

# Employees' Retirement System of Rhode Island

March 25, 2015  
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The material contained in this presentation is current as of the presentation date, unless otherwise indicated.

# Advanced Beta

# Advanced Beta: An Evolution in Passive Investing

## **Increased interest in Advanced Beta investment strategies**

- Assets under management continues to grow
- Expanding set of investment choices developed by investment managers and index providers

## **Compelling features have fueled the interest**

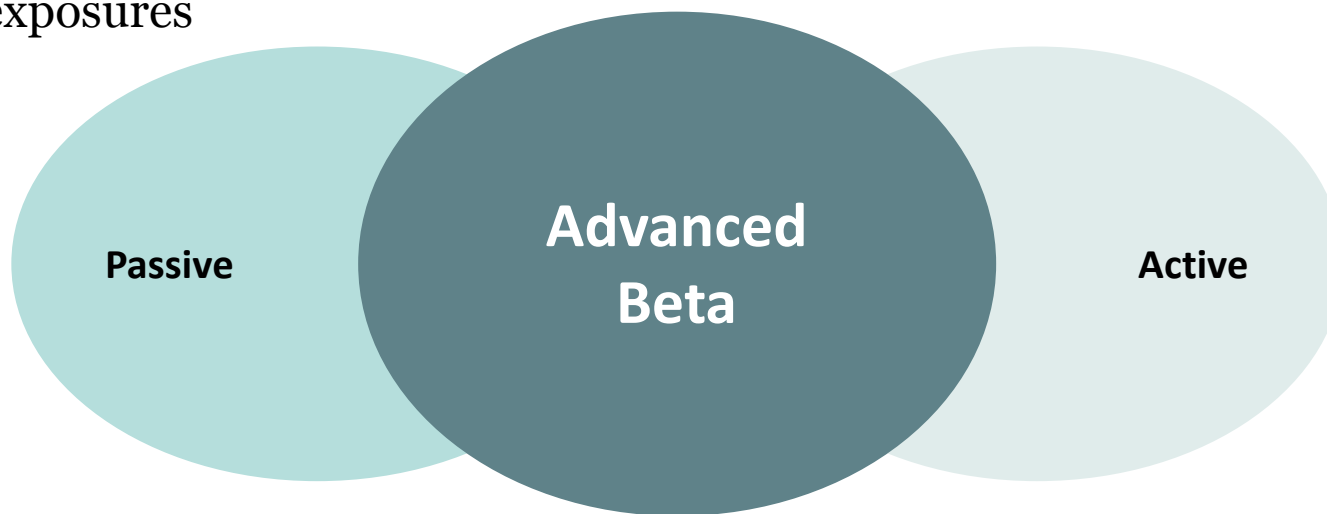
- Potential of improvement in performance and diversification
- Tools to express specific view on wide range of investment themes
- Packaged with the features of traditional passive investing

## **SSGA: An industry leader in Advanced Beta solutions**

- One of world's largest, most experienced managers of passive assets
- Huge selection of passive strategies to meet varying interests of investors
- At forefront in research and development of Advanced Beta solutions
- Capability to customize solutions to meet client-specific needs

# Advanced Beta: A Third Approach

**Advanced Beta:** Any objective, transparent, consistent process for capturing investment exposures



**A third approach.** Blurs the boundaries between active and passive investing.

**Active performance potential.** Expectations of improvement in absolute or risk-adjusted returns.

- Returns driven by well-known factors often targeted by active managers (valuation, volatility, quality, size, momentum, etc.)
- While long-term historical performance is attractive, interim risks are significant

**Passive implementation.** Retains the benefits of traditional passive investing.

- Transparency, objectivity, consistency, low cost, diversification and liquidity

Past performance is not a guarantee of future results.

# SSGA Advanced Beta Equity: Core Beliefs

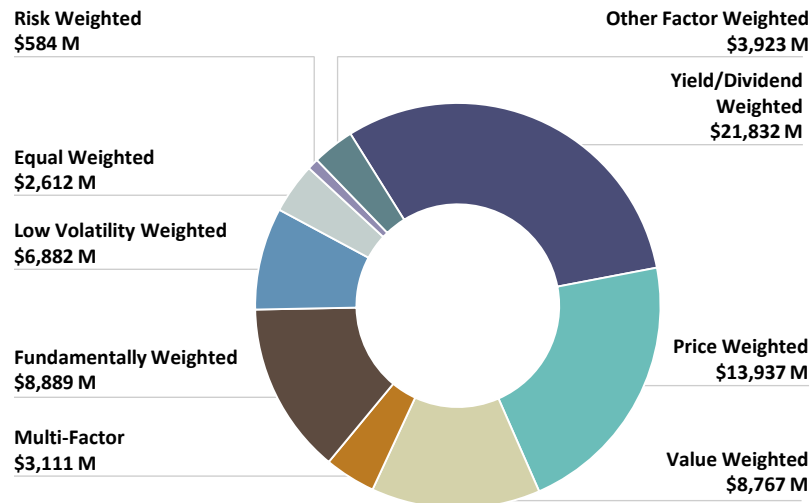
## **We believe that:**

- Advanced beta factor premia exist, creating opportunities to outperform traditional benchmarks
  - These premia reflect sources of risk, or in some cases, may result from security mispricings caused by investor behavioral biases or market frictions
- Advanced beta factor premia can be captured via transparent, rules-based investment processes
  - Consistent, systematic methodologies; not dissimilar to characteristics of traditional passive index methodologies
- Portfolios can be constructed in a manner that is consistent with investors' beliefs and objectives
  - An outcome-oriented mindset to strategy implementation is crucial, as performance expectations vary across factors
- Successful factor investing must account for cyclicity of factor performance
  - Multi-factor approaches provide diversification benefits, offer potential for improved consistency in performance
  - Longer term investment horizon is most appropriate
- Experienced, innovative investment team is essential in delivering best in class advanced beta solutions
  - Our Global Equity Beta Solutions team combines robust research capabilities with relevant global experience and trading experience

Diversification does not ensure a profit or guarantee against loss.

