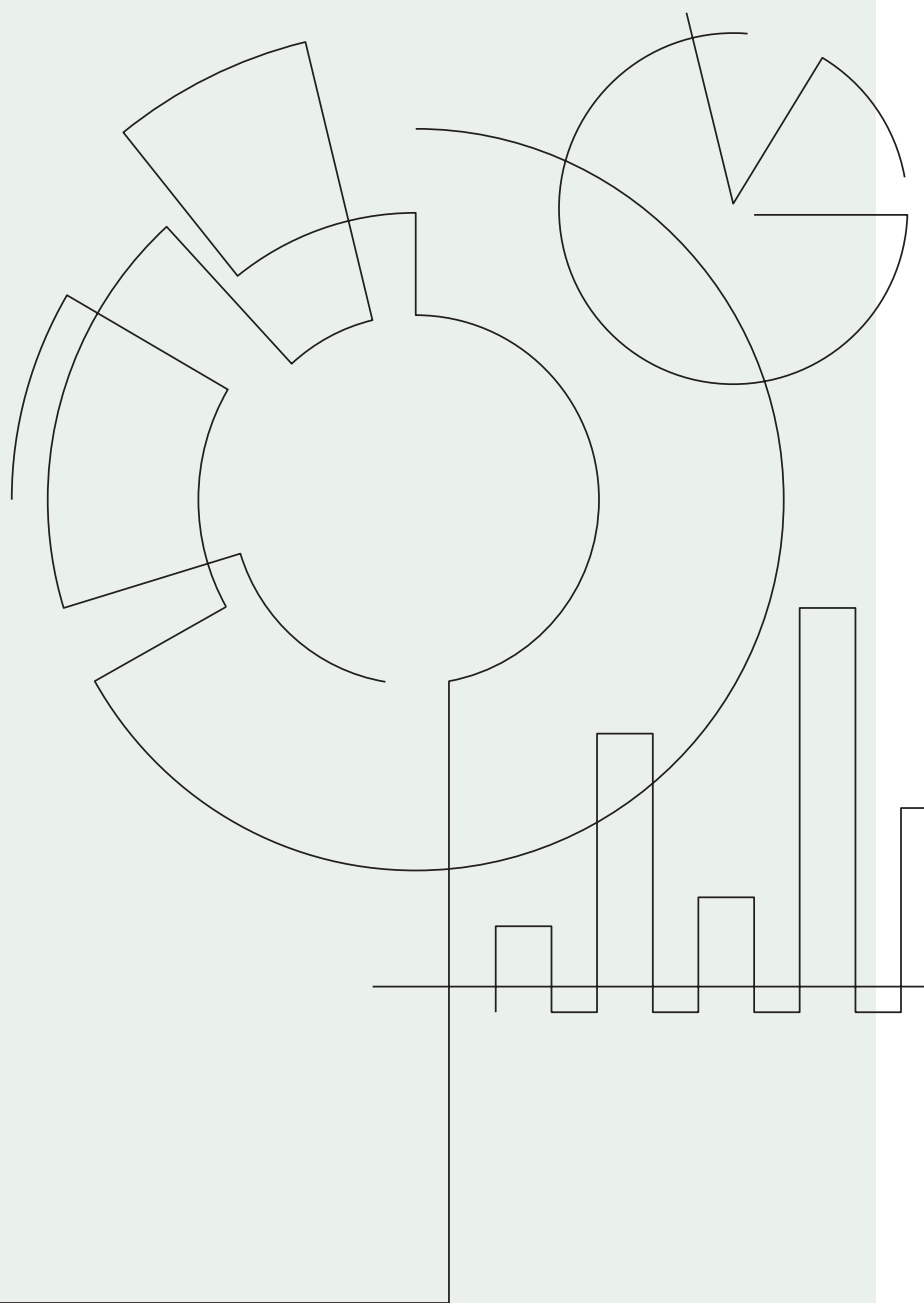


# COMPLETE GUIDE TO ADVANCED BETA

Beyond Active and Passive



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State Street Global Advisors (SSGA) has been a leading proponent of the benefits of Advanced Beta since its inception. Although still in its early stages, the Advanced Beta market is already significant. We see enormous potential in this sector and increasing numbers of our clients are looking to us to help them access the clear benefits of Advanced Beta.

Globally, hundreds of strategies are now in existence, accessible via open-ended funds, segregated mandates and ETFs. We focus here primarily on equity products but these are being joined by exciting new developments in the fixed income world. SSGA is proud to have taken the lead in developing a number of new Advanced Beta fixed income products, such as our Issuer Scored Corporate Indexing and Sovereign Bond strategies.

The future looks exciting in this space. Growth continues to accelerate and we expect to see further development in fixed income products, accelerated growth in European ETFs and increasing sophistication and refinement across the board.

One particular area that we expect to grow significantly is that of multi-factor Advanced Beta strategies. These strategies combine key factors, such as Quality and Low Volatility, and can help to provide enhanced performance and diversification benefits. These strategies are only now coming to market in a meaningful way but we expect to see much more of them because of the advantages they offer.

Advanced Beta is an exciting area — there's much to learn about and much to look forward to, we hope our guide helps you with both.

