

# Index Intelligence.

## Making the most of smart beta

Interest in alternative index funds, commonly referred to as ‘smart beta’, has increased exponentially over the past two years. But while the case for why these strategies are useful has been made frequently, the argument for how to use these approaches as part of an overall investment strategy has been less widely explored.



**Contribution by Simon Midgen – Head of Index Funds Strategy**

Simon joined LGIM in February 2012, where he is responsible for Index Strategy, focusing on developing the institutional index management business.



**Contribution by Andrzej Pioch – Assistant Fund Manager**

Andrzej is an assistant fund manager in the Multi-Asset Funds team with responsibilities covering the portfolio management and ongoing development of both institutional and retail multi-asset funds.

Evidence shows that many asset owners using alternatively weighted index strategies allocate to more than one index strategy<sup>1</sup>. In this edition of Index Intelligence we consider the rapid growth of smart beta and provide an example of how investors might combine exposure to achieve a particular investment objective.

### More is actually more

The growth of alternatively weighted index investing is likely to be accompanied by increasing allocations to more than one alternative index strategy. One reason for this can be seen in **figure 1**, which shows the correlation between various smart beta strategies. Unsurprisingly, as long-only strategies, they all have a relatively high correlation to the market capitalisation index. However, they may at times behave very differently, as indicated by a high tracking error and, once we adjust strategy return for market return, correlations between them are typically much lower. This enhances the diversification potential of using a portfolio of smart beta strategies, rather than selecting one strategy alone.

**Figure 1: Correlations between factor strategies<sup>2</sup>**

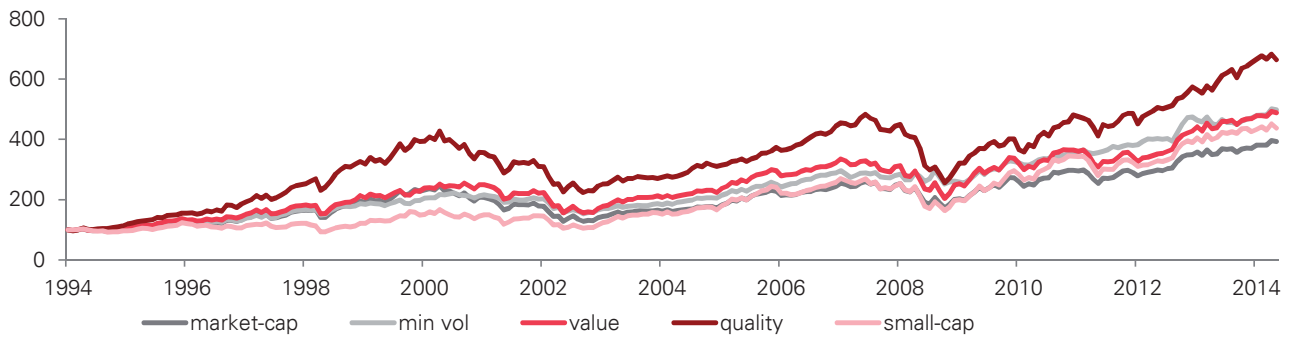
	Relationship with market-cap		Correlation between strategies (excl. market-cap return)			
	Correlation	Tracking error	Min Vol	Value	Quality	Small-cap
Min Vol	0.88	7.6%	1.00			
Value	0.98	3.3%	0.19	1.00		
Quality	0.90	6.8%	0.01	-0.02	1.00	
Small-cap	0.91	6.9%	-0.15	0.01	-0.18	1.00

Similarly we can see in **figure 2** that all strategies outperformed a straightforward market cap benchmark over the last two decades, but performed quite differently when looking at individual years (**figure 3**). This makes it vital to recognise the ‘cyclicality’ in the performance of individual risk factors and the importance of diversification when combining these in a multi-strategy portfolio.