# SSGA's Advanced Beta Equity Strategies: AUM and Flow Activity

## Alternatives to Cap-Weighting: AUM Details \$70,537 Million as of December 31, 2014



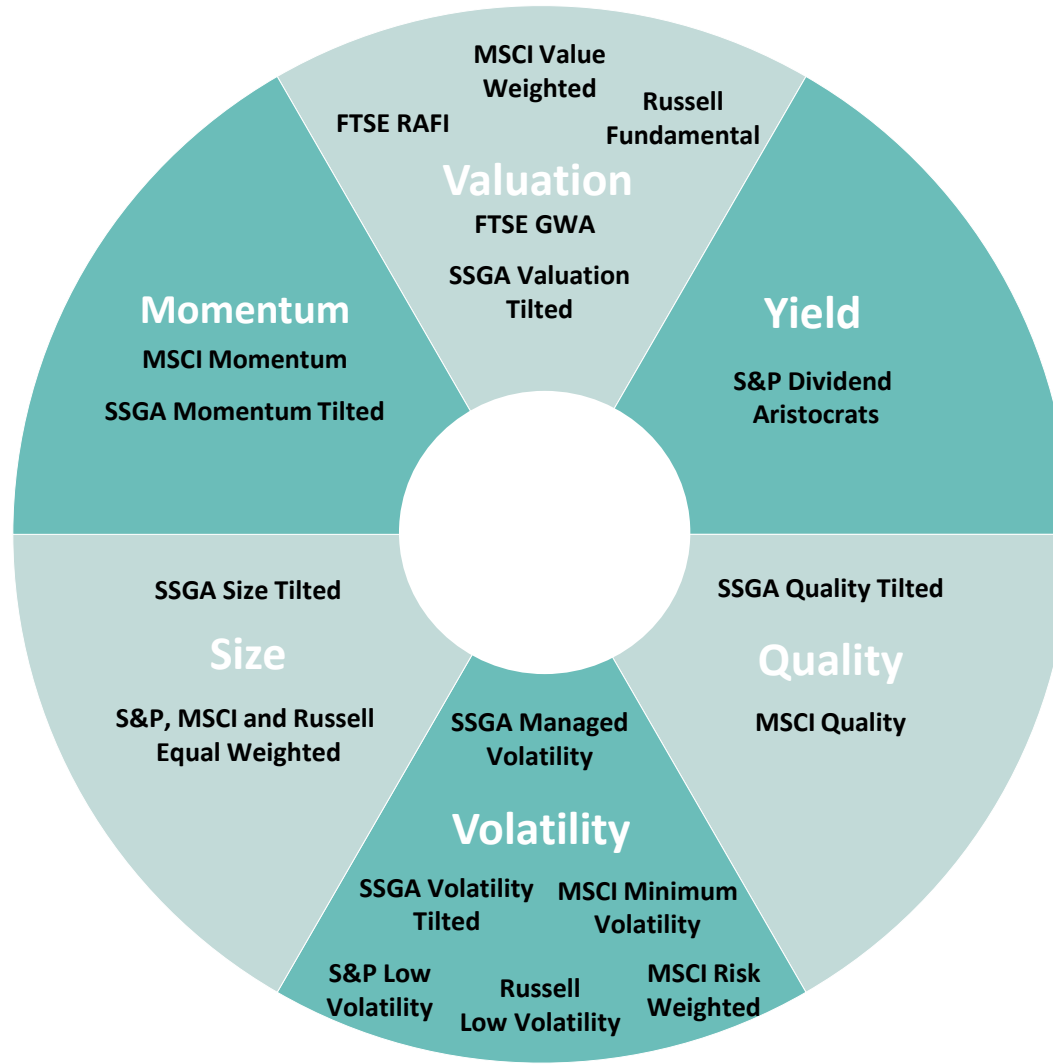
## SSGA Client Flows in 2014

| Categories             | Net Flows <sup>1</sup><br>(Millions USD) |
|------------------------|--|
| Multi-Factor           | +\$3,099                                 |
| Value Weighted         | +\$1,863                                 |
| Volatility Weighted    | +\$1,607                                 |
| Yield/Div Weighted     | +\$1,244                                 |
| Fundamentally Weighted | +\$700                                   |
| Equal Weighted         | +\$357                                   |
| Risk Weighted          | +\$90                                    |
| Price Weighted         | -\$733                                   |
| Other Factor Weighted  | -\$2,223                                 |
| <b>Total Net Flows</b> | <b>+\$6,005</b>                          |

- SSGA has been managing Advanced Beta portfolios for over 20 years
  - One of world's largest, most experienced managers of passive assets
  - Huge selection of strategies to meet varying interests of investors
  - At forefront of research and development of Advanced Beta solutions
- Investor flows into Advanced Beta continues to be positive
  - Over past year, most interest in multi-factor, value and volatility strategies

Source: SSGA as of December 31, 2014  
<sup>1</sup>Unaudited estimates

# Advanced Beta Strategies Target Certain Factors

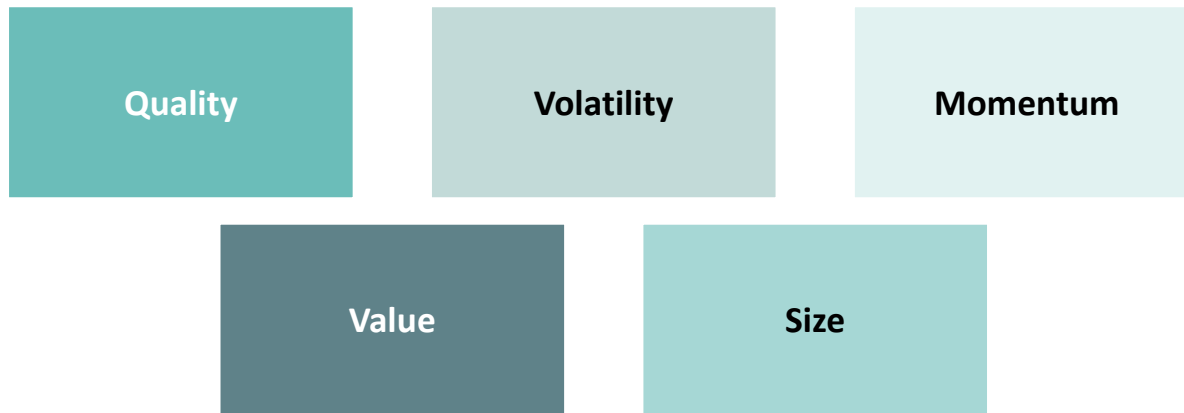


Source: SSGA.



# Single or Multi-factor Approaches

## Single Factor



## Multi-Factor



Source: SSGA  
The information contained above is for illustrative purposes only.

# Advanced Beta Investing: Decision Making Process

## Two key decisions for Advanced Beta investors

### 1. Factor(s) selection

- Single factor or multiple factors
- For selected factor(s), investor should have conviction in:
  - Investment thesis
  - Performance expectations






### 2. Strategy implementation

- A strategy's weighting scheme, stock selection and rebalancing frequency will determine these key portfolio characteristics:
  - Tracking error, total risk
  - Strength and purity of factor exposure
  - Portfolio concentration
  - Investability, liquidity and turnover
- Clarity of and comfort with investment process is imperative
- Expenses/fees vary by provider

These decisions are influenced by investor goals and beliefs

# Empirical Evidence by Attribute

## SSGA Attribute Definitions

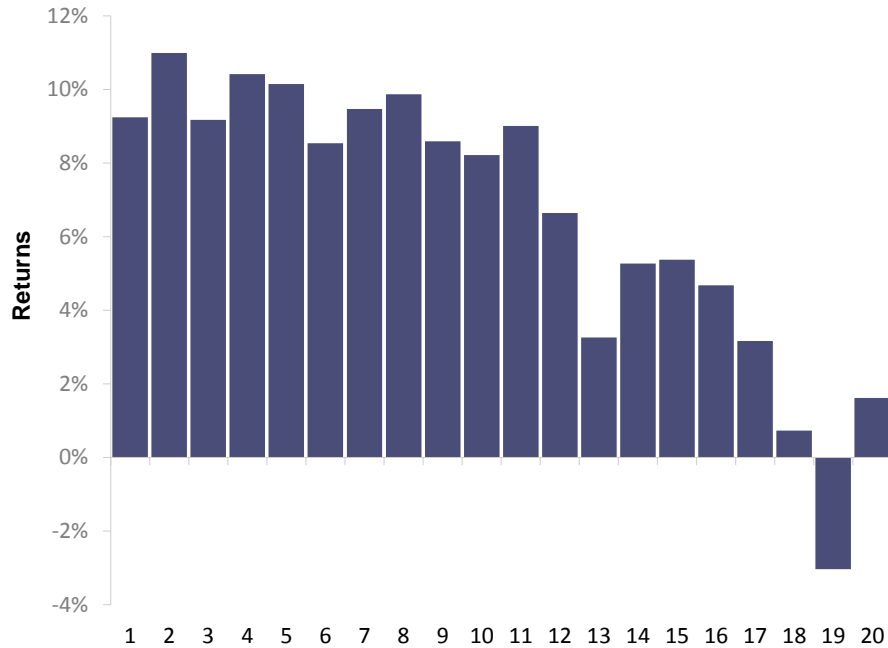
|  | <b>Attribute</b>  | <b>Definition</b>  |
|--|-------------------|--|
|  | <b>Valuation</b>  | <b>Price/Fundamental</b><br>Fundamentals: Earnings, Cash Flow, Sales, Dividend, and Book Value                   |
|  | <b>Volatility</b> | <b>Volatility of Total Return</b><br>60-month variance   |
|  | <b>Size</b>       | <b>Market Capitalization</b><br>Free float market capitalization   |
|  | <b>Momentum</b>   | <b>Total Return</b><br>Trailing 12-month   |
|  | <b>Quality</b>    | <b>(1) Profitability, (2) Earnings Consistency, and (3) Low Leverage</b><br>ROA, EPS variability, LT Debt/Equity |

