S&P Dow Jones Indices

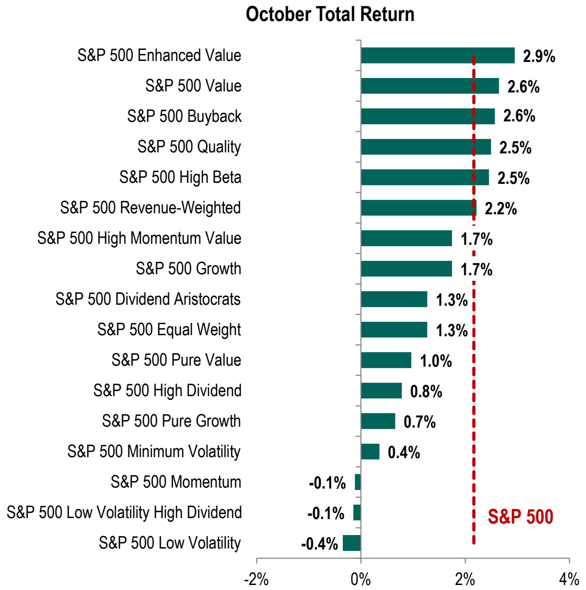
A Division of S&P Global

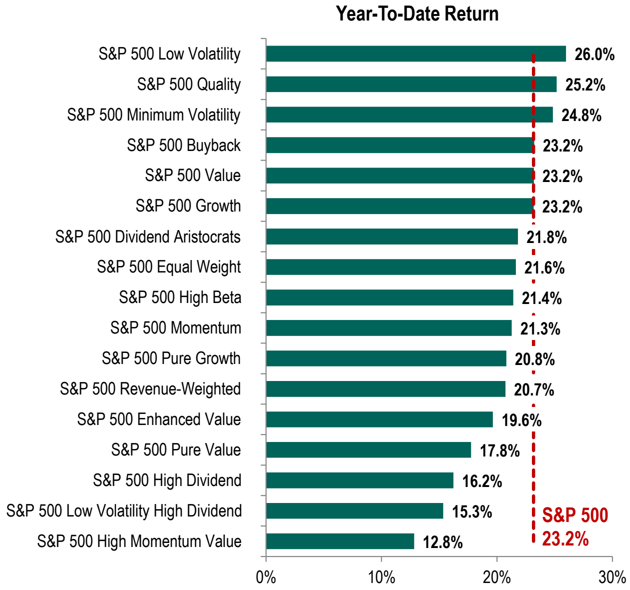
INDEX INVESTMENT STRATEGY

Index Dashboard: S&P 500® Factor Indices

October 2019

MONTHLY AND YTD TRAILING PERFORMANCE SUMMARY

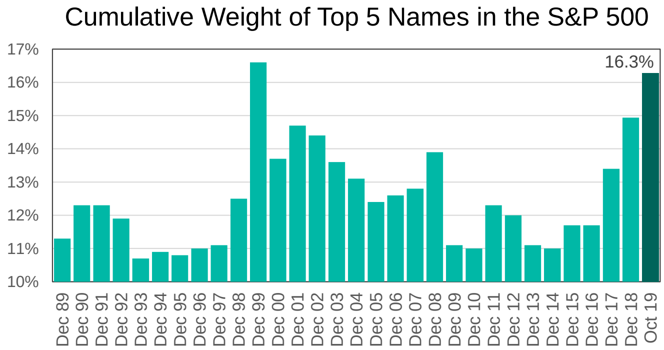




COMMENTARY

The resurgence in performance for U.S. value strategies that began in late September continued through October, with Enhanced Value taking the top spot this month. In another reversal, the year-to-date leader was this month's laggard: Low Volatility declined 0.4% in October, but retains the pole position for 2019.

This month, and this year, **a significant majority of S&P 500-based factor indices have underperformed**. Although, by construction, the benchmark has a factor score of zero, it is sometimes useful to consider the "biases" in the S&P 500 itself. In particular, the performance of profitable, mega-cap companies may help explain the relative strength in the benchmark's returns.

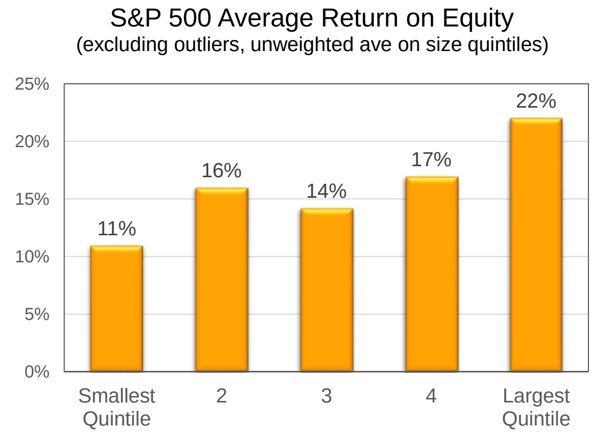


The outperformance - and increasing importance - of a select few mega-cap U.S. equities is **visible in the increasing concentration** of the S&P 500 into its top five companies.

Few factor indices match the current 16.3% weight of the top five benchmark positions. As demonstrated this year, **when the mega-caps outperform, few strategies will match the benchmark's return**.[1]

Although a cap-weighted benchmark will *always* be biased towards larger stocks, the benchmark's tilt towards other factors can vary. At present however, the largest stocks are also the most profitable - which gives a tilt towards the quality factor.

As illustrated in the chart to the right, the (unweighted) average ROE within the largest quintile of S&P 500 constituents is now double that of the smallest-cap quintile. In part because the benchmark holds a 67% cumulative weight in the largest quintile of stocks, excluding the S&P 500 Quality Index**, every other reported factor currently has a tilt away from quality, relative to the benchmark** (see page 6). And as Quality is the second-best performing factor year-to-date, this anti-quality tilt may help explain the lagging performance of most other factor indices.



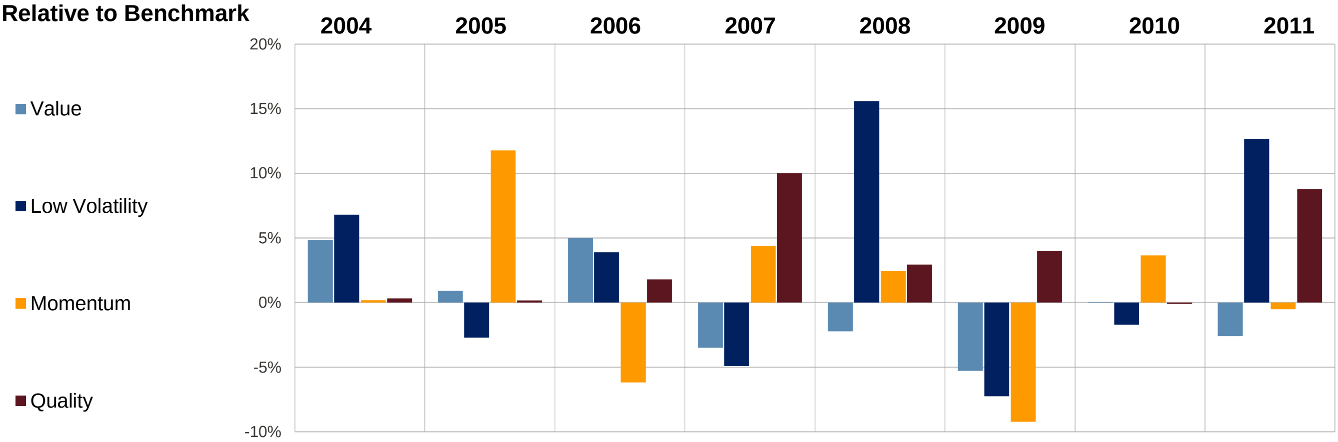
[1] For a longer-term view, see Chan, Fei Mei and Craig J. Lazzara, "Degrees of Difficulty: Indications of Active Success," S&P Dow Jones Indices, May 2018, pp. 8-9.