**Lynn S. Blake, CFA**

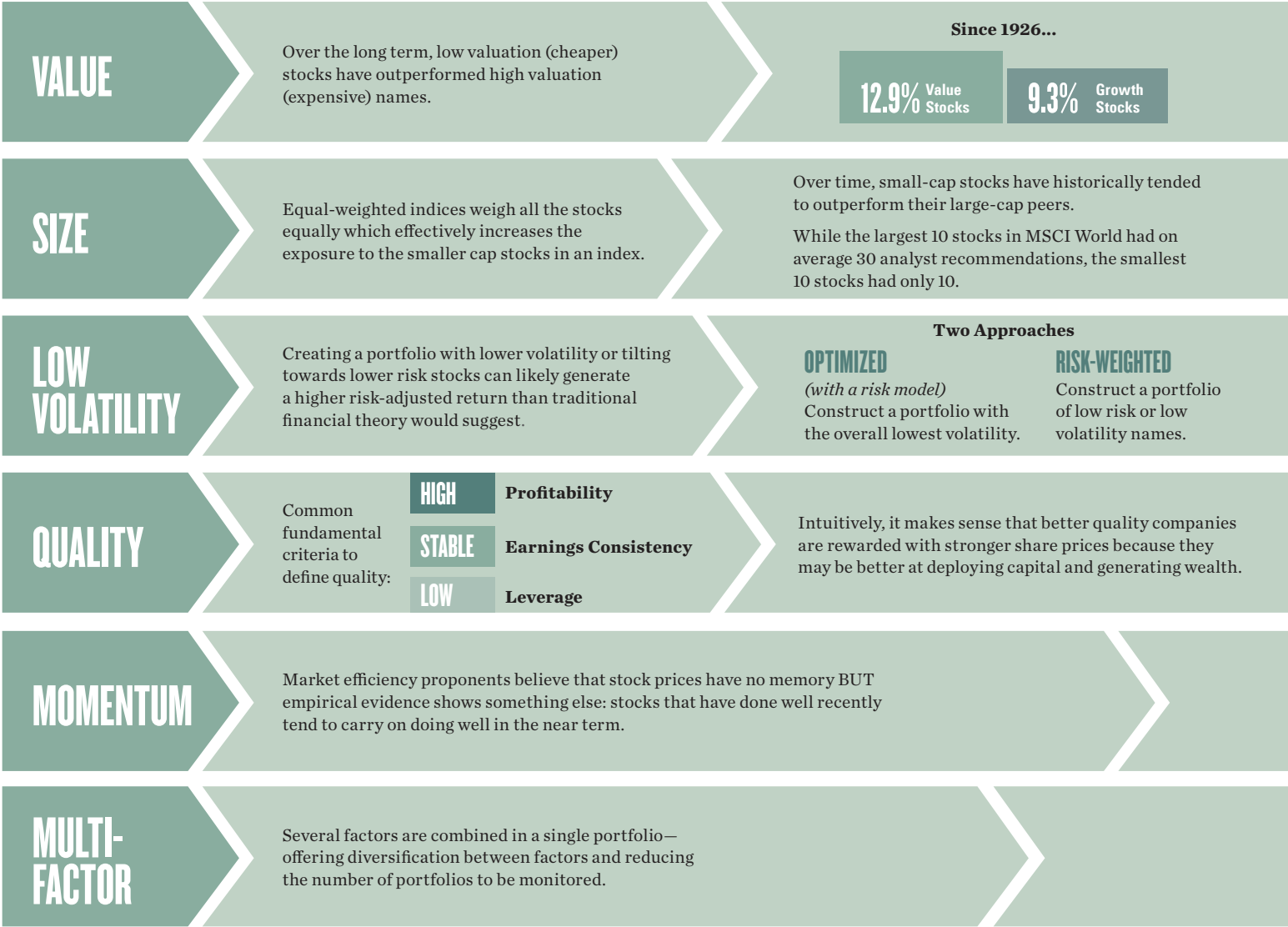
*CIO, Global Equity Beta Solutions*



# THE IDEA

# ADVANCED BETA ROADMAP

The rising popularity of advanced beta strategies has shaken up the investment world. Are they passive? Or are they active? How do they work? Do they work? These are just some of the questions posed by investors. Although the concepts and research that support these strategies have been around for some time, it is only over the last few years that index providers and asset managers have created advanced beta products which allow easy access and have broad market appeal.

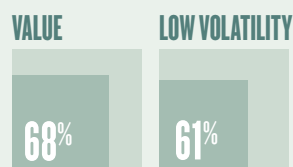


These strategies provide greater choice and can really help investors better express their investment views and beliefs. They show that the models previously used to represent markets are likely to be incomplete and that there are other sources of risk and return.

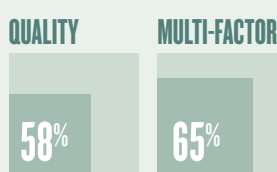
There are broadly accepted to be five main factors — also known as premia or exposures — that have been shown to outperform the market cap benchmark over the long term: Value, Size, Low Volatility, Quality and Momentum.

We take you through each of the factors, the research behind them and the compelling benefits they can offer investors. We'll also give you practical advice on implementation and which factors are most favoured and why.

What are seen as the strategies that can offer the best long-term risk-adjusted performance?



What are the strategies that investors are most keen to know more about in the future?



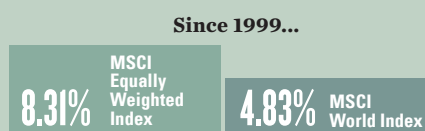
The first value indices were based on single metrics such as Price/Earnings and stocks were still weighted by their market capitalization.

Latest generation value indices use scoring or weighting by fundamental or financial metrics.

Advanced Beta Value strategies break the link between price and company weights in indexes.

stocks	analysts
LARGEST	30
SMALLEST	10

The MSCI World Index delivered 4.83% since January 1999 but the MSCI World Equally Weighted Index would have delivered 8.31% over the same period.



Most low volatility indices attain a 20–30% reduction in volatility.

Investors use historic volatility, or the standard deviation of returns, as a way of gauging portfolio and stock risk.



Investing in higher quality companies has been shown to deliver greater downside protection i.e. in down markets their stock price is less impacted than the overall market.

**Benjamin Graham**, Advanced Beta Pioneer was the first to recognize the quality premium, in the 1930s, calling it 'sustainable earnings power'.

- Could be defined as running your winners for longer and cutting your losers.
- Possible explanations can be found in behavioral finance.
- These are high turnover strategies and in consequence can incur high trading costs.

From a practical implementation perspective, there can be netting of securities, meaning that unnecessary trades and transaction costs are eliminated.

For illustrative purposes only. All sources SSGA unless otherwise stated.

<sup>1</sup> SSGA, Kenneth French—mba.tuck.dartmouth.edu

<sup>2</sup> SSGA Longitude Study—Advanced Beta Comes of Age, January 2014.



Value stocks have been shown to outperform the broader market indices over the long term. These results have been replicated by a number of researchers for many different sample periods and for most stock markets around the world.

SAMPLE INDICES

FTSE RAFI Indices	Russel Fundamental Indices	MSCI Value-weighted Indices
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# VALUE

Value stocks are those that trade at a lower price than their fundamentals (earnings, sales etc.) would imply. Value stocks have been shown to outperform the broader market indices over the long term. These results have been replicated by numerous researchers for many different sample periods and for most stock markets around the world.

Fama & French, back in 1992,<sup>1</sup> provided the foundation for this research but prior even to that, Basu (1977)<sup>2</sup> showed a significant positive relation between Earnings/Price (E/P) ratios and average returns for US stocks. In 1985, Rosenberg, Reid and Lanstein<sup>3</sup> also showed a significant positive relation between returns and the cheapness of stocks, but this time with Book-to-Price ratio (B/P).

## Performance

The chart below uses data from the Fama & French website to show the performance of US value and growth (more expensive) stocks since the 1970s. On an annualised basis, value names returned 13.8% over that period, significantly outperforming the 9.6% that growth names returned for the same period. If we use the full length of history available (since the 1920s), a performance differential remains, with value outperforming growth by a still healthy 3.6%.

The style indices of the 1980s, launched by Russell, were a first attempt to depart from cap-weighted benchmarks and acknowledge the existence of value as a factor. Initially, these were based on simple metrics like Price/Earnings but over the years index providers have included other metrics aimed at reducing volatility and improving the capture of the value factor.

## Cumulative Returns for US Value and Growth Portfolios



Source: Fama and French website. Past performance is not a guarantee of future results.

## Methodology

More recently, there has been a wave of advanced beta indices targeting value. The most common methodologies are centred on scoring by fundamental or financial metrics that are primarily found in companies' financial statements. Companies with the highest scores (or lowest fundamental valuation) are selected for the index — making a break with price as a driver of company weighting in the index.

## Rationale

Academics and practitioners have considered possible explanations for this phenomenon as a way of ascertaining if it can still be captured in the future. Although there's no one single, consensual explanation many of the probable reasons that are put forward do hint at structural causes.

If we consider a behavioural angle, researchers point towards behaviours that are common to most investors and that are difficult to eliminate. For example, it has been shown that investors do not like to realise losses and tend to hold on to stocks; which means stock prices will take longer to reflect new information. Also, investors at times make decisions based on trends and past observations leading to what researchers call 'herding', meaning that the group joins in with prevailing sentiment. These behaviours can lead to pricing errors in the short term and to a premium return for value stocks.

Another explanation for the value premium is that it may be a reward for additional risk (cheaper companies are sometimes in financial distress and could be seen as riskier investments) or for providing liquidity in a stressed environment (when capital availability is more limited).

<sup>1</sup> Fama and French, 'Common risk factors in the returns on stocks and bonds', 1992.

<sup>2</sup> Basu, 'Investment Performance of Common Stocks in Relation to Their Price-Earnings Ratios: A Test of the Efficient Market Hypothesis', 1977.

<sup>3</sup> Rosenberg, Reid and Lanstein, 'Persuasive Evidence of Market Inefficiencies', 1985.

SIZE

Similarly to the value effect, the size effect has been reproduced for numerous sample periods and for most major securities markets around the world. The effect observed here is that smaller capitalisation companies have tended to outperform larger capitalisation companies over the long term.

Methodology

In the advanced beta size indices all stocks are given the same weight independently of their market capitalisation. The assumption here is that there is no information in the share price of the company; the only relevant information is the fact that the stock belongs to the particular benchmark.

This differs from traditional size indices which split the market into market-capitalisation segments. The small cap indices then only include smaller cap companies (up to a capitalisation threshold) and where each constituent is still weighted by their market capitalisation.

Several of the leading index providers, such as MSCI and Russell, have created equally weighted versions of their standard indices.

