

## Global Managed Volatility Strategy



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## Managed Volatility: Addressing Client Concerns

**What we are hearing from investors**

- “We are concerned about the volatility of our portfolio”
- “Our portfolio needs to grow to meet future commitments”
- “Another drawdown in the equity market may restrain us from meeting our investment objectives”

**One solution to address these concerns**

- Implement a Managed Volatility equity strategy within portfolio
  - Seeks to reduce volatility of returns, while maintaining equity growth potential, over long term
  - Can be applied to all equity universes (developed markets, emerging markets, etc.)

**Potential benefits**

- Reduce drawdown of equity portfolio in declining market environments
- Improve the Sharpe ratio of equity allocation, and overall asset portfolio
- Achieve growth potential by maintaining full exposure to equities
- Reduce funding ratio volatility

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## Managed Volatility: Potential Performance Benefits

**Historical Drawdown**  
January 1999 – December 2010

- Seeks downside protection
  - Substantial reduction in drawdowns
  - Max drawdown (simulation period):
    - Managed Volatility: -35%
    - MSCI World Index: -54%

**Sharpe Ratio: Rolling 36-Months**  
January 1999 – December 2010

- Seeks stronger Sharpe ratio
  - Better risk-adjusted performance

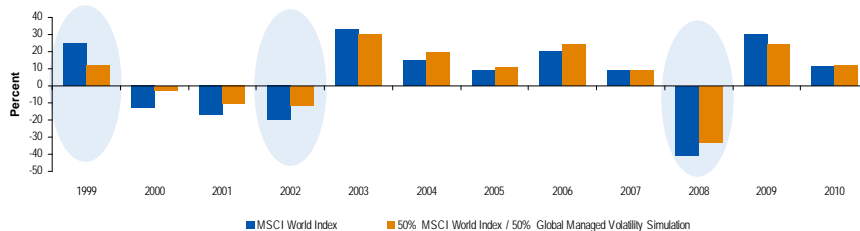
Source: SSgA  
Simulation period: January 1999 – December 2010.  
The simulated performance shown is not indicative of actual future performance, which could differ substantially.  
Please see the Appendix for additional Simulation Disclosure.  
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Index 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.

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## Managed Volatility Complements Traditional Equity Strategies

### What happens to equity portfolio when Managed Volatility is included?

- Consider a 50% allocation to Managed Volatility within equity portfolio



	MSCI World Index	Global Managed Volatility	50% MSCI World Index / 50% Global Managed Volatility
Volatility of Returns	16.6%	11.0%	13.2%
Max Drawdown	-54%	-35%	-45%
Sharpe Ratio	-0.01	0.47	0.20
Tracking Error*	N/A	10.0%	5.0%

- Compared to traditional equities, returns of Managed Volatility are expected to:
  - Trail in rapidly rising markets led by risky stocks, and be higher in falling markets
  - Be less volatile in all market environments

\*Tracking error versus the MSCI World Index  
Source: SSGA

Simulation period: January 1999 – December 2010.

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## Managed Volatility: Potential Benefits to Overall Portfolio

### What happens to overall portfolio when Managed Volatility is included?

- Let's assume 50% of equity is 30% of overall portfolio

Simulation period: January 1999 — December 2010

	Baseline Portfolio*	Global Managed Volatility, % of Overall Portfolio^		
		10%	20%	30%
Volatility of Returns	12.5%	11.3%	10.6%	10.1%
Max Drawdown	-42.5%	-39.6%	-37.5%	-35.2%
Sharpe Ratio	0.24	0.32	0.39	0.46
Tracking Error**	N/A	1.5%	2.4%	3.3%
Return	5.8%	6.4%	6.9%	7.4%

- A 30% allocation to Managed Volatility in overall portfolio has potential to materially improve performance
  - Performance is defined as risk-adjusted performance, or Sharpe Ratio
  - Volatility of returns of Managed Volatility is expected to be materially lower than market over long term
  - Returns of Managed Volatility are not expected to be materially different than market over long term

\* Baseline allocation consists of 60% Equity, 30% Fixed Income and 10% Real Assets/Alternatives. The Equity allocation is 50% MSCI World, 5% MSCI World Small Cap and 5% MSCI Emerging Markets. The Fixed Income Allocation is 25% Barclays Capital Global Aggregate, 5% Barclays Capital Global Treasury ex US Index and 10% in the FTSE EPRA/NAREIT Developed Index.

^ Portfolio weight in Managed Volatility, with weight allocated away from MSCI World Index.

\*\* Tracking error vs. the Baseline Allocation Portfolio

Source: SSGA

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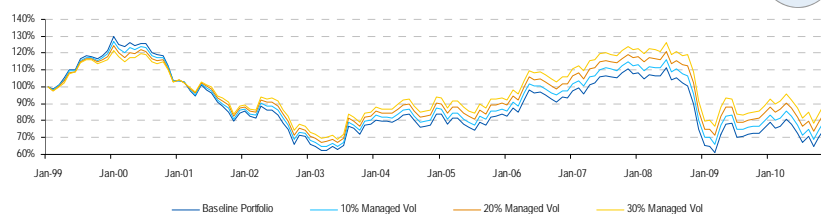
## Managed Volatility: Potential Benefits to Overall Portfolio (Continued)

### What happens to overall portfolio when Managed Volatility is included?

- Let's assume 50% of equity is 30% of overall portfolio

Simulation period: January 1999 — December 2010

	Baseline Portfolio*	Global Managed Volatility, % of Overall Portfolio <sup>^</sup>		
		10%	20%	30%
Ending Funding Ratio	78%	83%	88%	93%
Min Funding Ratio	61%	65%	67%	69%
Max Funding Ratio	130%	127%	124%	126%
Funding Ratio Volatility	17.4%	16.3%	15.4%	14.8%



- An allocation to Managed Volatility in overall portfolio is expected to reduce funding ratio volatility

\*Baseline allocation consists of 60% Equity, 30% Fixed Income and 10% Real Assets/Alternatives. The Equity allocation is 50% MSCI World, 5% MSCI World Small Cap and 5% MSCI Emerging Markets. The Fixed Income Allocation is 25% Barclays Capital Global Aggregate, 5% Barclays Capital Global Treasury ex US Index and 10% in the FTSE EPRA/NAREIT Developed Index.

<sup>^</sup>Portfolio weight in Managed Volatility, with weight allocated away from MSCI World Index. The analysis assumes the plan started the backtest at a funding ratio of 100%. Liability returns are provided by the Citigroup Pension Liability Index. Cash flows and contributions perfectly offset.

Source: SSQA

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## Performance Evaluation and Implementation Considerations

