



# Factor modeling provides key insights on return drivers and risk exposures

**As clients expect increasingly sophisticated portfolio analytics, wealth advisors should consider adding factor modeling capabilities to their toolkit.**

Insights: Factor Modeling | March 2022



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**Factor modeling – the analysis of investment risks and the drivers of returns – has become increasingly sophisticated, thanks in large part to advanced technology and data science.**

**Simply put, the power of today's computers and the availability of data we didn't have access to in the past enables us to slice and dice portfolios in ways that were not previously possible.**

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It's not only technology that has become more sophisticated; investors have, as well. The detailed analytics that only institutional investors used to want for their portfolios are now expected by individual clients. To meet that demand and also deliver better portfolio results for clients, wealth managers need to have factor modeling in their toolkit.

While proper diversification has always been key to portfolio construction, today's more sophisticated factor modeling can be used to identify new opportunities for even more effective diversification. Alternatives, and private investments in particular, are among the new diversification opportunities more readily available to individual investors today. These investments greatly expand the landscape of opportunities for investors. Factor modeling can be used both to identify the best alternative investments for a portfolio and to demonstrate to investors the value of including them.

## The evolution of factor modeling

For decades, it has been understood that certain factors drive the systematic risk and return of all assets. Along the way, there was also a recognition of the important nuance that a particular asset's exposure to a factor may vary over time. The earliest, and simplest, application of factor modeling was the Capital Asset Pricing Model (CAPM). Developed in the early 1960s, this is a single-factor model that suggested systematic market risk (beta) is the one risk factor driving all asset returns. It assumed a perfectly efficient market and did not account for the possibility of alpha generation.

In 1973, Robert Merton introduced the Intertemporal Capital Asset Pricing Model (ICAPM), a multifactor model that tied asset returns to multiple sources of risk, and in 1976, Stephen Ross pioneered the Arbitrage Pricing Theory, which linked unspecified macroeconomic factors to asset returns. These theories opened the door for the analysis of multiple factors (i.e., multivariate analysis). Since then, there have been many applications of factor research. The early efforts focused primarily on risk analytics, while later work aimed to identify and isolate various return drivers and to commoditize systematic factor exposure. Whether the objective is to better explain the drivers of risk or to harvest traditional/alternative risk premia, factor analysis can help investors make better investment decisions.

### Factor modeling can analyze both single-asset and multi-asset portfolios

Factor modeling can be applied to single-asset or multi-asset portfolios. For example, an equity portfolio can be broken down by exposure to factors such as value or company size. Similarly, a fixed income portfolio can be broken down into its major risk contributors, such as duration and credit. You can also identify more

esoteric risk components associated with asset classes, such as commodities, currencies, corporate loans, real estate equity and debt, and systematic trend following (a managed futures factor). In practice, factor modeling aims to identify major risk exposures and return drivers at both a granular level for each component of the portfolio and on an aggregated basis for the entire portfolio.

With the proper factor modeling tool, wealth managers can select the desired exposure they want to each factor. It is useful during both the initial construction or ongoing monitoring of a portfolio to ensure that factor exposure shifts are intentional and acceptable. When considering the addition or subtraction of investment options, wealth managers can use factor modeling to see how each decision would affect those exposures. That information enables them to select the investments that would maintain their target strategic factor exposures.

### Alternatives are attractive diversifiers, particularly in an outcome-based context

When wealth managers are looking to maximize portfolio diversification, the key, as always, is to find assets with low correlations. Alternative strategies can greatly enhance portfolio diversification because they have unique return drivers and often deliver better downside protection. For advisors, it is critical to evaluate investment opportunities in both the traditional and alternative markets to determine whether portfolio performance may improve with the addition or removal of any constituent. Again, factor modeling can greatly inform this effort.

Additionally, factor modeling facilitates a goals- or outcome-based investment approach as it provides a more granular, inside view of a portfolio. This makes factor modeling an effective tool for advisors focused on generating strong risk-adjusted returns and/or attractive yields as they customize portfolios according to their clients' needs.



## Understanding changes in factor exposures over time

Quantitative observations of an investment strategy help investors confirm the objectives of a strategy and its ability to deliver on those objectives consistently. Most due diligence processes combine quantitative and qualitative elements, and both are critically important in the overall construction of a portfolio and in the selection of individual investments. A static observation of a specified factor exposure can be a good starting point, but examining how factor exposures change over time can augment the exploration of portfolio risks.

You can accomplish this examination through a rolling estimation procedure, which re-examines factor exposures at points in time along the way as you look back over a number of years. These estimates enable you to see more than just what the overall factor exposure was over a five-year period, for example, by providing insight into how you got there and whether any variations in factor exposures occurred during that timeframe.

A rolling estimate of factor exposures will reveal their historical stability. The estimates also provide insight into expected performance and clues as to whether an observed historical return was the result of luck or skill. Both equity and bond funds, for example, often have style drift for a variety of reasons. A value equity fund may seem to have exceptional performance for its category, but a rolling estimate of factor exposures might reveal that in the past it had unusually high exposure to growth stocks, or vice versa. Fixed income funds often reach down the credit curve to gain advantage over their peers to generate higher yields while their fund names and categories may imply higher quality, investment grade strategies. Additionally, a hedge fund may present its strategy as a conservative 30% net long strategy, but it may have had spikes in equity exposure well beyond its average net long exposure (indicating potential market-timing behavior).

## Testing factor exposures through scenario analysis

Scenario analysis takes the efficacy of factor exposure to another level. A portfolio's factor exposures are estimated to determine how the portfolio, in its current state, would have performed during a past event. This analysis is particularly important given that the

inception dates of many investment products came after the Global Financial Crisis of 2008 – 2009. By using available factor performance records and the estimated factor coefficients, it is possible to conduct scenario analyses for noteworthy market environments, such as the financial crisis, the pandemic-related liquidity crisis, and many others.

Wealth managers and their clients can then see how various factor exposures might have affected a portfolio's returns and what the worst-case drawdowns might have been. Such stress-testing can then inform better portfolio construction with more forward-looking elements in the process. Still, it is important to remember that scenario analysis can offer only a rough indication of how a portfolio might fare under certain stressed conditions. Investors should always take a margin of error into account when interpreting the results of scenario analysis. Even with its limitations, though, it can provide important insights.

## Factor modeling can help advisors build efficient, customized portfolios

Factor analysis can play a critical role in helping advisors to construct more efficient portfolios, to customize them according to each client's preferences, and to evaluate and confirm the relevance of new investment opportunities. The analysis of factors also adds a layer of sophistication to an investment process. When it is applied and executed effectively, factor analysis can also provide a competitive advantage that differentiates an advisor's business. Further, using alternative investments from both the public and private markets has the potential to add significant diversification benefits to portfolios because of their potential for generating enhanced returns and delivering better downside protection.



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