

Low Volatility Index Comparison: Flexible and Fast Road to Portfolio Protection

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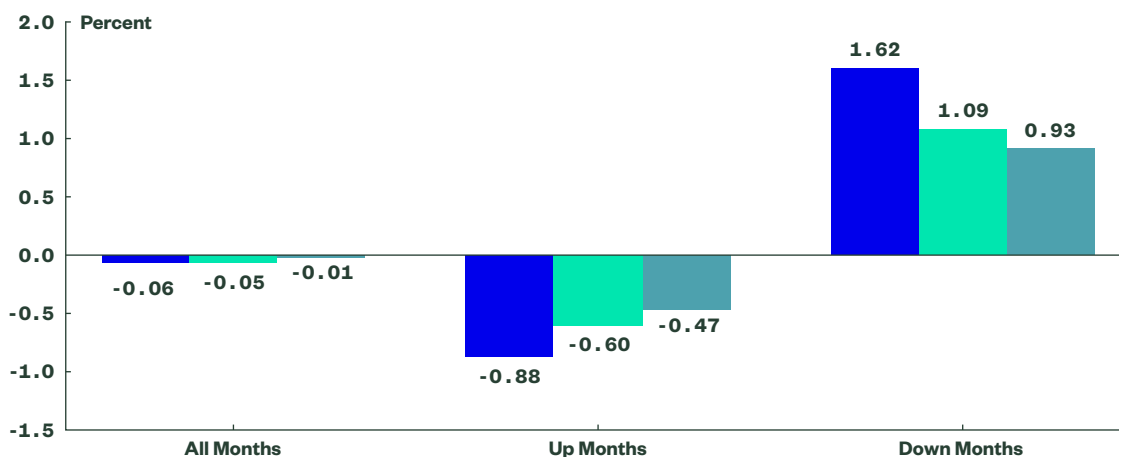
- Contrary to popular belief, low volatility strategies have achieved a higher level of volatility reduction than minimum volatility (or minimum variance) strategies.
- Low volatility's more regular rebalancing frequency can often react faster to prevailing market events.
- SPDR® ETFs offer a suite of low volatility strategies that follow a simple, yet effective methodology.

Low (or minimum) volatility index strategies regularly attract investors seeking to take long equity positions with lower historical risk. While many indices seek to target lower risk, less volatile stocks, SPDR ETFs offer a suite of low volatility strategies that follow a simple and yet effective methodology.

In this note, we take a look at the key distinctions between *Low Volatility* and *Minimum Volatility/Variance* index strategies.

Figure 1
**Average Excess
Returns of Volatility
Strategies in Up and
Down Markets**
(Last 15 Years)

■ S&P® 500 Low
Volatility Index
■ S&P® 500 Minimum
Volatility Index
■ FTSE USA Minimum
Variance Index



Source: State Street Global Advisors, Bloomberg Finance L.P., as of 30 September 2020. Index performance is based on net total return in USD using monthly data from September 2005 to August 2020. Past performance is no guarantee of future results. It is not possible to invest directly into an index. Results prior to index inception dates were calculated by using available data at the time in accordance with the Index's current methodology. Index returns are unmanaged and do not reflect the deduction of any fees or expenses.

Targeting Less Volatile Stocks Effectively

Research offered by Michael Jensen (1972) posed a considerable challenge to the capital asset pricing model (CAPM), which originally suggested a positive relationship between risk and return. Jensen's work, and subsequent empirical studies, demonstrated how lower volatility stocks have historically generated higher risk-adjusted returns.¹ This well-documented phenomenon, dating back to the 1970s, is referred to as the 'low volatility anomaly'.

As a result, many investment strategies have been constructed to capture this observable market behaviour, through investable indices. When constructing factor-based strategies, it is important that investors understand the index methodology. Construction variation can often produce a wide array of outcomes. The most common strategies, used by ETFs, for harvesting the return opportunity presented by the low volatility anomaly are *Low Volatility* and optimised *Minimum Volatility/Variance*.