# Departing from Cap Weights: Empirical Evidence

## Annualized Performance of Sub-Portfolios

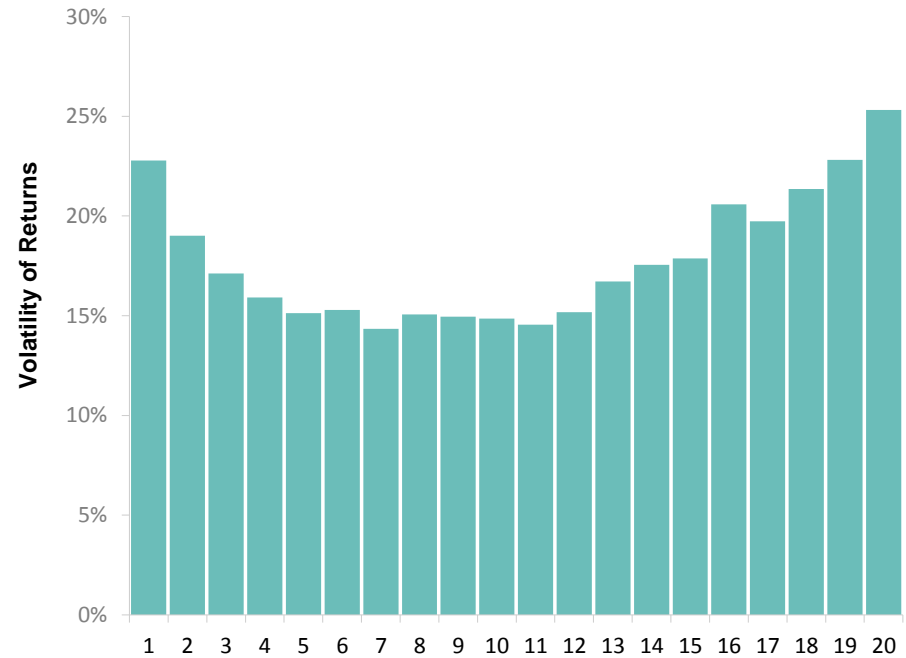
(USD, Universe = MSCI World Index, April 1989 – December 2013)

Valuation Sorted, returns



Sub-Portfolio (Low Valuation to the Left)

Valuation Sorted, volatility



Sub-Portfolio (Low Valuation to the Left)

Source: SSGA, FactSet

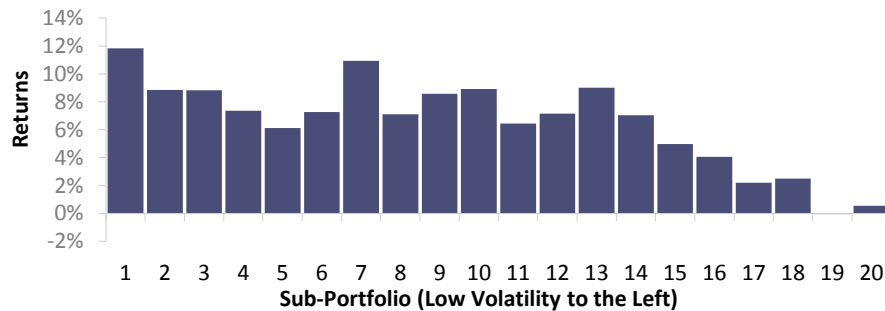
Past performance is not a guarantee of future results. Index returns are unmanaged and do not reflect the deduction of any fees or expenses. Index returns reflect all items of income, gain and loss and the reinvestment of dividends and other income.

# Departing from Cap Weights: Empirical Evidence

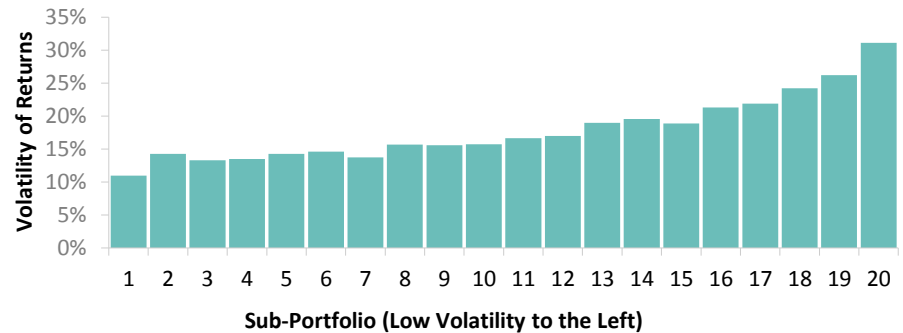
## Annualized Performance of Sub-Portfolios

(USD, Universe = MSCI World Index, April 1989 – December 2013\*)

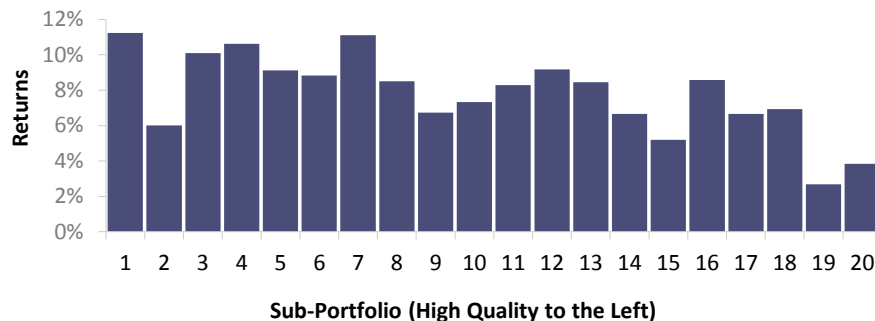
**Volatility Sorted, returns**



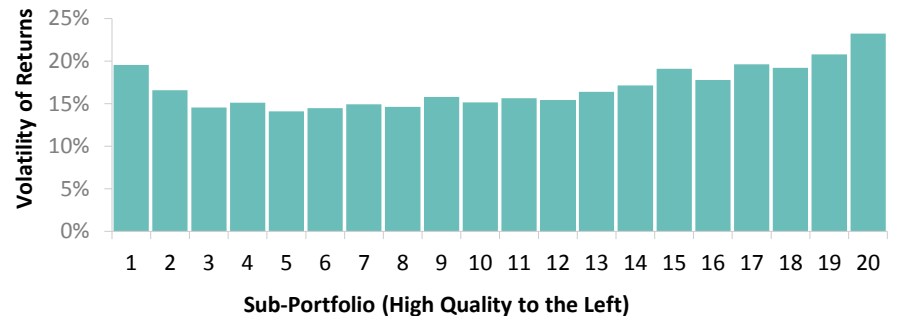
**Volatility Sorted, volatility**



**Quality Sorted, returns**



**Quality Sorted, volatility**



\* For Quality Sorted, observation period is April 1993 – December 2013

Source: SSGA, FactSet

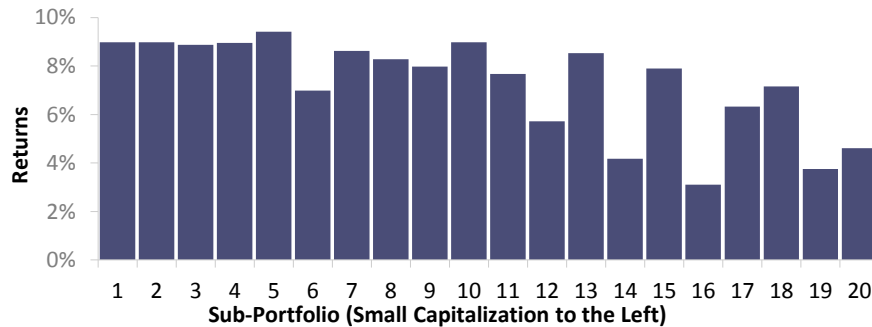
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# Departing from Cap Weights: Empirical Evidence

