Foundational concepts for understanding factor investing

Key points:

- Factor investing is an investment strategy in which securities are chosen based on certain characteristics with the goal of achieving a given investment outcome or to improve long-term risk and return.
- Factor investing is based on rigorously studied investment factors — characteristic, quantifiable features of an asset that can be cost-effectively targeted in a diversified portfolio.
- Once understood, factor investing stands as a third pillar of investing, complementary to traditional alpha sources and market-weighted indexing with its own use cases, strengths and weaknesses.

Today, factor investing has established itself as a third pillar of investing, offering investors a complementary approach to traditional active and pure passive investing.

Factor investing has a well-established and increasingly important role in investors’ portfolios. Over 70% of institutional investors surveyed in 2018 were using factor strategies and more than 60% were planning to increase their use of them in the following years, according to the Invesco Global Factor Investing Study, which was carried out by NMG Consulting. Increasingly, however, factor-based investing has also become important for private investors and their advisers. A growing number of investors are seeking a better understanding of the elements that drive returns and reduce risk. Factors can help investors gain this understanding and thus offer better control and transparency. Today, factor investing has established itself as a third pillar of investing, offering investors a complementary approach to traditional active and pure passive investing. In this paper, you will learn what factors are and what role they can play in a portfolio.
There are several reasons why factor investing has gained so much importance recently. First, exciting advancements in the study of asset pricing, largely from academia, have shown the huge potential for factor-based strategies to play a major role in diversified portfolios. Second, factor analysis frequently helps explain portfolio behavior in ways that were previously not well understood; even for portfolios that do not utilize a factor approach. Factors help explain risk and return, allowing greater granularity, control and customization. This transition is supported by decades of empirical research and is likely a permanent advancement in how assets are managed.

As explained earlier, factor investing consists in selecting securities based on certain attributes. But what attributes are we referring to? Factor investors focus on features of securities containing material information about their risk and return. There are two major categories: macro factors and style factors.

The macro factors are well-known and intuitive. They relate to the influence that factors such as economic growth and inflation rates have on security prices. Consider inflation for example. Inflation broadly impacts financial and economic environments. Changes in expected inflation impact prices across stocks, bonds, commodities; just about any asset class. Many markets have options to invest directly in inflation factor strategies such as TIPS or linkers.

Recent focus in research and development has increasingly shifted toward style factors. Therefore, when someone talks about factor investing today, they are often referring to style factors, rather than macroeconomic factors. For this reason, the bulk of the following discussion is focused on style factors.

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**Factors as important indicators of risk and return**

There are several reasons why factor investing has gained so much importance recently. First, exciting advancements in the study of asset pricing, largely from academia, have shown the huge potential for factor-based strategies to play a major role in diversified portfolios. Second, factor analysis frequently helps explain portfolio behavior in ways that were previously not well understood; even for portfolios that do not utilize a factor approach. Factors help explain risk and return, allowing greater granularity, control and customization. This transition is supported by decades of empirical research and is likely a permanent advancement in how assets are managed.

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**Figure 1: Examples of style and macro factors**

**Style factors: Investment factors that can be expressed in investment strategies**

- Value
- Size
- Momentum
- Volatility
- Quality
- Dividend yield
- Other investment factors (Equity market, liquidity, carry, term/duration)

**Macro factors: Broad and systematic factors that impact asset prices but may not be expressible directly using securities**

- Growth
- Inflation
- Financial conditions (Interest rates, currencies)

Source: Invesco. Illustrative examples of macro and style factors.
Insight: Equity style factors

Value, size, volatility, quality, and momentum are among the most established factor strategies in equity investing. The objective of the value strategy is to identify securities that are priced at a discount by some measure. Size strategies focus on the shares of small companies, while low-volatility strategies emphasize securities whose prices fluctuate less than those of other securities. Momentum strategies involve the purchase of equities that have recently recorded an above-average performance, while quality strategies search for companies of superior quality. The distinction is made on the basis of quantifiable metrics such as a price-to-earnings and price-to-book ratio, dividend yield or volatility. While some criteria are generally recognized, the approaches can vary in other aspects. In all cases, however, it is a systematic, rules-based process.