Low Volatility follows a process of selecting a portfolio of the least volatile stocks.² The S&P® 500 Low Volatility Index accomplishes this goal by selecting the 100 least volatile stocks in the S&P® 500 Index with minimal constraints. The portfolio then rebalances quarterly so that it can react quickly to prevailing market conditions, thus helping investors to continuously target the lowest volatility stocks.

Optimised Minimum Volatility (Variance) strategies are more complex than Low Volatility. Minimum Volatility strategies often use constraints to limit allocation (e.g. sector exposure) and portfolio turnover, while also considering the variation correlation of constituent securities.

Figure 2
Main Index Methodologies Targeting Less Volatile Stocks in the US Equities

	S&P® 500 Low Volatility Index	S&P® 500 Minimum Volatility Index	FTSE USA Minimum Variance Index
Ticker	SP5LVIN Index	SP5MVN Index	WIUSAMVN Index
Selection Universe	S&P® 500 Index	S&P® 500 Index	FTSE USA Index
Construction	Rank and select Top 100, based on past volatility measure (standard deviation)	Minimise index volatility subject to constraints	Minimise index volatility subject to constraints
Weighting Scheme	Price-weighted with a weighting factor based on the inverse of the preceding 12-month volatility	Determined by optimiser, using an estimated security covariance matrix, having taken into account constraints	Determined by optimiser, using an estimated security covariance matrix, having taken into account constraints
Stock Weight Constraint	None	Max weight: Lower of 20x the stock's S&P® 500 weight or 2% Min weight: 0.05%	Max weight: Lower of 20x the stock's FTSE USA weight or 1.5%
Sector/Industry Constraint	None	± 5% of the sector's S&P® 500 weight	Capped at 20% ICB Industry Group
Factor Constraint	None	± 0.25 standard deviation of benchmark exposure to all factors (except <i>Price Volatility</i>)	None
Turnover Constraint	None	Maximum 20% two-way turnover at each rebalance	None
No. of Securities	100	Floating	Floating (Target 300)
Rebalance Frequency	Quarterly (3rd Friday in February, May, August and November)	Semi-annually (3rd Friday in March and September)	Semi-annually (3rd Friday in March and September)

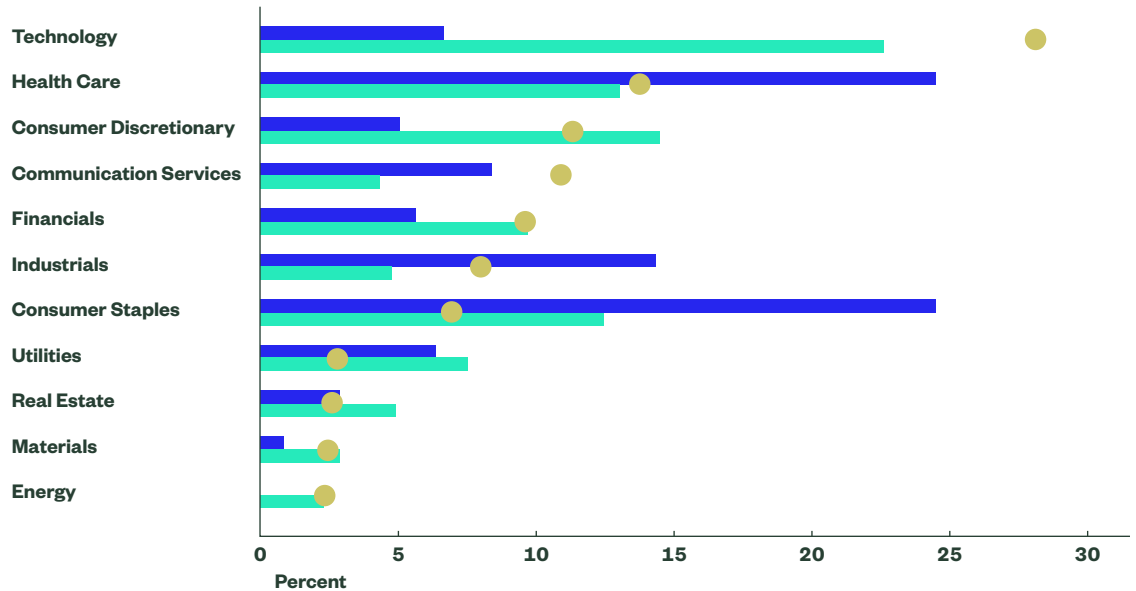
Source: State Street Global Advisors, S&P Dow Jones Indices, FTSE Russell, as of 30 September 2020. The information contained above is for illustrative purposes only.

