The Practicalities of Allocating to Smart Beta

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Given the wide variety of available smart beta approaches and the associated styles and exposures they produce, it is essential for investors to have a clear understanding of what they require before looking towards manager selection and implementation. In this paper we look at some of the practical challenges and considerations facing investors along the route from initial consideration of a smart beta allocation through to manager selection and implementation. It is based on information collected during our latest review of smart beta strategies for a large Middle Eastern Institution. Our client's portfolio has been growing significantly in recent years, and capacity concerns with their existing active equity managers were beginning to arise. They see smart beta as a scalable way to access active equity style returns in a cost effective manner alongside their existing active equity managers.

The Smart Beta Universe

Smart beta is a loosely defined investment style, and therefore covers a wide variety of investment approaches, some of which may stretch the spirit of the definition. In a previous report we broadly classified the range of smart beta approaches into four distinct groups; fundamental, risk efficiency, explicit weighting, and systematic risk factor.

For most investors, implementing a smart beta approach will require the selection of a specialist manager. Our recent review of smart beta managers (Q4 2013) showed that the availability of managers varied greatly across the four classifications. Over half the universe of smart beta managers (57%) were to be found within the risk efficiency space, whilst almost a quarter were fundamental in their investment approach. We also noted no managers offering explicit weighting approaches. The absence of any explicit weighting managers is not entirely unexpected given this is the domain

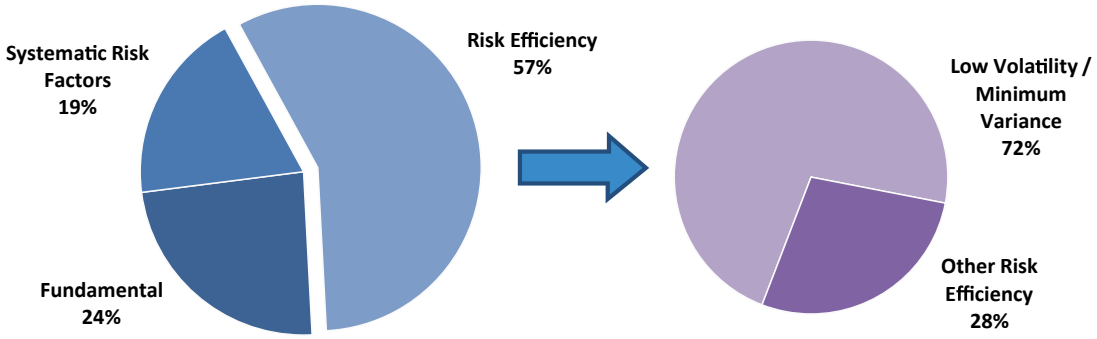

Exhibit 1: Representative Composition of the Smart Beta Universe, Including the Sub-classification of the Risk Efficiency Approach
Source: Author's Calculation

of existing index providers, and offers relatively limited scope for asset manager innovation (within the limits of the classification) away from the obvious candidates such as equal-weighted indices. As such, on a practical basis, it makes sense for investors to drop this grouping from the universe of managers and only consider fundamental, risk efficiency, and systematic risk factor classifications.

Further analysis also suggested that a natural sub-division exists within the risk efficiency group, namely low volatility / minimum variance approaches, and other risk efficiency strategies (which would include strategies such as maximum diversification). Here almost three-quarters of the risk efficiency products employed a low volatility / minimum variance approach. Again this breakdown is not entirely unexpected given the growth in popularity of these strategies over recent years, not least because of the well publicised low volatility anomaly, whereby historical returns from low volatility investing generate higher risk-adjusted returns than that expected from a simple capital asset pricing model approach.

Given the lack of clarity on what exactly constitutes smart beta, investors searching for smart beta managers are likely to encounter products and approaches that are smart beta in name only; more 'smart marketing' rather than smart beta. It is important to be able to identify these less appropriate strategies in order to exclude them from the due diligence process. Typically we find the most effective way to screen for such funds is through qualitative analysis of the investment process. This is obviously more time consuming than a systematic approach, but in our opinion is the only way to successfully isolate these funds. Our experience has shown that the most likely candidates for 'smart-marketing' tend originate from top-down driven macro approaches that often incorporate a significant degree of discretionary decision making, as well as more fundamental bottom-up funds where smart beta-like screens are only one of the decision making inputs.

