# A Third Way: Multi-Factor Investing Evolves

- *Momentum is the tendency for winning stocks to keep winning and losing stocks to continue underperforming. It was identified as a risk factor in the early 1990s and targeted by investment practitioners since then.*
- *Unlike the value and size factors, the momentum factor has remained robust and persistent with a premium of 500 to 700 basis points since being identified.*
- *Numerous other risk factors, such as profitability, R&D and asset growth, have been found by academics and industry research to explain returns.*

In my last installment in this series on quantitative multi-factor investing, I traced the early history of factor-based investing. I discussed the Fama-French Three-Factor Model, which improved upon the Capital Asset Pricing Model by explaining stock market returns using three factors: market, size, and value (for a refresher, see http://gersteinfisher.com/viewpoints/third-way-genesis-multi-factor-investing/). In this segment, I will introduce some more-recently identified investment factors.

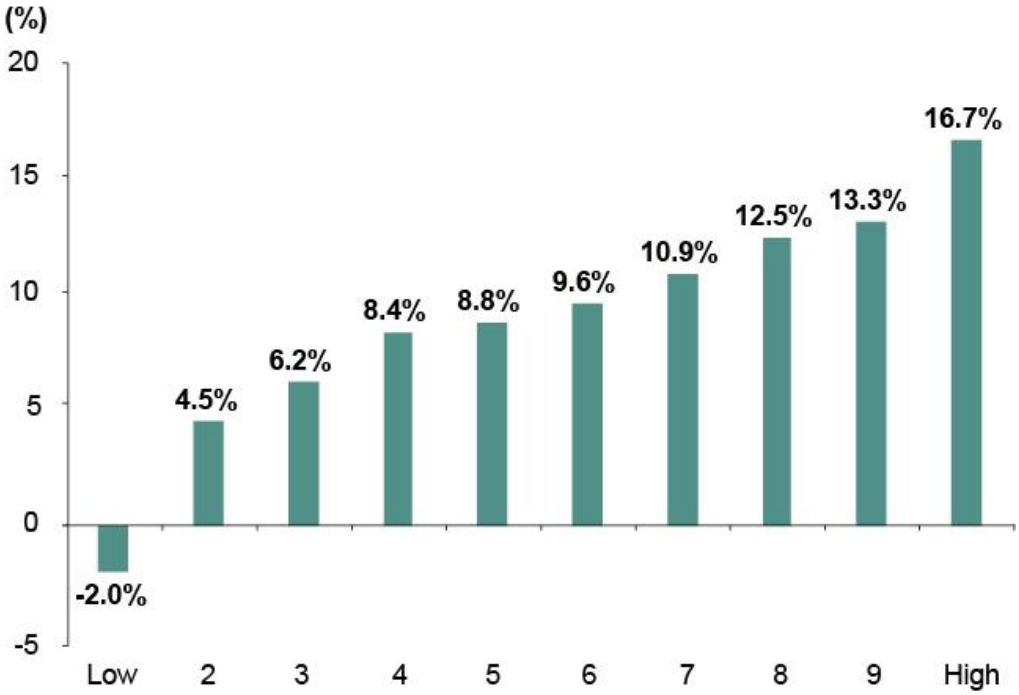
Academics and other financial markets researchers have found literally hundreds of discrete risk factors, but industry research (including our own) also shows that some factors add much more to expected portfolio return than others. Stated differently, nearly all of what we used to think of as the *alpha* of excess, or unexplained, returns (typically attributed to portfolio manager skill) can now be converted with the aid of computing power into quantitative factors that explain where those returns are really coming from.

**The Fourth Factor**

Shortly after Fama and French published their pioneering research on company size and value in the early 1990s, Gerstein Fisher academic partner Sheridan Titman, along with Narasimhan Jegadeesh, demonstrated a momentum effect in stocks[1]. Momentum is the tendency for winning stocks to keep winning and losing stocks to continue underperforming. Interestingly, the momentum factor was a refutation of Fama's efficient market hypothesis since it demonstrated that prior movements in stock price *do* influence expected stock returns. In 1997, Mark Carhart included momentum in his Four-Factor Model, which improved upon the predictive power of the Three-Factor Model.

