth stocks and overly pessimistic about cheap, slower-growth

stocks. When cheap stocks report higher-than-expected earnings (even versus low expectations), they can outperform as a result of the market’s improved optimism in their earnings potential.

Empirical results also seem to indicate that value investing can generate excess returns over time. Fama and French demonstrated that stocks with high book-to-price ratios outperformed stocks with lower ratios. Many commonly used indexes still place a heavy emphasis on that definition, and exposure to that particular valuation factor is easy to gain with available products. Yet there are many different ways to define value. For example, investors may examine earnings, sales, or cash flows to judge whether a stock appears inexpensive, and performance can vary based on which metric is used. Exhibit 2 shows the performance differential between two common measures of value: book-to-price ratio and earnings yield (earnings-to-price ratio).

In fact, a single-factor definition of value may expose investors to greater volatility and larger declines, and a multifactor approach to finding value stocks is typically preferred due to its diversification benefits, which tend

EXHIBIT 3: Excess Returns of Value Stocks

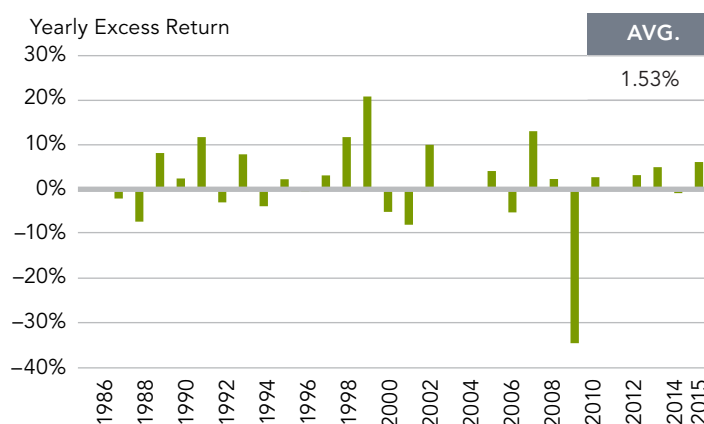
Inexpensive stocks have outperformed the broader market over the long term



Value composite is a combined average ranking of stocks in the equal-weighted top quintile (by book/price ratio) and stocks in the equal-weighted top quintile (by earnings yield) of the Russell 1000 Index. Returns shown are yearly returns of this value composite. Past performance is no guarantee of future results. Source: FactSet, as of Mar. 31, 2016.

EXHIBIT 4: Excess Returns of Momentum Portfolios

Due to common investor behaviors, momentum investing has led to outperformance over time



Momentum returns shown are yearly returns of the equal-weighted top quintile (as measured by trailing 12-month returns) of the Russell 1000 Index. Past performance is no guarantee of future results. Source: FactSet, as of Mar. 31, 2016.

to lead to higher returns over time. Exhibit 3 shows that a stock portfolio created using a composite of high book-to-price ratio and high earnings yield outpaced the broader market by 3.50% on average each year, beating both independent underlying metrics.

3. Momentum

The concept of momentum investing is similar in spirit to what technical analysts have been doing for decades, namely, examining price trends to forecast future returns. Empirical evidence of the momentum anomaly was first published in 1993 by Narasimhan Jegadeesh and Sheridan Titman, and demonstrated that stocks that had outperformed in the medium term would continue to perform well, and vice versa for stocks that had lagged.⁷

The explanation for why momentum investing works has been a topic of much debate, but many make a behavioral argument that investors tend to underreact to improving fundamentals or company trends. It's not until a stock is outperforming that it catches investors' attention and they pile onto the trade. This dynamic allows winners to keep winning and momentum investing to work. The cycle tends to continue until there is a

catalyst that causes it to stop (e.g., an earnings miss or overvaluation, indicating a negative fundamental change).