Active or passive?

One of the first decisions investors face when considering smart beta is how it should be conceptually treated within their portfolio: Is it passive, or is it active? As we have previously discussed (Strategies for Volatile Markets, IPE Dec 2013), there is no right or wrong way to look at smart beta; yes it can be implemented passively as a benchmark, and yes it can be considered an active strategy relative to a traditional market capitalisation weighted index. The vast majority of investors we talk to have elected to treat smart beta in an active context relative to their existing market capitalisation weighted benchmarks. As such, the active approach can be considered to be the default choice for investors given it is practically, if not conceptually, impossible for many to extract themselves from an established reporting and monitoring framework built around market capitalisation weighted indices. Seemingly driven from a commercial perspective, the broad range of managers within the smart beta space generally have no issues benchmarking themselves against established market capitalisation weighted indices although, as we note in the next section, high tracking errors make such benchmarking somewhat less relevant (we will look to discuss this benchmarking issue in a future paper).

As well as these traditional benchmarks, there exists a wide range of indices which follow established smart beta styles. Some investors might deem it appropriate to benchmark to these indices, however here we would advise caution as variations in index construction rules can drive significant mismatches between the invested product and the index unless the investor chooses explicitly to mandate themselves against it. In general, we feel such indices might be better used in the context of a peer group comparator unless the investor chooses to explicitly mandate against it.

Tracking Error

Treating smart beta as an active strategy implicitly raises the issue of tracking error. Whilst there might be a temptation to consider smart beta approaches as quasi-passive, and therefore assume a low tracking error, this is far from the case. The fundamentally different investment approaches behind many smart beta products can drive significant tracking error relative to traditional market capitalisation weighted indices. Of less comfort for investors here, we note that approximately two-thirds of managers within our representative smart beta universe do not specify an expected tracking error, and of those that do we see the average tracking error (to the relevant market capitalisation weighted index) of over 7% p.a., with many managers in excess of 10% p.a. Putting this in context, a typical traditional active equity mandate would have a median tracking error in the range 4-6% p.a., whilst an unconstrained equity mandate might reach 5-7% p.a. median tracking error. As such, investors should consider smart beta strategies as being more akin to an unconstrained equity mandate in terms of tracking error risk. Furthermore, due to their non-market capitalisation weighted construction methods, tracking errors are likely to be naturally elevated in more bubble-like environments, as the benchmark moves to more extreme values.

Given such conditions are not typically seen in the usual back test period or live track records of most smart beta strategies, we could conclude that future ex-ante tracking errors have the potential to be higher still. We are aware that there are many smart beta products are offered with constraints on tracking error, however this merely essentially just dilutes the smart beta effect, and the point remains that 'pure play' smart beta strategies can be expected to drive significant portfolio risk when considered in a market capitalisation weighted benchmark context.

What do you want it to do?

Asking yourself what you want your smart beta allocation to do may sound straightforward, but unlike traditional active managers, where the objective is typically limited to outperforming a benchmark in a risk controlled way, the range of fundamental objectives within smart beta varies considerably; both across classification groups and on a product by product basis. Therefore this becomes a very important question that can be used to guide investors from an early stage of their smart beta search. Very broadly smart beta approaches all have the same core aim; to provide returns in a more efficient way (i.e. superior risk-adjusted returns) than traditional market capitalisation weighted investment methods. However the way they go about this varies considerably. We feel it is useful to split smart beta approaches into a number of camps on this issue:

Smart Beta Investment Aims

- Provide superior risk-adjusted returns
- Provide returns with reduced overall volatility
- Provide returns from a less concentrated universe of stocks, i.e. diversification
- Provide returns that originate from specific investment style (i.e. factor tilts)
- Any combination of the above

If it is your aim to invest in smart beta in order to reduce portfolio volatility, then you may naturally focus your attention on styles where volatility reduction is an investment objective. Similarly, if it is your intention to use smart beta to express a specific portfolio tilt, e.g. value or momentum, then you would naturally focus on systematic risk factor approaches, although we note there are approaches from other smart beta strategies that could produce similar effects. Ultimately, what we are saying is that if investors are clear in what they want their smart beta allocation to do, they can use this information to better screen the wide universe of available approaches, making the search process substantially more targeted.

