

Multi-Factor Strategies: A Look Under the Hood

Factor Diversification: The “Why” and the “How”

The goal of factor diversification is to access a range of desirable investment characteristics in a way that smooths out the ups and downs of any single approach. The topic is enjoying growing interest among financial professionals and the media. We think it is important to understand the manner in which a factor diversification strategy is implemented, since seemingly small methodological differences can have important consequences for investment outcomes. Below, we explain what we see as key implementation issues in factor diversification.

Two common approaches in the marketplace today are (1) combining factor signals and (2) combining factor portfolios. They are sometimes referred to as (1) integrating and (2) mixing, but this terminology is often confusing to readers. The first approach combines factor signals into a composite score or rank, which is then used to determine security weights based on an optimizer or some other rules-based weighting scheme. The second approach, employed by GSAM's ActiveBeta® Indexes, creates independent factor portfolios, which are then combined to construct a factor-diversified portfolio.

At high levels of factor exposure and tracking error, combining signals potentially delivers higher risk-adjusted returns because of diversification benefits. In a long-only context, the composite scoring approach may be better positioned to take advantage of negative signal information. That is because this signal combination method, unlike the portfolio combination method, nets the scores of individual securities to obtain a single integrated score.

For example, in building a Value plus Quality factor portfolio using the portfolio combination approach, a stock with an average Value score and the lowest possible Quality score will likely have some position in the portfolio, since the Value position (let's assume an approximately benchmark weight) and the Quality position (we'll assume no weight) are averaged to derive the combined weight. However, the same stock would likely not be held at all when using the signal combination approach because the extremely negative Quality score would overwhelm the average Value score.

It is worth noting that this effect becomes less pronounced at lower levels of tracking error where individual positions tend to have smaller deviations from benchmark weight. Our analysis actually shows that combining portfolios has provided better investment efficiency than combining signals at low levels of tracking error. While combining signals may increase efficiency at higher levels of tracking error, not only do we find this not to be the case at lower levels of tracking error, but we also believe there are three key advantages of combining factor portfolios.

Ability to explicitly control rewarded/unrewarded risks for each factor

Examples:

- Sector risk tends to be rewarded in Momentum but not in Value.
- Country risk tends to be rewarded in Momentum but should be balanced with stock-specific risk.
- Sector risk tends to be rewarded in Quality but should be controlled regionally.

This ability to control for rewarded and unrewarded risks is very difficult to achieve when combining signals (“integrating”). However when combining factor portfolios (“mixing”), because each factor portfolio is constructed distinctly, the influence of unrewarded risks can be partially mitigated by refining the individual factor signal.

Ability to explicitly control the contribution to risk from each factor

The relative risk between low-score and high-score stocks is different for each factor. For example, Low Volatility and Quality have very different risk profiles. Each factor must be constructed with distinct parameters in order to produce factor portfolios of equal risk. A Quality factor portfolio with the same risk as a Low Volatility factor portfolio holds far fewer stocks, is more concentrated and requires a higher “active share” (weight of each security above the benchmark). By contrast, a Low Volatility factor portfolio with the same active risk does not require the same level of concentration and can be constructed with more diversification and hence more efficiently.

The ability to control the contribution to risk from each factor while also maintaining high diversification may be difficult to achieve when combining signals. The risk from each signal is affected differently by portfolio constraints (e.g., no shorting, sector, country, etc.), as well as the varying distribution of individual signal scores across the spectrum of benchmark weights. These impacts are difficult to disentangle, presenting a significant challenge when attempting to gain a clear understanding of risk contributions from each signal.

Ability to precisely attribute performance to individual factors

By building separate factor portfolios then combining them via a “mixed” approach, the performance of the combination multi-factor portfolio can readily be decomposed and sourced directly to each individual factor components. By contrast, in the case of a strategy constructed from a combined signal (composite score or “integrated” approach), attributing returns to factors is significantly more complicated and often requires the use of risk models and/or regression analysis. These attribution methods make it difficult to disentangle precise factor contributions from other corollary exposures (e.g., industry groups), and it can therefore be challenging to attribute performance results to the specific investment decisions that drove the selection of individual stocks. On the other hand, constructing and “mixing” individual factor portfolios enable direct cause-and-effect attribution, which is important in gaining a complete understanding of a multi-factor strategy and allows for more transparent performance attribution reporting.

Every approach comes with tradeoffs. Proponents of the integrated approach often argue that it favors “well-rounded” stocks, which score well across several metrics. Proponents of the mixed approach, on the other hand, advocate that factor purity is an important consideration and that investors want to capture each factor’s characteristics as efficiently as possible.

A common objection against the traditional mixed approach was that it did not allow for the same netting of positions as the integrated approach. However this consideration can be addressed in today’s mixed strategies, which don’t have to be siloed: for example ActiveBeta® indexes net positions when combining factor portfolios and even employ turnover minimization techniques for added efficiency.

There are pros and cons to any approach. The precision, control and transparency associated with the factor combination (or mixed) approach, as well as the potential to achieve greater factor purity, are considerations that were top of mind for us when developing our suite of ActiveBeta® Indexes.

Risk Considerations

Exchange-Traded Funds are subject to risks similar to those of stocks. Investment returns may fluctuate and are subject to market volatility, so that an investor's shares, when redeemed, or sold, may be worth more or less than their original cost. ETFs may yield investment results that, before expenses, generally correspond to the price and yield of a particular index. There is no assurance that the price and yield performance of the index can be fully matched.

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The Index is constructed using the patented ActiveBeta® Portfolio Construction Methodology, which was developed to provide exposure to the "factors" (or characteristics) that are commonly tied to a stock's outperformance relative to market returns. These factors include value (i.e., how attractively a stock is priced relative to its "fundamentals," such as book value and free cash flow), momentum (i.e., whether a company's share price is trending up or down), quality (i.e., profitability) and low volatility (i.e., a relatively low degree of fluctuation in a company's share price over time). Please note that one may not invest directly into an index.

Diversification does not protect an investor from market risk and does not ensure a profit.

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Different "factor" investment styles (e.g., "momentum", "value" or "low volatility") tend to shift in and out of favor depending upon market and economic conditions as well as investor sentiment. There is no guarantee that the use of these quantitative models will result in outperformance of an investment relative to the market or any relevant benchmark. Further, the value of investments and the income derived from investments will fluctuate (can go down as well as up), and a loss of principal may occur.

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