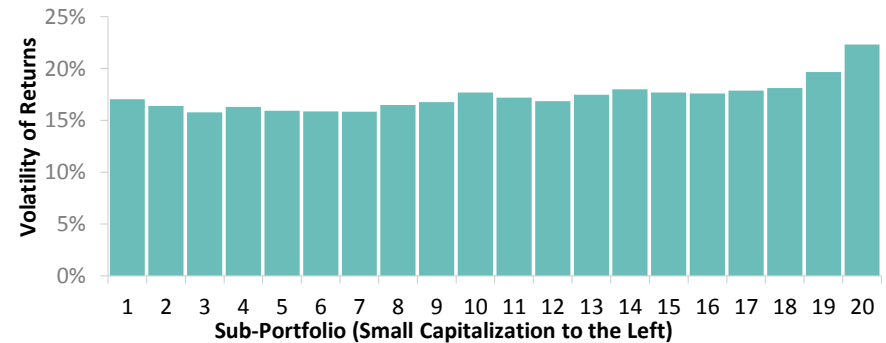
## Annualized Performance of Sub-Portfolios

(USD, Universe = MSCI World Index, April 1989 – December 2013)

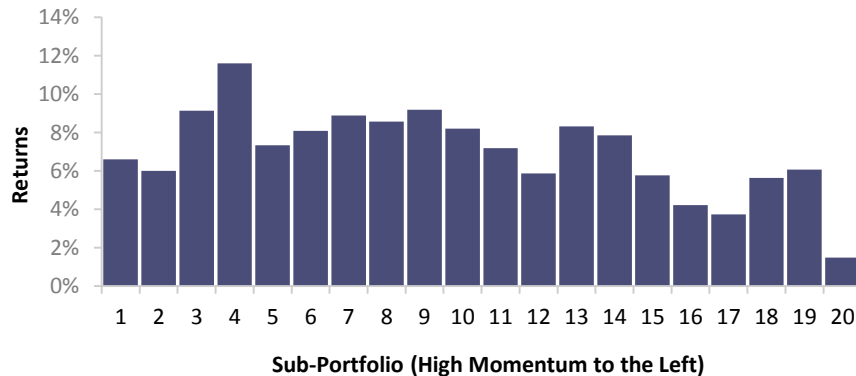
**Size Sorted, returns**



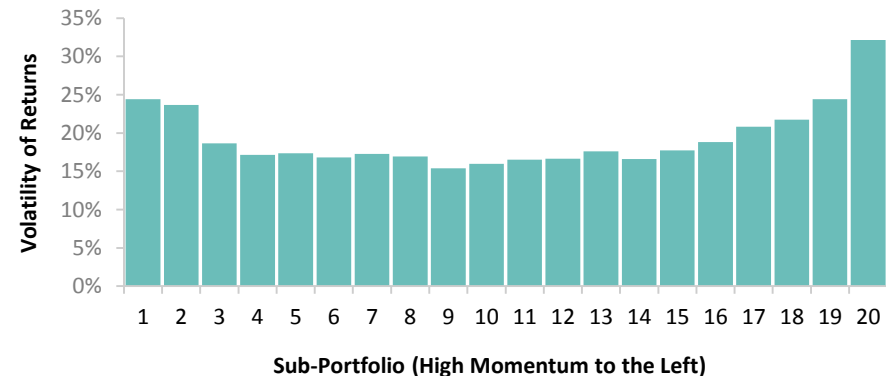
**Size Sorted, volatility**



**Momentum Sorted, returns**



**Momentum Sorted, volatility**



Source: SSGA, FactSet

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# Departing from Cap Weights: Global Equities

## Capturing Factor Outcomes through Tilting Strategies

Universe: MSCI World Index

| <b>Annualized Back-tested Performance<br/>Apr 1993 – Dec 2014</b> | <b>SSGA<br/>Val Tilt</b> | <b>SSGA<br/>Vol Tilt</b> | <b>SSGA<br/>Size Tilt</b> | <b>SSGA<br/>Qual Tilt</b> | <b>SSGA<br/>Mom Tilt</b> | <b>MSCI<br/>World</b> |
|---|--------------------------|--------------------------|---------------------------|---------------------------|--------------------------|-----------------------|
| Return  | 9.01%                    | 8.28%                    | 8.73%                     | 8.93%                     | 7.80%                    | 7.30%                 |
| Volatility  | 15.73%                   | 13.01%                   | 15.25%                    | 13.84%                    | 14.64%                   | 14.98%                |
| Excess Return*  | 1.71%                    | 0.98%                    | 1.43%                     | 1.62%                     | 0.50%                    | NA                    |
| Sharpe Ratio  | 0.39                     | 0.42                     | 0.39                      | 0.44                      | 0.34                     | 0.30                  |
| Tracking Error*   | 3.38%                    | 3.43%                    | 2.87%                     | 2.36%                     | 4.34%                    | NA                    |
| Information Ratio*  | 0.51                     | 0.29                     | 0.50                      | 0.69                      | 0.12                     | NA                    |
| Beta*   | 1.03                     | 0.85                     | 1.00                      | 0.91                      | 0.94                     | NA                    |
| Up Capture*   | 1.05                     | 0.88                     | 1.03                      | 0.97                      | 0.98                     | NA                    |
| Down Capture*   | 0.97                     | 0.84                     | 0.96                      | 0.90                      | 0.96                     | NA                    |
| Average Annualized Turnover (One-Way)                             | 13.5%                    | 10.1%                    | 11.8%                     | 11.0%                     | 83.7%                    | 6.7%                  |

\*Relative to MSCI World Index

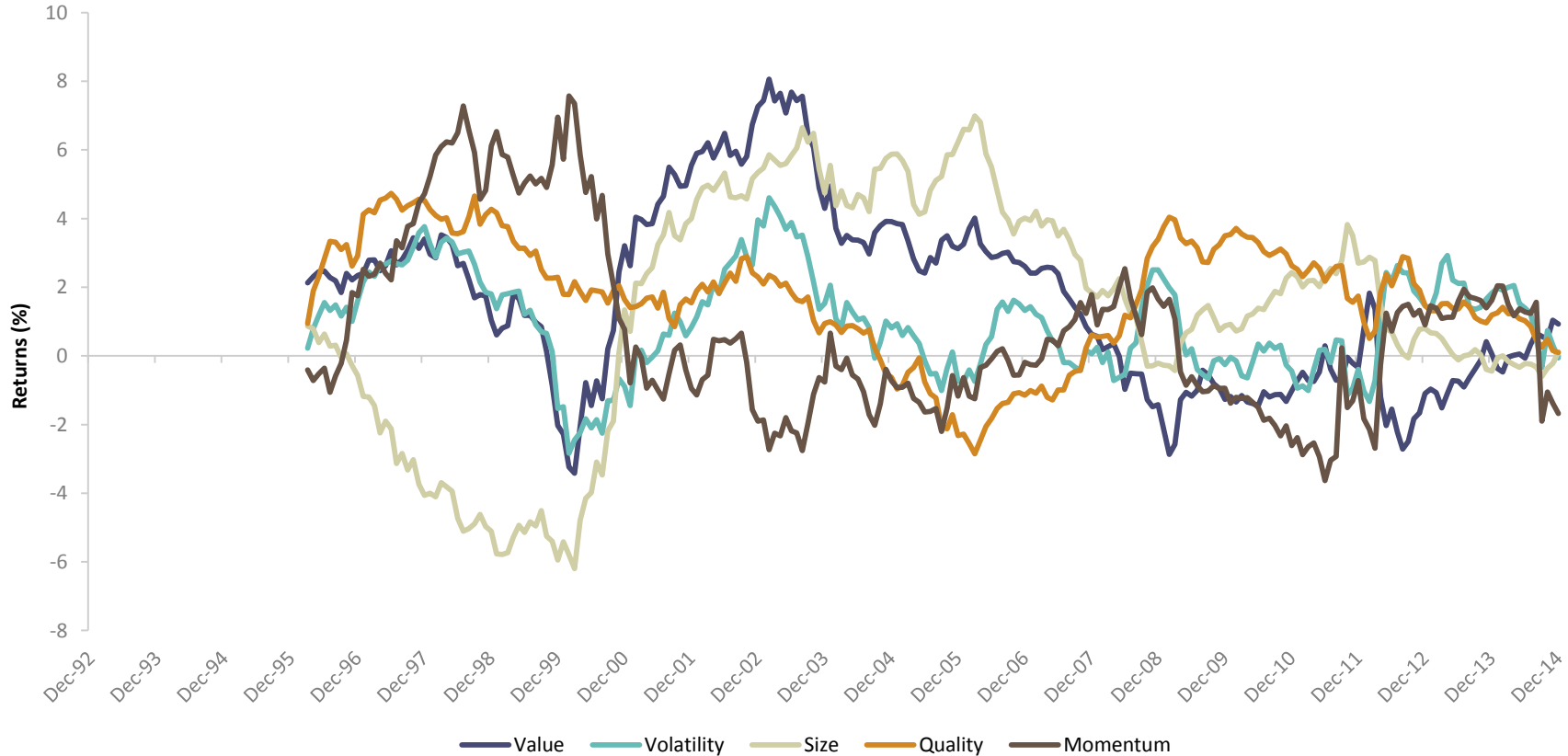
- Over long observation periods, these strategies have shown the potential for
  - Excess return
  - Reduced volatility
  - Compelling risk-adjusted performance
  - Better downside protection
- However, high tracking error highlights the risks of underperformance over certain periods