Value

With value strategies, the emphasis is placed on securities that are priced at a discount to other similar securities. The underlying assumption is that, over the long term, purchasing securities at lower prices will lead to higher returns. But how do you determine value? As it turns out, there are many different approaches that yield similar results. The index provider MSCI, for example, uses dividend yield, price-to-earnings ratio (P/E ratio) and price-to-book ratio (P/B ratio) as criteria. Cash flows and net profit are sometimes used as criteria as well. Price-to-book — as well as size — was used in 1992 by the scholars Eugene Fama and Kenneth French to expand the capital asset pricing model to produce the Fama-French three-factor model.1 In the fixed income context, value strategies can measure yield relative to credit rating by industry. However, there are also points of criticism. Quite apart from the fact that value strategies aren’t successful in all market phases, there is the considerable concern that innovative companies that don’t pay dividends and have a high price-to-book value are excluded. For this reason, Invesco often prefers cash flow yield as a measure of value in equities.

Size

With size (i.e. small cap) strategies, the focus is on the shares of small companies in the expectation that they will outperform those of large companies. This relationship was first demonstrated in a study by Rolf W. Banz in 1981.2 Subsequent studies confirmed these results. There are several explanations for the size factor. On the one hand, it is claimed that small companies have better growth prospects than large established companies. On the other hand, analysts focus less on these companies, which therefore tend to be overlooked. It is also said that the shares of small companies are not as liquid as those of their larger counterparts, with investors preferring the shares of large companies. In some markets, the consistency and magnitude of the size factor is tenuous, but it is often observed that other investment factors seem to work quite well across smaller companies, which increases its usefulness.

Volatility

The volatility factor (also known as minimum volatility or minimum variance) implies that shares associated with lower volatility perform better on a risk-adjusted basis than those with higher volatility. The observation was first described in 1972 by Robert Haugen and A. James Heins.3 Later studies also found that low-volatility shares outperformed those with high volatility over the long term on a risk-adjusted basis. What might be the rationale to explain this unexpected phenomenon? One possibility is a difference between reality and the realm of academic research. Given a set of assumptions, theory says investors should be indifferent between low and high volatility stocks because of access to leverage. In reality, investors may not be able to access leverage, or the costs of leverage might be higher than assumed in the research. This practical reality could cause investors to be willing to accept less incremental return as volatility increases. On the other hand, the approach is criticized for its poor sector coverage, with low volatility healthcare stocks overrepresented, for example. One note about the low-volatility factor: The most rigorous studies of this phenomenon find results are largely driven by poor returns of highly volatile securities. This result has important implications when considering a low-volatility investment, but details of this finding are beyond the scope of this introduction.
Foundational concepts for understanding factor investing

Momentum
Within the framework of momentum strategies, the most known factor is price momentum. Securities are purchased if they have performed well recently, and sold if they have performed badly. The outperformers of the recent past are therefore seen as the outperformers of the future. This factor was “discovered” by Jegadeesh and Titman in 1993. Momentum strategies are usually justified by the findings of behavioral finance, which focuses on known modes of behavior, such as the herd mentality, or anchoring bias for example. More recent studies find that earnings momentum largely subsumes price momentum. Earnings momentum is commonly defined as the trend in earnings surprises or changes in earnings expectations. The rationale for earnings momentum is similar to price momentum, although the finding impacts how the factor is captured in portfolios. Recent research suggests that the momentum factor also persists for bonds, measured by return over a recent period of time.

Quality
The quality factor entails a focus on the shares of high-quality companies because they tend to outperform those of lesser quality. Robert Noxy-Marx demonstrated in 2012 that the shares of highly profitable companies achieve better risk-adjusted performance than less profitable companies. Other criteria that are used to define quality include cash flows and debt ratios, as well as the quality of the management and business model, along with the market environment, and, with fixed income, a high credit rating, low duration, and low historical volatility. However, it is problematic that some elements of quality often can’t be measured, such as the value of a brand or good reputation. Not least, there is the danger that young high-growth companies — which don’t yet have steady earnings — are excluded, as are companies that are highly sensitive to economic trends.

