



SMART BETA: SMART FOR YOUR PORTFOLIO?

MARK ROWLING

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“Smart beta is a rather elusive term in modern finance;” this is the first result of a Google search of the phrase “smart beta definition.” Given that many asset managers have introduced and marketed (and marketed some more) products labeled “smart beta,” we thought it might be helpful to answer some questions regarding the latest buzzword in the world of investing. So, what is smart beta, and why has it gained so much attention?

Although it is unlikely that an agreed-upon definition of the term will emerge, there are common characteristics between the products that firms label as smart beta. These smart beta products come in a variety of shapes, sizes, names, and clever packaging with a naming convention that typically involves selecting a flashy adjective (strategic, advanced, scientific, enhanced, exotic, etc.) and combining it with either the term “beta” or “indexing.” Generally, smart beta can be viewed as an attempt to bridge the gap between the two options historically offered to investors: a passive market capitalization-weighted index approach and an active management approach. Smart beta seeks performance superior to a traditional cap-weighted index (“the market” – think Russell 3000 for US equities) by creating a portfolio that focuses on factors or risk premia historically proven to reward investors. In this sense, smart beta is active because these strategies hold securities at different weights than traditional market indices.

These active “bets” against the market are combined with the simple, transparent, rules-based implementation features offered by passive index products. Therefore, it makes sense that the fees for most smart beta products fall

between those charged by active managers and those charged for a passive index fund.

The recent attention on smart beta has prompted a healthy conversation in the institutional investment community. Most of the focus regarding smart beta products has been on long-only implementation within a single asset class, mainly traditional equities. However, within the smart beta realm, there is a wide range of product structures and fees. Smart beta can vary from statically targeting a single factor through long-only implementation in a single asset class, to dynamic, long/short implementation across multiple factors and asset classes.

More broadly-accepted and easily-implemented factors in more liquid markets are typically associated with lower fees, while strategies that combine more esoteric factors and asset classes will have costs more similar to the active management end of the spectrum. While we touch on other smart beta implementations, the main focus of this paper coincides with the current focus of most investors: long-only public equities.



Manager Discretion	No discretion; weighted based on market capitalization.	Manager establishes and does not deviate from rules/process.	Full discretion; manager chooses securities and weights.
Fees	Lowest	Between active and passive	Highest
Transparency	Transparent; rules regarding inclusion/weightings are known.	Transparent; strategy methodology is known.	Least transparent; managers not obligated to share methodology.

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New findings in academia and innovations in financial technology have armed investors with more tools than ever to evaluate manager performance and become more familiar with what they actually hold in their portfolio. A brief but important history lesson can help illustrate these developments and their relevance. William Sharpe published his work on the Capital Asset Pricing Model (CAPM) in 1964. The CAPM states that the expected return of a security is derived from a premium associated with investing in the stock market over a risk-free asset. This premium is adjusted based on a term, beta, which measures a security's price sensitivity relative to the market. Based on this model, a riskier security, or one whose price fluctuates more than the market, is expected to earn a higher rate of return than a lower risk security. Sharpe's single factor model was advanced by Stephen Ross' Arbitrage Pricing Theory (APT) in 1976, which claims that factors other than the market premium exist to explain a security's return; Ross did not explicitly define these factors, but he described characteristics of potential factors and noted that the nature of factors is likely to change over time.

Academia has debated at length what factors truly exist and have power in explaining returns. Firms like Dimensional Fund Advisors (DFA) have utilized the academic research behind the APT dating back to 1992 by systematically targeting factors in their equity portfolios, such as size and value, which they believe provide superior returns to the market over time. In this sense, factor investing is not new; it has been around for decades. The important takeaway here: Investment returns can be explained by certain factors but more and more of what has historically been deemed alpha, or manager skill, can be attributed to tilting a portfolio towards these factors rather than relating to specific security selection. Thus, smart beta raises the question, "If I can get exposure to proven factors/risk premia at a lower fee than what active managers charge, shouldn't I be considering this for my portfolio?"

On which factors do smart beta products focus, and which factors have merit?