It might also be that you are drawn to smart beta simply as the lowest cost alternative to traditional market capitalisation weighted indices. Indeed, there has been significant academic research concluding that market capitalisation weighting is one of the least optimal approaches (see for example Arnott *et al*, J. Port. Mgt. Summer 2013), which is clearly capable of pushing investors away from a traditional market capitalisation weighting if there is a viable alternative. Alternatively you might be using smart beta as a replacement for one or more active managers; getting similar sources of return at a fraction of the cost (albeit without the active management return component). In this latter case, the characteristics of the funds you are replacing would provide an important screen to your smart beta universe.

How representative is proforma data?

Quantitative analysis of track-record is an essential component of any investor's due diligence process, and ultimately allows for a direct comparison of approaches. Given much of the interest in smart beta has piqued over the last few years, a significant number of participants in the smart beta space have comparatively short live track records. However, due to the nature of smart beta investment processes (passive and systematic), these strategies are naturally very well suited to back-testing. This leads to the question are proforma smart beta time series reliable and representative?

The representativeness of a proforma or composite track record needs to be determined using a number of considerations, for example obvious effects such as the inclusion of trading costs, is it net/gross fees? As well as more subtle influences; have there been any market impact modelling, or liquidity assumptions made? For live track records it is also important to establish if the investment process or team changed over the period, as well as what level of assets achieved the track record.

Disappointingly, it seems that many smart beta managers fall down where proforma data is concerned. Across our sample universe of smart beta managers (screened for those that include proforma data), over half (56%) made no effort to include trading costs, and none considered market impact / turnover effects. Therefore, from our sample we would caution investors to take care when using proforma data, despite smart beta as a whole seemingly being an ideal candidate for proforma data. That said, however, our analysis of realised versus proforma data across a range of smart beta products notes no obvious discontinuities to risk profiles when switching regimes from proforma to realised track record.

Another consideration when assessing smart beta track records is the likely persistence of the risk / return characteristics over time. Given many smart beta track records are comparatively short in terms of investment style cycles, it is important to understand if returns are purely exploiting recent, potentially transient, phenomena or whether their investment approaches stand the test of time. For such an understanding we have to move away from realised track records and look towards academic studies. One such recent report by Amenc, Goltz and Lodh (ERI Scientific Beta, Jan 2014) looked at a range of smart beta strategies applied to US markets stretching back 40 years, and their conclusions are relatively reassuring for potential smart beta investors. With regard to long term returns, they surmised that outperformance of all analysed smart beta strategies was robust in the long term across a wide range of market conditions. In short they felt that smart beta returns were not experiencing a temporary period of unusual performance.

Fees

Within our representative universe, we noted a remarkable degree of homogeneity in pricing across the different classifications of smart beta approaches, suggesting to us that smart beta is priced as a concept rather than by individual approach. Analysing fee

data across our representative universe of smart beta managers for a $100m mandate, we see that just a 4 bps range covers the median management fees across all four smart beta classifications; low volatility/min. variance, other risk efficiency, fundamental, and systematic risk factors. Of these four strategies, we note the most consistent pricing (i.e. smallest range) is to be found in the systematic risk factor approaches, whilst fundamental smart beta had the highest dispersion with a 55 bps range. Where we see such dispersion, we start discussions early with managers in order to bring those with the highest fees closer in line with the median fee, and more in line with what we believe the client should expect to pay for such a strategy.

Our fee study also showed no obvious evidence of pricing pressure in the more populous smart beta approaches such as low volatility / minimum variance over and above the less represented strategies.

What is driving the risk/return characteristics?

Putting aside the specifics of universe selection and the nuances associated with rebalancing, there are two principal mechanisms for smart beta managers to control their risk / return profile; the level of risk taken, and the sources of risk employed.