ANNUAL PERFORMANCE

Core factor performance by calendar year, 2004-present:

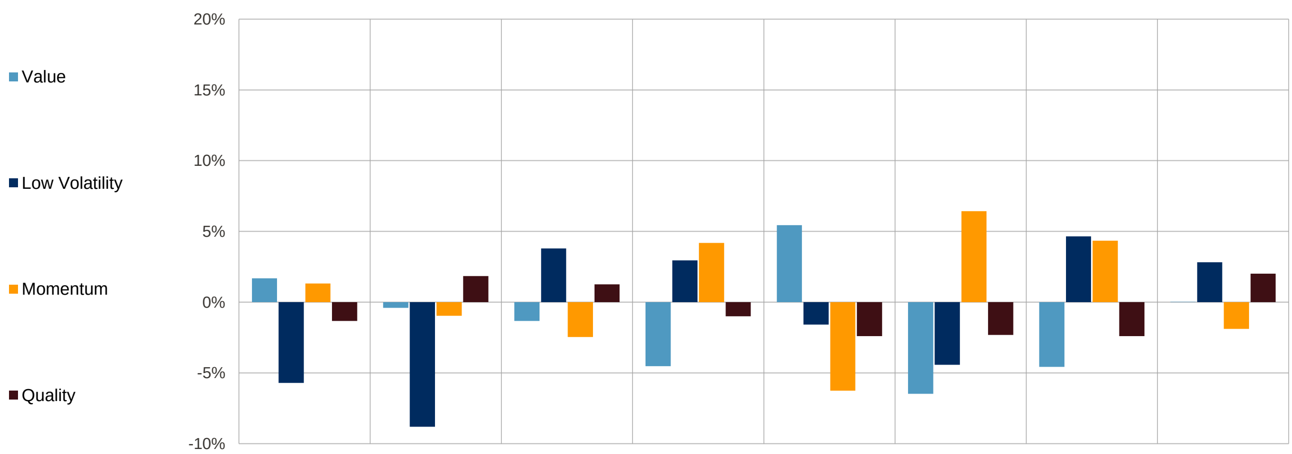
Total Return	2004	2005	2006	2007	2008	2009	2010	2011
Value	15.71%	5.82%	20.80%	1.99%	-39.22%	21.18%	15.10%	-0.48%
Low Volatility	17.69%	2.20%	19.69%	0.58%	-21.41%	19.22%	13.36%	14.78%
Momentum	11.05%	16.69%	9.61%	9.89%	-34.56%	17.24%	18.72%	1.60%
Quality	11.21%	5.07%	17.59%	15.50%	-34.06%	30.46%	14.95%	10.89%
S&P 500	10.88%	4.91%	15.79%	5.49%	-37.00%	26.46%	15.06%	2.11%

Relative to Benchmark



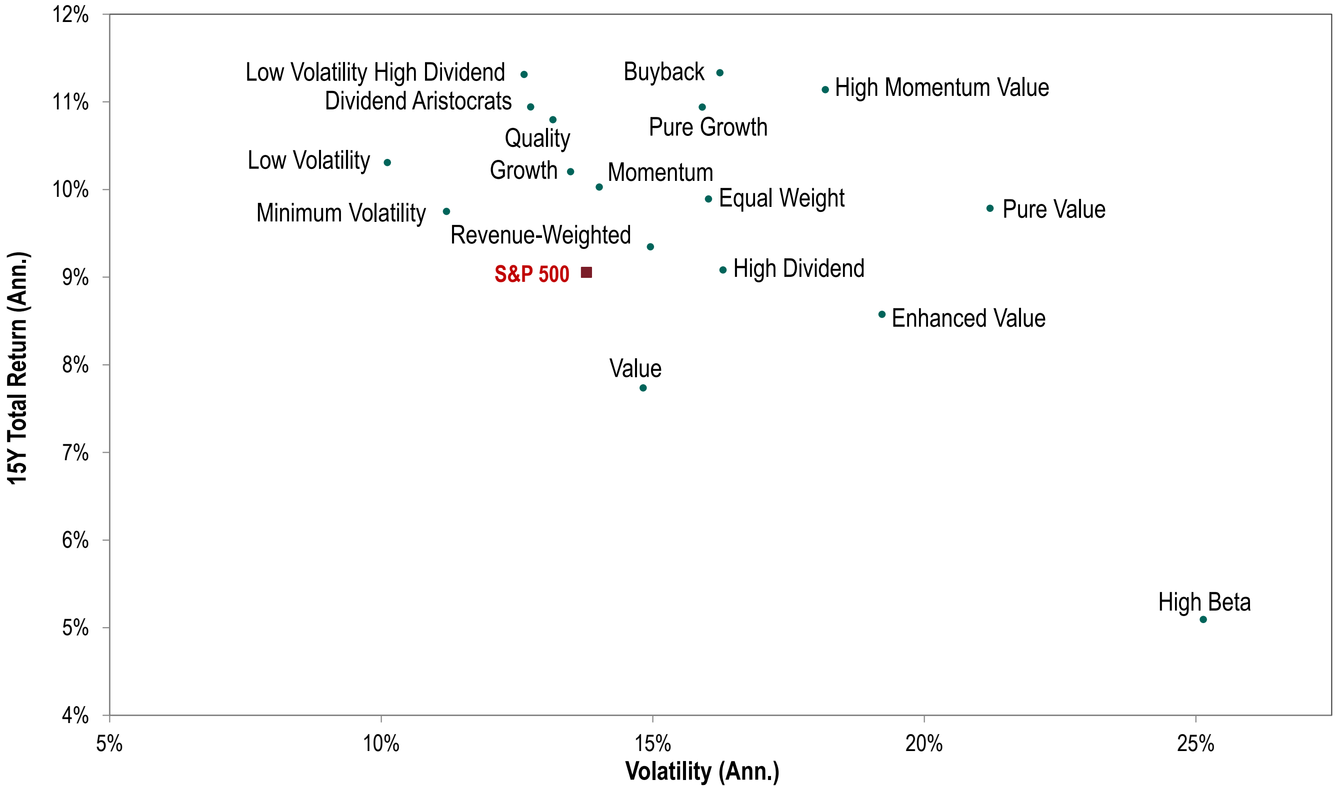
Total Return	2012	2013	2014	2015	2016	2017	2018	YTD
Value	17.68%	31.99%	12.36%	-3.13%	17.40%	15.36%	-8.95%	23.19%
Low Volatility	10.30%	23.59%	17.49%	4.34%	10.37%	17.41%	0.27%	25.98%
Momentum	17.33%	31.42%	11.23%	5.56%	5.70%	28.27%	-0.04%	21.28%
Quality	14.68%	34.24%	14.95%	0.38%	9.56%	19.51%	-6.79%	25.17%
S&P 500	16.00%	32.39%	13.69%	1.38%	11.96%	21.83%	-4.38%	23.16%

Relative to Benchmark



Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of October 31, 2019.