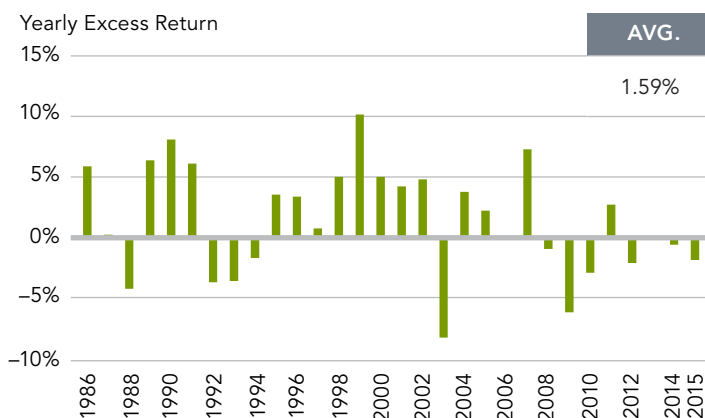
A common way to measure momentum is to classify stocks by 12-month price returns, which has proven to be an effective strategy for outperforming the broader market over time (Exhibit 4).

4. Quality

Although investors have been seeking out high-quality companies for decades, empirical evidence validating the merits of this approach has only emerged relatively recently. This may be due to the lack of consensus on how best to define "quality." For example, Richard Sloan and Scott Richardson conducted important work suggesting that companies with higher earnings quality or lower accruals (roughly measured as the difference between operating cash flow and net income) have outperformed over time.⁸ Many observers agree, however, that higher profitability, more stable income and cash flows, and a lack of excessive leverage are hallmarks of quality companies. For a company to have higher margins and profits than its competitors, it must boast some competitive advantage. Competitive

EXHIBIT 5: Excess Returns of Quality Portfolios

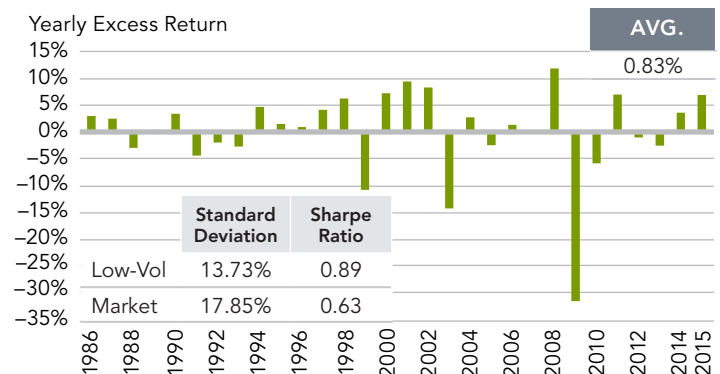
High-quality stocks with strong profitability tend to exhibit long-term outperformance



Return on equity: a measure of profitability that calculates how many dollars of profit a company generates with each dollar of shareholders' equity. Quality returns shown are yearly returns of the equal-weighted top quintile (as measured by return on equity) of the Russell 1000 Index. Past performance is no guarantee of future results. Source: FactSet, as of Mar. 31, 2016.

EXHIBIT 6: Excess Returns of Low-Volatility Portfolios

In addition to reducing risk, a low-volatility portfolio may beat the market over time



Low-volatility returns shown are yearly returns of the equal-weighted bottom quintile (by standard deviation of weekly price returns) of the Russell 1000 Index. Standard deviation: a measure of return dispersion. A portfolio with a lower standard deviation exhibits less return volatility. Sharpe ratio compares portfolio returns above the risk-free rate relative to overall portfolio volatility (a higher Sharpe ratio implies better risk-adjusted returns). Past performance is no guarantee of future results. Source: FactSet, as of Mar. 31, 2016.

advantages tend to be sticky, and companies that have them are thus able to earn higher profits than their peers over long periods of time. Put simply, companies that generate superior profits, possess strong balance sheets, and demonstrate stable cash flows should be able to provide consistent outperformance over the long term. Even by examining only a single measure of quality—such as return on equity—it is evident that stocks that exhibit strong profitability tend to outpace the market over time (Exhibit 5).