Since the basis of smart beta is to provide factor exposure implemented in a transparent and cost-efficient manner, the logical next step is to discuss the factors that, for better or worse, receive the most attention. After all, the decision to invest in a smart beta product requires investors to have

confidence that a factor: (1) exists and (2) will prospectively offer superior performance after adjusting for implementation costs. In recent years, there has been an explosion of new factors, as quantitative analysts run thousands of backtests in an attempt to harvest previously unknown premia (and make a name for themselves). While it is best left to academia to debate and articulate the evidence of these new factors, some have been extensively researched and broadly accepted in both the academic and practitioner communities. Most will agree that a factor should exhibit certain characteristics and qualities that help explain its existence. These characteristics typically include:



HISTORICAL EVIDENCE: The factor has been proven to work over a long period of time and is supported by academic research.



UNIVERSAL: There is evidence that a factor has been proven to work across multiple geographies and markets.



CAPTURABLE: There are means of investing in and exploiting the factor that provide positive excess returns after fees and trading costs.



RATIONALE: The factor should be supported by economic reasoning: "It makes sense that holding these securities should earn a premium."

With these characteristics in mind, the focus can now be turned toward the factors most commonly targeted in smart beta strategies.

Value – Relatively cheap securities tend to outperform relatively expensive securities.

Asset prices sometimes drop below their intrinsic value when they fall out of favor with investors, presenting opportunities for excess returns. Common measures of equity valuation include the price-to-earnings (P/E) ratio and the price-to-book (P/B) ratio. Buying stocks with low market values relative to book value and low market values relative to company earnings has proven to be a successful strategy over time. The value premium has been well-documented, beginning with the teachings of Graham and Dodd at Columbia University in 1928, and in their 1934 book, *Security Analysis*. Value is perhaps the most widely-accepted and documented factor that exists in investing.

Historical Evidence

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Not only is there evidence of the value premium's presence in the US equity market, but researchers have also discovered that purchasing securities whose market value is low relative to an estimated measure of intrinsic value is a successful strategy in international equity markets and other asset classes such as bonds, currencies, and commodities. The work of Asness, Moskowitz, and Pedersen (2013) confirmed that there is "consistent and ubiquitous" value across many markets and asset classes.  **Universal**

The intuition behind the existence of the value factor is simple to grasp. Prices can deviate from their true value in the short run, but tend to revert back to their true value over time. This means that lower-valued securities produce higher returns than higher-valued securities over time. The risk-based explanation of the value premium states that investors should be rewarded for holding securities that are out of favor with investors (for either right or wrong reasons).  **Rationale**

Managers have created many ways to focus a portfolio on the value factor while keeping transaction and implementation costs at low levels. In the US equity market, a tilt to value is as simple as purchasing an ETF or mutual fund that tracks the Russell 3000 Value Index at a low fee. However, a more "pure" exposure to value can be achieved through the use of short selling, which many strategies offer at competitive fees. The value factor is often combined with a measure of momentum to help insure against the value trap: purchasing cheap securities that stay cheap for long periods of time, sometimes forever.  **Capturable**

Momentum – Security prices tend to move in the same direction over short to intermediate time horizons.

The most widely-referenced measure of momentum is the change in price over the previous 12 months, excluding the most recent month (over a one-month period price movements tend to be noisy). Momentum and trend following have been documented in financial literature dating back to economist David Ricardo's work in the 1800s. Jegadeesh and Titman (1993) are among leading researchers of the momentum premium and have concluded that over a relatively short period of time (typically one year) price movements tend to be followed by movements in the same direction. Over longer periods, however, prices tend to show patterns of mean reversion. This means that short-term price

movements are often followed by reversals. Similar to value, momentum has been studied by academics and practitioners for years and is broadly accepted as providing returns superior to the market.  **Historical Evidence**

The momentum premium has been documented across multiple markets and asset classes in addition to the US equity market. The aforementioned work by Asness, Moskowitz, and Pedersen also shows that momentum, in addition to value, has been prevalent across the combination of eight different markets and asset classes they have analyzed.¹  **Universal**