A Flexible Approach to Lower Volatility

The matrix in Figure 2 explains the key distinctions between the construction methodologies of Low Volatility and Minimum Volatility/Variance indices. The critical feature is the 'unconstrained' nature of a low volatility approach. By not constraining the allocation, the low volatility strategy has the flexibility to go 'wherever it needs to' in targeting lower volatility. This will often lead to dislocations in sector exposure (see Figure 3) across the various strategies. It is important to remember that sector allocation is an *outcome* of investing in the least volatile stocks. This flexibility also helps promote the more dynamic approach enjoyed by low volatility strategies discussed in the next section (and displayed in Figure 5).

Figure 3
Sector Exposure of Various Volatility Strategies
(vs. S&P® 500 Index)

■ S&P® 500 Low Volatility Index
■ S&P® 500 Minimum Volatility Index
● S&P® 500 Index



Source: State Street Global Advisors, FactSet, BarraOne, as of 24 August 2020.

The flexibility provided by the low volatility approach is often the feature most cited for driving the excess return in down markets (Figure 1), since low volatility is able to hold more of the lowest volatility stocks. Figure 4 explains the detailed performance of our low volatility approach in each of the major market pullbacks, experienced by the benchmark S&P® 500, since the launch of the Low Volatility Index in 2011.**

Figure 4
Low Volatility Performance in Major Market Pullbacks
(vs. S&P® 500 Index)

Period	Date	S&P® 500 Index (%)	S&P® 500 Low Volatility Index (%)**	Allocation Effect	Selection Effect	Low Vol Outperformance (%)	S&P® 500 Minimum Volatility Index (%)*	Min Vol Outperformance (%)
2020 Q1	20-FEB-2020 to 23-MAR-2020	-33.55	-35.58	-2.72	0.69	-2.03	-33.44	0.11
2018 Q4	03-OCT-2018 to 27-DEC-2018	-14.51	-5.38	5.90	3.24	9.14	-12.53	1.98
2015 Q3	14-AUG-2015 to 29-SEP-2015	-9.66	-7.45	0.15	2.07	2.22	-7.44	2.22
2012 Q2	02-APR-2012 to 04-JUN-2012	-9.56	-2.08	6.41	1.07	7.49	-5.12	4.44
2011 Q3	02-MAY-2011 to 04-OCT-2011	-16.65	-3.76	9.56	3.32	12.88	-9.12	7.53
GFC	19-SEP-2008 to 09-MAR-2009	-45.28	-32.96	11.35	0.97	12.32	-42.56	2.72

Source: State Street Global Advisors, FactSet as of the date indicated. *State Street Global Advisors, Bloomberg Finance L.P., as of the date indicated.

**The S&P Low Volatility Index was inceptioned on 4 April 2011, returns prior to this date are based hypothetical index positions using the index methodology. The intensity of the colour indicates the relative size of the data points in a given column(s) from lowest to highest.