### How to evaluate performance

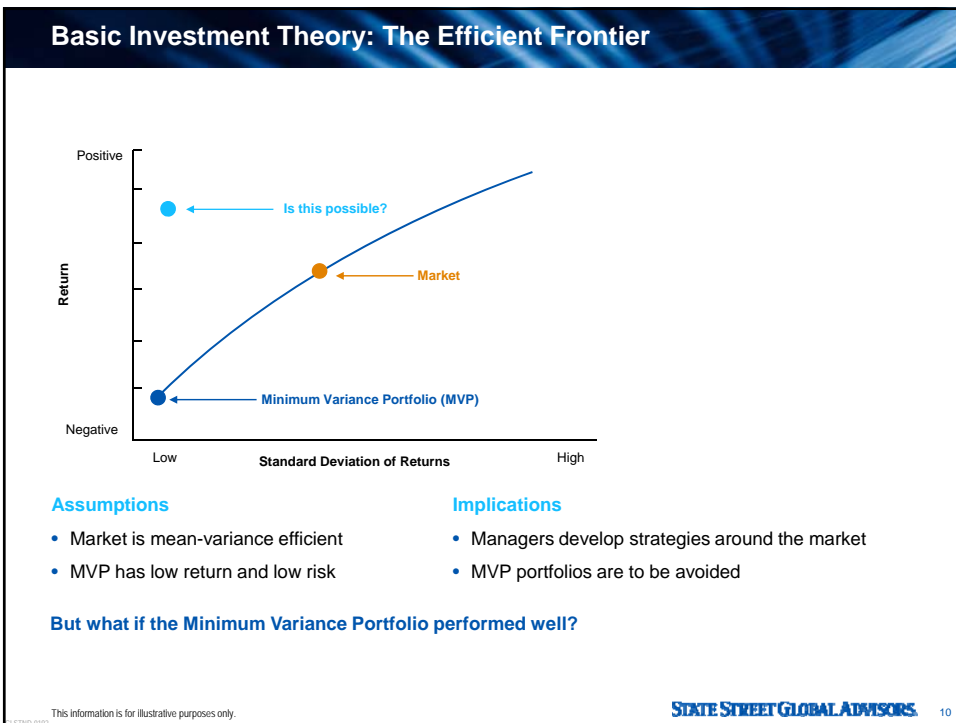
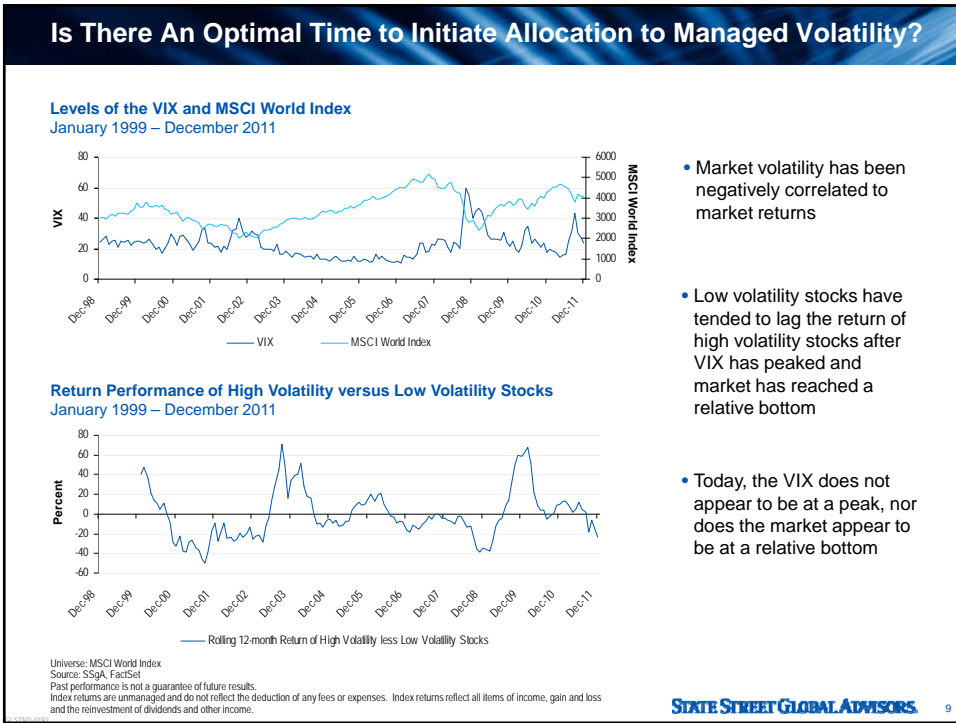
- Sharpe ratio: appropriate risk-adjusted performance measure
  - Defines how much total return is generated per unit of total risk
  - Total returns divided by volatility of total returns
- Performance benchmark
  - Primary: cap-weighted equity index
  - Other considerations
    - An investor's liabilities (an effective tool within an LDI framework)
    - Low volatility equity indices

### Implementation considerations

- Within equity allocation (recommended)
  - Complements traditional equity strategies
  - High correlation to cap-weighted equity indices
  - Tracking error vs. cap-weighted equity indices expected to be high
    - Add a low volatility equity index to investment policy to overcome tracking error challenges
    - Redefine equity risk tolerance (as measured by tracking error) within investment policy
- Within opportunistic or alternatives allocation
  - Allocate from an area within the asset portfolio that is not constrained by tracking error
- Natural fit within asset – liability matching investing approach (LDI framework)
  - As growth asset, helps bring asset volatility closer in line with volatility of liabilities

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### CAPM Assumes the Market Is Mean-Variance Efficient

We can test the CAPM to understand if the market appears efficient

**Assumptions**

- Returns should increase with beta
- Returns should be linearly related to beta
- The zero-beta portfolio should equal the risk-free rate

This information is for illustrative purposes only.

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### High Beta Doesn't Necessarily Mean High Returns

Average Annualized Monthly Return versus Beta for Equal Weighted Portfolios Formed on Expected Beta (MSCI World Index Universe)  
January 1990 — December 2009

**Assumptions**

- Returns are expected to be linearly increasing with beta but appear flat or declining
- Low beta stocks have historically performed much better than expected
- High beta stocks have historically performed much worse than expected

Source: SSGA  
As of December 2009  
Past performance is not a guarantee of future results.  
The MSCI World Index is a trademark of MSCI Inc.  
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.

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## Characteristics of Stocks within Beta Deciles

### MSCI World Index, 1999 — 2009

Beta Decile	Avg. Predicted Beta	Avg. Long-Term Growth Exp. (%)	Avg. # of Estimates	Avg. Daily Turnover (%)	Avg. Price to Book	Avg. Monthly Return (%)	Monthly Std. Dev. (%)
1	2.08	15.05	18.07	1.51	3.40	0.57	9.83
2	1.50	13.59	15.55	1.01	3.07	0.70	7.48
3	1.27	13.17	14.97	0.91	2.88	0.63	6.58
4	1.12	12.62	14.43	0.79	2.87	0.67	5.87
5	0.99	12.35	13.95	0.72	2.77	0.77	5.48
6	0.88	11.78	13.50	0.67	2.77	0.70	4.98
7	0.76	11.56	13.54	0.62	2.77	0.58	4.60
8	0.64	11.16	13.78	0.53	2.82	0.69	4.14
9	0.49	10.14	13.79	0.96	2.95	0.70	3.69
10	0.21	9.64	13.18	0.51	2.93	0.55	3.12

- High beta stocks are associated with glamour
  - High long term growth expectations
  - High analyst coverage
  - High daily turnover
- Glamour attracts crowds, leading to future underperformance

\* Universe: MSCI World Index. Period: January 1999 – December 2009.

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## Conclusions

### High volatility stocks have not been compensated with higher returns historically

- Stocks with higher expected volatility are associated with glamour
  - These stocks tend to be associated with high beta, perform worst during market drawdowns
- Investors should choose portfolios that maximize expected return per unit of expected risk

### Managed Volatility approach to equity investing is appealing

- Offers potential to improve total return per unit of total risk of equity portfolio
  - Performance evaluation focused on risk-adjusted performance
- Complementary to traditional equity strategies
  - Downside protection in falling markets while participating in upside during rising markets
- Attractive to broad range of investors
  - Pensions and insurance companies
  - Endowments and foundations
  - Retail investors

Past performance is not a guarantee of future results.

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## Global Managed Volatility Strategy and Process

Investing in foreign domiciled securities may involve risk of capital loss from unfavorable fluctuation in currency values, withholding taxes, from differences in generally accepted accounting principles or from economic or political instability in other nations. Investing involves risk including the risk of loss of principal. Derivative investments may involve risks such as potential illiquidity of the markets and additional risk of loss of principal. There are a number of risks associated with futures investing including but not limited to counterparty credit risk, currency risk, derivatives risk, foreign issuer exposure risk, sector concentration risk, leveraging and liquidity risks.