Source: SSGA, FactSet. Data is from April 1, 1993 through December 31, 2014

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# Advanced Beta Strategies: Single Factor Back-Tested Performance

## Advanced Beta Excess Returns\*, Rolling 36mths



\*Back-tested — tilted strategies, excess return relative to MSCI World Index.

Source: SSGA, FactSet.

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# SSGA Global Multi-Factor Strategy: Back-Tested Performance

## Rolling Excess Returns vs. MSCI World Index



## Positive excess return potential over market cycles for patient investors

- Positive excess return observed in 92% of rolling 36 month periods
- Positive excess return observed in 97% of rolling 60 month periods

Source: State Street Global Advisors.

Data is from April 1, 1993 through September 30, 2014

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# What is Driving Interest in Advanced Beta?

## Concerns about using capitalization weightings

- Market capitalization weights can be concentrated. For instance, as of August 27, 2014, the three largest stocks in the S&P 500 (Apple Inc, Exxon Mobil, and Microsoft) accounted for 7.75% of the index and the top 10 stocks accounted for 17.6% of the index
- Market capitalization weights are based on prices and freely floated shares. To the extent some stocks are overvalued, their weights reflect this undesirable bias
- High cost of active management

## Active management fees remain considerably higher than passive management fees

- For instance, Investment Company Institute (ICI) reports average expenses for actively managed equity funds at 89 basis points in 2013\*
- In contrast, ICI reports average passive (index) equity funds at 12 basis points in 2013\*

## Disappointing Active Manager Returns in Aggregate

- According to the S&P Dow Jones Indices US Scorecard (2013 year end), 56% of large-cap managers and 68% of small-cap managers underperformed the benchmarks over the past 12 months ending Dec. 31, 2013. Over 5 years, 61% of domestic managers underperformed their benchmarks
- Similarly, Mok, Bender, and Hammond (2014)\*\* found using eVestment institutional funds data that the median active manager excess returns was 1.1% (annualized average) from January 2002 to March 2012. From January 2008 to March 2012, it was 20 basis points.

Source: SSGA. As of December 31, 2014.

Past performance is not a guarantee of future results.

\* ICI Factbook (2014)

\*\*"Can Alpha Be Captured by Risk Premia" by William Mok, Jennifer Bender, and Brett Hammond (Journal of Portfolio Management, Winter 2013/2014)

# Concluding Remarks

## **Advanced Beta (AB): empirical evidence is compelling**

- Many different AB indexes and strategies, but returns are driven by a few well-known factors
- Since AB strategies are constructed with benefit of hindsight, they should be viewed with skepticism
- While long term historical performance is attractive, interim risks are significant

## **Considerations for implementing an Advanced Beta portfolio**

- Ownership of Advanced Beta decisions can pose unique challenges for investors
- To be successful with Advanced Beta strategies, investors should have:
  - (1) conviction about the source of returns
  - (2) patience to endure periods of underperformance
- Empirical evidence, low costs and intuitive arguments suggest opportunities for long-term investors

## **SSGA: Partnering with clients to deliver Advanced Beta solutions**

- Extensive research and development, successful implementation of Advanced Beta strategies
- Solutions-oriented approach with flexibility to customize portfolio construction

# Appendix A: Case Studies

# Client Case Studies

## European Government Pension Fund

- Objective: Increase risk-adjusted and total return
- Combination of Global Value, Global Low Volatility, and Global Low Size portfolios
- Implemented through SSGA Tilted Strategies in 2009

## European Corporate Pension Fund

- Objective: Increase risk-adjusted return
- Allocated to Value, Low Volatility, and Quality factors through an SSGA Multi-factor Strategy in 2014

## Asia Government Pension Fund

- Objective: Exposure to global low volatility
- Allocated USD 1.5 bn to the MSCI World Minimum Volatility Index and the MSCI Emerging Markets ex Taiwan Minimum Volatility Index in 2012

## US Public Pension Fund

- Objective to capture market, size, value and low volatility exposures
- Implementation through MSCI ACWI IMI Index (70%), MSCI ACWI Value Weighted Index (15%), and MSCI ACWI Risk Weighted Index (15%) in 2012

## US Corporate Pension Fund (DC)

- Objective to capture defensive factors
- Allocated to Low Volatility and Quality factors through an SSGA Quality-Volatility Strategy in 2014

For discussion purposes only.

# Case Studies: How Are Clients Using Advanced Beta Strategies?

**Case 1: “Improving passive exposure”**

**Case 2: “Replacing/reducing active manager allocations”**

**Clients**

**Case 3: “Taking the desired risk exposures”**

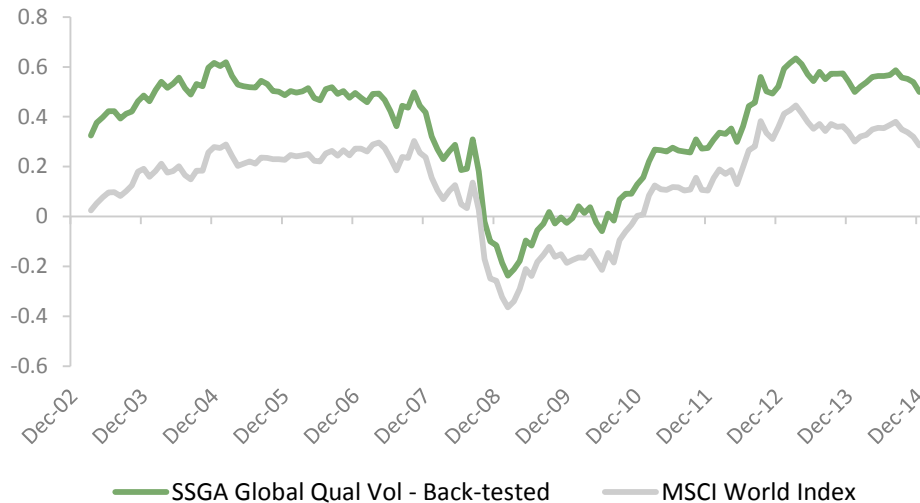
Source: State Street Global Advisors  
The information contained above is for illustrative purposes only.