Performance

The performance differential relative to the original index is quite large and shows the impact of an overweight in small caps: while the MSCI World Index delivered 4.83% on an annualised basis since January 1999, the MSCI Equally Weighted Index would have delivered 8.31%.<sup>4</sup>

Achieving this long-term outperformance may not be without difficulties: performance can be volatile and implementation can be challenging, given the lower liquidity of some smaller names and possibly higher transaction costs and the need to re-balance regularly to equal weight the stocks.

Rationale

Smaller cap names are less well covered by analysts and stand outside most investors’ radar. For example, while Apple has 54 analysts covering it, MeadWestvaco Corporation (the 1005th largest company in the MSCI World Index) only has 10 analysts.<sup>5</sup> Because these companies are relatively neglected, there is a greater dispersion in expectations and greater potential for surprises and share price volatility.

Another possible explanation is linked to transaction costs. These tend to be higher for small caps, implying that investors would have to be compensated with higher returns in order that they would invest in these smaller names.


Cumulative Performance for MSCI World Index and MSCI World Equally-Weighted Index



<sup>4</sup> Source: MSCI.  
<sup>5</sup> Source: Factset, 31/03/14.

SAMPLE INDICES

Russell Equally Weighted Indices	MSCI Equally Weighted Indices
----------------------------------	-------------------------------

A black and white photograph of a man with short dark hair, wearing a white dress shirt and a striped tie. He is looking down and writing in a notebook with a pen. The background is blurred.

The performance differential  
relative to the original index  
is quite strong and shows the  
impact of an overweight in  
small caps.

**8.31%** MSCI Equally  
Weighted Index

**4.83%** MSCI  
World  
Index



SAMPLE INDICES

MSCI Minimum Volatility Indices	S&P Low Volatility Indices	MSCI Risk Weighted
---------------------------------	----------------------------	--------------------

# LOW VOLATILITY

Volatility — or the standard deviation of returns — is used to quantify risk because it measures the distribution of returns. This helps investors understand the past performance of a given strategy and is considered to be an effective way of gauging future risk. The long-term outperformance of low volatility strategies is quite surprising and at odds with more traditional financial theory. Established theories such as the Capital Asset Pricing Model (CAPM for short) would tell you that in order to attain higher returns you need to invest in higher risk securities.

But empirical evidence suggests otherwise. The first investable product in the form of indices only appeared in 2008, post the great financial crisis. Investors' appetite for these strategies is, to some extent, a product of their dissatisfaction with cap-weighted indices and their volatile behaviour. Between 2005 and 2008, the rolling 3-year volatility of MSCI World went from 9.8 to 17.3%.

## Methodology: Two Main Approaches

### OPTIMISED

A risk model is used to construct a portfolio with the lowest forecast total volatility (examples: MSCI Minimum Volatility, FTSE Minimum Variance).

### RISK-WEIGHTED

Stocks are ranked, weighted and selected according to their risk or volatility (examples: S&P Low Volatility, MSCI Risk Weighted).

## Performance

Most low volatility indices attain a 20–30% reduction in volatility compared to their equivalent cap-weighted indices. The reduction in volatility is greater in optimised strategies — such as MSCI Minimum Volatility — but such strategies tend to come under greater scrutiny as many investors struggle with their relative lack of transparency and higher degree of constraints.

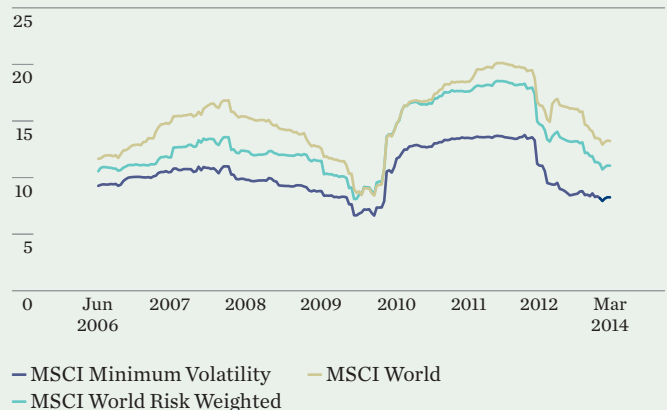
**Most low volatility indices attain a 20–30% reduction in volatility compared to their equivalent cap-weighted indices.**

## Rationale

Again, there's no consensus on precisely why low volatility strategies have outperformed cap-weighted but a few of the possible explanations are found in behavioural finance, which looks at patterns in investors' behaviour and how they respond to events. For instance, one of the themes relates to how investors can get excited about stock stories — the so-called 'glamour' stocks, think Facebook or Twitter — and their potential to deliver returns. Investors may then become overconfident in their ability to forecast the returns for those stocks and neglect the less exciting, less visible names.

Another factor is that including lower volatility stocks in a portfolio can increase the overall portfolio tracking error relative to a cap-weighted benchmark. This may cause some investors to avoid these lower volatility strategies because their governance structures do not allow them to have significant deviations (high tracking error) to their chosen benchmark.

## Rolling 5-Year Volatility



Source: SSGA, MSCI, March 2014. Past performance is not a guarantee of future results.

# QUALITY

Benjamin Graham was one of the first to recognize the quality premium among equities back in the 1930s and he defined it as 'sustainable earnings power'.

### Rationale

Out of all the factors we discuss here, quality has perhaps the clearest economic intuition. It makes sense that higher quality companies are rewarded with better returns over the longer term because they are better at deploying capital and generating wealth.

### Methodology

Although quality investing has in the past primarily been in the domain of active investing, recent developments in the indexing world have created credible alternatives in the form

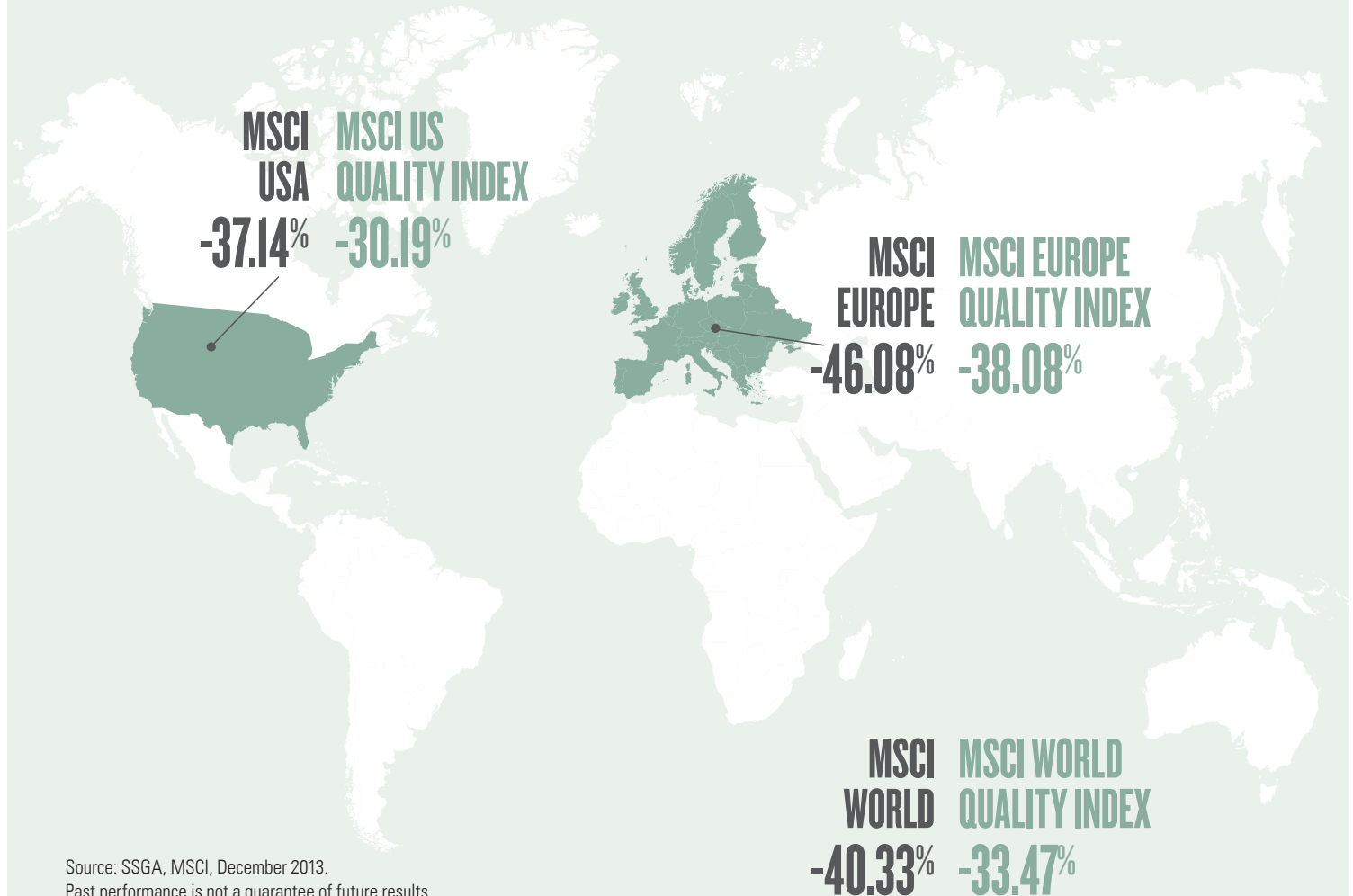
of rules-based, passive quality strategies. Most of these strategies are score-based and the focus is on growth and stability of earnings, plus a sustainable level of debt.