## Investment Philosophy

### Over time, we believe:

#### Low volatility portfolios offer the potential for attractive risk-adjusted returns

- Low volatility portfolios have performed as well, or better than, high volatility portfolios

#### Diversified low volatility portfolios can be constructed with confidence

- Risk models and optimization techniques are reliable tools

#### The low volatility opportunity is supported by a credible investment thesis

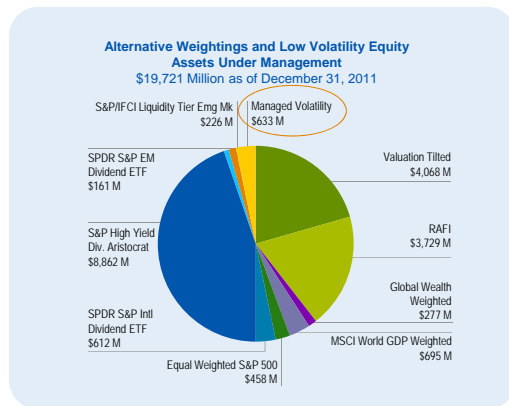
- Behavioral explanations and limits to arbitrage



## SSgA's Advanced Beta Capabilities

### Advanced Beta

- Categorized as any objective, transparent and unbiased method of capturing a return stream



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## Global Equity Beta Solutions Managed Volatility Team

- Experienced portfolio management team
- Investment strategy in place since 2008
- \$633 million under management as of December 31, 2011

### Team Members

Portfolio Management	Years of Experience
Lynn Blake, CFA, Head of GEBS	24
David Arrighini, CFA	20
Juan Acevedo	12
Susan Darroch	26
Selim Dekali	6
Nobuya Endo, CFA	16
Richard Hannam, ASIP	24
Frédéric Jamet	22
Emiliano Rabinovich, CFA	7
Eric Villott, CFA, CFP	16
<b>Research</b>	
Eric Brandhorst, CFA, Head of Research	23
Chris Cheung, CFA	8
Taie Wang, CFA	8

### SSgA Toolkit

#### Low Vol Research/Specialists

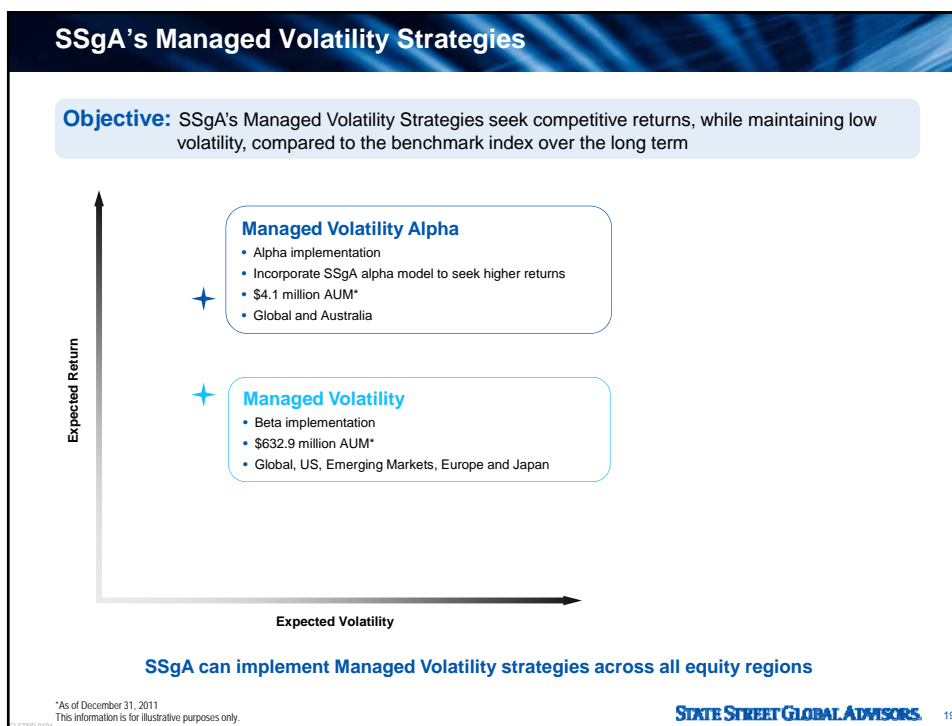
Ric Thomas, CFA; Scott Conlon, CFA; Sophie Mayrand, CFA, CGA; and Dane Smith

#### Advanced Research Center

#### Trading

#### Legal/Compliance

#### Operations



### Global Managed Volatility Strategy

<b>Objective</b>	<ul style="list-style-type: none"> <li>Seeks to provide competitive returns, while maintaining low volatility, compared to the benchmark over the long term by constructing a portfolio of stocks with low expected volatility relative to the benchmark</li> </ul>
<b>Benchmark</b>	<ul style="list-style-type: none"> <li>MSCI World Index</li> </ul>
<b>Investment Universe</b>	<ul style="list-style-type: none"> <li>Equity securities of MSCI World Index</li> </ul>
<b>Risk Management</b>	<ul style="list-style-type: none"> <li>Focus on managing total risk of portfolio, not benchmark-relative risk</li> </ul>
<b>Risk Parameters*</b>	<ul style="list-style-type: none"> <li>Maximum security weight of 1.0% (grandfathering allowed up to 1.25%)</li> <li>Maximum sector weight of 25%</li> <li>Maximum industry weight of 10%</li> <li>Maximum active country weight of 3%</li> <li>Control for size</li> </ul>
<b>Expected Turnover</b>	<ul style="list-style-type: none"> <li>25% per annum (one way)</li> </ul>
<b>Trading</b>	<ul style="list-style-type: none"> <li>SSgA's global trading desks focus on cost minimization and trade effectiveness</li> <li>Seeks to be fully invested</li> </ul>

\* At time of trade  
\*\* The above targets are estimates based on certain assumptions and analysis made by SSgA. There is no guarantee that the estimates will be achieved.

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## Analyzing Risk through Multiple Dimensions

A multi-factor risk model is utilized to assess and manage total portfolio risk

### Style:

- Exchange Rate Sensitivity
- Liquidity
- Medium Term Momentum
- Short Term Momentum
- Size
- Volatility
- Growth
- Leverage
- Value

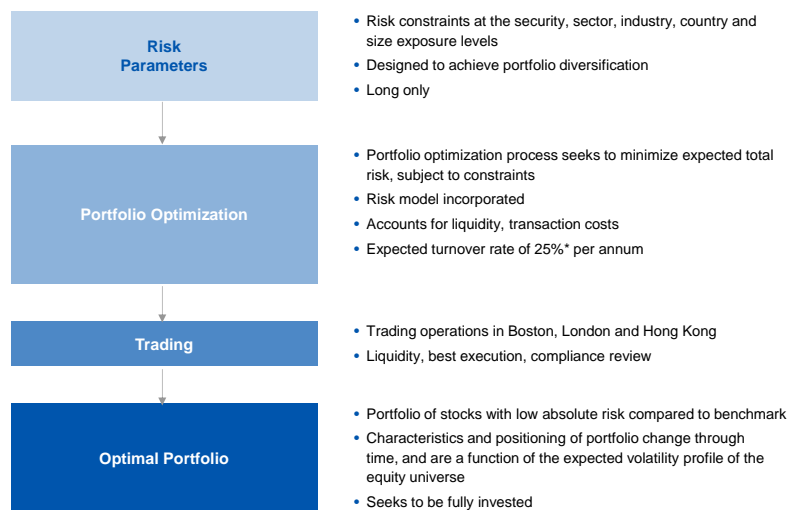
### Industry and Country:

- Accounts for a company's particular business and country of domicile

### Currency:

- Accounts for interaction of currency of stock returns
- Provides framework to view risk from the perspective of any base currency

## Global Managed Volatility Investment Process



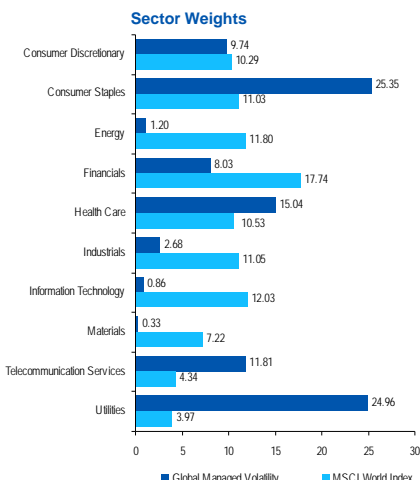
## Global Managed Volatility Strategy: Characteristics

**Risk Management focused on absolute exposure, not benchmark-relative risk**  
As of December 31, 2011

	Global Managed Volatility	MSCI World Index
Predicted Total Risk (%)	17.1	26.1
Weighted Avg. Market Cap (\$B)	27.5	65.5
Total Number of Holdings	264	1,614
Beta (Trailing 36 Months)	0.6	1.0
Standard Deviation (%) (Ann'd 36 Mos.)	13.5	20.4
Price/Book (x)	1.9	1.6
Ann. Dividend Yield (Trailing 12 Mos.) (%)	3.6	2.9
Price/Earnings (x) (Forward 12 months)	14.2	11.8
Price/Cash Flow (x)	8.3	6.8
Return on Equity (%)	17.9	18.5
Estimated 3-5 Year EPS Growth (%)	7.4	9.4
Composite AUM (M)	\$62.1	

### Top 10 Holdings

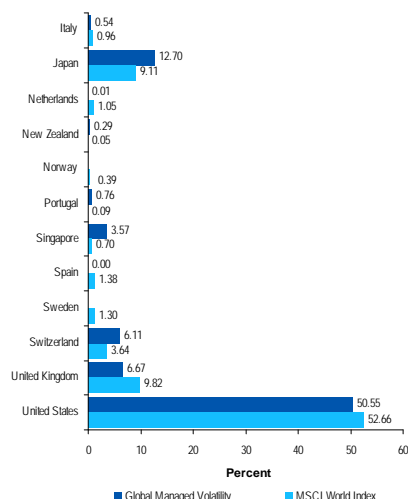
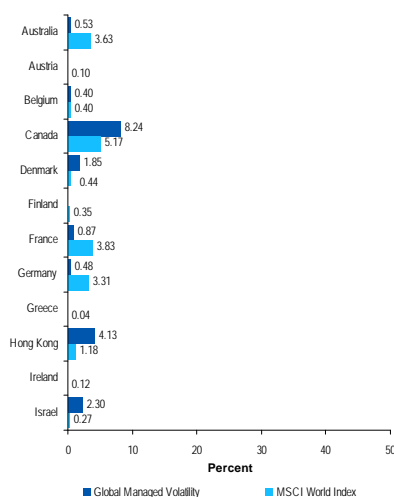
Stock	Portfolio Weight	MSCI World Weight
Hershey Co.	1.06%	0.05%
Bristol-Myers Squibb Co.	1.06	0.27
Verizon Communications Inc.	1.06	0.50
Eli Lilly & Co.	1.05	0.19
Lawson Inc.	1.05	0.02
USS Co. Ltd.	1.05	0.01
Southern Co.	1.05	0.18
BCE Inc.	1.05	0.05
Duke Energy Corp.	1.05	0.13
Unicharm Corp.	1.05	0.02



This information should not be considered a recommendation to invest in any particular sector or to buy or sell any security shown. It is not known whether the sectors or securities shown will be profitable in the future.  
The above information is considered supplemental to the GIPS presentation for this Composite, which can be found in the Appendix or was previously presented. A GIPS presentation is also available upon request. Past performance is not a guarantee of future results. Characteristics and weights presented are calculated using the month end market value of holdings, except for beta and standard deviation, if shown, which use month end return values. Averages reflect the market weight of securities in the portfolio. Market data, prices, and dividend estimates for characteristics calculations provided by FactSet Research Systems, Inc. All other portfolio data provided by SSgA. Characteristics and weights are as of the date indicated, are subject to change, and should not be relied upon as current thereafter. Past performance is not a guarantee of future results.

## Global Managed Volatility Strategy: Characteristics (Continued)

**Diversified country exposure**  
Country Weights as December 31, 2011

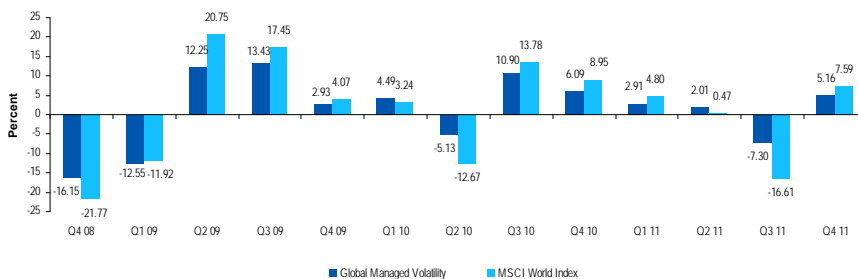


Source: SSgA  
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## Global Managed Volatility: Live Performance

### Gross annualized composite returns for the period ending December 31, 2011 (USD)

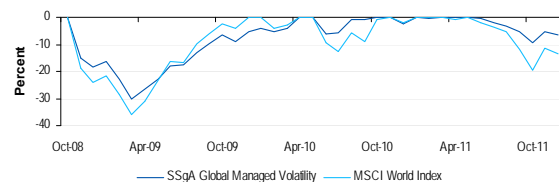
	YTD	2010	2009	Oct-Dec 2008	1 Year	2 Years	Since Inception*	Standard Deviation*	Volatility Reduction	Sharpe Ratio
Global Managed Volatility Composite	2.34%	16.63%	14.60%	-16.15%	2.34%	9.25%	4.31%	15.92%	-31%	0.26
MSCI World Index	-5.54	11.76	29.99	-21.77	-5.54	2.75	2.21	22.92		0.09
Difference**	7.88	4.87	-15.39	5.63	7.88	6.51	2.11	-7.00		0.17



† Inception: 10/1/2008: Partial year performance not annualized.  
 \* Annualized standard deviation of monthly returns since inception.  
 \*\* The value added returns may show rounding differences.  
 The performance shown is of a composite created 01/01/09 consisting of all discretionary accounts using this investment strategy. There is no minimum account size required for inclusion in the composite. New funds or accounts are added to the composite upon the first full month of operation and closed funds or accounts are removed from the composite upon the last full month of operation. The above information is considered supplemental. A complete description of this composite as well as a complete presentation that complies with the requirements of the GIPS standards is provided in the Appendix or was previously presented. A GIPS presentation is also available upon request.  
 Past performance is no guarantee of future results. Performance returns for periods of less than one year are not annualized. The performance figures contained herein are provided on a gross of fees basis and do not reflect the deduction of advisory or other fees which could reduce the return. The performance includes the reinvestment of dividends and other corporate earnings and is calculated in US dollars.  
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## Global Managed Volatility: Live Performance

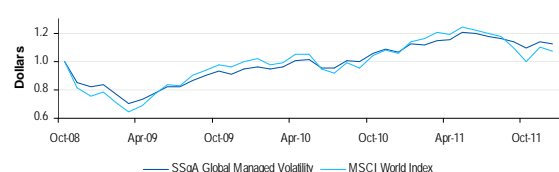
### Historical Drawdown October 2008 – December 2011