Momentum, of course, has been known to exist in other areas before it was realized in investing. After all, an object in motion tends to stay in motion. The behavioral preference of investors to buy securities that have recently performed well and to sell those which have performed poorly is the basis of the momentum premium. While prices tend to revert to their intrinsic value over the long term, over the short run prices show a tendency of continuing along a similar trajectory. The idea that investors tend to buy securities that have been recent winners, or the bandwagon effect, supports price momentum over relatively short periods of time.  **Rationale**

Trend following has been proven to produce superior returns for decades and innovation in financial products and technology has lowered trading costs, increasing the premium for momentum over time. However, momentum strategies tend to have higher trading costs than many other strategies because of the trading frequency and turnover required to capture the premium. When evaluating momentum-based strategies, transaction costs must be considered. Strategies that do not have a history of live results may not properly account for transaction costs and historical results may appear better than what is actually achievable going forward.  **Capturable**

Quality – More profitable, efficient companies outperform less profitable, inefficient companies.

For equity investing, common measures of quality include return on equity (ROE) and the debt-to-equity ratio.

¹ The eight asset classes and markets include US, UK, European, and Japanese stocks, country index futures, currencies, government bonds, and commodities.

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Academic research focusing on the quality premium has grown in recent years. Some of the earliest practitioners of quality investing include Benjamin Graham and Warren Buffett. One of Buffett's most famous sayings is, "It is far better to buy a wonderful business at a fair price than to buy a fair business at a wonderful price." In a 2004 white paper, *The Case for Quality – The Dangers of Junk*, research conducted by Grantham, Mayo, van Otterloo & Co. (GMO) showed that, based on several different measures of quality, high-quality equity has outperformed low-quality equity over a long time horizon.²  **Historical Evidence**

Quality investing has been shown to produce superior risk-adjusted returns in both domestic and international equity markets. Performance of MSCI Quality indices show that a tilt to quality provides downside protection versus a cap-weighted benchmark not only in the US, but in the broad global equity market as well.  **Universal**

The logic behind the quality premium is rather straightforward. Firms that can best utilize capital and assets should generate better returns over a long time horizon than those which are inefficient. A more pointed rationale behind the profitability premium claims that investors underreact to positive profitability news in the short run, which suggests that the market underestimates the ability of firms to persistently generate profits. Over a longer period, however, the market adjusts to reflect proper valuations based on profitability. This allows intelligent investors to purchase more profitable companies at a discount to their true value and earn a premium by holding these securities.

 **Rationale**

The quality factor can be captured through many different implementations with different costs and levels of effectiveness. As mentioned above, MSCI Quality indices offer a bias toward the quality factor in a simple, transparent manner that allows investability through a low-cost mutual fund or ETF. These indices score securities within a universe based on measures such as return on equity, debt-to-equity, and earnings variability, and determine each security's weight in the portfolio based on its score. However, products such as these may not provide the most direct exposure to

the quality factor as some other, less-restricted methods of portfolio construction (covered later).  **Capturable**

Low Volatility – Securities exhibiting lower price volatility tend to outperform those with higher volatility.

The most common measure of volatility is the historical standard deviation of an asset's returns. Low volatility indices and products use historical volatility as a basis to create a portfolio that is biased towards low volatility securities with the intention of protecting in down market environments and keeping pace in normal market environments. Academic research by Frazzini and Pedersen (2013) "show[s] how the security market line has continued to be too flat for another four decades after Black, Jensen, and Scholes" first discovered this to be true in 1972. In other words, taking on additional risk has historically not been rewarded as much as the CAPM would suggest.