# Advanced Beta Case #1:

**“Improving passive exposure”**

- **Scenario:**
  - US defined contribution plan with concerns about volatility, downside risk and concentration of market cap indices
  - Seeking to achieve an improvement in total risk adjusted performance
- **Outcome:**
  - Re-allocate part of passive cap-weighted allocation to a SSGA multi-factor strategy (targeting *low volatility* and *quality*)

**Sharpe Ratio, rolling 10 years**



**Annualized Back-Tested Performance  
April 1993 – December 2014**

|                                | MSCI World Index | SSGA Global Qual Vol — Back-Tested | Mix*    |
|--------------------------------|------------------|------------------------------------|---------|
| Return                         | 7.30%            | 9.49%                              | 8.42%   |
| Volatility                     | 14.98%           | 12.24%                             | 13.48%  |
| Excess Return <sup>^</sup>     | NA               | 2.19%                              | 1.12%   |
| Sharpe Ratio                   | 0.30             | 0.54                               | 0.42    |
| Tracking Error <sup>^</sup>    | NA               | 4.70%                              | 2.35%   |
| Information Ratio <sup>^</sup> | NA               | 0.36                               | 0.48    |
| Beta <sup>^</sup>              | NA               | 0.79                               | 0.89    |
| Max Drawdown                   | -54.03%          | -44.69%                            | -49.54% |
| Up Capture <sup>^</sup>        | NA               | 0.85                               | 0.93    |
| Down Capture <sup>^</sup>      | NA               | 0.75                               | 0.88    |

Source: State Street Global Advisors.

\*Mix represents returns based on an allocation of 50% MSCI World Index and 50% SSGA Global High Quality Low Volatility – Back-Tested

<sup>^</sup>Relative to MSCI World Index. Data is from April 1, 1993 through December 31, 2014

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# Advanced Beta Case #2:

**“Replacing/reducing active manager allocations”**

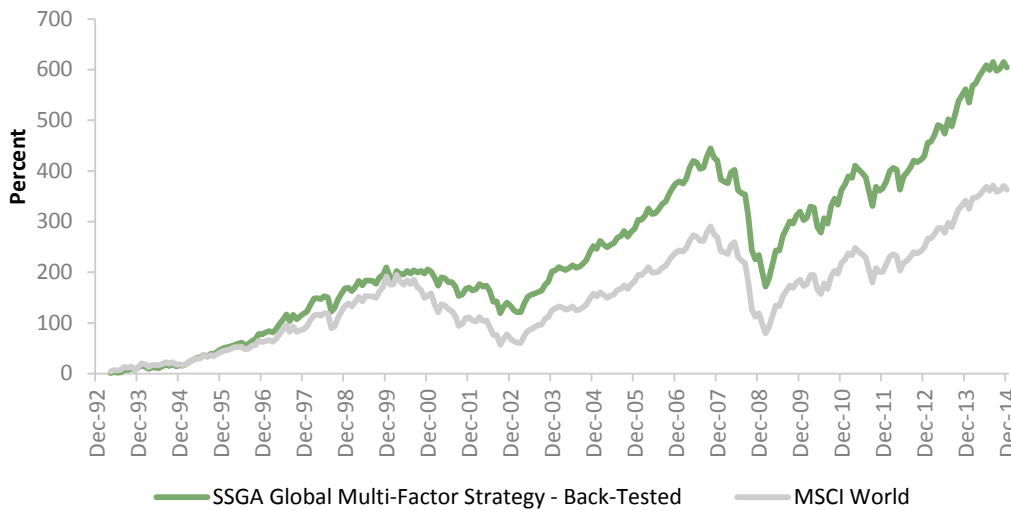
- **Scenario:**

- European pension fund dissatisfied with performance of certain active managers
- Seek to maintain active performance potential, but reduce management fees and resources required to monitor managers
- Seek factor diversification in an effort to achieve active performance consistency, minimize tracking error

- **Outcome:**

- Eliminate certain active managers, re-allocate to SSGA multi-factor strategy (targeting value, low volatility and quality)

**Cumulative Return**



**Annualized Back-Tested Performance  
April 1993 – December 2014**

|                                | MSCI World Index | SSGA Global Multi-Factor — Back-Tested |
|--------------------------------|------------------|--|
| Return                         | 7.30%            | 9.39%                                  |
| Volatility                     | 14.98%           | 13.12%                                 |
| Excess Return <sup>^</sup>     | NA               | 2.09%                                  |
| Sharpe Ratio                   | 0.30             | 0.50                                   |
| Tracking Error <sup>^</sup>    | NA               | 3.77%                                  |
| Information Ratio <sup>^</sup> | NA               | 0.42                                   |
| Beta <sup>^</sup>              | NA               | 0.85                                   |
| Max Drawdown                   | -54.03%          | -44.69%                                |
| Up Capture <sup>^</sup>        | NA               | 0.91                                   |
| Down Capture <sup>^</sup>      | NA               | 0.81                                   |

Source: State Street Global Advisors.

<sup>^</sup>Relative to MSCI World Index. Data is from April 1, 1993 through December 31, 2014

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# Advanced Beta Case #3:

“Taking the desired risk exposures”

- **Scenario:**

- US pension fund with many active equity managers, but very low overall tracking error

- **Questions:**

- Is over-diversification the reason for the low tracking error?
- Is the portfolio’s tracking error explained by alpha?

## Perform a risk-based analysis of equity holdings

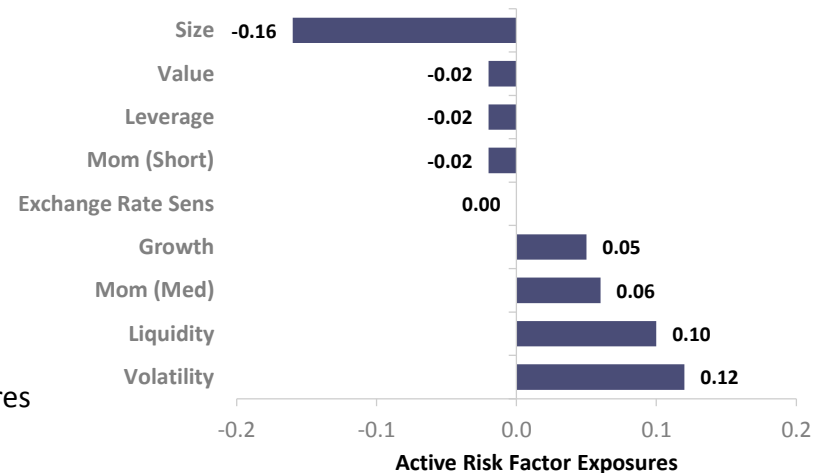
- Managers’ exposures offsetting, resulting in low tracking error
- Tracking error (active risk) largely explained by small cap bias

## SSGA recommendation

- Identify factor exposures to maintain, and those to remove
- Identify active managers to retain
- Implement Advanced Beta strategies targeting desired factor exposures

### Analysis of Investor’s Equity Portfolio As of March 31, 2014

|                       |       |
|-----------------------|-------|
| Predicted Beta        | 1.00  |
| Predicted Active Risk | 0.80% |
| Factor Risk           | 75%   |
| Specific Risk         | 25%   |



Source: State Street Global Advisors, Axioma

Holdings are as of the date indicated, are subject to change, and should not be relied upon as current thereafter.

The above predicted risk statistics are estimates based on certain assumptions and analysis. There is no guarantee that the prediction will be achieved.