### Performance

Quality indices tend to show lower volatility and better protection in down markets than standard cap-weighted indices. For that reason, they are sometimes viewed as risk reduction strategies by investors.

Because of their defensive characteristics, quality strategies may sometimes be expensive. This may mean that their return potential can be, at times, more limited but the long-term results remain very compelling.

### Drawdown Protection in Action in 2008







Quality indices tend to show lower volatility and better protection in down markets than standard cap-weighted indices.

## SAMPLE INDICES

MSCI Quality Indices

S&P High Quality Indices

Russell Defensive Indices

# MOMENTUM

Defenders of market efficiency believe that stock prices have no memory; meaning that how a stock moves today should be independent of how it moved yesterday. The empirical evidence shows something else: stocks that have done well recently can carry on doing well in the near term. By obtaining more exposure to those stocks that have done well, you benefit from the momentum premium. Another way of thinking of it is simply: run your winners and cut your losers.

The momentum effect, although observable in various markets and through time, has proven difficult to capture through an index. These are high turnover strategies and in consequence can incur high trading costs, limiting their appeal for investors looking for passive-type solutions in this space.

**Performance**

In academic research, momentum has been shown to deliver positive returns over the short term (3–12 months), but some of those returns disappear over the medium term (greater than two years).

**Rationale**

Once more, possible explanations can be found in behavioural finance. For example, individuals may at times get carried away by specific stories and ‘jump on the bandwagon’, pushing prices up further — where there is limited supply, increased demand increases the price that investors must pay.

Another possible reason may be the asymmetric responses of investors to winning and losing investments. Investors tend to sell winners to lock in gains, giving up some of their potential upside, while holding on to losers in the hope of a reversal of fortunes.

**The Continued Relevance of Cap-Weighted Strategies**

Despite the increased popularity of advanced beta strategies, cap-weighted indices remain the norm for most passive investors. They are easy to understand: as a company becomes more valuable, it becomes a bigger part of the index. In addition, they offer a tremendous wealth of choice, with indexes to suit most investor requirements.

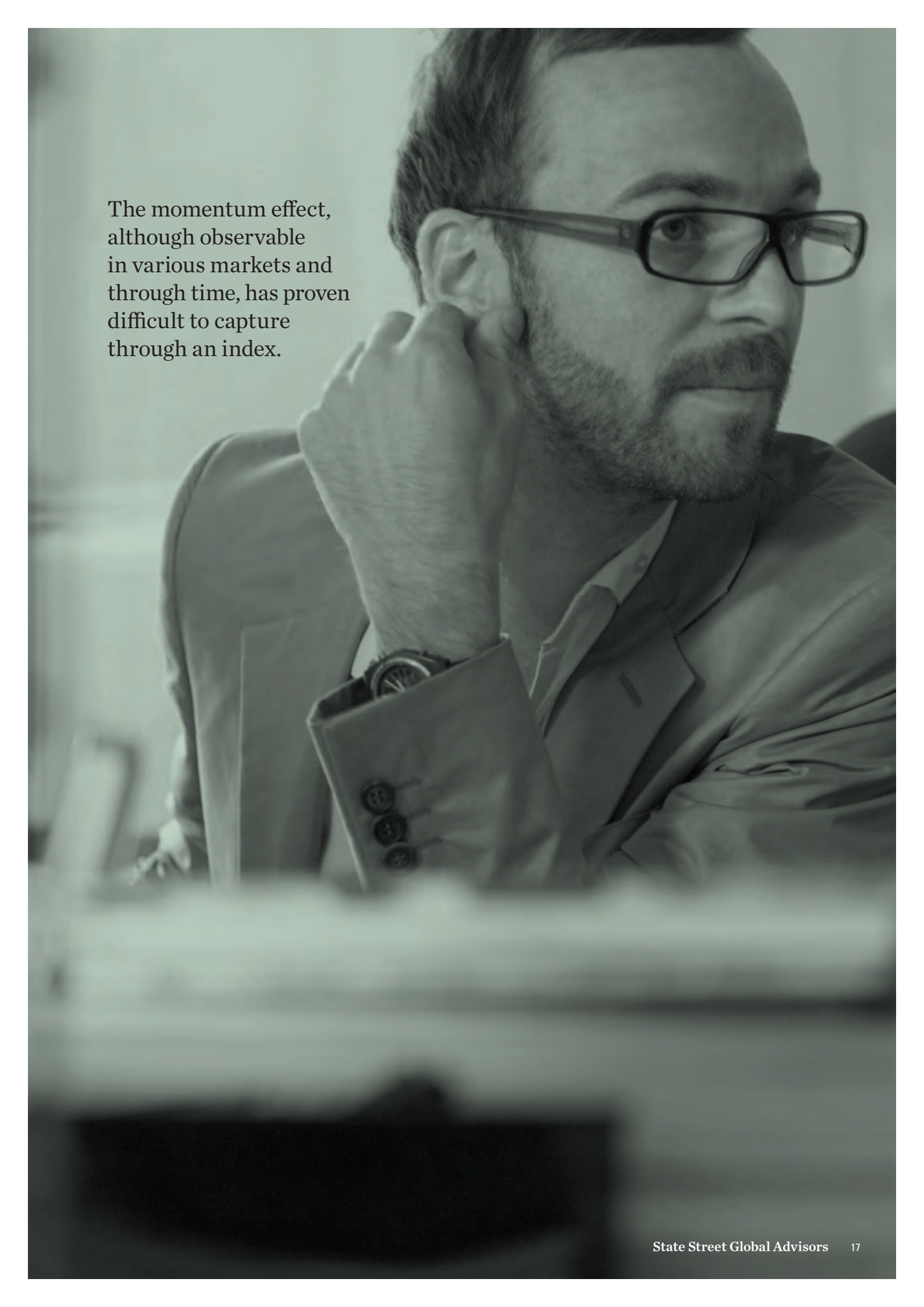
From a cost standpoint they remain attractive as they are cheaper than the alternatives and have lower turnover. Also, advanced beta strategies are usually priced at a premia relative to standard cap-weighted indices — reflecting the intellectual property behind them.

One must also remember that cap-weighted indices do reflect the broadest possible market and as such the full opportunity set of investment opportunities. This means that they are likely to remain relevant from a performance measurement standpoint as benchmarks for active strategies and even advanced beta strategies.

## SAMPLE INDICES

FTSE Active Beta	MSCI Momentum
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The momentum effect, although observable in various markets and through time, has proven difficult to capture through an index.