5. Low Volatility

As the name suggests, the primary objective of a low-volatility approach is to own stocks that have lower risk or return volatility than the broader market, which has historically resulted in higher risk-adjusted returns. Considerable research has shown that low-volatility portfolios may also outperform the broader market over time. For example, work by Robert Haugen and James Heins stated that stock portfolios with less variance in monthly returns tend to produce higher returns on average than those that are “riskier.”⁹ (Also see Fidelity

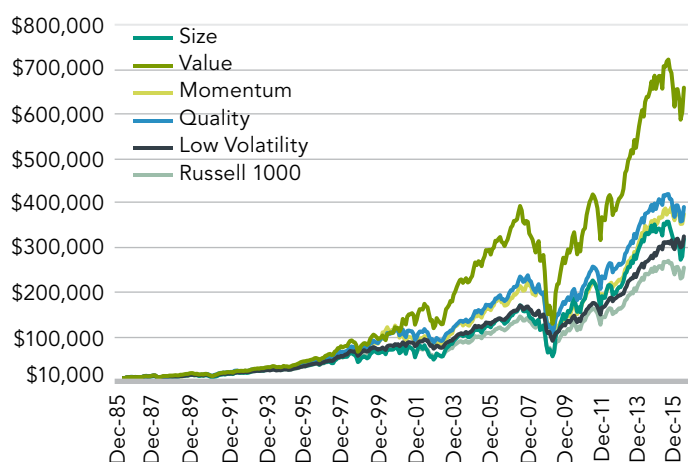
Leadership Series article, “Low Volatility Equity: More Than Meets the Eye,” Nov. 2014.) Some argue, however, that the relative outperformance of these strategies is actually attributable to the size anomaly or sector biases inherent to this category of stocks, and not to the low-volatility characteristic itself. Generally, robust factors should outperform even when their size and sector biases are controlled.

Even if the jury is still out on whether low-volatility investing can lead to outperformance on its own, the strategy can still be compelling. By classifying stocks in this way, investors may generate returns similar to the market over time, but with a less bumpy ride. The benefits of a low-volatility approach can also be achieved by investing in stocks with more stable revenues and earnings, which are less susceptible to recessions and other macroeconomic events.

This approach is designed to perform best when volatility is high and markets decline rapidly, because lower-risk stocks tend to hold up better during down markets when investor uncertainty is elevated. Low-volatility portfolios

EXHIBIT 7: Growth of \$10,000 Investing in Factor Portfolios vs. the Broader Market (1985–2015)

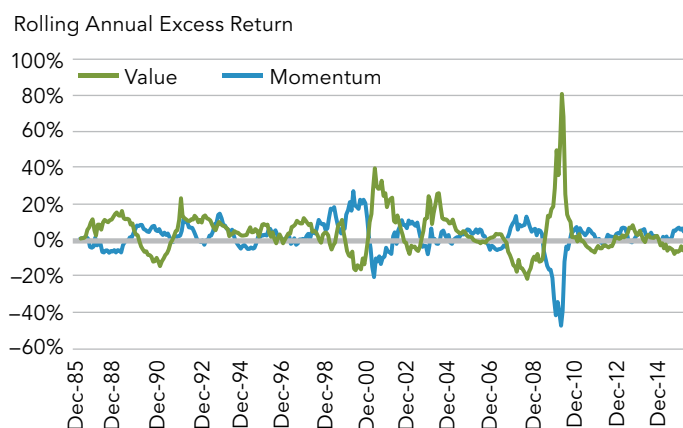
These five factors have outperformed over time



Returns are cumulative and assume reinvestment of dividends. Past performance is no guarantee of future results. Factor definitions consistent with those shown in previous exhibits. Source: FactSet, as of Mar. 31, 2016.