# Appendix B: GIPS® Presentation

# GIPS® Report: Global Multi-Factor Composite

As of December 31, 2014

## Gross Returns

|                               | Quarter | YTD | 1 Year | 3 Years | 5 Years | 10 Years | Since Inception Oct 2014 |
|-------------------------------|---------|-----|--------|---------|---------|----------|--------------------------|
| Global Multi-Factor Composite | 0.92    | N/A | N/A    | N/A     | N/A     | N/A      | 0.92                     |
| MSCI World Index              | 1.01    | N/A | N/A    | N/A     | N/A     | N/A      | 1.01                     |

| Year           | Global Multi-Factor Composite | MSCI World Index |
|----------------|-------------------------------|------------------|
| 2014 (Oct-Dec) | 0.92                          | 1.01             |
| 2013           | —                             | —                |
| 2012           | —                             | —                |
| 2011           | —                             | —                |
| 2010           | —                             | —                |
| 2009           | —                             | —                |
| 2008           | —                             | —                |
| 2007           | —                             | —                |
| 2006           | —                             | —                |
| 2005           | —                             | —                |

| Year           | No. of Portfolios | Composite Dispersion | 3 Yr Annualized Standard Deviation - Composite | 3 Yr Annualized Standard Deviation - Benchmark | Total Assets at End of Period (USD) | % of Firm's Assets | Total Firm Assets (USD mil) |
|----------------|-------------------|----------------------|--|--|-------------------------------------|--------------------|-----------------------------|
| 2014 (Oct-Dec) | *                 | N/A                  | **   | **   | 121,002,520                         | 0.01               | 2,383,493                   |
| 2013           | —                 | —                    | —  | —  | —                                   | —                  | —                           |
| 2012           | —                 | —                    | —  | —  | —                                   | —                  | —                           |
| 2011           | —                 | —                    | —  | —  | —                                   | —                  | —                           |
| 2010           | —                 | —                    | —  | —  | —                                   | —                  | —                           |
| 2009           | —                 | —                    | —  | —  | —                                   | —                  | —                           |
| 2008           | —                 | —                    | —  | —  | —                                   | —                  | —                           |
| 2007           | —                 | —                    | —  | —  | —                                   | —                  | —                           |
| 2006           | —                 | —                    | —  | —  | —                                   | —                  | —                           |
| 2005           | —                 | —                    | —  | —  | —                                   | —                  | —                           |

gGMFC  
 \* 5 portfolios or less  
 \*\* Less than 3 years  
 Quarterly and YTD returns are not annualized  
**Investment Objective:** The Fund seeks to provide an investment return in excess of the performance of the World Index (Net Total Return USD) over the long term.  
**Investment Strategy:** The Fund invests in equity securities of companies in countries in global developed markets, and denominated in USD, using a rules based investment technique based on three variables i.e. Valuation, Volatility and Quality and is ranked by market capitalisation. For valuation and volatility this is from lowest (most attractive) to highest and for quality this is from highest (most attractive) to lowest.

## Footnotes

**Firm Definition:** For the purpose of complying with the Global Investment Performance Standards (GIPS®), the firm ("SSGA-Global") is defined as all portfolios managed across the global offices of State Street Global Advisors (SSGA) and SSGA Funds Management, Inc., with the exception of business units which are held out to the marketplace as distinct business entities – Fiduciary Advisory Solutions (formerly known as the Office of the Fiduciary Advisor [OFA]) and Charitable Asset Management (CAM). Prior to 1/1/2011, SSGA-Global also excluded its wrap fee business (Intermediary Business Group [IBG]) and assets accounted for on a book value basis (global cash and stable value assets). In January 2011, SSGA acquired the Bank of Ireland Asset Management Limited (now known as SSGA Ireland Limited), a GIPS® Compliant firm. On 1/1/2012 SSGA Ireland Limited assets were merged into SSGA-Global.

**Composite Description:** The Composite seeks to achieve the Investment Objective described below using the Investment Strategy described below.

**Compliance Statement:** SSGA-Global claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with GIPS. SSGA-Global claims compliance with the GIPS standards from January 1, 2000. The period prior to January 1, 2000 is not in compliance, as not all actual fee-paying portfolios are in a composite. SSGA-Global has been independently verified for the periods January 1, 2000 through December 31, 2013. The verification report is available upon request. Verification assesses whether (1) the firm has complied with all the composite construction requirements of the GIPS standards on a firm-wide basis and (2) the firm's policies and procedures are designed to calculate and present performance in compliance with the GIPS standards. Verification does not ensure the accuracy of any specific composite presentation. In January 2015, the GIPS Firm name changed from "SSGA-Global" to "SSGA-Global".

**List Available:** A complete list of the firm's composites and their descriptions is available upon request.

**Creation Date:** The composite was created on 12/01/14.

**Benchmark Description:** The benchmark for the composite is the MSCI World Index. Index returns are unmanaged and do not reflect the deduction of any fees or expenses but include all items of income, gain, and loss.

**Currency:** Performance is presented in USD.

**Use of Subadvisors:** None.

**Fees:** Returns are expressed gross of management fees. Some members of this composite may accrue administration fees.

**Fee Schedule:** The maximum total annual expense ratio for this composite is 0.45%.

**Derivatives Use:** SSGA may use futures and other derivatives from time to time in the management of the Strategy generally as a temporary substitute for cash investments or for hedging purposes and not with the purpose of creating investment leverage.

**Calculation Methodology:** Additional information regarding the firm's policies and procedures for calculating and reporting performance results is available upon request.

**Annualized Returns:** All returns for periods greater than one year have been annualized.

**Withholding Taxes Differences:** None.

**Exchange Rates Differences Between Composite & Benchmark:** None.

**Minimum Asset Level for Inclusion:** 0.

**Dispersion:** Asset-Weighted standard deviation is calculated using the annual returns of the accounts that were included in the composite for all periods of the year.

**Significant Events:** In May 2014, Keith Crawford was appointed Global Head of Strategy, in addition to his current responsibilities as Chief Financial Officer. Crawford succeeded Bernard Reilly, who left the firm. In July 2014, on the departure of Maria Dwyer, Matt Steinaway was named interim Chief Risk Officer. Matt replaced Maria Dwyer, who was appointed to the leadership team of the Office of Regulatory Initiatives Oversight. In November 2014, David Saulnier was appointed as Chief Risk Officer for SSGA, replacing Matt Steinaway. Matt Steinaway resumed his position as Head of Global Cash Management.

**Past and Future Performance:** Historic performance is not necessarily indicative of actual future investment performance, which could differ substantially.

# Appendix C: Important Disclosures

# SSGA Tilted Back-Tested Performance Footnotes

Provides footnotes for back-tested performance shown on pages 15 and 16.

## **SSGA Global Value, Volatility, Size, Quality and Momentum Tilted Performance:**

Returns are back-tested from April 1, 1993 to December 31, 2014 and assume 50bp transaction costs each way. Average annual turnover (one-way) was approximately 14% for Global Value Tilted, 10% for Global Volatility Tilted, 12% for Global Size Tilted and 11% for Global Quality Tilted, with annual rebalancing. For Momentum Tilted, average turnover was approximately 84% annually (one-way), with quarterly rebalancing.

The testing methodology is a rules-based process to generate historical portfolios. The data used was only the data which would have been available at the time when the historical portfolios were generated, now what is available now. These processes help to eliminate various forms of survivorship bias, both in terms of a “smarter model” and in terms of making decisions based on information that was not available at the time.

**The results shown do not represent the results of actual trading using client assets but were achieved by means of the retroactive application of an investment process that was designed with the benefit of hindsight, otherwise known as back-testing. Thus, the performance results noted above should not be considered indicative of the skill of the advisor or its investment professionals. The back-tested performance was compiled after the end of the period depicted and does not represent the actual investment decisions of the advisor. These results do not reflect the effect of material economic and market factors on decision making.** In addition, back-tested performance results do not involve financial risk, and no hypothetical trading record can completely account for the impact of financial risks associated with actual investing.

No representation is being made that any client will or is likely to achieve profits or losses similar to those shown. In fact, there are frequently significant differences between back-tested performance results subsequently achieved by following a particular strategy.

The back-tested performance data is reported on a gross of fees basis, but net of administrative costs. Additional fees, such as the management fee, would reduce the return. For example, if an annualized gross return of 10% was achieved over a 5-year period and a management fee of 1% per year was charged and deducted annually, then the resulting return would be reduced from 61% to 54%. The performance includes the reinvestment of dividends and other corporate earnings and is calculated in US dollars.