<sup>1</sup>Russell Indexes, Smart Beta: Asset Owner Implementation Strategies, December 2014

<sup>2</sup>Indices used in the example to follow are for market cap (MSCI ACWI), Min Vol (MSCI World Min Vol), value (MSCI World Value Weighted), quality (Russell Global Large Cap Defensive Index, backfilled with MSCI World Quality tilt Index before March 2004 and MSCI World Quality Index before November 1998), small cap (FTSE Global Small Cap), statistics calculated using monthly returns between May 1994 and September 2014

Figure 2: Performance of alternatively weighted strategies



Source: MSCI, FTSE, LGIM. Performance is calculated using total gross GBP returns of underlying indices

Figure 3: Annual Returns of Alternately Weighted Strategies

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
min vol	-1%	23%	3%	19%	19%	12%	9%	-8%	-19%	13%	13%	19%	14%	5%	2%	2%	16%	7%	5%	16%	9%
value	-1%	25%	7%	20%	18%	23%	5%	-9%	-26%	26%	10%	23%	8%	5%	-20%	20%	15%	-8%	12%	26%	6%
quality	4%	35%	16%	33%	39%	29%	-4%	-13%	-26%	17%	14%	9%	23%	11%	-34%	28%	12%	2%	15%	23%	5%
small-cap	-4%	11%	-2%	3%	1%	34%	-3%	-4%	-20%	36%	16%	27%	9%	8%	-25%	32%	31%	-10%	13%	26%	3%

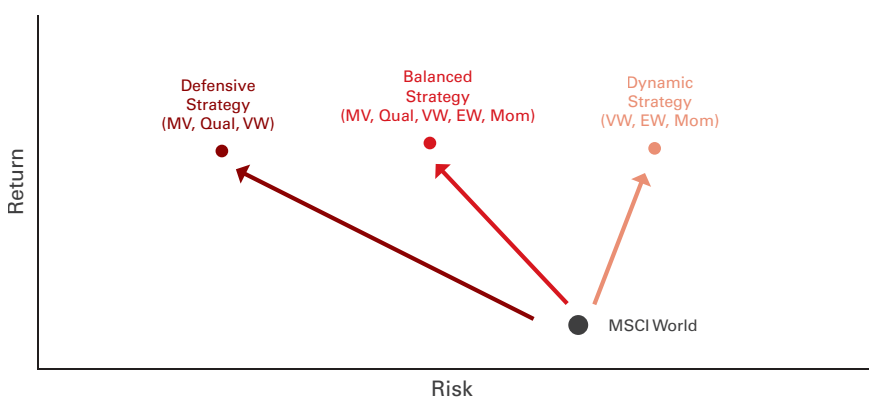
best performing strategy (left) to worst performing strategy (right)

Source: MSCI, FTSE, LGIM. Performance is calculated using total gross GBP returns of underlying indices

We believe that the correlation and performance data provide clear evidence that there are diversification benefits from combining alternative exposures. Certain smart beta strategies are by definition more defensive and others more growth orientated as **figure 4** shows. In deciding on an allocation strategy to different factors, investors will need to consider several issues:

- **Investment objective:** while many factors have outperformed market cap indices over the long term (**figure 2**), the risk/return characteristics of individual alternatively weighted indices are very different. Investors considering multiple index allocations will want to ensure that the likely risk/return profile meets with their overall investment objectives.
- **Persistence of factors:** both academic research and empirical evidence provide support for the level of excess returns that can be attributed to individual factors. For example, one explanation for the higher adoption of value weighted alternative index strategies is the evidence of higher returns from ‘undervalued’ stocks, the intuitive notion of allocating to companies with stronger underlying fundamentals and the academic evidence supporting a ‘value’ approach.
- **Willingness to tolerate tracking error/underperformance vs. benchmark:** the performance of alternatively weighted indices over time can vary significantly from market cap returns. Although alternatively weighted index strategies have shown strong outperformance over the long term, an investor using such strategies, but with a market cap strategic benchmark, could experience periods of significant underperformance. The ability to withstand any performance discrepancy – for example due to long-term investment belief, or investment objectives different from market cap returns – will drive the potential adoption of these indices.

Figure 4: Allocation to multiple factors



Source: MSCI

**Active implementation**

By way of an example, we consider below an investor looking to utilise alternatively weighted index strategies as a means to achieve a more cost-effective active strategy i.e. to both enhance returns and reduce risk. This is in contrast to use of smart beta strategies with a focus on risk reduction. In this example we look at how minimum volatility, quality, value and small cap strategies can be combined to provide a potentially more attractive risk/return profile compared to the default market capitalisation portfolio alone.

We first estimate the future returns that might be achieved from each factor and then consider the weightings or allocation to each factor to achieve the desired objectives.

**Estimating future returns**

We used a combination of historical index return data coupled with forward looking future performance to determine an allocation strategy to various alternatively weighted indices.