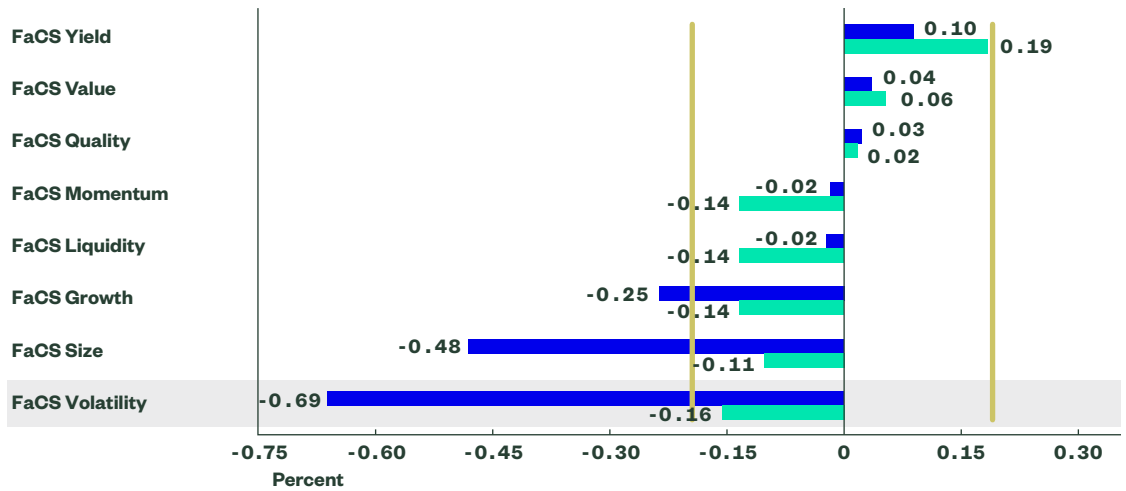
A Dynamic Approach to Volatility Investing

In addition to the flexibility offered by the 'unconstrained' nature of the low volatility approach. The more frequent rebalance schedule of our Low Volatility Index means that they are more 'dynamic' than the minimum volatility/variance strategies available. While this may lead to higher turnover, this is a feature of the strategy. As the standard performance chart and the end of this note will demonstrate, the ETF is historically capable of absorbing the potentially higher transaction costs associated with tracking the index.

The dynamic quarterly rebalance, coupled with the flexibility of the unconstrained approach, help our low volatility index to often display the lowest volatility (i.e. the highest factor exposure), as compared to the minimum volatility index (Figure 5a & 5b).

Figure 5a
FaCS Active Exposure Comparison
(vs. S&P® 500 Index)

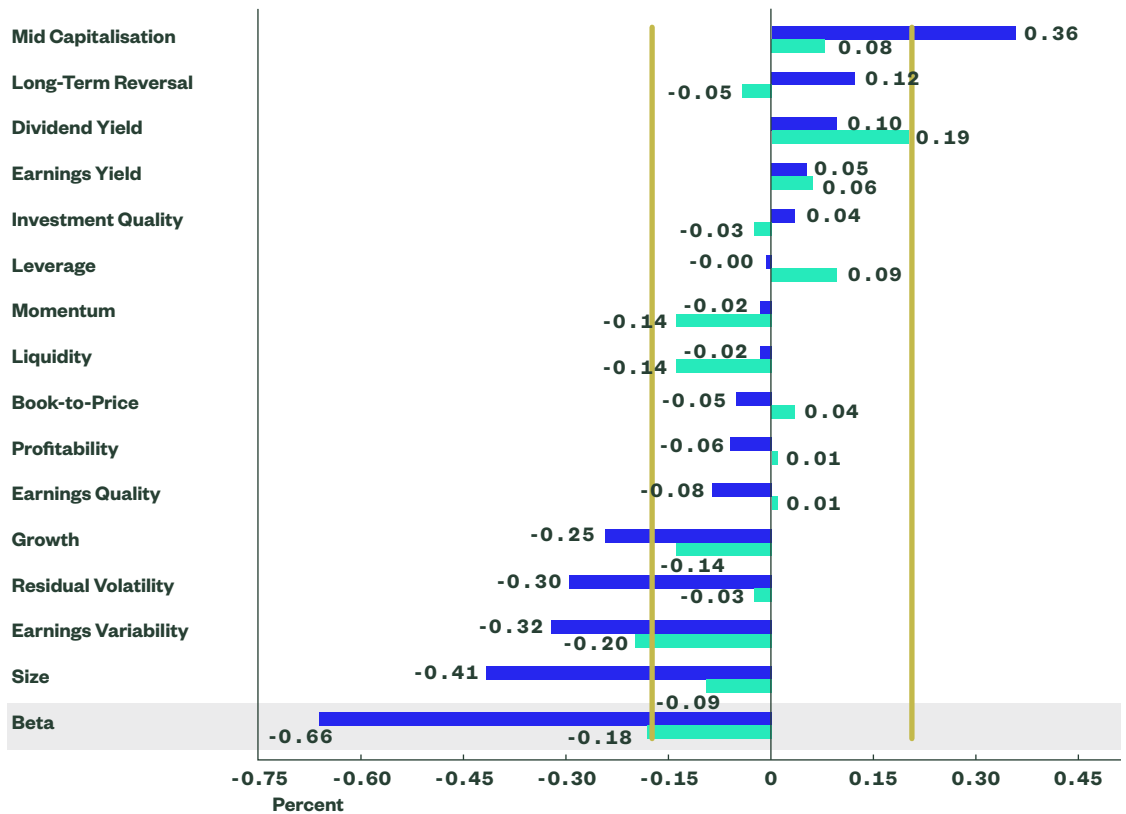
■ S&P® 500 Low Volatility Index
■ S&P® 500 Minimum Volatility Index
■ Significance Level (±0.2)