Demand for such products has grown significantly following the bear markets of 2002 and 2008, when the MSCI World Index fell 20% and 41%, respectively. Dr. Robert Haugen was one of the leading researchers of the low volatility premium. Baker and Haugen (2012) state the low volatility anomaly "is remarkable because it is persistent – existing now and as far back in time as we can see." Going back as far as 1972, Haugen and Heins discovered a negative relationship between risk and return in US stock and bond markets. While the empirical evidence appears convincing, the lack of long periods of live performance for products targeting the low volatility premium is a concern.  **Historical Evidence**

Numerous studies have confirmed that the low volatility premium exists across equity markets throughout the world, supporting the original work by Haugen and Heins. Among the most compelling evidence of low volatility investing is research by Ang et al. (2006), which shows that stocks with higher historical volatility underperform those with lower volatility on a risk-adjusted basis.  **Universal**

Frazzini and Pedersen (2013) point to the fact that many investors are constrained in their ability to use leverage and thus overweight risky securities, which in turn results in lower prospective returns for these assets. Another possible explanation is that investors view high volatility stocks as "get rich quick" opportunities, similar to gambling or playing the lottery. This preference of investors to gamble on high

² GMO's measures of quality include low leverage, high profitability, and low earnings volatility.

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volatility securities bids up those securities' prices and in turn lowers their future returns. The logic behind the low volatility premium may not be as clear as for value and momentum, but researchers have begun to explain its existence.

Intuitive

As previously mentioned, products that aim to exploit the low volatility premium are relatively new to the market. The products are primarily a result of investors' dissatisfaction with the high correlations of individual securities in cap-weighted indices in times of market distress and the poor total performance that this has caused. Since 2008, many fund managers have created low volatility strategies to meet such demand. Access to the low volatility premium is relatively cheap, but often comes with significant tracking error, a concern for many institutional investors.

Capturable

Size – *Smaller market capitalization companies tend to outperform larger companies.*

The most common measure of a company's size in the equity market is its market capitalization, which is the number of company shares outstanding multiplied by its current share price. In the Fama-French three-factor model (1993), they named size as one of the significant factors that explain equity returns, with small cap outperforming large cap over a long time horizon. Since 1979, the Russell 2000 Index, composed of 2,000 small cap companies, has outperformed the Russell 1000 Index, which is composed of 1,000 large cap companies. The Russell 2000 outperformed by a small margin of 0.2% per year with more risk, as measured by standard deviation of returns. Research conducted by Research Affiliates, referencing Shumway and Warther's work in the 1990s, claims the small cap bias has not been prevalent in the US since the early 1980s. Work by Rob Arnott shows that "when we separate the size effect from the value-versus-growth effect, we find that size as measured by market capitalization is far less powerful than is generally believed." The fact that small caps have earned a higher return than mid- and large-sized companies over the long term does not necessarily qualify it as a risk premium. To be considered a risk factor, these firms must exhibit superior risk-adjusted performance relative to what is implied in the CAPM. There is less evidence of the small cap risk premium compared to some of the other factors.  **Historical Evidence**

The size factor has historically been more rewarding in some regions of the world than in others. While small caps tend to offer higher absolute returns across the world, the risk-adjusted performance appears to be inconsistent.

Universal

The intuition behind the small cap premium is fairly straightforward. Small cap companies tend to have fewer assets and less access to capital than more established, stable, large cap companies. Investing in firms that are inherently more risky should require a return premium for taking on additional risk. However, simply earning a higher return by taking on additional risk does not make size a premium; earning a return *above* what is prescribed by the CAPM does.  **Intuitive**

Many products exist that offer a bias towards small cap, often at a low cost. The small cap factor can be accessed by simply investing in a fund or ETF that tracks the Russell 2000 or MSCI US Small Cap Index.  **Capturable**

What other smart beta products are available to investors?

While the focus of this paper has been on long-only, single-factor, static equity strategies, it is important to know that the breadth of smart beta reaches well beyond these limitations. Even in the equity space, smart beta products can take on many different forms and implementation styles.

Multi-factor: Combines multiple factors into a single strategy. For example, many smart beta products combine the value and momentum factors. This helps avoid "catching falling knives" while providing exposure to both the value and momentum factors. Combining factors also provides diversification benefits, as factors are not perfectly correlated and offer differing returns in different market environments.

Long/short: Permitting short selling allows a strategy to gain a more direct exposure to desired factors. However, this feature often comes with higher fees and tracking error relative to the benchmark.

Dynamic: Uses signals to tactically allocate in and out of individual factors based on certain rules or factor valuation metrics.