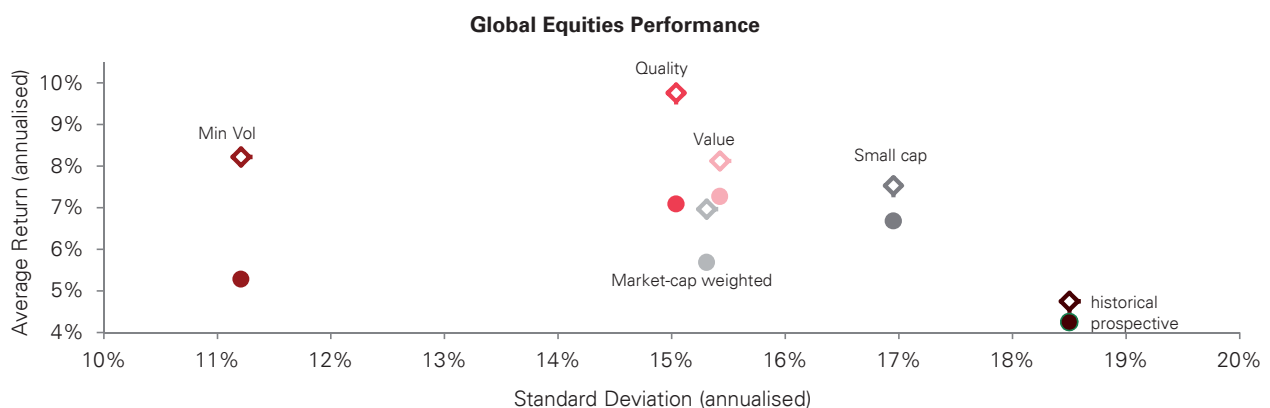
We believe that historically realised risks of each strategy are likely to be relatively robust guides to the future volatility. The same may not be said for returns, where historical realised returns are less useful as a guide to future returns. To assist our analysis we have estimated future returns.

Forecast returns for each factor were estimated using the following assumptions:

- For market capitalisation and small cap equities we use the long-term strategic assumptions of the LGIM Asset Allocation team. These assumptions are driven by estimates of the risk premia on equities and are a function of the risk of each asset (relative to a global market capitalisation portfolio) and illiquidity premia.
- For Minimum Volatility, Quality and Value we have assumed that each strategy will achieve a Sharpe ratio (geometric return divided by annualised standard deviation of returns) that is 0.1 higher than the market capitalisation weighted benchmark. Expected return is then calculated as a product of the market capitalisation Sharpe ratio plus 0.1, multiplied by the expected risk of each individual strategy. We believe this is a more conservative approach than using historical returns, although the exact quantification of this margin of improvement is to some extent a combination of historical analysis, the academic research on these strategies and a matter of qualitative judgment. This approach does assume that a riskier index has a higher expected return – everything else being equal – and that a smart beta approach can therefore enhance the risk/return ratio.

In **figure 5** we plot the risk and return (both historical and prospective) of each alternative strategy relative to the market cap weighted benchmark. It can be seen that the forecast returns are more conservative than the historical realised outcomes. This reflects the methodology of the LGIM Asset Allocation team, which bases expected equity returns in terms of risk premium received over cash. With cash returns expected to be relatively low over the next five years, this obviously has an impact on total returns. A projection of equity returns over a longer-term horizon would increase expected returns.

**Figure 5: Forecast risk and return for various index strategies**



Source: MSCI, LGIM, FTSE. Historical risk and return was calculated using monthly returns between May 1994 and Sept 2014

**Determining allocations to each factor**

As a starting point we chose a default equal weighted allocation to minimum volatility, quality and value. However, in order to meet the stated objective of enhancing returns and reducing risk, this is unlikely to be an optimal approach: two-thirds of the assets would be allocated to defensive strategies (minimum volatility and quality) and only one third to a more return-enhancing strategy i.e. value. As a result, the beta of the equally weighted mix is estimated to be just above 0.8 while tracking error is still large (3.7%) for what is a relatively small size of the expected outperformance on our estimates (0.9%) vs. MSCI All Country World benchmark. While we believe minimum volatility and quality will have superior risk-adjusted returns compared to market capitalisation, we would still factor in an adjustment to expected returns from such a risk-reducing strategy.