Source: State Street Global Advisors, FactSet, BarraOne, as of 30 September 2020. MSCI FaCS stands for MSCI Factor Classification Standards.

Figure 5b
GEMLT Active Exposure Comparison
(vs. S&P® 500 Index)

■ S&P® 500 Low Volatility Index
■ S&P® 500 Minimum Volatility Index
■ Significance Level (±0.2)



Source: State Street Global Advisors, FactSet, BarraOne, as of 30 September 2020. GEMLT stands for MSCI Barra's Global Equity Model for Long-Term Investors.

Conclusion

One strategy that always attracts investors seeking to take long equity positions with lower historical risk is low (or minimum) volatility. While many indices seek to target lower risk, less volatile stocks, SPDR® ETFs offer a suite of low volatility strategies that follow a simple and yet effective methodology.

The Low Volatility strategies tracked by SPDR® ETFs offer two important features that set them apart from minimum volatility/variance indices. Our low volatility indices are largely unconstrained, which allows them more flexibility in targeting lower volatility, and they are more dynamic as a result of rebalancing more frequently. In one simple trade, investors can seek to lower the risk in their portfolio, while remaining invested in US equities using the SPDR S&P® 500 Low Volatility UCITS ETF.

SPDR® ETFs

The investment objective of the SPDR® family of Low Volatility ETFs is to track the performance of US (S&P® 500), Eurozone (EURO STOXX®) and Global (Global STOXX®) equity securities, which historically have exhibited low volatility characteristics. Historically, both the S&P® 500 Low Volatility Index and EURO STOXX® Low Risk Weighted 100 Index have demonstrated better risk-adjusted returns versus the benchmark universes from which they select their constituent stocks, in part by offering lower historical drawdowns. The STOXX® Global Low Risk Weighted Diversified 200 Index was launched in 2020.

SPDR® S&P® 500 Low Volatility UCITS ETF

The S&P® 500 Low Volatility Index is designed to measure the performance of the 100 least volatile stocks within the S&P® 500 Index. The Index employs a volatility-driven selection and weighting scheme. Volatility is measured by the standard deviation of a security's daily price returns over the prior 252 trading days.

Figure 6
Standard Performance

Fund/Index Name	1 Month	3 Months	6 Months	Year to Date	1 Year	3 Years	5 Years	Since Inception
Inception Date 10/03/2012								
SPDR® S&P® 500 Low Volatility UCITS ETF	-1.79	8.43	15.50	-6.60	-5.46	7.27	10.20	10.29
S&P® 500 Low Volatility Index	-1.79	8.46	15.52	-6.58	-5.44	7.32	10.23	10.32
Difference	0.00	-0.03	-0.02	-0.02	-0.02	-0.05	-0.03	-0.03
S&P® 500 Index*	-3.84	8.79	30.95	5.13	14.49	11.62	13.46	12.69
Difference	2.05	-0.36	-15.45	-11.73	-19.95	-4.35	-3.26	-2.40

Source: State Street Global Advisors, *Morningstar and Bloomberg, as of 30 September 2020.