15 YEAR RISK & RETURN - ABSOLUTE



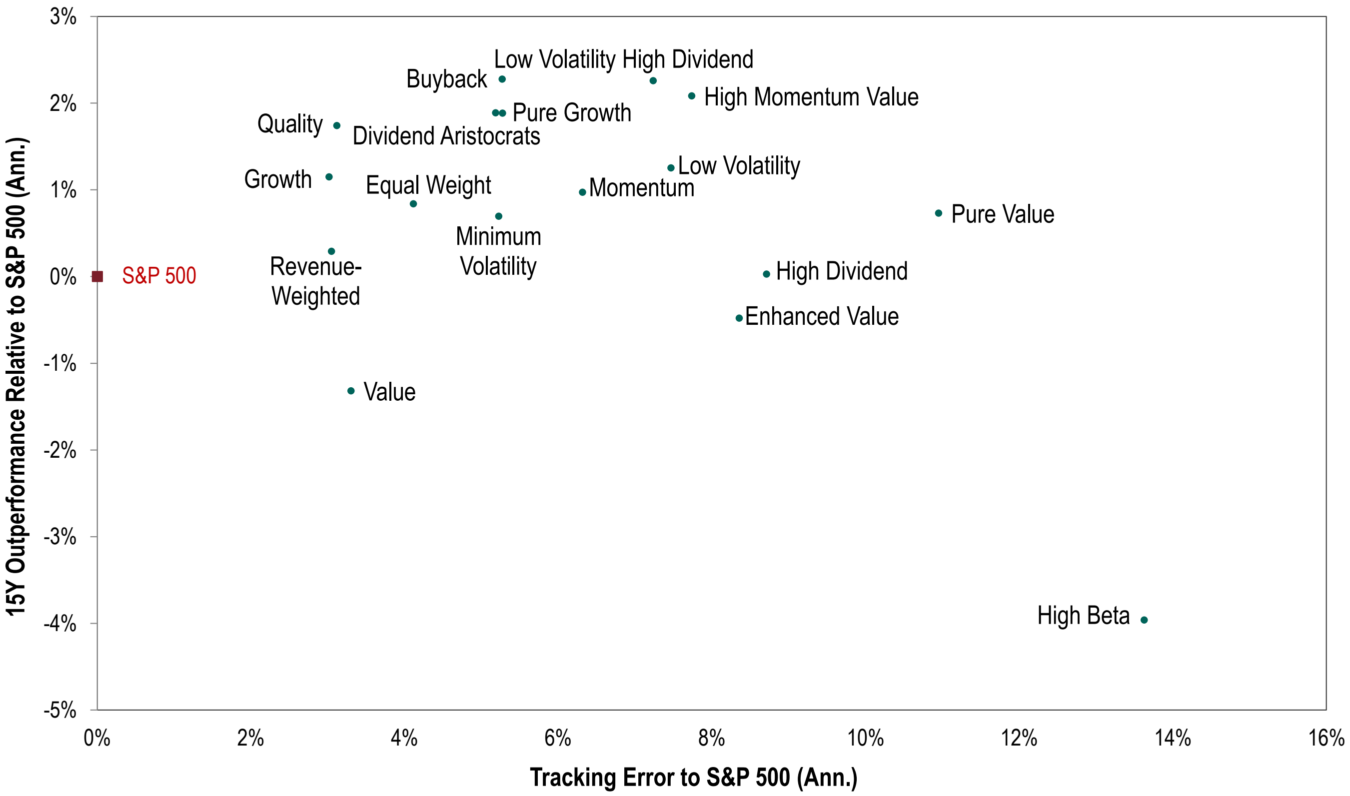
TOTAL RETURN AND VOLATILITY

TOTAL RETURN	1M	QTR	1YR	3YR	5YR	10YR	15YR
S&P 500 Low Volatility High Dividend	-0.1%	2.2%	10.3%	8.6%	10.2%	14.2%	11.3%
S&P 500 Buyback	2.6%	2.0%	13.0%	14.5%	9.7%	15.8%	11.3%
S&P 500 High Momentum Value	1.7%	1.2%	2.4%	10.4%	7.8%	13.8%	11.1%
S&P 500 Dividend Aristocrats	1.3%	4.1%	17.7%	14.7%	11.1%	14.9%	10.9%
S&P 500 Pure Growth	0.7%	-0.6%	11.8%	14.3%	9.6%	15.6%	10.9%
S&P 500 Pure Value	1.0%	0.9%	4.1%	10.4%	6.4%	14.3%	9.8%
S&P 500 Low Volatility	-0.4%	4.3%	22.9%	15.2%	12.2%	14.6%	10.3%
S&P 500 Equal Weight	1.3%	1.2%	12.8%	12.4%	9.1%	14.0%	9.9%
S&P 500 Growth	1.7%	1.3%	14.3%	17.2%	12.6%	14.9%	10.2%
S&P 500 Quality	2.5%	3.1%	14.8%	13.8%	9.8%	14.1%	10.8%
S&P 500 High Dividend	0.8%	2.1%	10.0%	9.7%	9.6%	14.8%	9.1%
S&P 500 Revenue-Weighted	2.2%	2.5%	10.6%	13.2%	9.3%	13.7%	9.3%
S&P 500 Minimum Volatility	0.4%	2.5%	16.2%	12.7%	11.4%	14.4%	9.8%
S&P 500 Momentum	-0.1%	-0.2%	12.6%	16.8%	12.0%	14.8%	10.0%
S&P 500 Enhanced Value	2.9%	1.7%	8.8%	13.8%	8.8%	13.6%	8.6%
S&P 500 Value	2.6%	3.7%	14.5%	12.1%	8.6%	12.3%	7.7%
S&P 500 High Beta	2.5%	-0.9%	10.0%	11.4%	6.2%	11.2%	5.1%
S&P 500	2.2%	2.4%	14.3%	14.9%	10.8%	13.7%	9.1%

Performance figures for more than one year are annualized.

VOLATILITY (ANN.)	1YR	3YR	5YR	10YR	15YR
S&P 500 Low Volatility High Dividend	16.0%	11.0%	10.6%	10.6%	12.6%
S&P 500 Buyback	21.2%	15.0%	14.6%	14.1%	16.2%
S&P 500 High Momentum Value	20.9%	14.7%	13.4%	14.0%	18.2%
S&P 500 Dividend Aristocrats	14.7%	11.0%	11.0%	11.2%	12.8%
S&P 500 Pure Growth	16.5%	13.3%	12.9%	14.6%	15.9%
S&P 500 Pure Value	23.3%	16.1%	15.4%	16.3%	21.2%
S&P 500 Low Volatility	11.5%	8.7%	9.2%	9.3%	10.1%
S&P 500 Equal Weight	18.3%	12.9%	12.4%	13.6%	16.0%
S&P 500 Growth	15.0%	12.0%	12.2%	12.6%	13.5%
S&P 500 Quality	15.8%	11.8%	11.7%	12.0%	13.2%
S&P 500 High Dividend	18.1%	12.1%	11.3%	11.2%	16.3%
S&P 500 Revenue-Weighted	18.2%	13.1%	12.4%	13.2%	15.0%
S&P 500 Minimum Volatility	14.5%	10.4%	10.0%	9.8%	11.2%
S&P 500 Momentum	14.3%	12.6%	12.2%	13.2%	14.0%
S&P 500 Enhanced Value	22.4%	16.2%	15.3%	15.7%	19.2%
S&P 500 Value	18.1%	13.0%	12.3%	13.0%	14.8%
S&P 500 High Beta	25.0%	19.4%	19.4%	21.1%	25.1%
S&P 500	16.3%	11.9%	11.8%	12.5%	13.8%

RELATIVE TO S&P 500



RELATIVE RETURN AND TRACKING ERROR

PERFORMANCE v S&P 500	1M	QTR	1YR	3YR	5YR	10YR	15YR
S&P 500 Low Volatility High Dividend	-2.3%	-0.3%	-4.0%	-6.4%	-0.6%	0.5%	2.3%
S&P 500 Buyback	0.4%	-0.4%	-1.4%	-0.4%	-1.1%	2.1%	2.3%
S&P 500 High Momentum Value	-0.4%	-1.3%	-11.9%	-4.5%	-3.0%	0.2%	2.1%
S&P 500 Dividend Aristocrats	-0.9%	1.7%	3.4%	-0.2%	0.3%	1.2%	1.9%
S&P 500 Pure Growth	-1.5%	-3.0%	-2.5%	-0.6%	-1.1%	1.9%	1.9%
S&P 500 Pure Value	-1.2%	-1.5%	-10.3%	-4.5%	-4.3%	0.6%	0.7%
S&P 500 Low Volatility	-2.5%	1.9%	8.6%	0.3%	1.4%	0.9%	1.3%
S&P 500 Equal Weight	-0.9%	-1.3%	-1.5%	-2.5%	-1.7%	0.3%	0.8%
S&P 500 Growth	-0.4%	-1.1%	0.0%	2.3%	1.8%	1.2%	1.1%
S&P 500 Quality	0.3%	0.7%	0.5%	-1.1%	-1.0%	0.4%	1.7%
S&P 500 High Dividend	-1.4%	-0.4%	-4.3%	-5.2%	-1.2%	1.1%	0.0%
S&P 500 Revenue-Weighted	0.0%	0.1%	-3.7%	-1.8%	-1.4%	0.0%	0.3%
S&P 500 Minimum Volatility	-1.8%	0.0%	1.9%	-2.2%	0.6%	0.7%	0.7%
S&P 500 Momentum	-2.3%	-2.7%	-1.7%	1.9%	1.2%	1.1%	1.0%
S&P 500 Enhanced Value	0.8%	-0.7%	-5.6%	-1.2%	-2.0%	-0.1%	-0.5%
S&P 500 Value	0.5%	1.3%	0.1%	-2.8%	-2.1%	-1.4%	-1.3%
S&P 500 High Beta	0.3%	-3.4%	-4.3%	-3.5%	-4.5%	-2.4%	-4.0%

Performance figures for more than one year are annualized.

