May 2017 Investment Publications Highlights

The Incredible Shrinking Factor Return (Part I of Alice in Factorland)

Rob Arnott, Vitali Kalesnik, and Lillian Wu, Research Affiliates LLC, April 2017

The authors assess and explain the differences between theoretical and actual factor tilt strategy returns. Their analysis compares returns of factor-based models against same-factor mutual funds. The authors conclude factor tilt strategies typically do not work as promised when implemented in the real world.

Factor tilt strategies are set up to provide investors greater-than-average exposures to companies exhibiting a specific return-driving characteristic and lower-than-average exposures to companies not exhibiting the characteristic. These characteristics—known as factors—have been identified through extensive academic research. Some of the more popular factors include market, value, size, and momentum. Indexes based on these factors have yielded impressive back-tested returns. Do the actual investable funds implementing these strategies perform just as well? The authors dive deep into the data to answer this question.

A multi-level regression is conducted on returns for about 3,000 factor tilt mutual funds from 1991 to 2016 against four respective factor-based theoretical portfolios for market, value, size, and momentum. High correlation between the factor tilt funds and the respective appropriate portfolios is confirmed, but the average returns for market, value, and momentum factor funds are significantly lower than returns for the respective theoretical portfolios.

The authors theorize the differences in performance are due to a combination of specific underlying factors and general issues with implementing factor tilt portfolios. For example, the market factor may have underperformed because low beta stocks have been shown to outperform high beta stocks relative to unit of risk. General implementation costs also play a role. One issue with a varying impact is trading costs; as stocks are bought and sold trading costs will eat away at returns. Strategies such as momentum have high turnover rates, and thus high trading costs. Conversely, the turnover rate for the size factor—the only factor to outperform the theoretical portfolio—is very low.

The authors conclude the difference in returns between theoretical portfolios and real-world factor tilt portfolios is significant, especially for the momentum factor. Trading costs likely wipe out the theoretical benefit of these strategies, meaning implementation may not be worth the cost. In particular, the real-world return for the value and market factors is halved or worse compared with the theoretical factor returns.

Will Your Factor Deliver? An Examination of Factor Robustness and Implementation Costs

Noah Beck, et al., *Financial Analysts Journal*, CFA Institute, vol 72, no 5 (September/October 2016): 58–82

The authors examine the inclusion of six factor strategies—low beta, value, size, momentum, illiquidity, and quality—in a portfolio and determine that size and quality lack robustness. They also study implementation costs associated with factor investing and suggest that investors should choose between active and passive management based on trading costs.

The authors evaluate Sharpe ratios to examine the robustness of six widely documented factors: low beta, value, size, momentum, illiquidity, and quality. They conduct this experiment across the multiple alterations in factor definitions and show that low beta, value, momentum (winners), and illiquidity factors offer significant risk-adjusted return benefits against their counterparts—high beta, growth, momentum (losers), and liquidity respectively, while size and quality factors do not show such persistence. They notice that small-cap stocks usually provide higher returns than large-cap stocks, but excess volatility associated with small-cap stocks doesn't improve their Sharpe ratio compared to large-cap stocks.

The authors use capture ratios (the ratio of portfolio returns to market returns during rising or falling markets) to analyze upside potential and downside risk of these factors. They find that size (small cap) and growth factors tend to perform the worst in falling markets due to their higher volatility with downside capture ratios of 1.18 and 1.08, respectively. Alternatively, low beta, value, and illiquidity factors tend to limit downside risk in falling markets with downside capture ratios of 0.56, 0.89, and 0.87, respectively.

The authors attempt to find a relationship between implementation costs linked with factor investing and choice of investment strategy. They establish that investors demand less liquidity from low beta and value factors. Therefore, a passive management or full factor index replication approach is more suitable in providing mostly the same factor premiums after trading costs. However, when more liquidity is demanded—especially in the case of momentum and illiquidity—active managers are preferable because of their ability to partially lower trading costs. The authors conclude that investors should not rotate between factors based on recent performance, but rather adopt a disciplined approach of buy-and-hold to maximize long-term benefits of factor investing.

Contrarian Factor Timing Is Deceptively Difficult

Clifford Asness, et al., *The Journal of Portfolio Management*, Special Issue 2017

The authors consider whether the rise in popularity of factor investing has made factors expensive relative to their history, and, if so, can investors benefit from timing allocations to these factors based on their relative cheapness. Using value spreads as a signal, they show that factors are not overvalued today, and find that timing fails to add value to a strategic multi-factor portfolio.

The authors consider three popular factors: value, momentum, and low beta. Evaluating these factors using a value spread (a metric to measure the cheapness of a factor), such as book-to-price, the authors find that none of

the three factors is unreasonably priced relative to its history. For example, the value spread based on book-to-price looks normal to cheap. Furthermore, the book-to-price for each factor tends to be mean-reverting, as opposed to steadily increasing, as investor demand for such factors has grown.

Since the value spreads for these factors exhibit a mean-reverting pattern, it is natural to ask whether investors can generate alpha relative to a multi-factor diversified portfolio by incorporating value timing based on value spread signals. In general, value timing relies on mean reversion being predictable and largely due to price changes. Unfortunately, factor valuations tend to be driven by other elements in addition to price, such as portfolio composition or fundamentals. If the mean reversion of a factor's book-to-price is not due primarily to a price change, then the link between mean reversion and profitable value timing, while not eliminated, is severely weakened. Still, the predictive powers of value, momentum, and low beta has been demonstrated in the academic literature, so the question isn't about if there is a relationship between value spread–based timing and subsequent 12-month returns, but rather the magnitude of that relationship. The authors find that for US large-cap stocks the relationship for each individual factor is weak; for example, the value factor had an R-squared of 0.10, a correlation of 0.3, and a t-statistic of 1.4.

More importantly, value timing fails to translate into economically meaningful risk-adjusted returns in the context of a strategic multi-factor portfolio. The authors measured the marginal benefit of value timing by comparing the performance of a strategic multi-factor portfolio with and without value spread–based timing. Based on their methodology, the authors find that using value timing within a multi-factor diversified portfolio that includes value, momentum, and low beta positions shows little to no improvement in returns (0.2%) or Sharpe ratios (0.2%).

Value timing fails to generate alpha relative to a strategic multi-factor portfolio because it can result in an increased allocation to a factor that reduces the risk-adjusted return due to diversification. In fact, as a portfolio gets more diversified, it becomes more difficult for value timing to generate alpha. Given that a strategic multi-factor portfolio is designed to spread risk across multiple sources of return and add value through diversification, value timing may work directly against this strategy. ■

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