Performance is net of fees. **Performance quoted represents past performance, which is no guarantee of future results. Investment return and principal value will fluctuate, so you may have a gain or loss when shares are sold. Current performance may be higher or lower than that quoted. All results are historical and assume the reinvestment of dividends and capital gains. The performance data do not take account of the commissions and costs incurred on the issue and redemption, or purchases and sale, of units. Visit spdrs.com for most recent month-end performance.** Performance returns for periods of less than one year are not annualised. Index returns are unmanaged and do not reflect the deduction of any fees or expenses.

Endnotes

- 1 Michael C. Jensen, ed., Studies in the Theory of Capital Markets. Praeger Publishers Inc, 1972.
- 2 In the methodology, volatility of the constituents, within each eligible universe, is calculated using available price return data for the trailing one year of trading days leading up to each index rebalancing reference date.

Appendix

Figure 7
Brinson Attribution by Sector
 (Q1 2020)

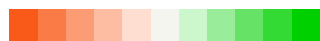
Sector	S&P® 500 Low Volatility Index			S&P® 500 Index			Attribution Analysis		
	Average Weight	Total Return	Contrib. To Return	Average Weight	Total Return	Contrib. To Return	Allocation Effect	Selection Effect	Total Effect
Total	–	-35.58	–	–	-33.55	–	-2.72	0.69	-2.03
Energy	0.90	-51.23	-0.46	3.14	-55.85	-1.98	0.72	0.16	0.88
Industrials	8.46	-35.96	-3.13	8.59	-41.69	-3.78	0.04	0.56	0.60
Consumer Staples	10.11	-23.77	-2.28	7.65	-24.12	-1.86	0.29	0.16	0.45
Materials	1.04	-39.74	-0.43	2.47	-36.20	-0.91	0.14	0.01	0.15
Financials	16.11	-40.22	-6.40	11.74	-42.85	-5.27	-0.40	0.52	0.12
Communication Services	4.57	-26.99	-1.17	10.67	-28.15	-2.83	-0.31	0.04	-0.27
Consumer Discretionary	2.89	-38.71	-1.09	9.78	-31.72	-2.97	-0.15	-0.17	-0.32
Health Care	4.49	-29.85	-1.38	14.59	-27.46	-4.08	-0.44	-0.09	-0.53
Technology	5.52	-29.21	-1.54	24.63	-30.45	-7.20	-0.78	0.03	-0.75
Utilities	28.07	-34.93	-9.99	3.60	-35.84	-1.37	-1.09	0.34	-0.75
Real Estate	17.83	-42.58	-7.73	3.13	-38.44	-1.29	-0.82	-0.87	-1.69

Source: State Street Global Advisors, FactSet, from 20 February 2020 to 23 March 2020.

Figure 8
Brinson Attribution by Sector
 (Q4 2018)

Sector	S&P® 500 Low Volatility Index			S&P® 500 Index			Attribution Analysis		
	Average Weight	Total Return	Contrib. To Return	Average Weight	Total Return	Contrib. To Return	Allocation Effect	Selection Effect	Total Effect
Total	–	-5.38	–	–	-14.51	–	5.90	3.24	9.14
Utilities	23.41	4.22	0.85	3.15	1.37	-0.01	3.15	0.63	3.78
Real Estate	18.53	-4.38	-0.97	2.85	-2.27	-0.09	1.80	-0.38	1.42
Financials	16.91	-8.31	-1.40	13.50	-15.03	-2.00	-0.04	1.17	1.14
Technology	8.71	-13.95	-1.23	20.34	-18.57	-3.83	0.37	0.50	0.87
Industrials	6.77	-10.95	-0.82	9.42	-19.09	-1.85	0.15	0.53	0.68
Energy	1.38	-23.99	-0.35	5.69	-25.25	-1.56	0.57	0.02	0.59
Consumer Discretionary	4.47	-5.83	-0.26	9.90	-15.84	-1.56	0.11	0.40	0.51
Materials	3.74	-4.73	-0.08	2.54	-13.10	-0.30	0.02	0.37	0.39
Consumer Staples	8.74	-6.08	-0.48	7.31	-5.07	-0.42	0.26	-0.14	0.12
Communication Services	–	–	–	9.97	-13.57	-1.32	-0.13	–	-0.13
Health Care	7.32	-7.84	-0.64	15.32	-10.21	-1.56	-0.38	0.14	-0.24