TRACKING ERROR v S&P 500 (ANN.)	1YR	3YR	5YR	10YR	15YR
S&P 500 Low Volatility High Dividend	6.3%	6.5%	7.3%	7.7%	7.2%
S&P 500 Buyback	6.7%	5.2%	5.0%	4.6%	5.3%
S&P 500 High Momentum Value	6.9%	5.8%	5.3%	4.8%	7.7%
S&P 500 Dividend Aristocrats	5.3%	4.3%	4.4%	4.5%	5.2%
S&P 500 Pure Growth	3.2%	4.9%	4.5%	5.3%	5.3%
S&P 500 Pure Value	9.0%	7.3%	6.7%	6.8%	11.0%
S&P 500 Low Volatility	8.8%	7.0%	7.2%	7.6%	7.5%
S&P 500 Equal Weight	3.4%	3.0%	2.8%	2.9%	4.1%
S&P 500 Growth	2.7%	3.5%	3.1%	2.7%	3.0%
S&P 500 Quality	3.3%	2.7%	2.5%	2.9%	3.1%
S&P 500 High Dividend	6.8%	6.4%	7.0%	7.1%	8.7%
S&P 500 Revenue-Weighted	3.2%	3.2%	2.8%	2.5%	3.0%
S&P 500 Minimum Volatility	3.6%	3.7%	5.0%	5.2%	5.2%
S&P 500 Momentum	6.3%	6.0%	5.4%	4.9%	6.3%
S&P 500 Enhanced Value	8.8%	8.1%	7.2%	6.6%	8.4%
S&P 500 Value	3.2%	4.0%	3.5%	3.0%	3.3%
S&P 500 High Beta	9.6%	9.9%	10.5%	11.0%	13.6%

Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of October 31, 2019.

DEGREE OF PORTFOLIO OVERLAP AND RELATIVE RETURN CORRELATIONS

PORTFOLIO OVERLAP

	S&P 500 Low Volatility	S&P 500 Minimum Volatility	S&P 500 Low Volatility High Dividend	S&P 500 High Dividend	S&P 500 Dividend Aristocrats	S&P 500 Quality	S&P 500 Growth	S&P 500 Pure Growth	S&P 500 Momentum	S&P 500 Revenue-Weighted	S&P 500 High Momentum Value	S&P 500 Value	S&P 500 Equal Weight	S&P 500 Pure Value	S&P 500 Buyback	S&P 500 Enhanced Value	S&P 500 High Beta	**S&P 500**
S&P 500 Low Volatility	100%	30%	15%	17%	19%	8%	21%	16%	29%	17%	19%	22%	20%	11%	9%	6%	0%	23%
S&P 500 Minimum Volatility	30%	100%	16%	14%	21%	21%	31%	19%	20%	33%	13%	30%	22%	10%	10%	10%	11%	38%
S&P 500 Low Volatility High Dividend	15%	16%	100%	55%	10%	4%	5%	5%	3%	16%	13%	17%	10%	15%	6%	15%	0%	11%
S&P 500 High Dividend	17%	14%	55%	100%	9%	2%	7%	5%	4%	19%	16%	17%	16%	26%	9%	16%	4%	12%
S&P 500 Dividend Aristocrats	19%	21%	10%	9%	100%	13%	16%	11%	11%	18%	14%	18%	11%	10%	4%	9%	3%	17%
S&P 500 Quality	8%	21%	4%	2%	13%	100%	31%	12%	33%	18%	7%	23%	18%	3%	14%	2%	14%	30%
S&P 500 Growth	21%	31%	5%	7%	16%	31%	100%	33%	36%	37%	6%	29%	38%	0%	12%	1%	21%	67%
S&P 500 Pure Growth	16%	19%	5%	5%	11%	12%	33%	100%	20%	13%	6%	0%	21%	0%	15%	1%	28%	22%
S&P 500 Momentum	29%	20%	3%	4%	11%	33%	36%	20%	100%	14%	3%	14%	20%	1%	7%	0%	8%	26%
S&P 500 Revenue-Weighted	17%	33%	16%	19%	18%	18%	37%	13%	14%	100%	26%	61%	50%	32%	20%	31%	15%	63%
S&P 500 High Momentum Value	19%	13%	13%	16%	14%	7%	6%	6%	3%	26%	100%	25%	20%	41%	26%	32%	13%	17%
S&P 500 Value	22%	30%	17%	17%	18%	23%	29%	0%	14%	61%	25%	100%	48%	25%	18%	23%	10%	62%
S&P 500 Equal Weight	20%	22%	10%	16%	11%	18%	38%	21%	20%	50%	20%	48%	100%	23%	20%	19%	19%	53%
S&P 500 Pure Value	11%	10%	15%	26%	10%	3%	0%	0%	1%	32%	41%	25%	23%	100%	24%	53%	12%	14%
S&P 500 Buyback	9%	10%	6%	9%	4%	14%	12%	15%	7%	20%	26%	18%	20%	24%	100%	22%	24%	18%
S&P 500 Enhanced Value	6%	10%	15%	16%	9%	2%	1%	1%	0%	31%	32%	23%	19%	53%	22%	100%	11%	11%
S&P 500 High Beta	0%	11%	0%	4%	3%	14%	21%	28%	8%	15%	13%	10%	19%	12%	24%	11%	100%	20%

"Portfolio Overlap" is percentage of index weights held in common between any two indices.