Financial economists still haven't agreed on *what* generates momentum profits, but they do agree on the existence of a substantial momentum premium (for more on the subject, see our recent paper http://gersteinfisher.com/gf_article/past-returns-predict-future-returns-evidence-momentum-short-term-reversals/). Personally, I lean towards a behavioral finance angle: there is security price memory, which reflects the experience investors have had in the past. Subsequent research by Prof. Titman and others showed that momentum profits are significantly higher when the strategy is implemented on growth (low book-to-market) stocks versus value (high book-to-market) stocks. Exhibit 1 shows the annualized returns from 1927 to 2015 for 10 portfolios formed on momentum. Investing in the highest past one-year return (i.e, highest-momentum) stocks generated a 16.7% annualized return, compared to *minus* 2% for the lowest decile of momentum stocks.

**Exhibit 1: Portfolios Formed on Momentum**
Jan. 1, 1927 – Dec. 31, 2015




Sources: Center for Research in Security Prices, Gerstein Fisher Research

One interesting aspect of the momentum factor is that, unlike the value and size factors (which have shrunk since they were identified, perhaps because they were quickly targeted by so many quantitative investment managers), it has remained robust and persistent, generating a premium of 500 to 700 basis points since being identified in the early 1990s, according to research by Gerstein Fisher and others. An astute reader will wonder why–given that the premium is so large and persistent–more investors do not tilt portfolios towards momentum. The answer is partly that momentum is a particularly fast-moving factor that, due to steep turnover and trading costs, is difficult to efficiently implement. I will discuss this challenge in my next installment in this series, which will focus on issues related to combining multiple factors in a portfolio.

**Leaning toward, leaning away**

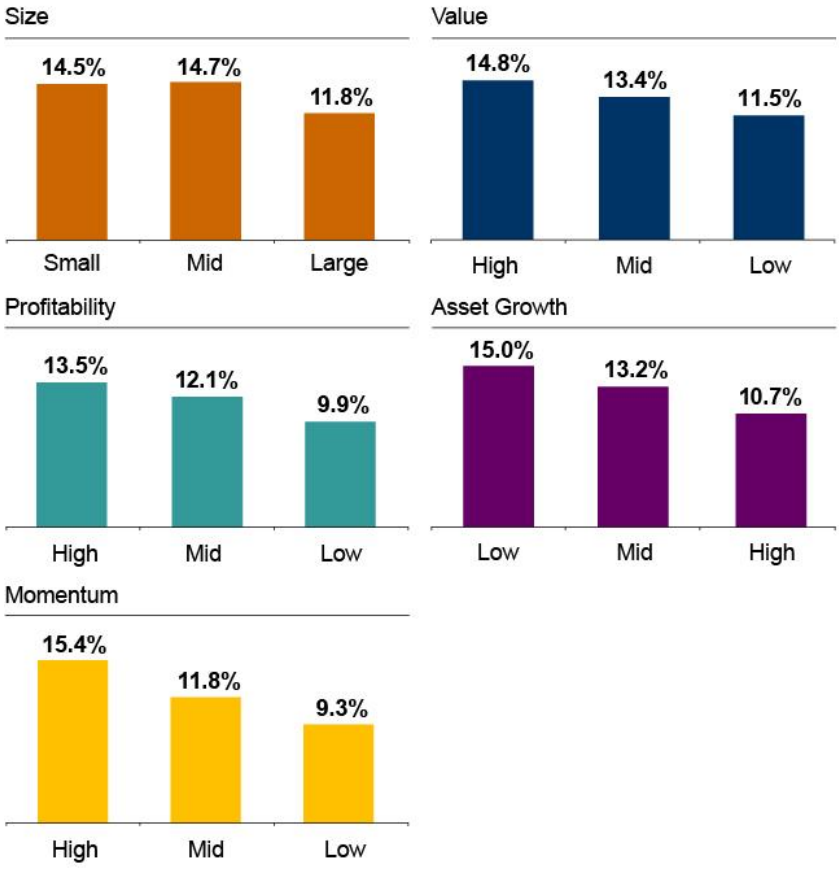
Several other factors that have been more recently identified in academic research can be divided into two groups, one positive and one negative:

- **Profitability and research & development (R&D):** Research has established that stocks of more-profitable (measured by gross profitability)[2], stable and growing companies tend to outperform the market. In other words, today's profitability is a good indicator of tomorrow's profitability and a predictor of returns. Similarly, growth stocks with high levels of R&D to sales (as well as R&D-intensive past losers)[3] tend to earn higher than average returns.