This material has been prepared or is distributed solely for informational purposes and is not a solicitation or an offer to buy any security or instrument or to participate in any trading strategy. It is not intended to supplement or replace the confidential offering memorandum and related offering materials, which should be the sole basis for making an investment decision. All of the recommendations and assumptions included in this presentation are based upon current market conditions as of the date of this presentation and are subject to change. Past performance is no guarantee of future results. All investments involve risk including the loss of principal. All material presented is compiled from sources believed to be reliable, but accuracy cannot be guaranteed.

The strategy described may be executed in a commingled fund managed by SSGA which is not insured by the FDIC or by another governmental agency; it is not an obligation of the FDIC nor is it a deposit or obligation of or guaranteed by State Street Bank and Trust Company. All SSGA commingled funds pay State Street Bank and Trust Company for services as custodian, transfer agent, and shareholder servicing agent and may pay affiliates of State Street Bank and Trust Company for investment advisory services.

Not all products are available to all investors, please contact SSGA for further information regarding this strategy.

***SSGA does not yet manage actual assets to this strategy. A complete list of the firm’s composites and their description is available upon request.***

# Important Disclosures

The views expressed in this material are the views of the Global Equity Beta Solutions team through the period ended December 31, 2014 and are subject to change based on market and other conditions. This document contains certain statements that may be deemed forward-looking statements. Please note that any such statements are not guarantees of any future performance and actual results or developments may differ materially from those projected.

Investments in small/mid-sized companies may involve greater risks than in those of larger, better known companies.

Companies with large market capitalizations go in and out of favor based on market and economic conditions. Larger companies tend to be less volatile than companies with smaller market capitalizations. In exchange for this potentially lower risk, the value of the security may not rise as much as companies with smaller market capitalizations.

Risk associated with equity investing include stock values which may fluctuate in response to the activities of individual companies and general market and economic conditions.

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Investments in emerging or developing markets may be more volatile and less liquid than investing in developed markets and may involve exposure to economic structures that are generally less diverse and mature and to political systems which have less stability than those of more developed countries.

Investing involves risk including the risk of loss of principal.

Diversification does not ensure a profit or guarantee against loss.

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# SSGA Global Multi-Factor Back-Tested Performance Footnotes

Provides footnotes for back-tested performance shown on page 17, 23 & 24.

## **SSGA Global Multi-Factor Performance:**

Returns are back-tested from April 1, 1993 to September 30, 2014 and assume 50bp transaction costs each way. Average turnover was approximately 16% annually (one-way), with annual rebalancing.

The testing methodology is a rules-based process to generate historical portfolios. The data used was only the data which would have been available at the time when the historical portfolios were generated, now what is available now. These processes help to eliminate various forms of survivorship bias, both in terms of a “smarter model” and in terms of making decisions based on information that was not available at the time.

**The results shown do not represent the results of actual trading using client assets but were achieved by means of the retroactive application of an investment process that was designed with the benefit of hindsight, otherwise known as back-testing. Thus, the performance results noted above should not be considered indicative of the skill of the advisor or its investment professionals. The back-tested performance was compiled after the end of the period depicted and does not represent the actual investment decisions of the advisor. These results do not reflect the effect of material economic and market factors on decision making.** In addition, back-tested performance results do not involve financial risk, and no hypothetical trading record can completely account for the impact of financial risks associated with actual investing.

No representation is being made that any client will or is likely to achieve profits or losses similar to those shown. In fact, there are frequently significant differences between back-tested performance results subsequently achieved by following a particular strategy.

The back-tested performance data is reported on a gross of fees basis, but net of administrative costs. Additional fees, such as the management fee, would reduce the return. For example, if an annualized gross return of 10% was achieved over a 5-year period and a management fee of 1% per year was charged and deducted annually, then the resulting return would be reduced from 61% to 54%. The performance includes the reinvestment of dividends and other corporate earnings and is calculated in US dollars.

This material has been prepared or is distributed solely for informational purposes and is not a solicitation or an offer to buy any security or instrument or to participate in any trading strategy. It is not intended to supplement or replace the confidential offering memorandum and related offering materials, which should be the sole basis for making an investment decision. All of the recommendations and assumptions included in this presentation are based upon current market conditions as of the date of this presentation and are subject to change. Past performance is no guarantee of future results. All investments involve risk including the loss of principal. All material presented is compiled from sources believed to be reliable, but accuracy cannot be guaranteed.

The strategy described may be executed in a commingled fund managed by SSGA which is not insured by the FDIC or by another governmental agency; it is not an obligation of the FDIC nor is it a deposit or obligation of or guaranteed by State Street Bank and Trust Company. All SSGA commingled funds pay State Street Bank and Trust Company for services as custodian, transfer agent, and shareholder servicing agent and may pay affiliates of State Street Bank and Trust Company for investment advisory services.

Not all products are available to all investors, please contact SSGA for further information regarding this strategy.

# Important Risk Information

For use with Rhode Island Employee Retirement System only. The Advanced Beta solution is a concept for discussion purposes only. The information provided herein does not constitute investment advice and is not a solicitation. It does not take into account any investor's particular investment objectives, risk tolerance, or financial and tax status.

Value stocks can perform differently from the market as a whole. They can remain undervalued by the market for long periods of time.

Standard deviation is a historical measure of the volatility of returns. If a portfolio has a high standard deviation, its returns have been volatile; a low standard deviation indicates returns have been less volatile. Standard Deviation is normally shown over a time period of 36 months, but the illustrations noted above may reflect a shorter time frame. This may not depict a true historical measure, and shouldn't be relied upon as an accurate assessment of volatility.

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# Appendix D: Biographies

# Biographies



## Gregory Balewicz

Greg is a Vice President and Senior Relationship Manager for State Street Global Advisors. He is responsible for managing Institutional client relationships located in the Northeastern United States.

Prior to his current role, Greg was a Relationship Manager in SSGA's Private Wealth Management Group where he was responsible for managing relationships for SSGA's RIA and Family Office customers and the consultant community that services them. Before that, Greg held positions in our Client Reporting group and in our New Business Installation Unit. He has been involved in the investment services field since 1996.

Greg holds a Bachelor of Arts degree from Framingham State University and holds the FINRA series 7 and 63 licenses. Greg also holds the NFA Series 3 and is an Associated Person of SSGA Funds Management, Inc. ('SSGA FM') SSGA FM is a Commodity Trading Advisor registered with the Commodity Futures Trading Commission.



## Jennifer Bender, PhD

Jenn leads research for Global Equity Beta Solutions. In this role, she is responsible for promoting the thought leadership of SSGA across key areas of passive investing including advanced beta, thematic investing, and evolutions in global equity investing. The focus of the GEBS team is to develop innovative research within these areas. These activities include the publication of white papers in industry-leading journals, developing SSGA proprietary strategies particularly in the area of advanced beta, and building client-specific custom equity solutions.

Previously, Jenn spent eight years as a vice president on the Index and Analytics Research teams at MSCI. Within Index Research, she was responsible for research on equity index-related topics, including asset allocation and index fund management. Prior to joining the Index Research Team, Jennifer worked in the Barra Research group, focusing on portfolio construction and risk modeling. She was previously at State Street Associates and began her career as an economist at DRI in 1996.

Jenn holds a PhD and a MS in economics from Brandeis University. Her work has been published extensively in peer-reviewed journals and compendiums.

# Biographies



## Scott P. Conlon, CFA

Scott is a Vice President of State Street Global Advisors and Portfolio Strategist in the firm's Global Equity Beta Solutions group. He is responsible for research, portfolio management, product development and positioning for Advanced Beta equity strategies within this group.

Previously, he spent several years as a member of SSGA's Active Quantitative Equity group where his investment experience encompassed a broad range of quantitative disciplines covering developed market and emerging market equities. Prior to joining SSGA, he worked for Merrill Lynch Investment Managers in the institutional short-term fixed income group. Scott has worked in the investment management industry since 1999.

Scott holds a MS in Finance degree from the Wallace E. Carroll School of Management at Boston College and a BS in Finance from Bentley College. He earned the Chartered Financial Analyst designation, and is a member of the CFA Institute and the Boston Security Analysts Society.