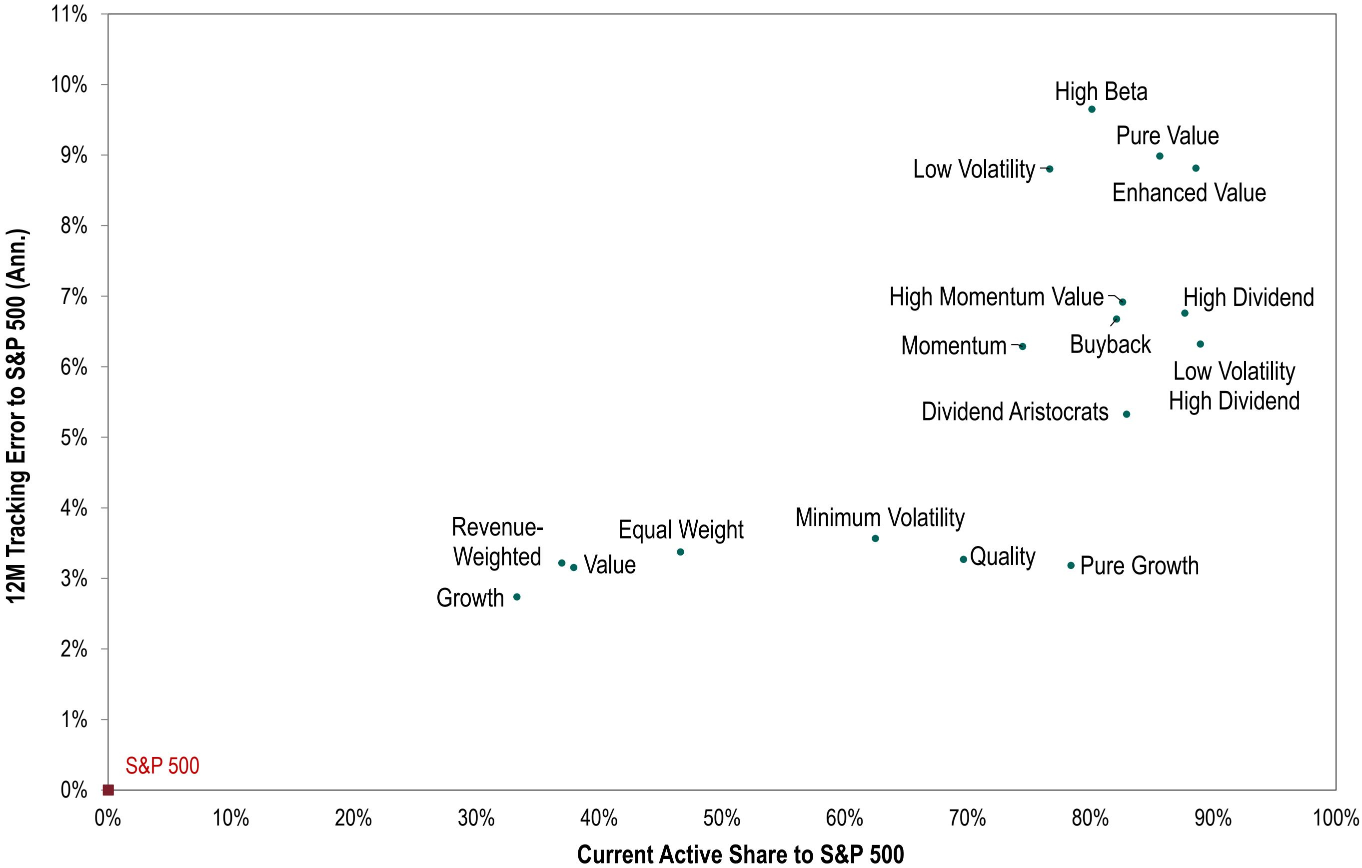
RELATIVE RETURN CORRELATIONS

	S&P 500 Low Volatility	S&P 500 Minimum Volatility	S&P 500 Low Volatility High Dividend	S&P 500 High Dividend	S&P 500 Dividend Aristocrats	S&P 500 Quality	S&P 500 Growth	S&P 500 Pure Growth	S&P 500 Momentum	S&P 500 Revenue-Weighted	S&P 500 High Momentum Value	S&P 500 Value	S&P 500 Equal Weight	S&P 500 Pure Value	S&P 500 Buyback	S&P 500 Enhanced Value	S&P 500 High Beta
S&P 500 Low Volatility	1.00	0.76	0.65	0.46	0.50	0.10	-0.05	-0.18	-0.01	-0.11	-0.19	0.06	0.07	-0.34	-0.37	-0.33	-0.71
S&P 500 Minimum Volatility	0.76	1.00	0.54	0.41	0.52	0.24	-0.02	-0.07	-0.01	0.03	-0.19	0.03	0.14	-0.22	-0.25	-0.28	-0.61
S&P 500 Low Volatility High Dividend	0.65	0.54	1.00	0.90	0.49	-0.02	-0.40	-0.43	-0.46	0.29	0.16	0.40	0.43	0.14	0.00	0.11	-0.35
S&P 500 High Dividend	0.46	0.41	0.90	1.00	0.45	0.03	-0.47	-0.43	-0.54	0.42	0.29	0.47	0.57	0.32	0.22	0.29	-0.13
S&P 500 Dividend Aristocrats	0.50	0.52	0.49	0.45	1.00	0.21	-0.45	-0.26	-0.31	0.42	0.26	0.46	0.49	0.21	0.23	0.20	-0.24
S&P 500 Quality	0.10	0.24	-0.02	0.03	0.21	1.00	0.08	0.17	0.13	-0.04	-0.09	-0.08	0.12	-0.04	0.07	-0.17	0.00
S&P 500 Growth	-0.05	-0.02	-0.40	-0.47	-0.45	0.08	1.00	0.69	0.53	-0.74	-0.74	-1.00	-0.59	-0.71	-0.62	-0.78	-0.28
S&P 500 Pure Growth	-0.18	-0.07	-0.43	-0.43	-0.26	0.17	0.69	1.00	0.50	-0.41	-0.38	-0.69	-0.06	-0.30	-0.16	-0.42	0.15
S&P 500 Momentum	-0.01	-0.01	-0.46	-0.54	-0.31	0.13	0.53	0.50	1.00	-0.40	-0.29	-0.51	-0.42	-0.33	-0.38	-0.42	-0.08
S&P 500 Revenue-Weighted	-0.11	0.03	0.29	0.42	0.42	-0.04	-0.74	-0.41	-0.40	1.00	0.68	0.73	0.66	0.79	0.70	0.81	0.29
S&P 500 High Momentum Value	-0.19	-0.19	0.16	0.29	0.26	-0.09	-0.74	-0.38	-0.29	0.68	1.00	0.74	0.60	0.83	0.78	0.87	0.47
S&P 500 Value	0.06	0.03	0.40	0.47	0.46	-0.08	-1.00	-0.69	-0.51	0.73	0.74	1.00	0.58	0.71	0.62	0.78	0.28
S&P 500 Equal Weight	0.07	0.14	0.43	0.57	0.49	0.12	-0.59	-0.06	-0.42	0.66	0.60	0.58	1.00	0.71	0.71	0.60	0.42
S&P 500 Pure Value	-0.34	-0.22	0.14	0.32	0.21	-0.04	-0.71	-0.30	-0.33	0.79	0.83	0.71	0.71	1.00	0.83	0.91	0.60
S&P 500 Buyback	-0.37	-0.25	0.00	0.22	0.23	0.07	-0.62	-0.16	-0.38	0.70	0.78	0.62	0.71	0.83	1.00	0.83	0.61
S&P 500 Enhanced Value	-0.33	-0.28	0.11	0.29	0.20	-0.17	-0.78	-0.42	-0.42	0.81	0.87	0.78	0.60	0.91	0.83	1.00	0.54
S&P 500 High Beta	-0.71	-0.61	-0.35	-0.13	-0.24	0.00	-0.28	0.15	-0.08	0.29	0.47	0.28	0.42	0.60	0.61	0.54	1.00

Correlation of weekly excess total returns (versus S&P 500), last three years

Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of October 31, 2019.

TRACKING ERROR & ACTIVE SHARE- RELATIVE TO S&P 500



FACTOR EXPOSURE SUMMARY (See following page for factor scoring methodology)

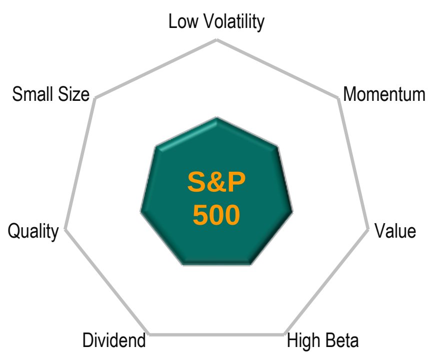
INDEX	AVERAGE	LOW VOLATILITY	MOMENTUM	VALUE	HIGH BETA	DIVIDEND	QUALITY	SMALL SIZE
S&P 500 High Momentum Value	16.5%	-6.4%	-12.4%	75.9%	-4.8%	24.2%	-4.4%	43.7%
S&P 500 Pure Value	15.4%	-34.8%	-30.3%	84.4%	-1.0%	35.7%	-4.4%	57.9%
S&P 500 Low Volatility	15.1%	80.5%	52.2%	-0.4%	-73.8%	24.9%	-12.8%	34.8%
S&P 500 Low Volatility High Dividend	13.8%	21.6%	-30.3%	49.0%	-48.8%	87.4%	-22.3%	39.7%
S&P 500 High Dividend	13.6%	-17.6%	-31.2%	55.4%	-30.9%	86.5%	-19.6%	52.8%
S&P 500 Quality	7.8%	0.0%	2.1%	-12.4%	4.9%	0.2%	60.5%	-1.0%
S&P 500 Enhanced Value	9.4%	-28.6%	-47.5%	89.2%	8.1%	40.6%	-25.6%	29.8%
S&P 500 Dividend Aristocrats	7.8%	24.0%	-0.8%	11.8%	-27.3%	22.2%	-4.4%	29.0%
S&P 500 Buyback	7.9%	-30.5%	-11.3%	51.5%	6.8%	4.1%	-4.4%	39.2%
S&P 500 Momentum	5.4%	38.5%	74.0%	-31.6%	-30.9%	-7.3%	-4.9%	0.0%
S&P 500 Value	5.4%	-0.1%	-10.2%	37.4%	-9.3%	20.4%	-0.1%	0.0%
S&P 500 Revenue-Weighted	4.7%	-6.4%	-17.7%	55.7%	-9.3%	15.0%	-9.1%	4.3%
S&P 500 Equal Weight	5.8%	-17.6%	-3.8%	25.6%	-9.3%	8.9%	-6.6%	43.2%
S&P 500 Minimum Volatility	0.6%	20.3%	10.7%	0.6%	-33.6%	12.1%	-13.2%	7.3%
S&P 500	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**
S&P 500 Pure Growth	-4.4%	-26.3%	7.7%	-13.0%	2.9%	-25.4%	-13.7%	36.8%
S&P 500 Growth	-4.3%	0.0%	10.7%	-22.9%	3.9%	-14.5%	0.0%	-7.0%
S&P 500 High Beta	-3.9%	-79.4%	-30.5%	9.7%	74.2%	-20.5%	-9.1%	28.1%

Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of October 31, 2019.

KEY TO FACTOR SCORINGS FOR INDICES

Factor Definitions

Each constituent of the S&P 500 index is provided with a factor "score" for each of Beta, Volatility, Momentum, Dividend, Size, Value and Quality.



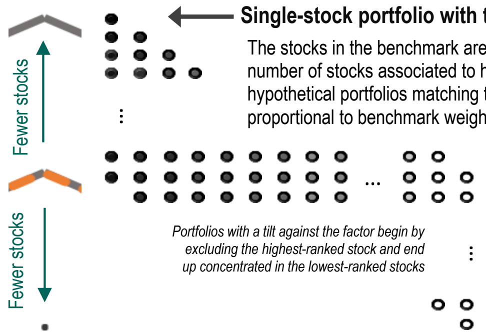
Factor	Measurement at single-stock level
Volatility	Trailing 12-month daily volatility.
Momentum	Twelve-month price change as of one month ago ("13 minus 1 momentum"), divided by the daily volatility during the twelve-month period that ended one month prior. For more details, see the S&P Momentum methodology.
Value	The average of (normalized) earnings to price ratio, book to price ratio and sales to price ratio. For more details, see the S&P Value methodology.
Beta	Trailing 1 year beta of daily returns to the benchmark's returns.
Dividend	Trailing 12-month dividend.
Quality	The average of the (normalized) return on equity, the negative of the accruals ratio and the negative of the financial leverage ratio. For more details, see the S&P Quality methodology. Average and standard deviations for each metric follow below.
Size	Free-float market capitalization.