- Seeks to deliver downside protection, while also participating in rising markets

- Low exposure to higher volatile, higher beta (glamour) stocks

### Cumulative Growth of \$1 October 2008 – December 2011



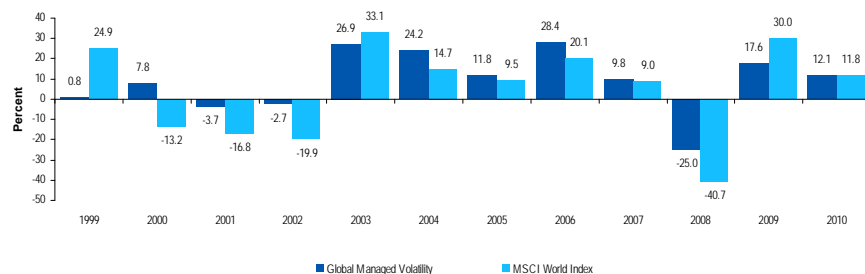
- By limiting downside in falling markets, the strategy seeks to benefit from compounding effects over the long term

The Global Managed Volatility Strategy was inception on October 1, 2008.  
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## Global Managed Volatility: Simulated Performance

Gross annualized returns for the period ending December 31, 2010 (USD)

	1 Year	3 Years	5 Years	10 Years	Since Inception†	Standard Deviation*	Volatility Reduction	Sharpe Ratio
Global Managed Volatility	12.06%	-0.36%	6.87%	8.69%	7.93%	10.96%	-34%	0.47
MSCI World Index	11.76	-4.85	2.43	2.31	2.61	16.61		-0.01
Difference**	0.30	4.49	4.44	6.38	5.32	-5.65		0.48



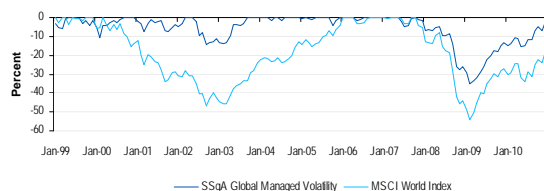
Strategy returns are not expected to be significantly different than index over long term.

† Inception date of simulation is January 1999.  
 \* Annualized standard deviation of monthly returns since inception.  
 \*\* The value-added returns may show rounding differences.  
 Disclaimer: The information contained in this Performance Simulation is provided in good faith and for general information and discussion only. The whole or any part of this simulation may not be reproduced, copied, transmitted or any of its contents disclosed to third parties without SSgA's expressed written consent. Simulated past performance figures are no guarantee of factual future returns which could differ substantially and SSgA makes no representation in relation to future performance or returns. Please see Appendix for additional Simulation Disclosure.  
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## Global Managed Volatility: Simulated Performance

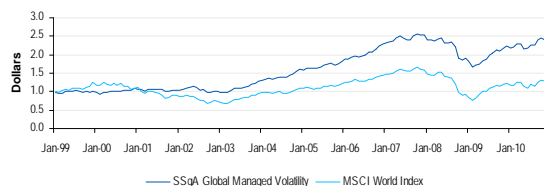
Historical Drawdown  
 January 1999 – December 2010



- Seeks to deliver downside protection, while also participating in rising markets

- Low exposure to higher volatile, higher beta (glamour) stocks

Cumulative Growth of \$1  
 January 1999 – December 2010



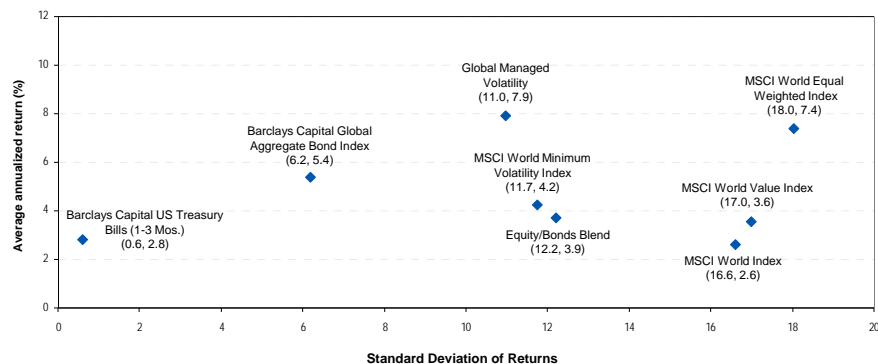
- By limiting downside in falling markets, the strategy seeks to benefit from compounding effects over the long term

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 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.

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## Measuring Performance over the Long Term

Simulations Run from January 1999 to December 2010  
Annualized Volatility Versus Average Annualized Return

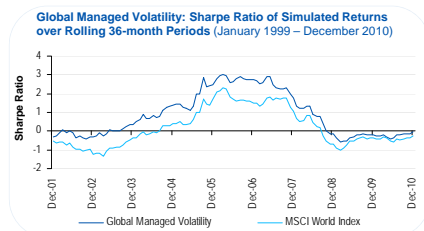
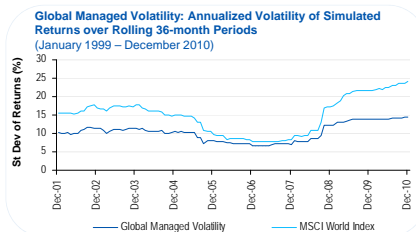
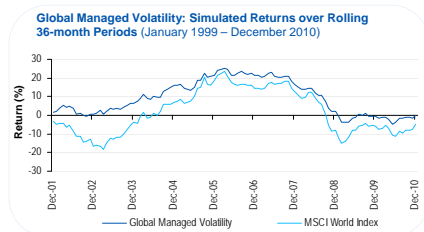


- Equity/Bonds Blend: 70% MSCI World Index/30% Barclays Capital Global Aggregate Bond Index

Strategy returns are not expected to be significantly different than index over long term

Disclaimer: The information contained in this Performance Simulation is provided in good faith and for general information and discussion only. The whole or any part of this simulation may not be reproduced, copied, transmitted or any of its contents disclosed to third parties without SSGA's expressed written consent. Simulated past performance figures are not a guarantee of actual future returns, which may differ substantially, and SSGA makes no representation in relation to future performance or returns. Please see Appendix for additional Simulation Disclosure. The Barclays Capital Global Aggregate Bond Index is a trademark of Barclays Capital, Inc. The above information is considered supplemental to the GIPS presentation for this Composite, which can be found in the Appendix or was previously presented. A GIPS presentation is also available upon request. 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.