# MULTI FACTOR

The three attributes that resonate the most with long-term investors are value, low volatility and quality.

Investors can implement single factors through individual strategies to tailor them to their beliefs and achieve a better fit from an asset allocation perspective. Additionally, by keeping each factor separate, investors can attribute performance more precisely.

**The Next Generation: Combining Factors**

A useful development on the single factor approach is to combine multiple factors. A strategy that combines, for example, Quality and Low Volatility can provide enhanced performance and diversification benefits. These products are in a nascent stage but we expect to see much more of them because of the advantages they offer.

**Rationale**

Low correlation between factors is a key driver of the growing interest in multi-factor approaches. Reducing the number of portfolios can also reduce management costs and oversight efforts. Also, from a practical implementation perspective, by combining strategies there can be ‘netting’ of securities, meaning that unnecessary trades (and associated transaction costs) can be eliminated.

To capture these implementation efficiencies SSGA is launching multi-factor funds that combine several factors into one single portfolio. Our experience working with the evidence for factor-tilted strategies is that the three attributes that resonate the most with long-term investors are value, low volatility and quality.

**Methodology**

A key starting point is to design a framework which allows two or more factors to be combined in a sensible and efficient way. Based on investors’ feedback SSGA set out to create a simple, intuitive methodology for tilting a broadly diversified global portfolio toward securities with low valuations, low historical volatility and high quality.

To evaluate attributes, we use the following measures:

01. VALUATION	Earnings, Sales, Dividends and Book Value
02. VOLATILITY	60-month volatility of monthly returns
03. QUALITY	Return on Assets, Variability of Earnings and Leverage (Debt/Equity)

We begin by independently sorting stocks by each measure (from most to least attractive) and classify stocks by quartile of capitalization. For example, Quartile 1 of valuation-sorted stocks contains the stocks that comprise the 25% of the universe market capitalization with the lowest valuations. In the same way, Quartile 1 of volatility-sorted stocks contains the stocks that comprise the 25% of the universe market capitalization with the lowest volatility. The same would apply to Quality, but this time it would be highest quality names that we would find in Quartile 1.

We assign scores to stocks based on the quartile they fall into for each of the three factor categories. We then group the scores by tiers and apply a multiplier to the stocks’ cap weights. The multiplier allows us to tilt the portfolio towards the most attractive names across the 3 factors (highest quality, lowest volatility, lowest valuation).

**Performance**

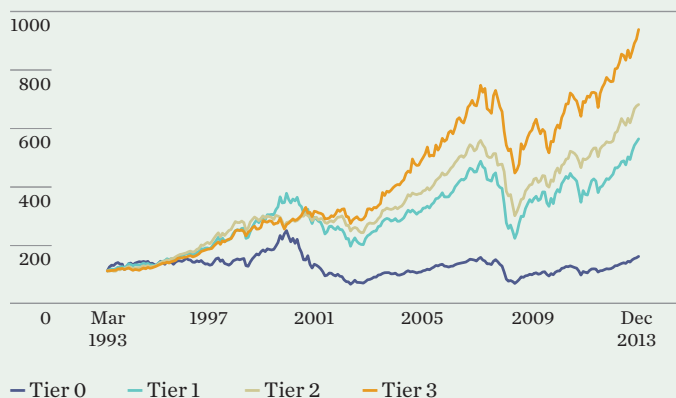
Tier 0, which contains the worst scorers across the 3 dimensions and is not included in the strategy, is the weakest performer over the long term.

Combining Tiers 1 to 3 results in impressive risk-adjusted performance relative to MSCI World over the longer term.

The number of names in the final portfolio remains high (average of 1,200 over our backtesting versus 1,600 or so in MSCI World Index) and so a broad and diversified passive exposure is maintained.

From a risk-adjusted perspective, the results are even more powerful. While for the overall period, tier 0 had a Sharpe ratio of -0.05, tier 3 had a Sharpe ratio of 0.64. The move from less attractive to more attractive, across the three dimensions, has a strong impact on risk-adjusted performance.

#### Performance Benefits of Multi-Factor



Source: SSGA, MSCI, December 2013.

Past performance is not a guarantee of future results.

Hypothetical returns are based upon estimates and reflect subjective judgments and assumptions. These results were achieved by means of a mathematical formula and do not reflect the effect of unforeseen economic and market factors on decision-making. The hypothetical returns are not necessarily indicative of future performance, which could differ substantially.

#### Increased Choice and Flexibility

As investors become increasingly comfortable with the concepts and empirical evidence, they are looking at their options in terms of implementation. Pursuing each factor individually is a flexible approach that allows investors to choose and weight their preferred providers for each factor and it gives more transparency in performance attribution.

However, running multiple portfolios can lead to higher costs and if one is using indices from different providers there may be gaps in coverage as well as different rebalancing schedules. For these reasons we are seeing increased interest in the combination of two or more factors into a single portfolio giving a more cost-efficient implementation with enhanced diversification.

There isn't a right or wrong approach to the implementation of these strategies. Different investors will have different opinions and each choice has potential benefits.

#### Single and Multi-Factor Results in Emerging Markets

Following our work in Developed Markets, we are now exploring the same methodology in emerging markets. The first results are encouraging: we find evidence of the same factors and we can also see strong benefits from a multi-factor approach here.

## SAMPLE INDICES

MSCI Quality Mix

EDHEC Multi-Strategy Smart Factor Indices

# FIXED INCOME ADVANCED BETA

**Not Just For Equities**

Fixed income advanced beta has taken longer to come of age than equities. This is in part due to the less exchange-based nature of the fixed income transaction process and to an initial paucity of academic research on the factors. The lack of persistence and availability of data is sometimes cited as a hurdle to academic analysis.

Nevertheless, the changing fixed income landscape has created a need for investors to adapt. The gradual adoption of fixed income indices, from the late 90s onwards, has helped define the market beta. For SSGA, fixed income advanced beta can be defined similarly to that of equity advanced beta – a systematic rules- based, non-cap-weighted strategy that should be transparent, cost-effective and diversified in its implementation.

From screened exposures and systematic dynamic rebalancing of risk through to factors-based analysis, fixed income advanced beta is now becoming increasingly sought after by investors.

Certain key drivers explain this growing trend:

- The challenge of investing in a post-AAA world and the conundrum of sovereign bonds in the portfolio: safety & liquidity versus growing sovereign credit risk
- The need for yield. This favours credit but concentration risk must be carefully managed
- The rise of sustainable investing in fixed income, fostering the growth of screened strategies
- Disappointment with active management has lead to growing attention to systematic and transparent beta constructions

Below are two of the Fixed Income Advanced Beta strategies that SSGA has developed to meet these new challenges.

	THE CHALLENGE	THE SOLUTION	
ISSUER SCORED CORPORATE INDEX	Traditional cap-weighted bond indices are most heavily weighted towards the most indebted issuers	<b>Allocation of Capital</b> Re-weight issuers based on bond investor-friendly ratios	<b>Subordinated Debt</b> Exclude subordinated debt, due to its equity-like features and volatility
		<b>Issuer Transparency</b> Only hold publicly listed issuers	<b>Minimum Remaining Maturity</b> Elevated cash market liquidity premiums suggest keeping bonds to maturity
SOVEREIGN BOND STRATEGY	Certain Sovereigns in key indices have experienced credit deterioration	<b>Global Sovereign Universe</b> Start with a diversified Global Sovereign Investment Grade Universe	<b>Reduce Risk</b> Use expected yield spread as a measure of sovereign risk. Tilt away from countries with higher expected spread
	Since Sovereign portfolios are typically used to obtain interest rate exposure in a liquid and relatively safe way this may be problematic	<b>Increase Quality</b> Re-distribute freed-up weights to those countries with lower sovereign risk	



A black and white photograph of a woman in profile, looking down at a smartphone she is holding. She is standing in front of a large window with horizontal blinds. The light from the window creates a strong pattern of horizontal lines across the scene. The woman is wearing a dark, long-sleeved top. The overall mood is professional and focused.