Index Factor Ranking and Factor Diagram Scaling

Index Scores

Each index is provided score in each factor from -100% to +100% based on how much of the total capitalization of the benchmark must be excluded in order to provide a portfolio of stocks with similar exposure to that factor. This is done by examining a ranked series of hypothetical cap-weighted portfolios, including or excluding an increasing number of the stocks with the highest or lowest scores. An illustration of the process is below, further details may be found at this link.

Factor Diagram Axis



Single-stock portfolio with the highest possible factor score

The stocks in the benchmark are ranked in order from highest to lowest factor score, and we examine portfolios including or excluding a varying number of stocks associated to high or lower factor scores. The score in each factor (and its level on the chart) reflects the **active share** of a hypothetical portfolios matching the factor score of that index. The weights of stocks within the hypothetical comparison portfolios are set proportional to benchmark weights, i.e. free-float market capitalization.

Benchmark Portfolio has a factor rank defined by that of a cap-weighted average score among all stocks

Weighting matters to the ranking of the index. Each the ranked portfolios of stocks is given a factor score through the capitalization-weighted average. Factor indices can use alternative weightings, which can provide higher factor exposures with fewer stocks.

Single-stock portfolio with the lowest possible factor score

Notes On Additional Index Statistics

Statistic	Notes
Active Share (Stock)	Ranging from 0 to 100%, "active share" is a measure of how much a portfolio's composition differs from that of its benchmark, and provides the amount of trading theoretically required to switch from a position in one to a position in the other. The Active Share (Stock) for each index is calculated as the absolute sum of difference between S&P 500 stock weights and Index stock weights, divided by two.
Active Share (Sector)	The Active Share (Sector) is the absolute sum of difference between S&P 500 sector weights and Index sector weights, divided by two.
Concentration (HH Index)	The Herfindahl-Hirschman ("HH") concentration measure is equal to the index constituent's percentage weights, squared. For example, the HH measure of a single-stock portfolio is 10,000 (the maximum possible). The HH measure of a 100-stock, equally weighted index is 100.
Correlation (Stock)	Calculated as the weighted-average 1Yr trailing daily variance of current index constituents, divided by the 1Yr trailing daily Index variance. The value approximates an average stock-to-stock correlation of index constituents, weighted proportionally to both constituent weight and constituent volatility.

Benchmark Statistics for Value, Quality and Momentum (normalization variables)

	VALUE			QUALITY			MOMENTUM	
	Earnings to Price	**Book to Price**	**Sales to Price**	**Accrual Ratio**	**Return on Equity**	**Leverage Ratio**	**12M - 1M Return**	**Daily Price Volatility**
S&P 500 index-weighted average	4.54%	27.7%	43.6%	5.72%	16.02%	1.33	4.70%	1.71%
S&P 500 index-weighted standard deviation	2.65%	26.7%	46.1%	21.38%	31.88%	1.30	17.13%	0.46%

Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of October 31, 2019.

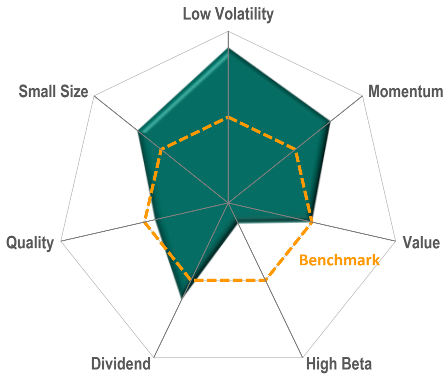
S&P 500 Low Volatility

Description

The S&P 500 Low Volatility is designed to measure the performance of the 100 stocks in the S&P 500 with the lowest volatility, measured on a 1-year trailing basis. The weighting of each stock is in inverse proportion to its volatility.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	-0.4%	4.3%	26.0%	22.9%	15.2%	12.2%	14.6%	10.3%
Relative to Benchmark	-2.5%	1.9%	2.8%	8.6%	0.3%	1.4%	0.9%	1.3%
Index Volatility				11.5%	8.7%	9.2%	9.3%	10.1%
Tracking Error				8.8%	7.0%	7.2%	7.6%	7.5%

Benchmark: S&P 500. 1 Yr trailing beta to benchmark = 0.58



Factor Exposure Chart

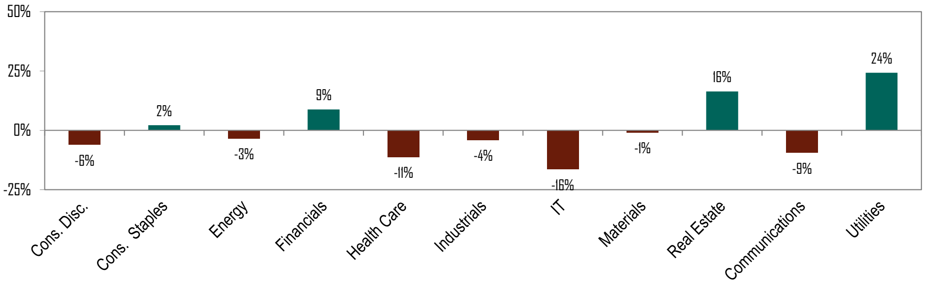
Portfolio Statistics	*Index*	*Bmark*
Active Share (Stock)	77%	0%
Active Share (Sector)	52%	0%
Concentration (HH Index)	101.2	93.1
Correlation (stock)	0.42	0.38
Ann. Turnover (last 10 yr)	0.58	0.05

Top Sector Tilts (versus benchmark)

Sector	*Index*	*Bmark*	*Difference*
Utilities	28%	3%	24%
Real Estate	20%	3%	16%
Info Tech	6%	22%	16%
Health Care	3%	14%	11%

Index-Weighted Avg.	*Index*	*Bmark*
Stock Volatility	18%	26%
12M - 1M price return	15%	5%
Book/Price	0.33	0.27
Earnings/Price	0.04	0.04
Sales/Price	0.37	0.46
Stock Beta	0.53	1.01
Yield (12M trailing)	2.5%	1.9%
R.O.E.	13%	16%
Market Cap (U.S. $ bn)	67.5	248.0

Sector Tilts (Detail)



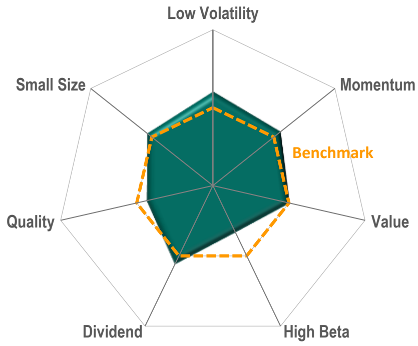
S&P 500 Minimum Volatility

Description

The S&P 500 Minimum Volatility uses an optimization process to find the portfolio of S&P 500 stocks, and weights, that would have demonstrated the lowest volatility on a historical basis, subject to constraints maintaining limiting sector and factor exposures. As of Oct 31, 2019 the index comprised 116 constituents.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	0.4%	2.5%	24.8%	16.2%	12.7%	11.4%	14.4%	9.8%
Relative to Benchmark	-1.8%	0.0%	1.7%	1.9%	-2.2%	0.6%	0.7%	0.7%
Index Volatility				14.5%	10.4%	10.0%	9.8%	11.2%
Tracking Error				3.6%	3.7%	5.0%	5.2%	5.2%

Benchmark: S&P 500. 1 Yr trailing beta to benchmark = 0.83



Factor Exposure Chart

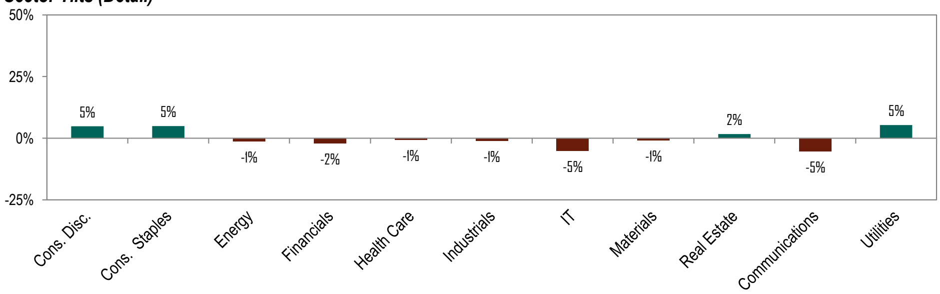
Portfolio Statistics	*Index*	*Bmark*
Active Share (Stock)	62%	0%
Active Share (Sector)	17%	0%
Concentration (HH Index)	132.9	93.1
Correlation (stock)	0.33	0.38
Ann. Turnover (last 10 yr)	0.50	0.05