For systematic risk factor approaches, the sources of risk, i.e. style factors, are usually explicitly defined, e.g. value or momentum, and are therefore comparatively straightforward for investors to understand and access. For other smart beta strategies the drivers of risk and return are less clear, potentially leading to unknown or unwanted factor exposures implicitly being included in a portfolio.

In order to avoid such pitfalls, it is necessary to understand the underlying drivers in a given smart beta strategy; how they behave over time, and to what extent they influence return generation. One of the most effective ways to achieve this is by multi-factor regression. By choosing a set of known factor exposures and regressing them against the smart beta returns, it is possible to understand the sensitivity (i.e. beta) that each product or approach has to each risk factor. In using such a set of pre-determined factors, investors are effectively cutting through arbitrary strategy descriptions, and using a single common language (the risk factors) to describe the entire universe of smart beta products. This has important ramifications for characterising smart beta approaches, as well as understanding how smart beta approaches can be combined effectively.

There are a number of important technical points to consider when using multiple regression techniques, just one of which is the number of factors used. On a practical basis, we have found that using five factors provided a suitable trade-off between the level of descriptivity and the statistical significance of the results. These five factors are:

- Equity
- Equity volatility
- Equity momentum
- Small-large cap tilt
- Value-growth tilt

In addition to these five factors, which describe the sources of risk, we also include value-at-risk (VaR) as a sixth factor to characterise level of risk being taken (which is calculated independently outside of the above 5-factor regression). By running the multiple regressions on a rolling basis, we are able to look at the evolution of these factors over time and understand if exposures are persistent or dynamic as well as how influential each factor is. Furthermore, applying these techniques to a representative sub-set of the full smart beta universe allows us to make some general observations regarding smart beta risk factor exposures. In particular, we saw that all approaches had a neutral to negative sensitivity to equity volatility. This is to be expected given these are long-only investment approaches, and means that smart beta strategies would be expected to sell-off, but to varying degrees, in periods of elevated market volatility (often associated with equity market declines). We also noted that approaches that don't explicitly target momentum tend to have a net short sensitivity to this factor, making them more contrarian in nature.

Our analysis showed a wide range of conventional equity market sensitivities, with results confirming an intuitive interpretation that the lower sensitivity approaches tended to be the risk efficiency approaches including maximum diversification. We also saw this trend carry through into the value-at-risk factor where we note that the lower risk approaches generally reside within the risk efficiency classification. Setting this in a volatility reduction context, we see that within the risk efficiency classification, the average level of volatility reduction over the last five years was approximately 25% with respect to the equivalent market capitalisation weighted index. However, drilling through to the different sub-classifications within risk efficiency, we note that low volatility / minimum variance approaches have a higher average level of volatility reduction of just over 32%, whilst the other risk efficiency approaches yield just a 19% reduction in volatility.

How do I identify suitable combinations of managers?

The above technique can also be very useful when looking to combine smart beta approaches. By understanding the sources of risk taken by each manager and how they evolve over time, investors should be better placed to understand the implicit diversification potential of each manager by looking at correlations of the constituent risk factors, rather than just correlation of the resulting performance time series. To illustrate this point it is useful to compare the range of correlations seen using the overall time series returns, with those calculated from the constituent risk factors across our representative subset of smart beta products. As shown in the figure below, using the overall time series results in a very limited range of correlations (0.85 to 0.99), which provides little assistance in identifying diversification potential. In contrast, the range of correlations observed from the sensitivities of the set of risk factors each utilise the vast majority of the entire +1 to -1 correlation space, thereby providing much greater assistance in identifying diversification potential.