- **Capital expenditures, asset growth, external financing and leverage:** Firms that increase capital expenditures and assets rapidly tend to realize negative excess returns[4], which implies that investors should tilt *away from* these two factors (and toward companies with low asset growth) due to the negative relationship between investment and returns. In addition, there is a strong negative relationship between net external financing[5] (both equity and debt) and future profitability. I could explain these patterns with cost of capital theory: companies with high stock prices and low costs of capital tend to borrow and invest too much and take on more-marginal projects, which negatively impacts future stock returns. I will take up the leverage factor in an installment on real-estate investment trusts later in this series.

Exhibit 2 compares the asset growth and profitability premiums to those of size, value and momentum over a recent 40-year time period.

**Exhibit 2: The Benefits of Factor Tilts**
Monthly Data from Jan. 1, 1975 – Dec. 31, 2015




Sources: Center for Research in Security Prices, Gerstein Fisher Research
Note: Average compound annual returns (%) in US dollars. Indices are not available for direct investment. Their performance does not reflect the expenses associated with the management of an actual portfolio. Past performance is not a guarantee of future results. Portfolios are based on CRSP market portfolios divided into bottom 30%, middle 40%, and top 30% segments for respective factors and calculated on a value-weighted basis. For profitability portfolios, operating profitability is used. For momentum portfolios, the average of respective decile portfolios are used to create 30/40/30 breakpoint portfolios. Asset class returns are not representative of indices or actual portfolios and do not reflect costs and fees associated with an actual investment. Actual returns may be lower.

Since all of the risk factor premiums I have described are out there in the public domain, a natural question is why more investors don't harness them in building portfolios. The answer is that proofs in academic literature are one thing; selecting, combining and implementing multiple quantitative factors in a strategy that makes sense from an investor's point of view is quite another matter—and will be the subject of the next installment in this series.

## Conclusion

Momentum, identified in the early 1990s, became known as the fourth factor. Since then, many quantitative factors that help to explain returns, such as profitability and asset growth, have been uncovered and targeted by investment practitioners. There are other factors that investors would be well served to tilt away from since they have demonstrated a negative impact on returns.

**[1] Jegadeesh, Narasimhan and Sheridan Titman, "Returns to buying winners and selling losers: Implications for stock market efficiency," *The Journal of Finance* (1993). [2] See for example Novy-Marx, Robert, "The Other Side of Value: The Gross Profitability Premium," 2012. [3] Chan, L. K. C., Lakonishok, J. and Sougiannis, T., "The Stock Market Valuation of Research and Development Expenditures," *The Journal of Finance,* 2001. [4] Titman, Sheridan, KC John Wei, Feixue Xie, "Capital Investments and Stock Returns," 2003, and Cooper, Michael, Huseyin Gulen and Michael Schill, "Asset Growth and the Cross-Section of Stock Returns," *The Journal of Finance*, August 2008. [5] Bradshaw, Mark, Scott Richardson, Richard Sloan, "The relation between corporate financing activities, analysts' forecasts and stock returns," 2004.**

Disclosure:

**Investment Products & Services**

- Not insured by FDIC or any Federal Government Agency
- May Lose Value
- Not a Deposit or Guaranteed by a Bank or any Bank Affiliate

**Gerstein Fisher is a division of People's Securities, Inc., a Broker/Dealer, member of FINRA and SIPC, and a registered investment advisor. People's Securities, Inc. is a subsidiary of People's United Bank, N.A.**

Please remember that past performance may not be indicative of future results. Different types of investments involve varying degrees of risk, and there can be no assurance that the future performance of any specific investment, investment strategy, or product (including the investments and/or investment strategies recommended or undertaken by Gerstein Fisher), or any non-investment related content, made reference to directly or indirectly in this blog will be profitable, equal any corresponding indicated historical performance level(s), be suitable for your portfolio or individual situation, or prove successful. Due to various factors, including changing market conditions and/or applicable laws, the content may no longer be reflective of current opinions or positions. Moreover, you should not assume that any discussion or information contained in this blog serves as the receipt of, or as a substitute for, personalized investment advice from Gerstein Fisher. To the extent that a reader has any questions regarding the applicability of any specific issue discussed above to his/her individual situation, he/she is encouraged to consult with the professional advisor of his/her choosing. Gerstein Fisher is neither a law firm nor a certified public accounting firm and no portion of the blog content should be construed as legal or accounting advice. A copy of the Gerstein Fisher current written disclosure statement discussing our advisory services and fees is available for review upon request.