## THE RESULTS

- Better risk-adjusted returns
- Lower volatility
- Lower idiosyncratic risk

- 
- Re-focuses the universe systematically
  - Anticipates and avoids deteriorated Sovereigns
  - Lowers drawdown risk



# NEXT STEPS

# REDUCING RISK AND ENHANCING RETURNS

## Making Advanced Beta Work for You

Once convinced of the benefits of allocating to advanced beta strategies, investors must consider how best to introduce advanced beta strategies into their portfolios and how to monitor their behaviour and performance.

How can investors use these strategies to potentially improve the risk/return profile of their equity portfolios?

There are two possible routes, and the right decision will ultimately depend on individual investment beliefs and portfolio objectives:

Risk Reduction  
Return Enhancement

We show examples of each approach to help visualise these alternative routes.

### Example 1

#### Risk Reduction Including Low Risk Strategies

The factor targeted here is low volatility, or risk. Although academic studies have shown that lower risk strategies have outperformed cap-weighted indices over the long term, their impact in terms of risk reduction is even more powerful.

In the example below, one can see that moving merely 20% of the portfolio to a low volatility strategy in global equities has a significant impact on reducing the risk of the overall portfolio. The revised portfolio maintains the same return but the volatility (standard deviation of returns) in the equity portfolio is reduced from 14% to under 12%. Same return, less risk.

Over the period, the combined portfolio had a performance that was broadly similar to the MSCI World Index but at all times maintained a better risk profile, as measured by volatility.

#### Rolling 3-year Volatility



#### Rolling 3-year Return



Source: SSGA, MSCI, December 2013, Net USD. Past performance is not a guarantee of future results.

Example 2

Risk Reduction – Including Low Risk Strategies and Adding an Allocation to Emerging Markets

In this example, we take advantage of the reduction in risk that comes from using a lower volatility strategy to fund an allocation to emerging markets. If an investor is happy with the original level of risk in their equity portfolio but wants to improve their overall diversification, this is a way to redistribute the risk budget and improve the portfolio diversification.

Starting again with a developed equities portfolio, by adding a low volatility strategy and an emerging markets allocation, an investor would have achieved a similar level of returns but with the benefit of a more diversified portfolio.

Return/Risk Comparison

Indices			Return/Risk	
MSCI World	MSCI Min Vol	MSCI EMs	5-yr Return	5-yr Risk
100%	—	—	15.0%	17.2%
—	100%	—	12.4%	9.5%
—	—	100%	14.8%	22.6%
80%	10%	10%	15.0%	17.0%

Source: MSCI, SSGA as of December 2013, Net USD. Past performance is not a guarantee of future results.

Example 3

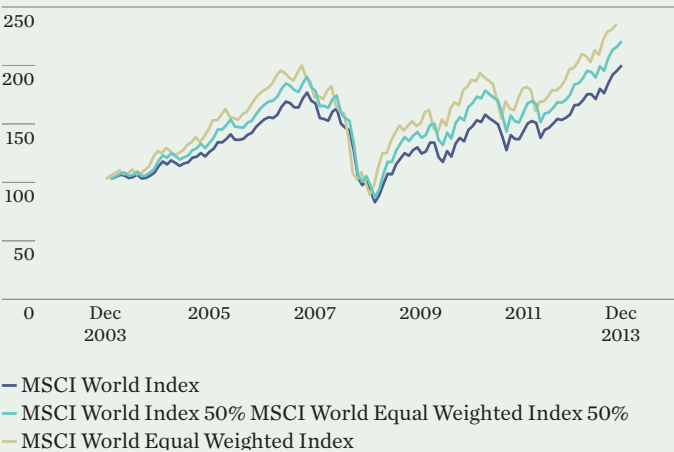
Return Enhancement – Adding Small Cap

The other major implementation goal for many investors is to improve returns by adding an advanced beta strategy. One way to do this may be by adding an allocation to a small cap strategy.

The more traditional way to capture the small cap premium in the indexing world would be to include an allocation to a small cap index. The advanced beta version is the equal weighted approach: all stocks are given the same weight independently of their size. This means that overall the small caps have a greater weight than they would in a standard index, while the larger cap stocks have a smaller weight.

The chart below compares the cumulative performance of MSCI World Index, MSCI World Equally Weighted Index and a portfolio that allocates 50% to each of these indices.

Cumulative Performance



Source: SSGA, MSCI, December 2013, Net USD. Past performance is not a guarantee of future results.

The long-term performance is compelling but the risk of the combined portfolio is slightly higher (5-year volatility for the MSCI World Index is 17.2%, versus 18.1% for the combined portfolio).



# AN INVESTOR'S VIEWPOINT

We spoke with one of our clients, a public pensions manager that manages defined contribution pensions, to get an investor's view of what they considered when opting for an advanced beta allocation.

### **How would you define advanced beta?**

Our starting point for advanced beta within the equity space are those risk premias/strategies that seem to work better than cap-weighted strategies over longer periods of time — either through a higher return or lower risk or a combination of both. We are firm believers in the early work of Eugene Fama and Ken French, and based on their research the most important advanced beta strategies for us would be value and small cap and, since the summer of 2013, also quality. We have also added low volatility and momentum strategies to our definition of advanced beta.

### **What benefits attracted you to advanced beta strategies?**

The opportunity to achieve higher returns over time, lower risk or a combination of the two compared to cap-weighted benchmarks, while still being able to use cost-efficient implementation strategies. We're attracted to strategies where we have a clear understanding of the risks we are taking.

### **How did you present your recommendations to the Board?**

We have discussed these alternative strategies in depth within our asset management organisation and we have set up internal risk limits with regard to the maximum allocation to different types of alternative betas. We still have a market-cap-weighted reference benchmark, so the alternative beta exposures also need to fit the risk limits set by the Board. We regularly make presentations to the Board on the development and performance of these strategies.

### **What kind of challenges do implementing these types of strategies present?**

Not all the strategies are easy to actually invest in. Momentum strategies are theoretically interesting, but within the long-only equities space we believe these strategies to be challenging to implement due to transaction costs, and even more so in

Emerging markets. In some strategies there are also limited alternatives available. For example, if you want to break down your portfolio into regional sub-components, there are more options for the US region than in Asia or in Emerging markets.

### **Did you have any specific consideration on timing before implementing these strategies?**

Yes, even though we are firm believers in different strategies over longer periods of time, we would like to have a favourable entry point. Market-timing decisions are generally deemed very hard to do, but we at least try to avoid investing when we feel there may be hype or when we are afraid some strategies are overcrowded.

### **What role do they play in your portfolio?**

Alternative betas are one of the important dimensions within our long-only equity portfolio. We work along three dimensions — factors, regions and sectors — with factors/alternative betas being viewed as the strategic foundation.

### **How are you benchmarking these strategies/measuring their performance?**

We have a market-cap weighted reference benchmark, so allocating to alternative betas gives us active positions, which we measure in size and performance daily.


### **How do you allocate between cap-weighted strategies and advanced beta strategies?**

We aim to have strategic weights to advanced beta strategies but our other dimensions (regions and sectors) are, for practical reasons, implemented through market-cap weighted investments.

### **What do you see as the next evolution in this area?**

We believe the next step to take is multi-factor investing, where you blend selected advanced beta strategies within the same investment strategy.





**We're attracted to strategies  
where we have a clear  
understanding of the  
risks we are taking.**

# THE OUTLOOK FOR ADVANCED BETA

Interest in advanced beta has grown significantly over the past few years, especially since the launch — more than 10 years ago — of mainstream indices that capture factor exposures such as value or low volatility. These strategies represent an evolution in indexing or passive equity management. Investors are no longer constrained by the active versus passive debate because these strategies can combine the best of both approaches.

SSGA recently commissioned Longitude Research<sup>6</sup> to conduct a study on what investors think about advanced beta and how they are planning to include it in their portfolios. Respondents included public and private pension funds, endowments, foundations, insurance companies and private banks, across both Europe and North America.