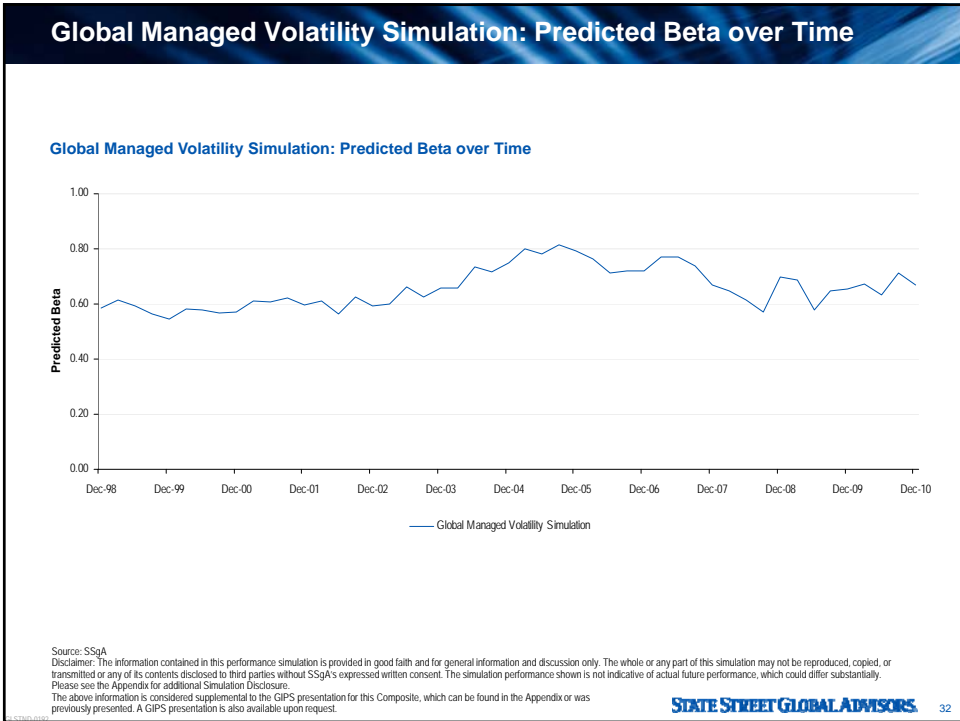
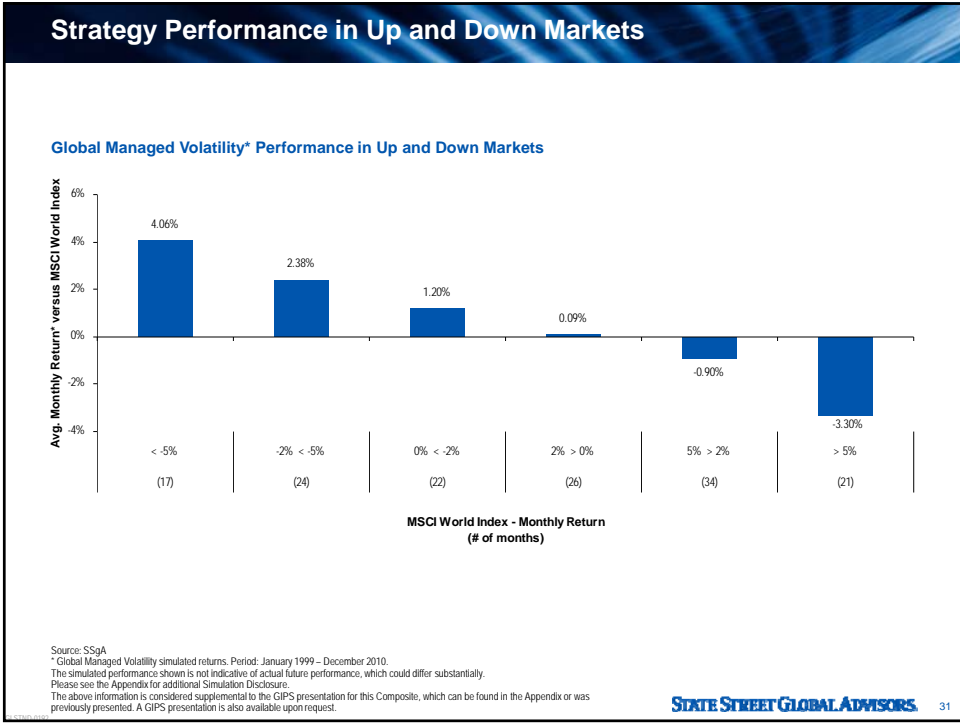
## Risk-Adjusted Performance over Market Cycles



- Competitive returns, lower volatility: improved Sharpe Ratio over market cycles

Strategy returns are not expected to be significantly different than index over long term

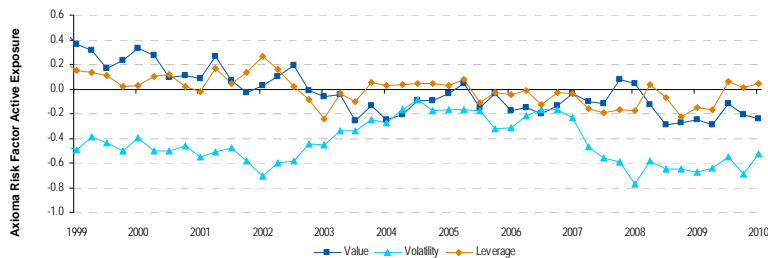
Source: SSGA  
Simulation period: January 1999 – December 2010.  
The simulated performance shown is not indicative of actual future performance, which could differ substantially. Please see the Appendix for additional Simulation Disclosure. The above information is considered supplemental to the GIPS presentation for this Composite, which can be found in the Appendix or was previously presented. A GIPS presentation is also available upon request. 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.



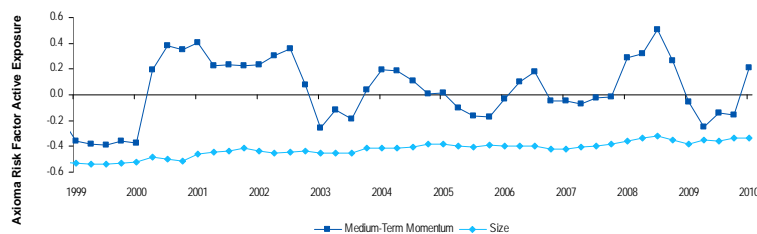


## Global Managed Volatility Simulation: Active Exposures over Time

Value, Volatility and Leverage Active Exposure



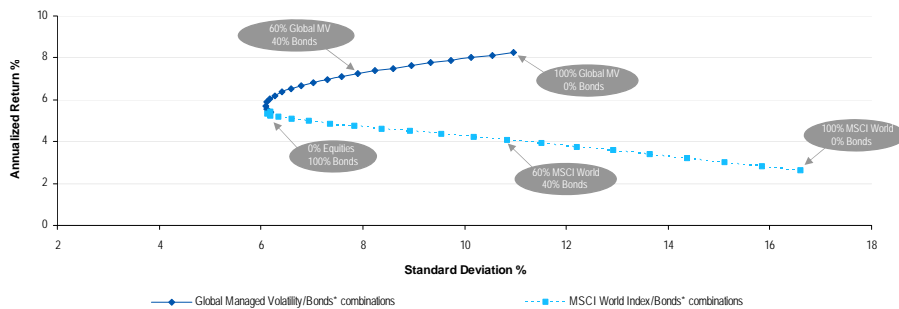
Medium-Term Momentum and Size Active Exposure



Source: SSGA  
 Disclaimer: The information contained in this performance simulation is provided in good faith and for general information and discussion only. The whole or any part of this simulation may not be reproduced, copied, or transmitted or any of its contents disclosed to third parties without SSGA's expressed written consent. The simulation performance shown is not indicative of actual future performance, which could differ substantially. Please see the Appendix for additional Simulation Disclosures.  
 The above information is considered supplemental to the GIPS presentation for this Composite, which can be found in the Appendix or was previously presented. A GIPS presentation is also available upon request. Please see the Appendix for additional Simulation Disclosures.

## Potential Diversification Benefits within Asset Allocation Framework

Efficient Frontier



\* Global Managed Volatility simulated returns. The Barclays Capital Global Aggregate Index is used for the Bonds proxy. Period: January 1999 – December 2010

### Global Managed Volatility's potential benefits over the long term:

- Lower volatility than broad equity market, with competitive equity returns
- Enhanced risk/return profile can help improve performance of equity/bond portfolio mix
- Global Managed Volatility can help reduce volatility of assets without sacrificing returns

Disclaimer: The information contained in this Performance Simulation is provided in good faith and for general information and discussion only. The whole or any part of this simulation may not be reproduced, copied, transmitted or any of its contents disclosed to third parties without SSGA's expressed written consent. Simulated past performance figures are not a guarantee of actual future returns, which could differ substantially, and SSGA makes no representation in relation to future performance or returns. Please see the Appendix for additional Simulation Disclosure.  
 The above information is considered supplemental to the GIPS presentation for this Composite, which can be found in the Appendix or was previously presented. A GIPS presentation is also available upon request.

