

Thought leadership

# The case for multifactor investing



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## Key takeaways

- Research has shown that there are differences in expected returns among securities, and company size, relative price, and profitability help identify long-term differences in expected returns across stocks.
- Incorporating these long-term drivers of expected returns into an investment strategy offers the potential for outperformance, but requires balancing the trade-offs among competing premiums, diversification, and costs.
- The exchange-traded fund (ETF) is a vehicle well suited to our systematic and transparent investment approach.

This paper presents a framework for identifying factors worth pursuing, structuring portfolios to pursue them, and implementing them in a cost-effective way within an ETF structure.

## Executive summary

Theoretical and empirical research in finance have led to an evolution in our understanding of how financial markets work. For instance, 50 years ago, most financial economists and some market participants thought that sensitivity to the market was the only driver of expected returns so that market was the only factor needed to systematically explain differences in expected returns among securities. Today, we recognize several other factors in addition to the market itself, including long-term drivers such as company size, relative price, and profitability, as well as shorter-term drivers like investment.

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The existence of multiple factors presents additional complexity to investors’ asset allocation decisions. In the past, those decisions were relatively simple: To build their own portfolios, investors had to decide (1) how to split their money between fixed income and equities and (2) whether to invest in index funds, conventional active funds, or individual securities. Today, while investors still need to make those decisions, they can make better choices by taking into account, among other things, the additional factors that help explain returns in the equity markets and how those factors interact with each other, as well as how much emphasis they want to place on each factor. A multifactor world presents better opportunities to meet investors’ needs and pursue improved outcomes, but doing so effectively requires a greater degree of expertise to evaluate and manage the trade-offs between expected returns, diversification, and costs.

## Dimensional’s investment philosophy

Backed by decades of theoretical and empirical research, Dimensional Fund Advisors’ investment approach is based on a strong belief in the importance of market prices, which can be used to identify systematic differences in expected returns among securities. Market prices reflect the expectations of risk and return of all market participants and the information available to them. As market participants voluntarily trade with one another at prices they see as fair, their daily activity drives prices toward equilibrium.<sup>1</sup>

Research has also shown there are differences in expected returns among securities.<sup>2</sup> Valuation theory provides us with a framework about the drivers of expected stock returns. It tells us that a stock’s current market price reflects information about future cash flows discounted by the expected stock return. Therefore, we can use price variables, such as market capitalization and relative price, combined with cash flow variables, such as profitability and investment, to identify reliable differences in expected stock returns. All else equal, companies with lower prices should have higher expected returns. Similarly, all else equal, companies with higher expected profitability or lower expected investment should have higher expected returns.

Company size reflects the excess return that investors demand for investing in small-capitalization stocks relative to large-capitalization stocks. The premium associated with this variable is the size premium. Relative price reflects the excess return that investors expect from investing in low relative price, or value, stocks (as measured, for instance, by the price-to-book ratio) compared to high relative price, or growth, stocks. The premium associated with this variable is the value

premium. Profitability provides a way to discern the expected returns of companies with similar price-driven characteristics. If two companies trade at the same relative price, the one with higher profitability should have a higher expected return. The premium associated with this variable is the profitability premium. We consider company size, relative price, and profitability to be long-term drivers of expected returns because they tend to contain reliable information about systematic differences in expected returns over multiple years.

In contrast, investment (as measured by asset growth) contains information about systematic differences in expected returns over shorter horizons, persisting on average for about two years. Investment provides an additional way to compare the expected returns of companies with similar price-driven characteristics. Firms that must invest heavily to sustain profits should have lower cash flows to investors than firms with similar profits but lower investment. All else equal, firms with higher investment and, thus, lower cash flows, should have lower expected returns. The premium associated with this variable is the investment premium. Our research shows that the effect is much stronger among small caps than large caps<sup>3</sup>, so we can combine investment with the long-term drivers of expected returns in multifactor strategies that invest in small caps to pursue higher expected returns and more reliable investment outcomes.

As long as there are differences in expected returns among securities, we should expect size, value profitability, and investment premiums.

These premiums are supported by theoretical and empirical research,<sup>4</sup> covering over 40 countries and 9 decades of stock data, that show that the premiums have been positive on average through time and across markets. While there is no guarantee realized premiums will be positive over any time period, the probability of negative realized premiums has historically decreased over longer horizons. The

volatility of the premiums underpins the importance of being mindful of the opportunity costs associated with deviating from the market portfolio in the pursuit of higher expected returns. We design our strategies to carefully balance the trade-offs between expected returns, diversification, and costs, and aim to deliver a robust investment solution even when the premiums turn out to be disappointing over any given timeframe. This is a critical aspect of how we think about risk management.