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Alternative asset classes/multi-asset class: Smart beta products are offered outside of the equity market although historically that is where the vast majority of investor focus has been concentrated. Firms are introducing strategies that aim to exploit similar factors using similar construction methodologies in asset classes such as bonds, commodities, and real estate investment trusts.

Strategies exist that permit short selling across multiple asset classes and dynamically allocate between factors and asset classes, providing pure exposures to desired factors on a total portfolio level.

What are some important considerations for those evaluating smart beta products?

According to a survey conducted by Russell Investments in January 2014, approximately 50% of the North American investors surveyed: (1) had an allocation to smart beta, (2) were currently evaluating a smart beta product, or (3) were planning on evaluating smart beta within the next 18 months. Many institutional portfolios have historically been invested in smart beta products (through something as simple as a Russell 3000 Value Index mutual fund, for example), though naming/marketing conventions often lead investors to believe that smart beta is an entirely new phenomenon. It is important to note that smart beta investing is not without its risks; investors should be mindful of several key considerations when evaluating these products.

Allocators Own Smart Beta Performance

Investors considering smart beta products should be aware that the decision to implement such strategies means they are choosing to target a specific factor or factors using a chosen methodology. The main message is that institutional investors who may have been able to shield themselves from criticism when active managers underperform will likely not be afforded that luxury when it comes to implementing smart beta, because they are actively making these factor bets. As previously mentioned, an investor should have conviction that the factors being targeted with smart beta implementation (1) exist, (2) will continue to offer prospective excess returns, and (3) can be effectively exploited by the product/fund being evaluated.

Market Timing is Difficult and Underperformance Happens

Timing factors should be equated to the decision to get in or out of the stock market. For this reason, a long-term buy and hold approach is best when considering smart beta implementation. Just as there are extended periods of time when the total market performs poorly, factors are also susceptible to long periods of underperformance. While value is broadly accepted as a factor that has offered superior returns to that of the cap-weighted index (Figure 1), there are long periods where value underperforms the more growth-oriented market index. For example, during the most recent 71 monthly rolling five-year periods (as of April 2015), the broad market Russell 3000 Index has outperformed the value-oriented Russell 3000 Value Index (Figure 2).

Figure 1 Russell 3000 vs. Russell 3000 Value
Growth of \$1: 1980 - April 2015

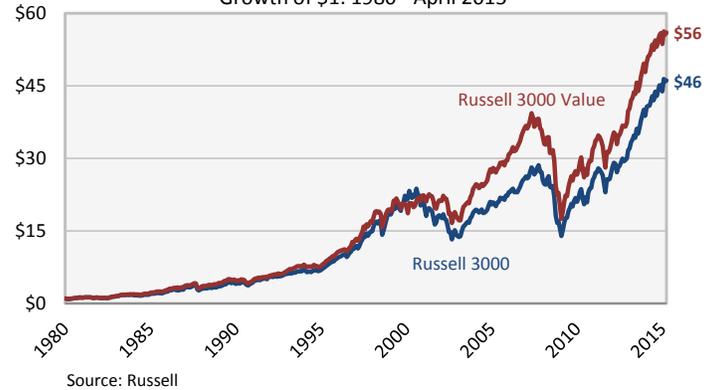
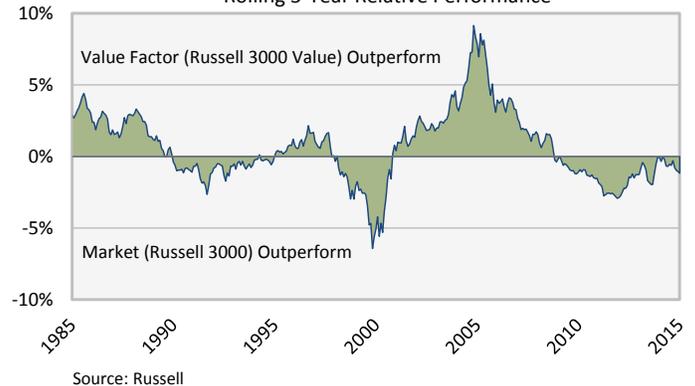