### **Positive, Becoming More So**

One of the key findings was that investors' views on advanced beta are generally positive and becoming more so. In Europe, 42% of the participants had already invested in advanced beta and a further 22% was intending to do so. Only 20% of participants professed scepticism about the approach.

While in Europe, the majority of the private pension schemes in this survey had already committed a proportion of their portfolio to advanced beta, the figure for public pension schemes was significantly less. This looks set to change, however, given that fully 57% of the European public schemes surveyed said that they intend to invest in advanced beta.

The empirical evidence and the potential for positive excess returns relative to the market over the long term is attractive to investors. The ability to reduce risk at the overall portfolio level from strategies like low volatility and quality is also appealing.

In order for an allocation to make an impact it needs to be significant and most investors appear to realise this. Looking at the institutions that have already allocated to advanced beta, the majority have between 11–15% of their equity portfolio in these strategies. Our survey results suggest these allocations will increase in the coming years.

When considering their allocation, investors will tap into their current active and passive allocations to fund their advanced beta strategies. Indeed, when asked about their

future allocations, 63% of the institutions in the survey intend to fund their advanced beta allocation from both active and passive. The second-most popular answer was to fund it from their active allocation (28%), with only 8% intending to reduce their passive allocation. The breakdown was similar when looking at either private or public pension schemes, Europe or US.

### **What's Popular?**

Low volatility and low valuation strategies have been the most popular so far, but there is a lot of interest in quality as a future allocation. Multi-factor strategies are also increasingly on the radar of most investors; 71% of the interviewees in Europe are currently investigating multi-factor strategies with a view to possibly investing in the future.

Looking only at pension funds in Europe, we observe a similar trend with regard to multi-factor but there is also a concern with income. Around 55% of the public and private pension schemes in the survey are currently investigating the possible use of yield-based advanced beta strategies.

### **An Advanced Future**

Smart investors are focusing more on outcomes than merely investment styles. The empirical evidence is strong, growing and consistent. There are also now live track records that investors can refer to when investing in advanced beta. Investors need to be mindful that these are investments for the long term. They need to build strong support and awareness within investment committees and the broader stakeholders for a truly successful implementation. One thing is certain though — these strategies will continue to develop further and challenge the status quo.



# 57%

European public schemes surveyed that intend to invest in advanced beta.<sup>6</sup>

In Europe, 42% of the participants had already invested in advanced beta and a further 22% intended to do so.<sup>6</sup>

# 71%

European interviewees are currently investigating multi-factor strategies with a view to investing in them.<sup>6</sup>

<sup>6</sup> Beyond Active and Passive, Advanced Beta Comes of Age, SSGA, January 2014





# IMPLEMENTATION

# ADVANCED BETA IMPLEMENTATION A CHECKLIST

Moving from the idea stage to practical implementation requires analysis, planning and expert guidance. The best-laid plans can become unstuck if careful thought is not given to possible implementation setbacks and how best to address them.

Cap-weighted benchmarks have long been the standard when it comes to indexing and benchmarking active strategies; and most investors are comfortable with using them. Although there are broad similarities, advanced beta strategies do differ from traditional cap-weighted indexes and when departing from the latter it's necessary to build conviction among the various stakeholders, as well as managing future expectations.

Over the years SSGA has built extensive experience in developing and implementing advanced beta strategies. Drawing on that experience and feedback from clients that have been through the process, we've developed a short checklist on some things to keep in mind when considering implementing advanced beta strategies.



### □ **Ensure the broader stakeholders are involved.**

Both the investment committee and trustees should be involved from the start to create awareness around the extended range of options available.

### □ **Start by understanding what you have.**

The first step in that direction would be to undertake a risk assessment in order to understand the existing exposures. This can be done using risk models such as Barra or Axioma or through the creation of a risk heat map that can highlight unwanted risk concentration or where exposure is lacking.

### □ **Build beliefs.**

Initial discussions should be about possible factors to consider, how they fit with the team's investment beliefs and how investing around factors can really be an added-value option.

### □ **Keep an open mind.**

Although the academic research behind these strategies exists from the 70s and backtests date back even further, it is still a relatively new field within investment management. It may be that new factors come to prominence, especially as research moves on from looking primarily at equities and makes further inroads into incorporating other asset classes, such as fixed income.

### □ **Clarify concepts and definitions.**

There are many different concepts and notions that are part of the advanced beta lexicon and some of these may not be familiar to all. It makes sense to identify key concepts and definitions, improving understanding in the teams and creating an environment where buy-in can be stronger.

### □ **Manage expectations around performance and risk.**

Although the long-term proof is strong for these strategies, they will behave differently to cap-weighted indices and will be positioned differently in terms of stocks, sectors and countries. Providing training on factors and the empirical evidence behind them will help investors understand the performance and risk profiles of these strategies.

### □ **Rethink performance measurement.**

These strategies perform differently to market-cap indices and the performance monitoring process needs to take this into account. Market cap-weighted indices should remain the primary reference point but, due to the potential for large deviations when compared to cap-weighted, a published index that is similar in process to the strategy being managed may also need to be considered.

### □ **Be realistic about the level and impact of change.**

In order to invest in these factors it is necessary to re-think asset allocation and no longer frame it purely along the lines of asset classes such as equities and fixed income. This is not an easy transition and a complete switch to factor allocation may not be achievable, or indeed even desirable. It is necessary to set realistic milestones and ensure stakeholders understand how, and why, the portfolio is changing.

### □ **Focus on your true goals.**

Many investors start this process because they want to reduce the costs associated with active management. However, that should be seen more as a potential benefit rather than the sole driving force. Pension trustees are mainly looking at future liabilities and their fiduciary responsibilities, while private investors are concerned with diversification and capital preservation. A too-narrow focus on costs may hinder investors' ability to achieve those goals.

### □ **Finally, remember it's a journey.**

It is early days for most investors and, as a community, we are still trying hard to find the best ways to incorporate and manage these strategies. New developments are likely around the corner and they will help to further grow awareness and comfort with these approaches.

As investors become increasingly comfortable with the theoretical value of advanced beta, the focus has shifted to practical implementation, from 'Should we?' to 'How do we?'



# AN IMPLEMENTER'S VIEWPOINT

SSGA has a long history of managing these types of strategies across a wide range of indices and regions. This experience helps us identify the possible issues and determine the best implementation techniques for advanced beta portfolios.

## **Manage Costs**

Our research shows that advanced beta portfolios can be more costly to implement than their cap-weighted counterparts. The portfolios may be more concentrated and/or have an exposure to smaller or less liquid names.

This means that advanced beta portfolios may benefit from different implementation tactics than standard cap-weighted portfolios. For example, if the portfolio has an allocation to names that represent a large portion of their average daily volume, it can be wise not to trade in unduly constrained periods of time, such as the market at close.

## **Technology and Experience Matter**

The initial implementation trade could then be spread over a time period allowing completion of the trade without undue influence on the stock price. Experience and technology are important factors in properly implementing trades this way. Direct market access, multiple trading venues, crossing, and algorithmic trading can also help to balance the competing risks of market impact and opportunity cost.

## **Sampling may be an Option**

In addition, passive equity portfolio managers can reduce the liquidity needs of the strategy by sampling or optimising the portfolio. This creates a portfolio that closely matches the benchmark across many risk dimensions (country, sector, size, etc.) yet excludes, or reduces the weight of, less liquid names.

## **Plan Index Changes Smartly**

The rebalancing and review of advanced beta strategies tends to generate a higher turnover, and in consequence, higher ongoing trading costs to keep the strategy true to its philosophy. Index changes may be best implemented over an extended period of time around the index change date itself in order to minimize trading costs.

## **Patience Pays Off**

Advanced beta strategies are long-term investments by nature, and take significant risk relative to cap-weighted indices. Being patient can help reduce costs while retaining the factor bets intended by the strategies.