Figure 2: Key systematic style factors

<table>
<thead>
<tr>
<th>Factor</th>
<th>Seeks to capture</th>
<th>Commonly captured by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Excess returns to securities that have low prices relative to peers with higher prices in the long run</td>
<td>P/B, P/E ratio, cash flow yield, duration hedged yield in bonds</td>
</tr>
<tr>
<td>Size</td>
<td>Excess return of smaller firms (by market cap) or issues in bonds relative to their larger counterparts</td>
<td>Market capitalization (full or free float) for equity and issue size in bonds</td>
</tr>
<tr>
<td>Momentum</td>
<td>Excess returns to securities with stronger past performance</td>
<td>Relative returns (6-mth, 12-mth, usually with last 1-mth excluded), earnings revisions</td>
</tr>
<tr>
<td>Volatility</td>
<td>Excess risk-adjusted returns to securities with lower than average volatility or beta</td>
<td>Standard deviation (1-yr, 2-yrs, 3-yrs), downside standard deviation, standard deviation of idiosyncratic returns, beta</td>
</tr>
<tr>
<td>Quality</td>
<td>Excess returns to stocks that are characterized by low debt, stable earnings growth, profitability, and other “quality” metrics</td>
<td>Return on equity, earnings stability, dividend growth stability, strength of balance sheet, financial leverage or for bonds short duration, high credit quality or low volatility</td>
</tr>
</tbody>
</table>

Source: Invesco. Simplified schematic representation for illustrative purposes only.
Professional investors’ special interest in investment factors becomes understandable if the returns on factor-based equity portfolios are considered and compared with general market developments. Indeed, factor investing has at times outperformed the market in the long term.

Figure 3: Factor strategies — Historical index data shows outperformance potential

Source: Invesco, MSCI from Dec. 31, 1997 to June 30, 2019 (total return, in USD). For illustrative purposes only. Indices: Size = MSCI World Equal Weighted, incepted on Jan. 2, 2008; Momentum = MSCI World Momentum, incepted on Dec. 11, 2013; Value = MSCI World Value Weighted incepted on Dec. 7, 2010; Low Volatility = MSCI World Min. Volatility, incepted April 14, 2008; Quality = MSCI World Quality, incepted on Dec. 18, 2012. All of the factor indices shown have been created comparatively recently, and therefore, contain elements of hindsight and selection bias. All information presented prior to the inception dates is back-tested. Back-tested performance is not actual performance, but is hypothetical. Although back-tested data may be prepared with the benefit of hindsight, these calculations are based on the same methodology that was in effect when the index was officially launched. Index returns do not reflect payment of any sales charges or fees. Performance, actual or hypothetical, is not a guarantee future results. An investment cannot be made in an index. Please note the x axis labeling denotes the end of each full year.
What is the difference between factor investing and traditional stock picking, as it has long been practiced? After all, many traditional fund products have “value” or “size” in their name.

The essential difference is in the security selection process. Stock picking involves leveraging a unique skill or information source to determine which securities are undervalued, and evaluates characteristics of securities based on criteria defined by the investment manager. Factor investing involves a rules-based approach, picking securities that exhibit particular characteristics based on solid and objective rationale drawn from quantitative data and applied using a systematic process. Commonly, stock picking involves deliberately concentrating on the most undervalued securities, while a factor approach maintains broad diversification across securities to reduce security specific risk.

### Figure 4: Factor investing differs from traditional alpha and market-weighted strategies

<table>
<thead>
<tr>
<th>Potential benefits</th>
<th>Market cap-weighted index</th>
<th>Factor investing</th>
<th>Fundamental alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>- No active risk</td>
<td>- Excess return potential</td>
<td>- Active risk</td>
<td>- Excess return potential</td>
</tr>
<tr>
<td>- Transparency</td>
<td>- Transparency of process</td>
<td>- Requires understanding of risk management and exposures</td>
<td></td>
</tr>
<tr>
<td>- Easy to understand</td>
<td>- Management of risks</td>
<td>- Cost</td>
<td>- Easy to understand</td>
</tr>
<tr>
<td>- Process risk</td>
<td>- Customizable</td>
<td>- Capacity</td>
<td>- Additional return sources</td>
</tr>
<tr>
<td>- Capacity</td>
<td>- Cost</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Cost</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Potential drawbacks</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- No potential for excess return</td>
<td>- Process risk</td>
</tr>
<tr>
<td>- Limited customization</td>
<td>- Cost</td>
</tr>
</tbody>
</table>

Source: Invesco. Simplified schematic representation for illustrative purposes only.
Empirically speaking, the data of global style factor indices show that factors have generated a better return than the market over the long term. However, investors who make their investment decisions for the future also want to understand the reasons for this phenomenon. This is why the rationale is so important.