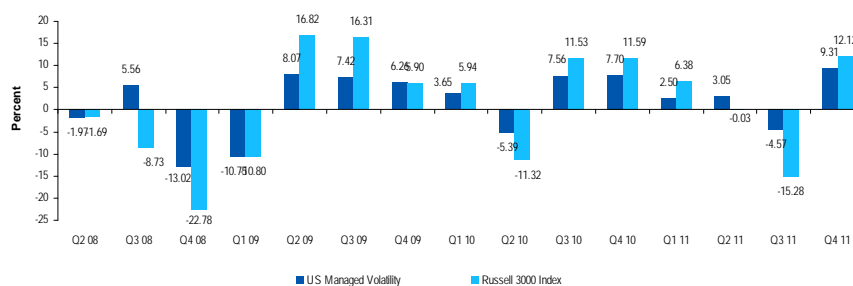
## Appendix A: Managed Volatility within Other Regions



## US Managed Volatility: Live Performance

Gross annualized composite returns for the period ending December 31, 2011 (USD)

	2011	2010	2009	(Apr-Dec) 2008	1 Year	2 Years	3 Years	Since Inception <sup>†</sup>	Standard Deviation <sup>**</sup>	Volatility Reduction	Sharpe Ratio
US Managed Volatility Composite	10.19%	13.60%	10.09%	-10.00%	10.19%	11.88%	11.28%	5.91%	13.94%	-36%	0.40
Russell 3000® Index	1.03	16.93	28.34	-30.71	1.03	8.68	14.88	1.32	21.85		0.04
Difference <sup>***</sup>	9.16	-3.33	-18.25	20.71	9.16	3.20	-3.60	4.59	-7.91		0.36

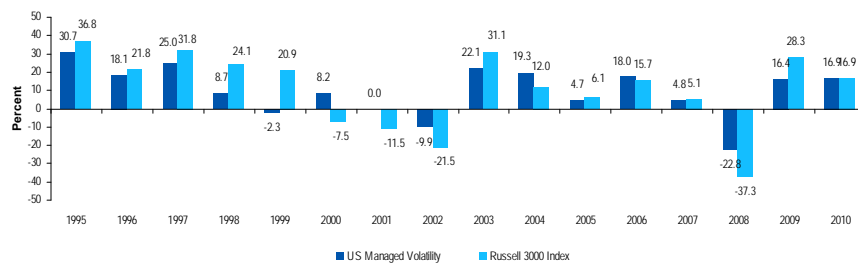


Source: SSGA  
<sup>†</sup> Inception: 4/2008; Partial year performance not annualized.  
<sup>\*\*</sup> Annualized standard deviation of monthly returns since inception.  
<sup>\*\*\*</sup> The value added returns may show rounding differences.  
 The performance shown is of a composite created 01/01/09 consisting of all discretionary accounts using this investment strategy. There is no minimum account size required for inclusion in the composite. New funds or accounts are added to the composite upon the first full month of operation and closed funds or accounts are removed from the composite upon the last full month of operation. The above information is considered supplemental. A complete description of this composite as well as a complete presentation that complies with the requirements of the GIPS standards is provided in the Appendix or was previously presented. A GIPS presentation is also available upon request.  
 Past performance is no guarantee of future results. Performance returns for periods of less than one year are not annualized. The performance figures contained herein are provided on a gross of fees basis and do not reflect the deduction of advisory or other fees which could reduce the return. The performance includes the reinvestment of dividends and other corporate earnings and is calculated in US dollars.  
 The index returns are unmanaged and do not reflect the deduction of any fees or expenses. The index returns reflect all items of income, gain and loss and the reinvestment of dividends and other income.

## US Managed Volatility: Simulated Performance

Gross annualized returns for the period ending December 31, 2010 (USD)

	1 Year	3 Years	5 Years	10 Years	Since Inception <sup>†</sup>	Standard Deviation*	Volatility Reduction	Sharpe Ratio
US Managed Volatility	16.87%	1.65%	5.36%	5.96%	8.97%	11.04%	-32%	0.50
Russell 3000 <sup>®</sup> Index	16.93	-2.01	2.74	2.16	8.66	16.25		0.32
Difference**	-0.06	3.66	2.63	3.80	0.31	-5.21		0.18



Strategy returns are not expected to be significantly different than index over long term

<sup>†</sup> Inception date of simulation is January 1995.  
<sup>\*</sup> Annualized standard deviation of monthly returns since inception.  
<sup>\*\*</sup> The value added differences may show rounding differences.  
 Disclaimer: The information contained in this performance simulation is provided in good faith and for general information and discussion only. The whole or any part of this simulation may not be reproduced, copied, transmitted or any of its contents disclosed to third parties without SSGA's expressed written consent. The simulated performance shown is not indicative of actual future performance, which could differ substantially. Please see the Appendix for additional Simulation Disclosure.  
 The above information is considered supplemental to the GIPS presentation for this Composite, which can be found in the Appendix or was previously presented. A GIPS presentation is also available upon request.  
 Russell Investment Group is the source and owner of the trademarks, service marks and copyrights related to the Russell Indexes.  
 Russell 3000<sup>®</sup> is a trademark of Russell Investment Group.

## Appendix B: Managed Volatility Simulation Footnotes and Disclosures



## Global Managed Volatility Simulation Footnotes

### Global Managed Volatility Performance:

Returns are simulated from January 1, 1999 to December 31, 2010, started with \$1 billion USD asset size, and assume 50bp transaction costs each way. Average turnover was approximately 20% annually (one-way), with quarterly rebalancing.

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. The simulated 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.

The simulated performance data is reported on a gross of fees basis, but net of administrative costs. Additional fees, such as the advisory 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.

The simulated performance is not necessarily indicative of future performance, which could differ substantially. The benchmark used is the MSCI World Index. The index returns are unmanaged and do not reflect the deduction of any fees or expenses. The index returns reflect all items of income, gain and loss and the reinvestment of dividends and other income. All trademarks are property of their respective owners.

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 will be available to all investors, please contact SSgA for further information regarding this strategy.

The performance information should not be shown without these accompanying notes.

### Backtest Creation:

The testing methodology used an optimization model to generate historical portfolios. The data used was only that data which would have been available at the time when the historical portfolios were generated, not 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.

Quarterly portfolios were created, and returns are the result of a buy and hold assumption on each of these portfolios. Transaction costs were assumed as stated above.

This Global Managed Volatility process was backtested in April 2011.

## US Managed Volatility Simulation Footnotes

### US Managed Volatility Performance:

Returns are simulated from January 1, 1995 to December 31, 2010, started with \$1 billion USD asset size, and assume 50bp transaction costs each way. Average turnover was approximately 25% annually (one-way), with quarterly rebalancing.

The results shown do not represent the results of actual trading using client assets but were achieved by means of the retroactive application of a model that was designed with the benefit of hindsight. The simulated 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.

The simulated performance shown was created by the Global Equity Beta Solutions team. The simulated performance data is reported on a gross of fees basis, but net of administrative costs. Additional fees, such as the advisory 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.

The simulated performance is not necessarily indicative of future performance, which could differ substantially. The Benchmark is the Russell 3000 Index. The index returns are unmanaged and do not reflect the deduction of any fees or expenses. The index returns reflect all items of income, gain and loss and the reinvestment of dividends and other income. Russell 3000® Index measures the performance of the 3,000 largest U.S. companies based on total market capitalization, which represents approximately 98% of the investable U.S. equity market.