Source: State Street Global Advisors, FactSet, from 3 October 2018 to 27 December 2018.



The intensity of the colour indicates the relative size of the data points in a given column from lowest to highest.

Figure 9

Brinson Attribution by Sector

(Q3 2015)

Sector	S&P® 500 Low Volatility Index			S&P® 500 Index			Attribution Analysis		
	Average Weight	Total Return	Contrib. To Return	Average Weight	Total Return	Contrib. To Return	Allocation Effect	Selection Effect	Total Effect
Total	–	-7.45	–	–	-9.66	–	0.15	2.07	2.22
Financials	34.95	-7.59	-2.72	16.56	-10.98	-1.84	-0.25	1.23	0.97
Consumer Staples	21.67	-4.84	-0.98	9.71	-6.21	-0.59	0.43	0.30	0.73
Health Care	10.92	-11.53	-1.31	15.24	-13.62	-2.12	0.19	0.23	0.42
Energy	–	–	–	6.95	-12.66	-0.90	0.22	–	0.22
Materials	2.00	-13.10	-0.32	2.83	-14.23	-0.41	0.05	0.02	0.07
Industrials	14.65	-8.55	-1.19	10.04	-8.79	-0.87	0.03	0.02	0.05
Communication Services	2.22	-7.09	-0.15	2.42	-7.48	-0.18	-0.01	0.01	-0.00
Utilities	4.22	-6.32	-0.21	3.00	-5.78	-0.19	-0.03	-0.02	-0.05
Consumer Discretionary	5.26	-5.25	-0.37	12.90	-7.36	-0.92	-0.19	0.12	-0.07
Technology	4.13	-4.78	-0.20	20.20	-8.31	-1.63	-0.27	0.15	-0.12

Source: State Street Global Advisors, FactSet, from 14 August 2015 to 29 September 2015.

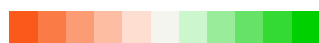
Figure 10

Brinson Attribution by Sector

(Q2 2012)

Sector	S&P® 500 Low Volatility Index			S&P® 500 Index			Attribution Analysis		
	Average Weight	Total Return	Contrib. To Return	Average Weight	Total Return	Contrib. To Return	Allocation Effect	Selection Effect	Total Effect
Total	–	-2.08	–	–	-9.56	–	6.41	1.07	7.49
Utilities	29.24	2.07	0.60	3.55	1.95	0.07	3.01	0.03	3.04
Consumer Staples	30.88	-2.86	-0.89	11.08	-2.96	-0.33	1.35	0.01	1.36
Financials	1.62	-8.01	-0.13	14.57	-16.07	-2.41	0.92	0.13	1.05
Technology	5.19	-7.39	-0.39	20.24	-12.42	-2.54	0.46	0.27	0.73
Energy	1.77	-10.70	-0.20	10.78	-13.59	-1.47	0.38	0.04	0.43
Materials	2.42	0.49	0.01	3.27	-11.52	-0.37	0.01	0.29	0.29
Health Care	14.15	-4.30	-0.62	11.52	-5.58	-0.64	0.10	0.17	0.27
Consumer Discretionary	5.65	-0.64	-0.04	11.16	-7.23	-0.82	-0.15	0.37	0.22
Industrials	3.64	-8.19	-0.30	10.51	-11.08	-1.17	0.10	0.10	0.20
Communication Services	4.58	-1.00	-0.04	2.89	7.17	0.19	0.27	-0.37	-0.10

Source: State Street Global Advisors, FactSet, from 2 April 2012 to 4 June 2012.