Dimensional's internal research team continually evaluates external research on purported new factors. We have examined many of the factors that academics and practitioners have uncovered over the years and found that most do not add to our understanding of expected returns. When we do add a new premium, it is done with scientific rigor and involves careful analysis by Dimensional researchers and portfolio managers, as well as the financial economists with whom we maintain close ties. But the investment process goes beyond identifying the drivers of expected returns. It also requires expertise in structuring and implementing cost-effective investment solutions.

## Integrated solutions

Integrated solutions that incorporate multiple drivers of expected returns can potentially increase the reliability of outcomes by efficiently and effectively utilizing information about securities' expected returns. However, it is difficult yet essential to properly account for the interaction among the different premiums. Effective integration requires balancing the trade-offs among competing premiums, diversification, and costs.

Pursuing one premium without taking into account how that will affect a strategy's emphasis on the other premiums can hurt a portfolio's expected performance. For instance, more profitable companies tend to have higher relative prices

than less profitable companies. Consequently, if we seek to capture the profitability premium without taking into account how it interacts with the value premium, it could hinder our ability to capture the value premium.

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The integration of relative price and profitability allows us to separate, for instance, more profitable securities from less profitable securities within the value segment of the market. This differentiation, in turn, allows us to select or overweight more profitable securities and exclude or underweight less profitable securities in an effort to improve expected returns without offsetting the emphasis on the value premium.

We realize that not all securities contribute equally to the premiums. As Eugene F. Fama and Kenneth R. French (2007),<sup>5</sup> among others, have shown, some securities do extremely well while others have average returns or perform poorly. Research has also shown that it is not possible to reliably predict which securities are going to do well on an individual basis, because in many cases news about why they will do well has not arrived yet (e.g., a new discovery or a new need by some other company), so it is not yet in the price. For that reason, the most reliable way to capture the premiums is to have a diversified strategy that emphasizes securities with higher expected returns (lower market cap, lower relative price, higher profitability stocks, and, within small caps, lower investment). Concentrated portfolios may inadvertently exclude securities that ultimately generate most of those premiums, whereas broadly diversified portfolios are more likely to include those securities and capture those expected premiums.

In addition, it is almost impossible to reliably determine when premiums may be realized. Thus, to increase the reliability of

outcomes and the likelihood of capturing different market premiums, strategies should have a continual and accurate focus on the dimensions of expected returns every day.

A premium that can be pursued with a large number of stocks in a relatively low turnover strategy is more relevant for real-world portfolios than a premium that is concentrated in a small set of stocks in a relatively high turnover strategy. A good portfolio design will recognize that difference and will focus on premiums that can be captured in broadly diversified portfolios in a cost-effective way. Targeting these investable premiums makes implementation more efficient because it allows us to treat securities with similar characteristics as close substitutes for one another, at least over short timeframes and provided we maintain appropriate diversification, and this substitutability creates flexibility when executing trades.

### Implementation in an ETF

In addition to a solid theoretical foundation and robust empirical research, long-term results for investors depend on how effectively insights can be implemented as strategies in competitive, real-world financial markets, either through a mutual fund, an ETF, or another investment vehicle. Implementation through an ETF, a vehicle well suited to our systematic and transparent investment approach, begins by building a custom index that takes into account the foregoing considerations.

The application of Dimensional's investment approach to John Hancock Multifactor ETFs requires careful design of the indexes tracked by the ETFs. Each ETF tracks a specific index designed to target higher expected returns within a specific segment of the market in a broadly diversified way. For example, the John Hancock Dimensional Large Cap Index<sup>6</sup> targets the top 750 to 800 companies based on market capitalization. Within that segment, it then overweights stocks with smaller market capitalization, lower

relative price, and higher profitability. The indexes also account for the investment premium in small caps and price momentum, which is an additional source of information about differences in expected returns, when determining security selection and weighting. Regardless of the targeted segment, the indexes are designed to consider the drivers of expected returns when defining those segments and weighting securities within them.

Trading costs have a direct impact on investors' returns, so the indexes are constructed to allow for cost-effective trading. In the index design, we work to reduce trading costs by adding what we call Index Memory<sup>®</sup>. For an index with no memory, the companies held in the index prior to rebalancing would have no bearing on the new construction of the index. In our design, the index remembers what was held previously. To help illustrate this concept, consider a company that is currently in the index and can still be held at its current weight without meaningfully changing the index's overall characteristics. Index Memory enables the index to continue to hold that company, which avoids unnecessary turnover. A more rigid index design without Index Memory may have deleted the company from the index at reconstitution in favor of another company, increasing turnover, and therefore trading costs, without meaningfully increasing expected returns. Again, the idea is to target a particular segment of the market, capture the premiums when they appear, and simultaneously be mindful of costs that detract from returns.