By forming an equal-weighted combination of the six factor correlations (thereby assuming no biases to any individual risk factor), we get a single empirical metric for assessing the likely diversification potential of combinations of smart beta approaches; the more negative the number, the greater the diversity in the sources and level of risk at any point in

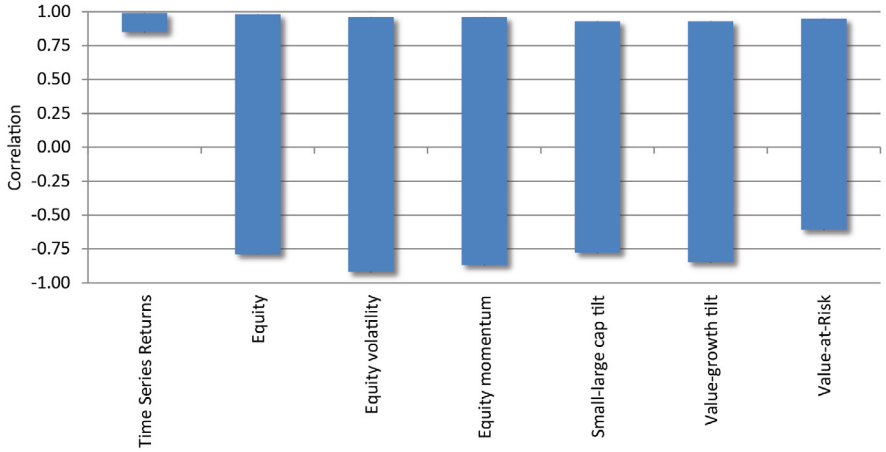

Exhibit 2: Range of Pair-wise Correlations Observed For Conventional Time Series, and Component Risk Factors Across a Representative Subset of Smart Beta Approaches
Source: Author's Calculations

time, i.e. the greater the diversification potential. As well as pairwise correlations across different smart beta products to identify suitable combinations of products, this technique is also versatile enough to be used to calculate diversification potential of the smart beta approach with respect to the investor's existing portfolio, allowing investors to not only identify good combinations, but good combinations that sit well with the rest of their portfolio. Combining this type of quantitative approach with qualitative manager due diligence therefore provides a robust framework for identifying suitable smart beta combinations. Furthermore, it has the flexibility to look beyond purely conceptual smart beta combinations e.g. value and momentum, to see for instance what combines well with less intuitive approaches, e.g. what goes well with a minimum variance manager? Some of the results from our representative universe of smart beta products were not necessarily intuitive combinations. For example, we saw beneficial pairings from products within the same classification, whilst at a cross-classification level we noted at least one suitable pairing arising from each of the possible combinations of classifications. This indicates to us that when looking to blend smart beta approaches it is as much about diligent manager selection, as it is about considering top-down strategic approaches.

In terms of the absolute number of suitable combinations within a given smart beta universe, our empirical analysis indicated that of all possible manager combinations, only around 15% of them displayed any beneficial diversification potential, again lending weight to the argument that combining approaches requires careful manager selection.

Conclusion

In this paper, we have considered a number of conceptual and practical issues that investors face when considering allocation to smart beta approaches, and made suggestions and empirical observations on how to handle these issues. In particular we note that:

- The universe of smart beta strategies is not evenly distributed, and we see a heavy bias to risk efficiency type strategies.
- If considering smart beta strategies in an active context, tracking errors can be considerable, and we feel that historically realised levels could still under-represent future levels.
- Proforma data is prevalent in smart beta strategies, and we advise caution when using such data.
- Factor-based techniques provide an insightful framework for analysing the drivers of risk within the wide range of smart beta strategies, as well as providing a mechanism for assessing the suitability of combining smart beta approaches.
- Combining smart beta approaches is as much about diligent manager selection, as it is about considering complementary top-down strategic approaches.

Authors' Bios

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Toby Goodworth has over twelve years of risk management experience. Prior to joining bfinance Toby was Head of Risk Management at Key Asset Management, one of Europe's oldest fund of hedge funds, where he designed and ran the firm's bespoke risk models. Toby holds a Ph.D in Physics from University College London as well as a first class honours degree (MSci) in Physics, also from University College London.

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Julien joined bfinance as an Analyst in January 2008 after graduating from the French Edhec Business School specialising in Risk and Asset Management. Julien gained a BSc (first class) in Nice – Sophia Antipolis University of Applied Mathematics. During his studies, he worked for Fortis Banque Monaco as an Assistant Financial Advisor.