EXHIBIT 8: Value and Momentum Cyclicalities

Most factors are not highly correlated, so diversifying among them may improve risk-adjusted returns over time



Value represented by the equal-weighted top quintile (by book-to-price ratio) of the Russell 1000 Index. Momentum represented by the equal-weighted top quintile (by trailing 12-month returns) of the Russell 1000 Index. Source: FactSet, as of Mar. 31, 2016.

tend to experience smaller drawdowns, and investors can benefit from the compounding of positive excess returns in a down market. Exhibit 6 shows that stocks exhibiting low price volatility have narrowly outperformed the market over time, with less risk—leading to higher risk-adjusted returns.

The cyclical performance of factor performance

The evidence suggests that these five key factor exposures can be compelling additions to a portfolio (Exhibit 7). But no single factor works all the time and returns tend to be cyclical (Exhibits 1–6). For example, small-caps can underperform large-caps for multiyear periods, as they did during the technology “bubble” in the late 1990s and during the financial crisis in 2007–08. Value stocks also fell out of favor during the high-growth tech bubble but managed to earn back their losses (and then some) in the years that followed. Swift changes in market direction are typically detrimental to momentum strategies—such as in 2000, following the collapse of the tech bubble, and in 2009, following the rapid recovery from the financial crisis. Quality portfolios typically lag during low-quality rallies—when the most beaten-down stocks lead the market in a rebound, as they did in 2003. Finally, low-volatility stocks tend to underperform during market rallies following bear markets—such as in 2009. These performance swings can be unsettling to investors, causing them to sell and miss out on rebounding performance.

The good news is that most factors are not highly correlated with one another—they are driven by different market anomalies and therefore tend to pay off at different times. For example, by definition, value and momentum strategies are poles apart (Exhibit 8). Value investors buy stocks that have declined in price and are cheap, while momentum investors buy stocks that have been on the rise and should continue to run.

The distinct cyclical performance of factor returns may tempt investors to try and time their exposures. Indeed, factor strategies can provide a useful tool for tactically minded

investors to get the right exposure at the right time. But, similar to market timing, effective factor timing can be challenging, and diversifying across multiple factor strategies may be a sound option for long-term investors. (For more detail on how to implement factor-based strategies, see Fidelity *Leadership Series* article, “Putting Factors to Work,” Sep. 2016.)

Investment Implications

Factor-based investment strategies can be compelling options because they provide investors with targeted and streamlined access to factor exposures. It’s important to also note that the factor-investing universe is broad and extends beyond single-factor strategies targeting the five key factors addressed in this article. Many factor-based strategies provide exposure to multiple factors within one vehicle and others provide exposure to stock characteristics that address specific investor needs or desired outcomes—such as income—but do not explicitly seek to improve returns or adjust risk in any way.

The factor-investing marketplace has become more crowded, and these strategies can vary significantly in how they are constructed and in how they perform. As a result, it can be a difficult investment landscape to navigate. For example, a naively constructed factor-based strategy may also contain unintended exposures (e.g., a small-cap bias or sector tilts) that could alter the overall exposures of a broader portfolio. Further, some factor definitions and the best metrics to capture these exposures are still up for debate. (See Fidelity *Leadership Series* article, “How to Evaluate Factor-Based Investment Strategies,” Sep. 2016.)

Although not all factor-based strategies are created equal and careful evaluation may be required to select among them, academic research and historical performance have proven the case for factors and exposures as potentially compelling components of a broader portfolio.

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Endnotes

1. Morningstar, as of Dec. 31, 2015. 2. Lintner (1965); Mossin (1966); Sharpe (1964); and Treynor (1961). 3. To be more technically precise, it should be noted that factors and exposures explain the *variance of returns* of stocks, but that distinction falls outside the scope of this paper. 4. Ross (1976). 5. Fama and French (1992). 6. Graham (1949). 7. Jegadeesh and Titman (1993). 8. Richardson, Sloan, Soliman, and Tuna (2005). 9. Haugen and Heins (1975).

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Index definitions

Russell 1000 Index is a market capitalization-weighted index designed to measure the performance of the large-cap segment of the U.S. equity market.

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