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## Risk Models, Factors, and Smart Beta

by Dr. David Esch

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Factor models are hugely important to the finance industry. These risk models provide tremendously useful information to investors and managers by estimating the risk of any portfolio of stocks, and the models have also been extended to other asset classes such as bonds and commodities. The consensus of most current econometric thinking is that a sizable part of price movement of equities, for example, is explained by a few basic risk factors: Market, Size, Value, Growth, Momentum, Return Reversal, and Quality. Exact definitions of these factors may vary, but most descriptive factor models include some variation of this list of factors. They are among the best known leading indicators of market, sector, and individual security price movement for which reliable data is easily available at the individual security level. Most risk models as a whole do reasonably well at estimating risk for portfolio attribution purposes, and can be used in optimization as well.

Managers need these risk models to understand the risk characteristics of their products, because customers demand to know the risks of their investments. Unlike New Frontier, most managers' processes are decoupled from the risk attributes of their assets. Their processes largely consist of overweighting assets on which they are bullish, and underweighting those on which they are bearish, and periodically updating this scheme. Since such a process is not intrinsically designed to control risk, risk models must be used with the final portfolios to obtain numerical summaries of risk characteristics. In contrast, careful risk and correlation estimates are balanced against return signals throughout New Frontier's asset allocation process, so good estimates of portfolio risk characteristics come directly with the portfolios and solidly match any reasonable external calculations using risk models. By design, New Frontier's investment products have the best possible out-of-sample (future) risk characteristics across a wide range of market scenarios.

While these risk factors are definitely connected to the risk characteristics of capital markets, it is more controversial how reliably related to return any of the individual factors are. The recent popularity of factor-tilted and smart beta products show that many investors are willing to bet that factor returns will beat the market. However, factor returns are alternately positive, negative, or near zero, and difficult to predict. History shows that factor returns ultimately average to positive values, so many investors in factor-tilted products, so far, have been rewarded for their patience. Yet, the exact mechanism of the outperformance is still debated.

Observed risk factors are evolving, with mostly diminishing correlation to return, as markets become more efficient and liquid. The future is still uncertain in spite of track records of positive performance. As more managers rush in to create competing factor-tilted products, the advantages of factor-tilted fund weighting may also be compromised.

Each risk factor cycles between under- and overperformance on its own irregular rhythm, so a tactical allocation toward a rotating choice of factors could theoretically achieve superior average performance under clairvoyant management. However, investors should be skeptical of managers claiming crystal-ball accuracy in predicting near-term factor performance. New Frontier's investment process does not forecast or make tactical bets, so we must rely on stable risk and return management to generate our long-term outperformance. A core strategic investment in multiple factor-tilted funds could require a long-term commitment to realize an average outperformance relative to a similar portfolio of indexed funds, and over that period there would likely be substantial ups and downs in performance. Also, nobody knows the future performance of these factors. Because of these unavoidable risks and uncertain futures, the advantages of a strategic fund of factor tilted or Smart Beta funds over a similar fund made of more stable index-weighted funds are unclear. Nevertheless, there is a good way to get the best of both worlds: some exposure to risk premia with the stability of cap-weighted fund constituents. Factor attribution shows that New Frontier's investment process does in fact generate portfolios with some stable and measured exposure to the most common risk factors, even though the constituent funds, with few exceptions, are not deliberately tilted toward factors and are mostly index-weighted. The observed lean toward these factors is due to the careful management of the risk characteristics of the portfolios and the direct link to the risk characteristics of actual historical performance, which is an integral part of every step of the process. The process of creating portfolios with Michaud Optimization mirrors factor analysis of market data in its direct link to asset performance through history.

The process of creating reliable Global Core investments at New Frontier has been consistently applied over our eleven year plus track record, considering all risks, both systematic and hidden, at each stage. The selected asset universe covers all return-generating risk premia available through well-vetted ETF products, and uses the superior Michaud optimization technology to create robust portfolios that perform well and control risk under many different market scenarios. New Frontier strategies' measurable lean toward well-known risk factors comes from careful modelling of the full relationship between risk and return, rather than formal factor-based risk models. Because of the rigor of the mathematical and statistical processes within the estimation and Michaud optimization steps of the process, investors in NFA Asset Allocation products have some risk-controlled exposure to



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the same sources of performance toward which smart beta and factor products tilt, without the uncertainty of future performance created through more extreme non-index weighting. We believe that much of the benefit of factor tilting is already captured within the extremely stable Michaud optimization process. GSAA is a suitable core investment for all investors, including those who want some benefits of active management without the costs.

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