As an alternative, we would therefore consider a higher allocation to value as part of a return-enhancing strategy. A more balanced allocation, with equal weight of risk-enhancing and defensive strategies (i.e. 50% in value and 50% across minimum volatility and quality, in a 40/60 mix) would provide a higher expected outperformance (1.1%) while lowering tracking error to 3.2% and still maintaining expected volatility well under the market cap weighted benchmark. Within the more defensive part of the portfolio, we would allocate more to quality than minimum volatility as the overall portfolio is targeting a higher level of expected return and the quality strategy is expected to generate higher excess returns than the minimum volatility strategy.

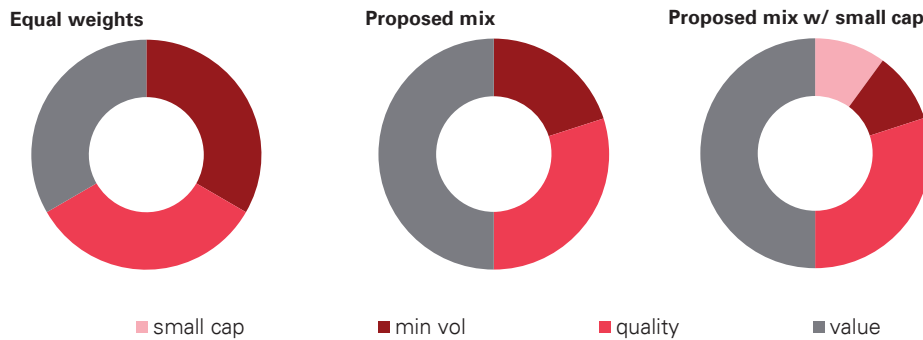
While estimates of prospective returns are subject to a wide band of uncertainty, we believe that smart beta strategies help to improve the risk/return trade-offs for any portfolios (in technical terms they shift the efficient frontier up and to the right). However, portfolios that utilise smart beta will still face a trade-off in terms of expected return versus risk. Our proposed mix aims to achieve both an increase in expected return and risk reduction, in contrast to the risk-reduction focus of an equal weighting.

Chosen allocations of the proposed mixes are provided below, together with the equally weighted allocation to minimum volatility, quality and value. In the bottom table we provide the correlation matrix of the four portfolios, their historical tracking error to market capitalisation index, and beta to market capitalisation index.

As an alternative to a blend of these three factors we also introduce a fourth component – small cap. Although this is not an alternatively weighted exposure as such, the enhanced risk/return of small cap equities complements the risk-enhancing portion of the portfolio (i.e. value). The addition of small cap exposure in this case can increase the excess return while still providing a portfolio with lower expected risk relative to conventional equities. **Figure 6** therefore shows the three alternative allocations to smart beta strategies.

**Figure 6: Weightings and risk outcomes of different portfolios**

	Min vol	Quality	Value	Small-cap
Equal weights	33.33%	33.33%	33.33%	
Proposed mix	20.00%	30.00%	50.00%	
Proposed mix w/small cap	10.00%	30.00%	50.00%	10.00%



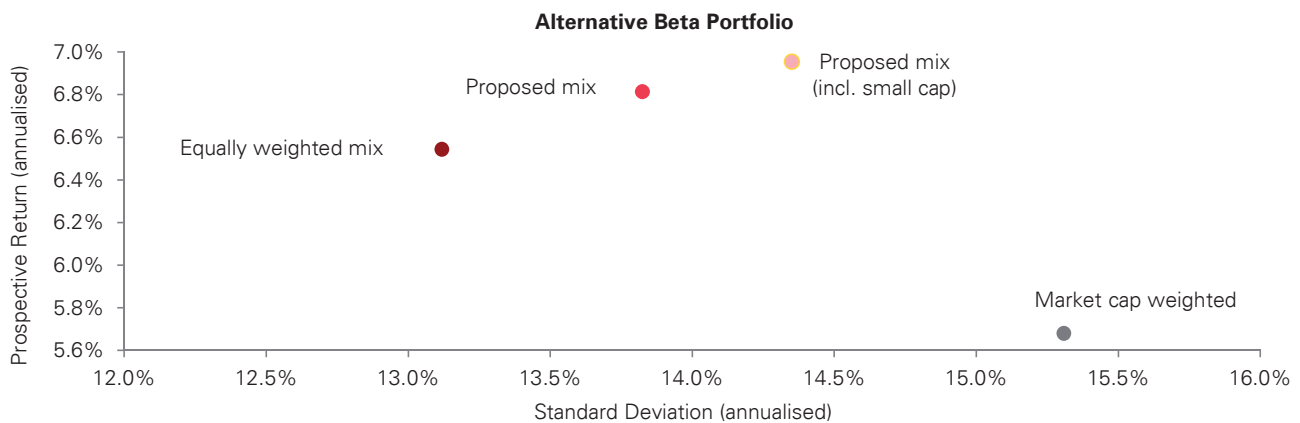
Source: MSCI, LGIM, FTSE.