These trade-offs, intended to minimize unnecessary turnover for the ETF portfolios, have also been incorporated into the reconstitution frequency of the indexes. Reconstitution, the process by which the list of stocks and/or their weights in the indexes change, happens twice per year. As with any decision we make regarding portfolio design and execution, we considered multiple trade-offs in determining how often to rebalance the indexes. Our aim for the indexes is to maintain consistent focus on the premiums while keeping

turnover low and otherwise limiting the costs associated with pursuing the premiums. Reconstituting twice per year allows us to balance those competing objectives.

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Between reconstitution dates, if a security above a certain threshold weight within an index is removed due to corporate activity or delisting, rather than redistributing the removed security's weight pro rata among the remaining index names as is typical of a more rigid index, the indexes tracked by the John Hancock Multifactor ETFs redistribute the weight according to a value add process called Enhanced Redistribution. In an Enhanced Redistribution, the indexes recalculate their desired security weights based on maintaining a consistent focus on the premiums and then allocate the weight of the removed security to the most underweight names remaining in the indexes based on desired weights. This process enables the indexes to intelligently use natural turnover in the market and the most up-to-date information in market prices to target higher expected returns.

These thoughtful index design considerations enhance our ability to apply Dimensional's investment approach in an ETF structure. The John Hancock Multifactor ETFs are designed to fully replicate the indexes as efficiently as possible. In addition to trading the ETF portfolio so that it tracks the index closely, portfolio management activities include managing cash and corporate actions. Dimensional's experience with portfolio design, management, and execution provides useful knowledge applicable to both the design of the index and the ongoing management of the ETFs.

## Conclusion

In liquid and competitive markets, security prices reflect the aggregate expectations of all market participants. As a result, we can use information in market prices to systematically identify differences in expected returns among securities. Numerous studies show that certain factors—company size, relative price, profitability, and investment—contain reliable information about differences in expected returns that we can use to structure and execute investment strategies that pursue higher expected returns.

The premiums associated with those factors are largely unpredictable over short periods, both in terms of when they will show up and which individual securities will be the drivers of those premiums. For those reasons, we believe the best way to invest is to structure broadly diversified portfolios with a consistent focus on the premiums to increase the likelihood of capturing them when they appear.

This multifactor approach requires expertise in understanding how the premiums interact with each other, because stocks are often exposed to more than one premium. It also requires expertise in balancing the trade-offs among diversification, trading costs, and other market frictions.

In the end, we believe a deep commitment to theoretical and empirical research, combined with a focus on effective implementation in competitive and complex markets, can increase an investor's chance of capturing the higher expected returns supported by financial theory.



1 Fair is used in the sense that no market participant has an unfair advantage over others in predicting how prices will move in the future. Given their preferences and expectations, buyers think purchased securities will add to their portfolios by more than what they paid for them. Similarly, given their preferences and expectations, sellers have a different view—the money received is worth more to them than the securities sold. Buyers and sellers meet their different expectations at the traded price, which they both see as fair, and they transact voluntarily. The evolution of these views drives prices. This evolution is based on, among other things, new information. 2 “An Intertemporal Capital Asset Pricing Model,” *Econometrica*, 1973, and “A Five-Factor Asset Pricing Model,” *Journal of Financial Economics*, April 2015. 3 Rizova, Savina and Namiko Saito (2019) “Investment and Expected Stock Returns.” A Dimensional Fund Advisors white paper of October 2019, available at <https://www.mydimensional.com/investment-and-expected-stock-returns>. 4 For more information about the historical performance of the equity, small-cap, value, and profitability premiums in the U.S. and developed ex-U.S. markets, see [http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data\\_library.html](http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html). 5 “Migration,” *Financial Analysts Journal*, June 2007. 6 John Hancock Dimensional Large Cap Index is a rules-based index of large-cap U.S. stocks that have been selected based on sources of expected returns. Securities eligible for inclusion in the index are classified according to their market capitalization, relative price, and profitability, and are weighted accordingly in favor of smaller, less expensive, more profitable companies. The index is reconstituted and rebalanced on a semiannual basis. Index performance assumes reinvestment of dividends and, unless otherwise indicated, does not reflect the management fees, operating expenses, transaction costs, and other expenses that apply to an ETF. It is not possible to invest directly in an index. Past performance does not guarantee future results.

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