Top Sector Tilts (versus benchmark)

Sector	*Index*	*Bmark*	*Difference*
Utilities	9%	3%	5%
Cons. Staples	12%	7%	5%
Communications	5%	10%	5%
Info Tech	17%	22%	5%

Index-Weighted Avg.	*Index*	*Bmark*
Stock Volatility	23%	26%
12M - 1M price return	7%	5%
Book/Price	0.27	0.27
Earnings/Price	0.04	0.04
Sales/Price	0.46	0.46
Stock Beta	0.80	1.01
Yield (12M trailing)	2.2%	1.9%
R.O.E.	16%	16%
Market Cap (U.S. $ bn)	160.0	248.0

Sector Tilts (Detail)



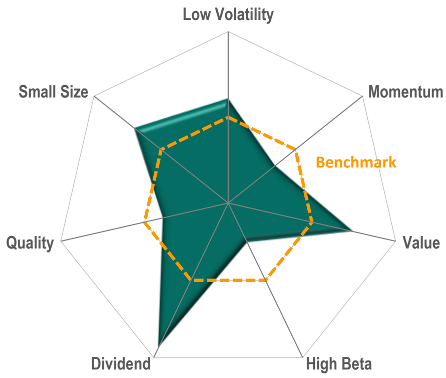
S&P 500 Low Volatility High Dividend

Description

The S&P 500 Low Volatility High Dividend measures the performance of the 50 least-volatile high dividend-yielding stocks in the S&P 500. Each component is weighted proportionally to its dividend yield, subject to single stock and sector constraints.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	-0.1%	2.2%	15.3%	10.3%	8.6%	10.2%	14.2%	11.3%
Relative to Benchmark	-2.3%	-0.3%	-7.8%	-4.0%	-6.4%	-0.6%	0.5%	2.3%
Index Volatility				16.0%	11.0%	10.6%	10.6%	12.6%
Tracking Error				6.3%	6.5%	7.3%	7.7%	7.2%

Benchmark: S&P 500. 1 Yr trailing beta to benchmark = 0.69



Factor Exposure Chart

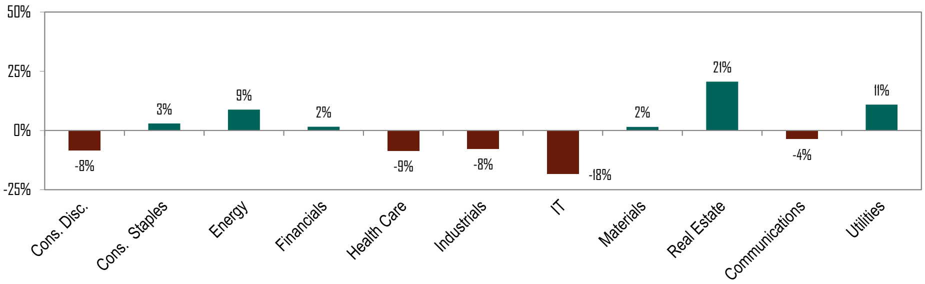
Portfolio Statistics	*Index*	*Bmark*
Active Share (Stock)	89%	0%
Active Share (Sector)	46%	0%
Concentration (HH Index)	209.3	93.1
Correlation (stock)	0.31	0.38
Ann. Turnover (last 10 yr)	0.56	0.05

Top Sector Tilts (versus benchmark)

Sector	*Index*	*Bmark*	*Difference*
Real Estate	24%	3%	21%
Utilities	14%	3%	11%
Info Tech	4%	22%	18%
Health Care	5%	14%	9%

Index-Weighted Avg.	*Index*	*Bmark*
Stock Volatility	23%	26%
12M - 1M price return	-4%	5%
Book/Price	0.49	0.27
Earnings/Price	0.05	0.04
Sales/Price	0.77	0.46
Stock Beta	0.71	1.01
Yield (12M trailing)	4.8%	1.9%
R.O.E.	11%	16%
Market Cap (U.S. $ bn)	57.8	248.0

Sector Tilts (Detail)



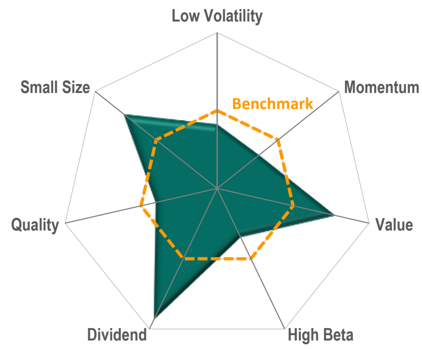
S&P 500 High Dividend

Description

The S&P 500 High Dividend is constructed from the 80 constituents of the S&P 500 with the highest indicated dividend yield. The index is equal weighted.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	0.8%	2.1%	16.2%	10.0%	9.7%	9.6%	14.8%	9.1%
Relative to Benchmark	-1.4%	-0.4%	-6.9%	-4.3%	-5.2%	-1.2%	1.1%	0.0%
Index Volatility				18.1%	12.1%	11.3%	11.2%	16.3%
Tracking Error				6.8%	6.4%	7.0%	7.1%	8.7%

Benchmark: S&P 500. 1 Yr trailing beta to benchmark = 0.76



Factor Exposure Chart

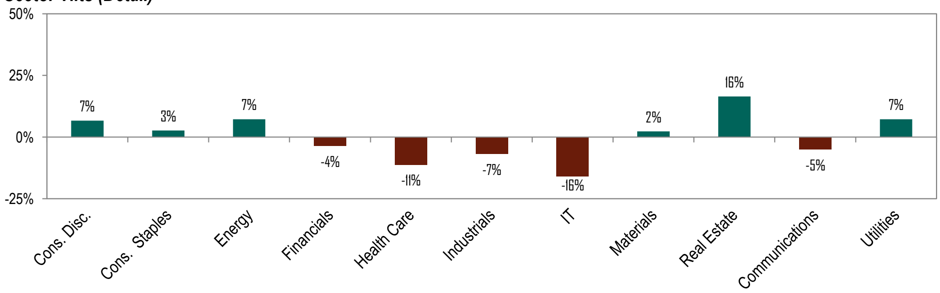
Portfolio Statistics	*Index*	*Bmark*
Active Share (Stock)	88%	0%
Active Share (Sector)	43%	0%
Concentration (HH Index)	127.2	93.1
Correlation (stock)	0.26	0.38
Ann. Turnover (last 10 yr)	0.38	0.05

Top Sector Tilts (versus benchmark)

Sector	*Index*	*Bmark*	*Difference*
Real Estate	20%	3%	16%
Utilities	11%	3%	7%
Info Tech	6%	22%	16%
Health Care	3%	14%	11%

Index-Weighted Avg.	*Index*	*Bmark*
Stock Volatility	27%	26%
12M - 1M price return	-6%	5%
Book/Price	0.50	0.27
Earnings/Price	0.02	0.04
Sales/Price	0.98	0.46
Stock Beta	0.82	1.01
Yield (12M trailing)	4.7%	1.9%
R.O.E.	5%	16%
Market Cap (U.S. $ bn)	40.3	248.0

Sector Tilts (Detail)



Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of October 31, 2019.

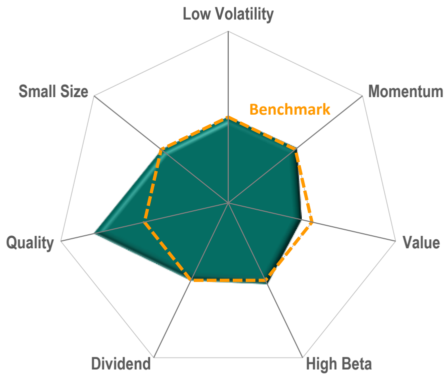
S&P 500 Quality

Description

The S&P 500 Quality is designed to track the 100 stocks in the S&P 500 with the highest quality score, which is calculated based on return on equity, accruals ratio and financial leverage ratio. The weighting is proportional to both the quality score, and the market capitalization, of each component, subject to single stock and sector constraints..