	Equal weights	Proposed mix	Proposed mix w/small-cap
Correlation to market cap	0.98	0.98	0.98
Tracking error to market cap	3.7%	3.2%	2.8%
Beta to market cap	0.84	0.89	0.92

Correlations, tracking errors and beta were calculated using simulated monthly returns between May 1994 and September 2014

These three portfolios, plus the default market cap, are plotted in **figure 7**, using our prospective returns and prospective/historical risk estimates. It can be seen that the equally weighted mix has considerably lower volatility, whereas our proposed mixes focus on both return-enhancement as well as volatility reduction.

Figure 7: Risk and return of proposed portfolios



Source: LGIM

The proposed portfolio with the additional small-cap exposure is forecast to deliver a 1.3% higher return than market capitalisation (on our prospective estimates) as it now also captures a well-documented size premium. At the same time, tracking error to conventional global equities would fall below 3% and beta will move above 0.9.

The important aspect of all of these approaches is not the precise return estimates but the establishment of a mix that provides a balanced exposure to two volatility-reducing strategies and two return-enhancing strategies.

### Putting it into action

As the adoption and range of alternatively weighted indices has grown, global investors have an increasingly wide range of implementation options to consider, once an investment strategy has been agreed.

Pooled funds can provide the building blocks for investors to allocate to multiple alternatively weighted index strategies. Availability of existing funds covering multiple index approaches can provide flexibility and speed of implementation. Economies of scale from having many investors invested in a fund can result in reduced transaction costs from unit and stock crossing as well as allowing for competitively negotiated commissions.

By contrast, implementation via a dedicated or segregated account enables the asset owner to more precisely define the investment strategy to their specific investment objective. The asset owner can define exactly which indices they wish to gain exposure to and ensure that any policy exclusions are accounted for. Policy specific benchmarks are now available from all major index providers which provide blended exposure to desired factors whilst providing benefits of natural crossing arising when a security 'moves' from one factor to another.

### Summary

The market is becoming convinced about the theory of smart beta. As a result, the practice of using smart beta effectively will increasingly come into focus. Our view is that using smart beta as part of an investment strategy is not about which strategy to choose, but to build combinations of factors that can provide a balanced and diversified exposure aimed at achieving the desired outcome.

Whatever the outcome of their deliberations, investors should remember that smart beta is still an index strategy and that all the basics of 'normal' index investing still apply: intelligent execution of a carefully designed smart beta strategy is necessary to avoid missing out of the expected benefits. As such, a strong index fund management team, sound investment process and efficient fund management capabilities remain as important as ever.

## About LGIM

Legal & General Investment Management (LGIM) is one of Europe's largest institutional asset managers and a major global investor. LGIM manages £477 billion in assets for more than 3,000 clients.\* Throughout the past 40 years we have built our business through understanding what matters most to our clients and transforming this insight into valuable, accessible investment products and solutions. We provide investment expertise across a full spectrum of asset classes including equities, fixed income, commercial property and cash. Our capabilities range from index-tracking and active strategies to liquidity management and liability-based risk management solutions.

\*As at 30 September 2014



### For further information please contact:

Marcel Linotte  
Head of Netherlands  
Tel: +31 35 625 25 37  
Email: marcel.linotte@lgim.com

## Important Notice

This document is designed for the use of professional investors and their advisers. No responsibility can be accepted by Legal & General Investment Management Limited or contributors as a result of information contained in this publication. Specific advice should be taken when dealing with specific situations. The views expressed in Index Intelligence by any contributor are not necessarily those of Legal & General Investment Management Limited and Legal & General Investment Management Limited may or may not have acted upon them. Past performance is not a guide to future performance.

This document may not be used for the purposes of an offer or solicitation to anyone in any jurisdiction in which such offer or solicitation is not authorised or to any person to whom it is unlawful to make such offer or solicitation.

© 2015 Legal & General Investment Management Limited. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, including photocopying and recording, without the written permission of the publishers.

Legal & General Investment Management Ltd, One Coleman Street, London, EC2R 5AA  
[www.lgim.com](http://www.lgim.com)

Authorised and regulated by the Financial Conduct Authority.

M0267