**Figure 5: Why can factor premiums be expected?**

<table>
<thead>
<tr>
<th>Risk premiums</th>
<th>Compensation for additional risks versus the broad market, that is, for an undesirable return pattern.</th>
</tr>
</thead>
</table>
| Behavioral psychology | Markets are inefficient due to the behavioral characteristics of investors.  
- Anchoring  
- Action bias  
- Loss aversion |
| Market structure | Markets can be inefficient due to restrictions and limitations. |

Source: Invesco. Simplified schematic representation for illustrative purposes only.
While it can be demonstrated relatively easily that factor investments produce above-average returns over the very long term, large fluctuations and differences in returns are possible in the short and medium term. Different factors display strengths and weaknesses in different economic and market environments, with one factor outperforming in one environment and the other doing better in another environment. Successful predictions (timing) are exceedingly difficult.

![Figure 6: Factor strategies – Success in various market phases](image)

Source: Invesco, MSCI from Dec. 31, 1997 to June 30, 2019 (total return, in USD). Indices: Size = MSCI World Equal Weighted, Momentum = MSCI World Momentum, Value = MSCI World Value Weighted, Volatility = MSCI World Min. Volatility, Quality = MSCI World Quality. All of the factor indices shown have been created comparatively recently, and therefore, contain elements of hindsight and selection bias. Please see MSCI disclosures at the end of this document for further information on MSCI factor indices, indices inception dates and back tested past performance. Backtested performance is not a guide or an indicator of future returns. Please note the x axis labeling denotes the end of each full year.

The different return patterns of factors during different market phases also offer opportunities. As mentioned before, enhanced diversification is one potential benefit of factor investing. Over the long term, investment factors have captured a premium over market cap-weighted indices. Since factors often perform differently at different points in the economic cycle, factor investing can enhance diversification. Multi factor strategies seek to exploit this benefit within the portfolio while single factor strategies can complement the broader client portfolio.
Factor strategies that are implemented with rules-based ETFs have recently attracted a lot of attention and have managed to pool significant amounts of investor capital. This can create the impression that factor strategies are always best suited to passive investment products. But a closer look reveals that factor strategies – even as rules-based ETFs – can entail a high level of activity in terms of the steady turnover of securities. For example, the momentum strategy naturally involves changing large portions of the investment portfolio, such as when a steady trend shifts after being effective for a long period of time.

In any case, factor investments aren't only reserved for passive investment products and ETFs. Quite the opposite, in fact: Active management teams have been using factors for decades to assemble and structure their portfolios — even though these often don't carry the “factor investing” label. A look at the history of factor research also shows that factors in active management are much older than ETFs.

**Figure 7: Factor investing – The origins**

|-------|-------|-------|-------|-------|-------|

Source: Invesco. Illustrative examples of macro and style factors.
Active quantitative managers typically use self-developed factors or multi-factor models that are constantly monitored and enhanced. The active manager’s work is at the core of the optimization process. As a result, these strategies often lack transparency for investors — except when it comes to the main features and objectives. Index-based products on the other hand are fully transparent, and their rules governing how securities are selected are set once the index has been launched.

**Figure 8: Differences between active and index-based factor investing**

<table>
<thead>
<tr>
<th></th>
<th>Active</th>
<th>Index-based</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model updates</strong></td>
<td>Regular monitoring and enhancement of factors and their weightings to suit the market environment</td>
<td>Adjustment of the portfolio according to fixed rules</td>
</tr>
<tr>
<td><strong>Factors</strong></td>
<td>Individual/self-developed, often defined to complement other factors or improve diversification across factors</td>
<td>Often not self-developed, but generally proven</td>
</tr>
<tr>
<td><strong>Transparency</strong></td>
<td>Transparent in the factors pursued but more complex and less transparent in implementation process</td>
<td>Unlimited transparency of method and implementation</td>
</tr>
<tr>
<td><strong>Costs</strong></td>
<td>Typically at a discount to traditional alpha seeking strategies and connected to complexity of the strategy</td>
<td>Generally cheaper reflecting the lower complexity</td>
</tr>
</tbody>
</table>

Source: Invesco. Simplified schematic representation for illustrative purposes only.
In the bond area, factor investing is in the earlier stage of adoption, as compared to equities. In recent years, however, many papers have been written by both academics and practitioners. Further, since the rationale at the core of investment factors are not asset class specific, satisfied equity factor investors are increasingly moving on to factor applications with bonds.