The intensity of the colour indicates the relative size of the data points in a given column from lowest to highest.

Figure 11

Brinson Attribution by Sector

(Q3 2011)

Sector	S&P® 500 Low Volatility Index			S&P® 500 Index			Attribution Analysis		
	Average Weight	Total Return	Contrib. To Return	Average Weight	Total Return	Contrib. To Return	Allocation Effect	Selection Effect	Total Effect
Total	–	-3.76	–	–	-16.65	–	9.56	3.32	12.88
Utilities	29.68	-0.14	-0.04	3.52	0.67	0.01	4.71	-0.24	4.47
Consumer Staples	31.34	-3.31	-1.06	11.03	-5.12	-0.54	2.45	0.53	2.99
Financials	0.90	-16.14	-0.15	14.60	-27.47	-4.23	1.72	0.08	1.80
Energy	1.73	-13.71	-0.26	12.22	-24.05	-3.11	0.89	0.17	1.06
Industrials	3.55	-13.14	-0.48	10.73	-23.88	-2.59	0.57	0.39	0.96
Consumer Discretionary	4.71	10.95	0.49	10.72	-13.65	-1.42	-0.25	1.10	0.85
Health Care	14.74	-8.12	-1.20	11.74	-11.79	-1.30	0.13	0.53	0.66
Materials	2.11	-7.25	-0.15	3.36	-24.74	-0.86	0.09	0.37	0.46
Communication Services	5.42	-6.98	-0.38	2.97	-7.13	-0.19	0.22	-0.03	0.20
Technology	4.89	-9.22	-0.48	18.48	-11.35	-2.15	-0.85	0.06	-0.79

Source: State Street Global Advisors, FactSet, from 2 May 2011 to 4 October 2011.

Figure 12

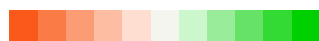
Brinson Attribution by Sector

(GFC**)

Sector	S&P® 500 Low Volatility Index			S&P® 500 Index			Attribution Analysis		
	Average Weight	Total Return	Contrib. To Return	Average Weight	Total Return	Contrib. To Return	Allocation Effect	Selection Effect	Total Effect
Total	–	-32.96	–	–	-45.28	–	11.35	0.97	12.32
Financials	1.04	-53.54	-0.64	12.76	-71.82	-12.07	5.50	0.24	5.74
Utilities	32.39	-34.29	-11.09	4.15	-34.20	-1.33	3.60	-0.27	3.34
Consumer Staples	30.01	-31.32	-9.42	12.97	-30.75	-3.64	2.91	-0.50	2.41
Industrials	4.12	-44.45	-2.02	10.81	-54.49	-6.33	0.95	0.50	1.44
Consumer Discretionary	3.67	-24.00	-0.72	8.22	-47.16	-3.85	0.03	0.99	1.01
Health Care	15.27	-28.19	-4.31	14.74	-29.64	-4.20	0.21	0.10	0.31
Materials	1.34	-38.68	-0.55	2.95	-51.30	-1.59	0.06	0.15	0.20
Communication Services	5.02	-33.86	-1.70	3.52	-25.06	-0.70	0.35	-0.59	-0.24
Technology	4.50	-34.66	-1.58	16.01	-39.55	-5.91	-1.08	0.14	-0.95
Energy	1.75	-36.09	-0.63	13.47	-41.23	-5.26	-1.06	-0.01	-1.06

Source: State Street Global Advisors, FactSet, from 19 September 2008 to 9 March 2009.

**The S&P® Low Volatility Index was inceptioned on 4 April 2011, returns prior to this date are based hypothetical index positions using the index methodology.



The intensity of the colour indicates the relative size of the data points in a given column from lowest to highest.

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