Figure 2 Russell 3000 vs. Russell 3000 Value
Rolling 5-Year Relative Performance



Be Properly Skeptical of Backtests

The recent interest in and demand for smart beta products has brought a wave of new products to the market. The majority of these products do not have robust live track records to illustrate just how indicative (or not) the backtests

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of these strategies are, or how the fund is likely to perform in certain market environments. Many smart beta products will advertise excellent results and Sharpe ratios, but this may not be representative of how the strategy will perform in the future. Investors should ensure that backtests fully incorporate trading and implementation costs when comparing smart beta products. Backtests are also susceptible to data mining techniques that artificially inflate performance; if portfolio performance changes dramatically based on small changes in implementation procedure or factor definitions, data mining is likely to be a concern. Ideally, a smart beta manager will have a live track record long enough to ease potential investor concerns.

Tracking Error Should Not Be Overlooked

Similar to traditional active management, the bets that smart beta products allow investors to make can cause these strategies to deviate dramatically from the return of the market. Low volatility strategies are among the best examples of such products. Some low volatility strategies can have tracking error in the 10% range, which means a normal expectation should be for these strategies to over/underperform their benchmark by 10% over a given 12-month period. Because some strategies can have significant tracking error, it is best to take a long-term approach when evaluating how a strategy has performed. Without a long time horizon of realized returns, it is difficult to tell if a strategy's performance relative to its benchmark is a result of "noise" or how it is intended to be constructed. The transparent and rules-based structure of smart beta strategies does not necessarily eliminate downside performance or high variance from the market return. While investors should be aware that specific factors can undergo long periods of subpar performance, strategies with high tracking error are not unique to active management only.

Smart Beta Products as Benchmarks

Another benefit of smart beta strategies is their application to evaluate active manager performance. Managers that market themselves as having a bias toward a factor or factors can be measured against smart beta strategies of similar types. For example, if an active manager claims to have an active bias toward quality in the US market, the MSCI US Quality Index would likely be a more appropriate benchmark for the manager than the MSCI US Index. Active managers that do not exhibit the ability to outperform smart beta strategies net of fees over a long time period should be re-

evaluated. Style bias or style drift can also be a useful tool when comparing active managers versus smart beta strategies. Plotting strategies in a style box can help answer the question, "How well do managers actually stick to the bias they tell me they are targeting?" As more smart beta products and indices come to market, the means of measuring manager performance improve as well.

Summary

Smart beta products have been flooding the market at an opportune time. Over the five-year period ending March 31, 2015, the median active large cap equity manager underperformed the Russell 1000 Index by 0.33% per year...gross of fees! Investors are not only being drawn to the fee savings of smart beta strategies, but also to the transparency of the processes regarding security selection and implementation. Smart beta continues to increase the options available to investors by offering portfolios that aim to exploit factors historically targeted by active managers, usually at lower fees. The factors most commonly advertised by smart beta providers include value, momentum, quality, low volatility, and size/small cap. These factors vary in the strength of their historical evidence, proof across markets and asset classes, logical reasoning behind their existence, and capturability. The ability of smart beta strategies to combine factors and asset classes and differentiate between implementation styles has resulted in an essentially unlimited number of options from which investors may choose. There are several important considerations that allocators should take into account when evaluating smart beta strategies.

1. Investment decision-makers should have conviction that chosen factors are prevalent and that a strategy's implementation style can effectively and efficiently exploit these factors.
2. Factors tend to underperform broad market indices for long periods of time, so it is best to view smart beta as a long-term investment.
3. Investors should be cognizant of the methods used to backtest smart beta strategies and the potential tracking error associated with these products.

Smart beta products have the potential to enhance portfolio performance, but should be evaluated carefully and thoughtfully.

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Mark J. Rowling, Research Analyst

Mark is a Research Analyst in the Risk Management and Playbook group. His responsibilities include supporting all facets of the department, particularly the development of economic and capital market reports for Summit's Playbook, as well as conducting risk analysis for client portfolios. Prior to joining Summit, Mark spent a summer as an intern in Summit's Modeling group. Mark graduated magna cum laude from Illinois State University, receiving a BS in Finance.

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