When it comes to government and corporate bond indices, the usual weighting of securities based on market capitalization causes special problems — because it means that high weightings are assigned to the most highly indebted countries and companies, respectively. Investors will therefore disproportionately be invested in issuers with the highest debt burden. This will generally be undesirable. Instead, issuers that can pay back their debts should be more in demand.

Furthermore, the indices are often even less balanced than equity indices. For example, many global government bond indices have a strong US and Japan bias, while many corporate bond indices primarily contain bonds from the financial sector.

Today, there are also some promising approaches to apply well-known style factors to fixed income strategies. In very general terms, value can be interpreted as meaning that a financial asset is cheap relative to other bonds by some measure. The application of the quality factor to the bond sector is viewed as particularly promising, as is the size factor by focusing on smaller issuers.

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**Figure 9: The most important style factors in fixed income investing**

<table>
<thead>
<tr>
<th>Duration</th>
<th>The return of longer-dated bonds over shorter-dated bonds of similar credit quality</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A duration portfolio buys all treasury bonds across the maturity curve</td>
</tr>
<tr>
<td>Credit</td>
<td>The return of lower-rated credit over higher-rated credit of similar maturity</td>
</tr>
<tr>
<td></td>
<td>A credit portfolio buys all credit bonds across the maturity and ratings spectrum</td>
</tr>
<tr>
<td>Value</td>
<td>The return of holdings bonds that are at a discount to similar bonds</td>
</tr>
<tr>
<td></td>
<td>A value portfolio buys bonds with a higher spread than bonds with similar ratings in the same industry</td>
</tr>
<tr>
<td>Quality</td>
<td>High credit rating, low duration and low historical volatility</td>
</tr>
<tr>
<td></td>
<td>A quality portfolio buys and sells the top 20% of bonds sorted on quality</td>
</tr>
<tr>
<td>Carry</td>
<td>Highest overall yield</td>
</tr>
<tr>
<td></td>
<td>A carry portfolio buys the top 10% and sells the lowest 10% of bonds sorted by this metric</td>
</tr>
<tr>
<td>Liquidity</td>
<td>Age and size</td>
</tr>
<tr>
<td></td>
<td>A liquidity portfolio buys the least liquid bonds and sells the most liquid bonds sorted by this metric</td>
</tr>
</tbody>
</table>

Source: Invesco. Simplified schematic representation for illustrative purposes only.
Now that we have gained a general understanding of factors, the key question is how factor investing is used in investor portfolios and what its objectives are. In general, a strategic portfolio that is diversified according to factors may reduce the risk and enhance the return potential in the long term compared with the broad market. Depending on their individual starting point and investment portfolio, investors may use factor strategies for different reasons.

Some of the key considerations are:

- In a portfolio with traditional market-weighted strategies, index-based factor strategies (frequently referred to as “smart beta” strategies) can offer a cost-efficient means of increasing return potential of the portfolio or used as a tool to balance overall factor exposures.

- Investors with a portfolio consisting of market-weighted strategies may use active quantitative factor strategies to apply customized objectives like ESG to pursue excess return or achieve a more effective risk diversification.

- Investors who have traditionally invested in fundamental active strategies may decide to add factor strategies to increase diversification, smooth allocations, directly target factor premiums or lower total investment costs.

- Investors who already use index-based factor strategies might switch to active factor strategies to achieve more efficient implementation, allow for advancements in techniques or increase effective risk diversification.

In the process, the decision to use factor strategies in a portfolio does not have to be strategically motivated. As the following chart shows, factor strategies can also be used tactically.

### Figure 10: Objectives of factor investing

<table>
<thead>
<tr>
<th>Application</th>
<th>Tactical</th>
<th>Strategic</th>
<th>Risk management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective</td>
<td>Improve return</td>
<td>Reduce risk</td>
<td>Improve return</td>
</tr>
<tr>
<td>Implementation</td>
<td>Single factor strategies are used to produce a factor-tilt of a portfolio to implement investment ideas of the investor</td>
<td>Building a portfolio using factors to improve long-term return potential versus a market portfolio</td>
<td>Building a portfolio using factors to reduce long-term risks versus a market portfolio</td>
</tr>
</tbody>
</table>

Source: Invesco. Simplified schematic representation for illustrative purposes only.