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 will be available to all investors, please contact SSgA for further information regarding this strategy.

The performance information should not be shown without these accompanying notes.

### Backtest Creation:

The testing methodology used an optimization model to generate historical portfolios. The data used was only that data which would have been available at the time when the historical portfolios were generated, not 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.

Quarterly portfolios were created, and returns are the result of a buy and hold assumption on each of these portfolios. Transaction costs were assumed as stated above.

This US Managed Volatility process was backtested in May 2011.

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## Appendix C: GIPS® Presentations

SSGA

## GIPS® Report: Global Managed Volatility Composite

As of December 31, 2011

### Gross Returns

	Quarter	YTD	1 Year	3 Years	5 Years	10 Years	Inception Oct 2008
Global Managed Volatility Composite	5.16	2.34	2.34	11.01	N/A	N/A	4.31
MSCI World Index	7.59	-5.54	-5.54	11.13	N/A	N/A	2.21

Year	Global Managed Volatility Composite	MSCI World Index
2011	2.34	-5.54
2010	16.64	11.76
2009	14.60	29.99
2008 (Oct-Dec)	-16.15	-21.77
2007	—	—
2006	—	—
2005	—	—
2004	—	—
2003	—	—
2002	—	—

Year	No. of Portfolios	Composite Dispersion	3 Yr Annualized Standard Deviation - Composite	3 Yr Annualized Standard Deviation - Benchmark	Total Assets at End of Period	% of Firm's Assets	Total Firm Assets (\$ mil)
2011	*	N/A	13.29	20.15	62,129,023	0.00	1,789,204
2010	*	N/A	**	**	2,881,247	0.00	1,519,244
2009	*	N/A	**	**	2,334,501	0.00	1,360,125
2008 (Oct-Dec)	*	N/A	**	**	2,050,140	0.00	949,988
2007	—	—	—	—	—	—	—
2006	—	—	—	—	—	—	—
2005	—	—	—	—	—	—	—
2004	—	—	—	—	—	—	—
2003	—	—	—	—	—	—	—
2002	—	—	—	—	—	—	—

gGMVC  
 \* Less than 5 accounts  
 \*\* Less than 3 years  
 Quarterly and YTD returns are not annualized

### Footnotes

**Composite Description:** The Global Managed Volatility Composite seeks to provide attractive returns while controlling risk. The Composite's performance objective is to match or exceed the return of the MSCI World Index.

**Firm Definition:** For the purpose of complying with the Global Investment Performance Standards (GIPS®) the firm (SSGA-Globa) 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 market place as distinct business entities - the Office of the Fiduciary Advisor (OFA) and Charitable Asset Management (CAM). Prior to 1/1/2011, SSGA-Globa 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).  
**List Available:** A complete list of the firm's composites and their descriptions is available upon request.

**Compliance Statement:** SSGA-Globa has prepared and presented this report in compliance with the Global Investment Performance Standards (GIPS®). SSGA-Globa claims compliance with GIPS® from January 1, 2000.

**Creation Date:** The composite was created on 1 Jan 09.

**Verification Statement:** SSGA-Globa claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS® standards. SSGA-Globa has been verified for the periods from 1 January 2000 through 31 December 2009 by an independent third party. A copy of 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.

**Benchmark Description:** The benchmark for the composite is the MSCI World Index. The index returns are unmanaged and do not reflect the deduction of any fees or expenses. The index returns reflect 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:** For commingled funds, management fees are 22% of the first \$50,000,000, 20% of the next \$50,000,000, 18% thereafter. The annual minimum management fee for these accounts is \$10,000. For separately managed accounts, the management fees are the same as above, with minimum annual fee for separate accounts is \$150,000. Management fees may be adjusted based upon specific client requirements. As of 12/31/2010, 100% of the assets in this composite are non-management fee paying assets.

**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 November 2007, on the departure of the North America CIO Sean Flannery, Global asset class CIOs were appointed (Alstair Lowe, Asset Allocation and Currency CIO Mark Marinella, Fixed Income CIO Steve Meier, Cash CIO and Arlene Rockefeller, Equities CIO).

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

## GIPS® Report: US Managed Volatility Composite

As of December 31, 2011

### Gross Returns

	Quarter	YTD	1 Year	3 Years	5 Years	10 Years	Inception Apr 2008
US Managed Volatility Composite	9.31	10.19	10.19	11.28	N/A	N/A	5.91
Russell 3000® Index	12.12	1.03	1.03	14.88	N/A	N/A	1.32

Year	US Managed Volatility Composite	Russell 3000® Index
2011	10.19	1.03
2010	13.60	16.93
2009	10.09	28.34
2008 (Apr-Dec)	-10.00	-30.71
2007	—	—
2006	—	—
2005	—	—
2004	—	—
2003	—	—
2002	—	—

Year	No. of Portfolios	Composite Dispersion	3 Yr Annualized Standard Deviation - Composite	3 Yr Annualized Standard Deviation - Benchmark	Total Assets at End of Period	% of Firm's Assets	Total Firm Assets (\$ mil)
2011	*	N/A	12.24	19.35	3,082,834	0.00	1,789,204
2010	*	N/A	**	**	2,796,463	0.00	1,519,244
2009	*	N/A	**	**	2,462,570	0.00	1,360,125
2008 (Apr-Dec)	*	N/A	**	**	2,259,474	0.00	949,988
2007	—	—	—	—	—	—	—
2006	—	—	—	—	—	—	—
2005	—	—	—	—	—	—	—
2004	—	—	—	—	—	—	—
2003	—	—	—	—	—	—	—
2002	—	—	—	—	—	—	—

gJSMVA  
 \* Less than 5 accounts  
 \*\* Less than 3 years  
 Quarterly and YTD returns are not annualized

### Footnotes

**Composite Description:** The U.S. Managed Volatility Composite seeks to provide attractive returns while controlling risk. The Composite's performance objective is to exceed the return of the Russell 3000 Index.

**Firm Definition:** For the purpose of complying with the Global Investment Performance Standards (GIPS®) the firm (SSGA-Globa) 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 market place as distinct business entities - the Office of the Fiduciary Advisor (OFA) and Charitable Asset Management (CAM). Prior to 1/1/2011, SSGA-Globa 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).  
**List Available:** A complete list of the firm's composites and their descriptions is available upon request.

**Compliance Statement:** SSGA-Globa has prepared and presented this report in compliance with the Global Investment Performance Standards (GIPS®). SSGA-Globa claims compliance with GIPS® from January 1, 2000.

**Creation Date:** The composite was created on 1 Jan 09.

**Verification Statement:** SSGA-Globa claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS® standards. SSGA-Globa has been verified for the periods from 1 January 2000 through 31 December 2009 by an independent third party. A copy of 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.

**Benchmark Description:** The benchmark for the composite is the Russell 3000® Index. The index returns are unmanaged and do not reflect the deduction of any fees or expenses. The index returns reflect 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:** For commingled funds, management fees are 20% of the first \$50,000,000, 18% of the next \$50,000,000, and 15% thereafter. The annual minimum management fee for these accounts is \$10,000. For separately managed accounts, as above. The minimum annual management fee for separately managed accounts is \$50,000. Management fees may be adjusted based upon specific client requirements. Presently, 100% of the assets in this composite are non-management fee paying assets, but net of custody and administration fees.

**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 November 2007, on the departure of the North America CIO Sean Flannery, Global asset class CIOs were appointed (Alstair Lowe, Asset Allocation and Currency CIO Mark Marinella, Fixed Income CIO Steve Meier, Cash CIO and Arlene Rockefeller, Equities CIO).

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