# THE CASE FOR TILTING

Within the advanced beta world, tilt investing is one of the more popular approaches. Tilt investing shifts portfolio allocations towards specific advanced beta factors to potentially gain an excess return relative to traditional cap-weighting approaches. The starting point is usually the cap-weighted indices and the level of tilting can be more or less aggressive, depending on the provider and the investor’s wishes.

### The Benefits of Tilting

Tilt strategies represent an important evolution in indexing as they allow investors to more easily access investment exposures or factors that have been shown to deliver positive excess returns, relative to the index, over time.

In most cases, tilted strategies will be designed in a way such that the investor can capture the desired factor(s) exposure while also minimizing tracking error relative to a cap-weighted index.

As a result the potential underperformance (in terms of tracking error) of a tilted strategy relative to a cap-weighted index tends to be lower (i.e. better) when compared to more aggressive, higher tracking error advanced beta strategies. On the other hand, the potential outperformance of a tilted strategy is also expected to be limited when compared to more aggressive advanced beta approaches.

### Lower Tracking Error

Tilted strategies’ relatively lower tracking error feature may have a strong appeal for investors who are drawn to the underlying investment concepts and potential benefits of advanced beta factor investing but face the implementation challenge of policy limits on tracking error.

### Diversification Maintained

While tilted strategies offer the potential for outperformance relative to a cap-weighted index, their rules-based, transparent nature is strongly similar to traditional passive investing. Additionally, since the starting point in building a tilted portfolio is usually a well-diversified, investable cap-weighted index, these strategies are likely to retain high levels of diversification and liquidity.

### Tilted Strategies Combine Both Worlds

TRADITIONAL MARKET EXPOSURE	The starting point is the diversified cap-weighted index
ADVANCED BETA EXPOSURE	Designed to capture the performance and/or risk outcomes of the desired factor(s)

### Performance and Risk Relative to MSCI World

	Global Value Tilted	Global Size Tilted	Global Volatility Tilted	Global Quality Tilted	Global Momentum Tilted	MSCI World
Return (%)	9.41	8.39	9.07	8.85	9.12	7.39
Volatility (%)	16.02	13.21	15.52	14.89	14.06	15.23
Sharpe Ratio	0.59	0.64	0.58	0.59	0.65	0.52
Excess Return (vs. MSCI World) (%)	1.48	0.46	1.13	0.91	1.19	—
Tracking Error (%)	3.46	3.50	2.92	4.49	2.41	—
Information Ratio	0.43	0.13	0.39	0.2	0.49	—

Source: SSGA, MSCI. Annualised Performance: April 1993 – December 2013. Past performance is not a guarantee of future results. The simulated performance shown is not necessarily indicative of future performance, which could differ substantially. The simulated results were produced by backtesting.

SSGA’s Tilted Methodology

SSGA has been managing advanced beta equity strategies for many years and has built a reputation as an innovative provider and client partner in this space. SSGA’s Tilted methodology — which can be applied to any factor or set of factors — is a good example of this innovation.

SSGA’s Tilted strategies tilt the weights of stocks in a cap- weighted index based on the factor characteristics of the constituents — ultimately increasing the tilted portfolio’s exposure to the desired factor(s).

Our proprietary approach for a single-factor tilted strategy allocates capital across a number of factor-ranked sub-portfolios, each representing initially the same proportion of the cap- weighted index.

The sub-portfolio approach achieves two key objectives:

- It reduces the influence of any outliers
- It provides a simple framework to customize factor tilts to an investor’s specific needs

The tilt framework then re-allocates weights across these sub-portfolios to create the desired factor-tilted exposure. For example, sub-portfolio 1 will contain the most attractive stocks for a specific factor, and will receive the highest weight in the portfolio.

The key here is flexibility: clients can choose the factor and the level of tilt they would like to pursue.

The table on the left provides more detail on the performance and risk of these simulated tilted strategies, alongside relative performance versus MSCI World.

Over the whole period (1993–2013) examined, the Global Value-Tilted portfolio was the best absolute performer,

but it also exhibited the highest volatility. On a risk-adjusted basis, the Global Quality-Tilted was the strongest both in absolute (highest Sharpe ratio) and relative terms (highest Information ratio).

Multi-factor Tilting

Investors may also benefit from diversifying across factors and taking advantage of negative/low correlations between factors.

Investors can chose to implement single factors through individual portfolios or they can combine various factors in a single portfolio to take advantage of the diversification between factors.

Reducing the number of portfolios can reduce management costs and the required oversight effort. Also, by combining strategies, there can be ‘netting’ of securities, meaning that unnecessary trades (and associated transaction costs) can often be eliminated.

At SSGA, we have developed several multi-factor tilted strategies. Our design flexibility allows multi-factor tilted strategies to be built in a way that isolates particular sets of equity factors that are most interesting to the investor.

Tilting, Advanced Beta Your Way

Tilted strategies are a useful addition to the investors’ toolkit in the advanced beta space. They provide exposure to factors that are considered attractive because of their past performance and behaviour. Their starting point is usually a broad, cap-weighted index, and they offer a factor tilt while maintaining trading liquidity, investment capacity and turnover characteristics similar to the parent index.

Additionally, the potential for design flexibility allows advanced beta tilted strategies to be built in a way that best fits the goals of the investor.

SAMPLE INDICES	S&P Tilt Indices	SSGA Single Factor Tilt Indices	SSGA Multi-Factor Tilt Indices
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Whether you require bespoke indices, custom tilted multi-factor approaches, pooled fund access to commercial products or the very latest ETFs, SSGA is your partner for the very best advanced beta implementation.

# ADVANCED BETA AT SSGA

## **A World Leader in Beta and Advanced Beta**

At SSGA, we draw upon decades of hands-on experience managing portfolios to help clients identify and invest in the precise risk exposures they choose. As one of the world's largest providers of index and rules-based strategies, we now manage more than \$1 trillion in traditional and advanced beta assets. Our advanced beta strategies alone represent more than \$70 billion of assets, making us a valued and experienced partner for institutions pursuing rules-based investment opportunities targeting specific investment characteristics.

As pioneers in the field of advanced beta, we continue to be at the forefront of bringing advanced beta solutions to market. Recognizing that advanced beta is often a complement to traditional active and passive strategies, we help clients take a holistic view of their existing holdings and objectives before implementing strategies. We can help clients evaluate the effectiveness of single-factor versus multi-factor approaches given current goals, holdings and constraints, and we bring practical, real-life experience to strategy design and execution.

## **The Advantages of an Open Framework**

SSGA is not tied to one specific approach. We can precision track off-the-shelf advanced beta indices from providers such as MSCI, RAFI and Russell or we can develop totally custom advanced beta indices for you. We have an innovative tilting framework that can 'shift' traditional indices to exactly the right amount of factor tilt that suits your investment aims and parameters, minimizing tracking error or maximizing opportunity.

## **Deep, Broad Coverage**

Our scale of resources and breadth of investment expertise allows SSGA to invest in critical infrastructure and research to support our sophisticated and rapidly evolving portfolio management processes. Cash flows across all markets (large and small cap, developed and emerging) can translate into free or low-cost trading in areas where transaction costs can otherwise be high.

## **Thoughtful Implementation**

SSGA works with our clients to fully understand their investment objectives. From factor guidance to fully deconstructing portfolios to assess which factors are contributing which levels of return, SSGA is a valuable partner in successfully completing your advanced beta implementation.

Our implementation process is thoughtful and considered, from how to transition into an allocation to effective trading strategies.

Whether you require bespoke indices, custom tilted multi-factor approaches, pooled fund access to commercial products or the very latest ETFs, SSGA is your partner for the very best advanced beta implementation.

# Complete Guide to Advanced Beta

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\* Assets under management were \$2.45 trillion as of 31 December 2014. This AUM total includes the assets of the SPDR Gold Trust (approx. \$27.3 billion as of 31 December 2014), for which State Street Global Markets, LLC, an affiliate of State Street Global Advisors, serves as the marketing agent. Please note that AUM totals are unaudited.

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