Insight: Tactical use is also possible

The objective of factor investing is normally strategic due to the long term nature of investment factors. However, a tactical use of factors is also possible, for example, in order to express a market view. In this way, investors who expect a positive equity market trend to continue can focus on momentum strategies. Other investors, who may expect heavy volatility in equity markets in the future, can hedge their bets with low-volatility strategies instead. Last but not least, factor investing can also be used in a targeted way to reduce portfolio risk - with the objective of giving the investment additional diversification. A note of caution, however; applying factors that have historically delivered a premium in the long term creates an additional hurdle that must be overcome when used tactically.

Market trends and economic cycles can change quickly and, sometimes unexpectedly. In order to benefit from tactical applications, investors must know when to get in and when to get out.
Insight: Typical applications of multi-factor investing
The benefits of multi-factor investing are as manifold as the options to combine factor strategies to meet investor needs. Distinct factors offer diversification benefits when combined in a multi-factor strategy. For example, investors seeking to build a core portfolio offering exposure to equities can use a multi-factor approach to obtain a highly robust and consistent investment process with high capacity limits. Another example: Many investors use strategies managed by different managers in their portfolios (for example, by investing in different funds). Adding a multi-factor strategy to such a portfolio can offer particular benefits because of the frequently low correlations between such a strategy and other equity strategies.

The case for multi-factor:
• Single-factor portfolios are not neutral to other factors due to cross-effects between factors
• A holistic approach in constructing multi-factor portfolios results in higher desired factor exposures compared to a naive (equal weighted) allocation of multiple single factors
• Multi-factor construction can lead to improved efficiency of the overall portfolio

Figure 11: Multi-factor versus multiple single factors
Standard deviations versus the global stock universe (-3 to 3)

In summary
We can see that investors who already have an existing equity or equity fund portfolio can try to compensate for one factor’s recognized deficiency by adding single-factor products, such as smart beta ETFs. For example, if an investor believes that the existing portfolio is too speculative in orientation and doesn’t include enough securities that are more resistant to volatility, an investment product with a low-volatility factor strategy can be added.

However, the situation isn’t always clear because it is very difficult to analyze exactly how good the factor diversification of an existing portfolio really is and what would have to be done to improve it. In this case, a new equity portfolio based entirely on factors may be more appropriate. This can be based on single-factor strategies. However, this might force investors and their advisers to make ad-hoc interventions to adapt the portfolio to changed market conditions.

A fundamentally different approach is to assign an active manager to construct a multi-factor portfolio with the relevant products. This requires skill and proficiency on the part of the professional manager to weight and adapt the individual factors in the portfolio in such a way that the investment objectives that were agreed upon – or established for the fund product – are achieved for the investor in an optimal way.

Different objectives also require a different approach. If the objective is to achieve as much return as possible – even with higher volatility risks – the fund manager can assign a lower value to risk aversion as part of the portfolio optimization process and thereby assign greater importance to higher returns. On the other hand, a long-term strategic diversification based on factors is paramount to achieve the steadiest returns possible with manageable equity risk.

Invesco, as of Dec. 31, 2018. Factor exposure scores are shown in standard deviations from the entire stock universe. Scores are normalized and fall between a range of -3 to +3 where -3 represents a stock with unattractive factor scores and +3 represents an attractive stock.

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Important information
As with any comparison, investors should be aware of the material differences between active and passive strategies. Unlike passive strategies, active strategies have the ability to react to market changes and the potential to outperform a stated benchmark. Other differences include, but are not limited to, expenses, management style and liquidity.

There is no guarantee that low-volatility stocks will provide low volatility.

Investing in securities of small capitalization companies involves greater risk than customarily associated with investing in larger, more established companies.

A value style of investing is subject to the risk that the valuations never improve or that the returns will trail other styles of investing or the overall stock markets.

Momentum style of investing is subject to the risk that the securities may be more volatile than the market as a whole or returns on securities that have previously exhibited price momentum are less than returns on other styles of investing.

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3 Robert A. Haugen, A. James Heins, Wisconsin working Paper, 1972
5 Actual events are difficult to predict and may substantially differ from those assumed. There can be no guarantee that the assumptions discussed will come to pass.
7 Since ordinary brokerage commissions apply for each buy and sell transaction, frequent trading activity may increase the cost of ETFs.
8 ETFs disclose their full portfolio holdings daily.