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	2.5%	3.1%	25.2%	14.8%	13.8%	9.8%	14.1%	10.8%
Relative to Benchmark	0.3%	0.7%	2.0%	0.5%	-1.1%	-1.0%	0.4%	1.7%
Index Volatility				15.8%	11.8%	11.7%	12.0%	13.2%
Tracking Error				3.3%	2.7%	2.5%	2.9%	3.1%

Benchmark: S&P 500. 1 Yr trailing beta to benchmark = 1.07



Factor Exposure Chart

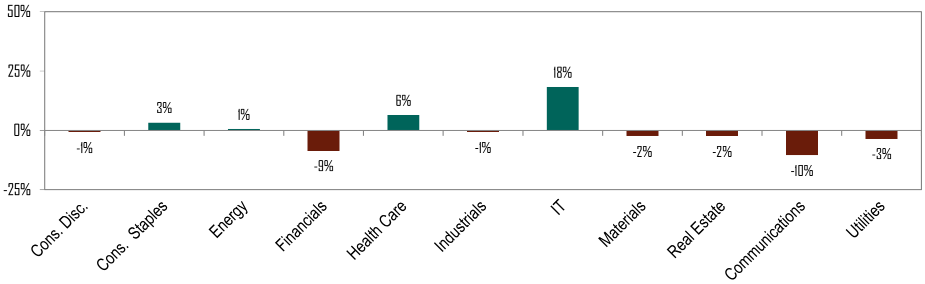
Portfolio Statistics	*Index*	*Bmark*
Active Share (Stock)	70%	0%
Active Share (Sector)	28%	0%
Concentration (HH Index)	271.0	93.1
Correlation (stock)	0.45	0.38
Ann. Turnover (last 10 yr)	0.63	0.05

Top Sector Tilts (versus benchmark)

Sector	*Index*	*Bmark*	*Difference*
Info Tech	41%	22%	18%
Health Care	20%	14%	6%
Communications	0%	10%	10%
Financials	4%	13%	9%

Index-Weighted Avg.	*Index*	*Bmark*
Stock Volatility	26%	26%
12M - 1M price return	6%	5%
Book/Price	0.16	0.27
Earnings/Price	0.05	0.04
Sales/Price	0.30	0.46
Stock Beta	1.05	1.01
Yield (12M trailing)	1.9%	1.9%
R.O.E.	29%	16%
Market Cap (U.S. $ bn)	256.0	248.0

Sector Tilts (Detail)



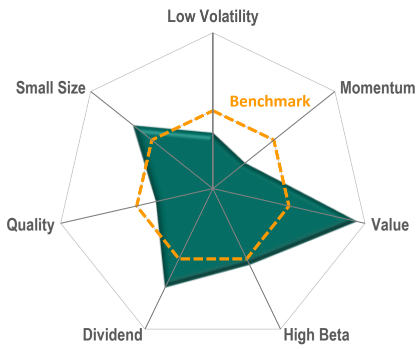
S&P 500 Enhanced Value

Description

The S&P 500 Enhanced Value is designed to measure the performance of the 100 stocks in the S&P 500 with the highest average book value-to-price, earnings-to-price, and sales-to-price. The weighting is proportional to both the value score and the market capitalization of each component.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	2.9%	1.7%	19.6%	8.8%	13.8%	8.8%	13.6%	8.6%
Relative to Benchmark	0.8%	-0.7%	-3.5%	-5.6%	-1.2%	-2.0%	-0.1%	-0.5%
Index Volatility				22.4%	16.2%	15.3%	15.7%	19.2%
Tracking Error				8.8%	8.1%	7.2%	6.6%	8.4%

Benchmark: S&P 500. 1 Yr trailing beta to benchmark = 0.99



Factor Exposure Chart

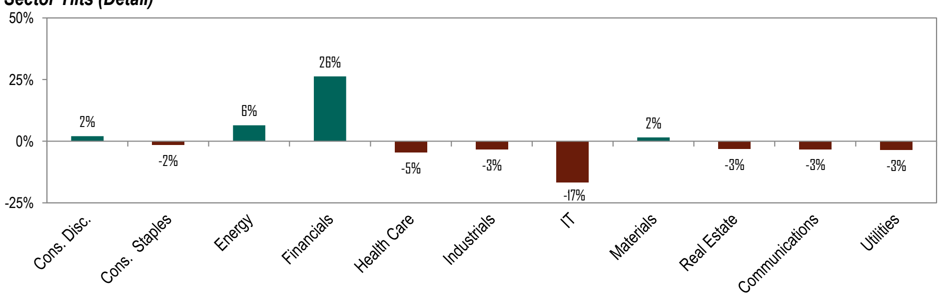
Portfolio Statistics	*Index*	*Bmark*
Active Share (Stock)	89%	0%
Active Share (Sector)	36%	0%
Concentration (HH Index)	226.3	93.1
Correlation (stock)	0.38	0.38
Ann. Turnover (last 10 yr)	0.47	0.05

Top Sector Tilts (versus benchmark)

Sector	*Index*	*Bmark*	*Difference*
Financials	39%	13%	26%
Energy	9%	4%	4%
Info Tech	6%	22%	17%
Communications	8%	10%	3%

Index-Weighted Avg.	*Index*	*Bmark*
Stock Volatility	28%	26%
12M - 1M price return	-9%	5%
Book/Price	0.73	0.27
Earnings/Price	0.08	0.04
Sales/Price	1.60	0.46
Stock Beta	1.07	1.01
Yield (12M trailing)	2.9%	1.9%
R.O.E.	11%	16%
Market Cap (U.S. $ bn)	78.5	248.0

Sector Tilts (Detail)



S&P Dow Jones Indices

A Division of S&P Global

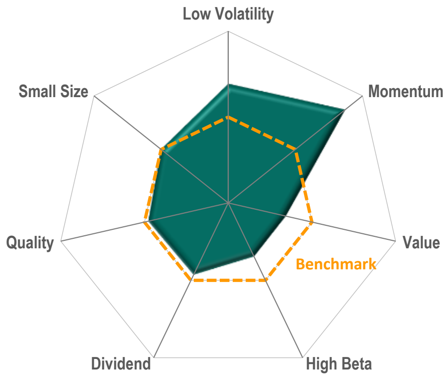
S&P 500 Momentum

Description

The S&P 500 Momentum comprises the top 100 stocks in the S&P 500® based on 12M prior risk-adjusted performance (excluding the most recent month at the rebalance). The weighting is inversely proportional to the trailing volatility of each component, subject to single stock and sector constraints..

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	-0.1%	-0.2%	21.3%	12.6%	16.8%	12.0%	14.8%	10.0%
Relative to Benchmark	-2.3%	-2.7%	-1.9%	-1.7%	1.9%	1.2%	1.1%	1.0%
Index Volatility				14.3%	12.6%	12.2%	13.2%	14.0%
Tracking Error				6.3%	6.0%	5.4%	4.9%	6.3%

Benchmark: S&P 500. 1 Yr trailing beta to benchmark = 1.08



Factor Exposure Chart

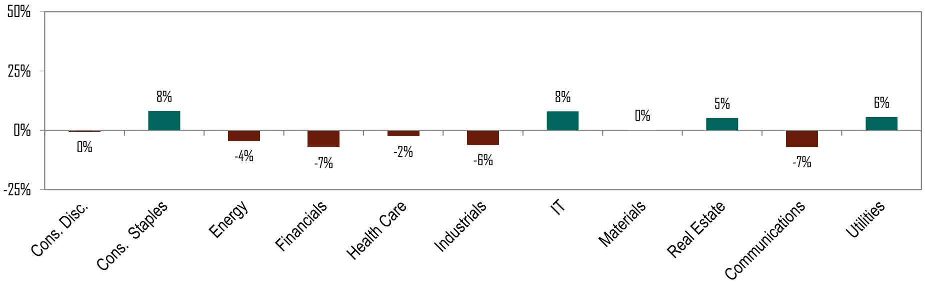
Portfolio Statistics	***Index***	***Bmark***
Active Share (Stock)	74%	0%
Active Share (Sector)	27%	0%
Concentration (HH Index)	294.6	93.1
Correlation (stock)	0.70	0.38
Ann. Turnover (last 10 yr)	1.18	0.05

Top Sector Tilts (versus benchmark)

Sector	***Index***	***Bmark***	***Difference***
Cons. Staples	16%	7%	8%
Info Tech	30%	22%	8%
Financials	6%	13%	7%
Communications	4%	10%	7%

Index-Weighted Avg.	***Index***	***Bmark***
Stock Volatility	22%	26%
12M - 1M price return	24%	5%
Book/Price	0.15	0.27
Earnings/Price	0.03	0.04
Sales/Price	0.26	0.46
Stock Beta	0.82	1.01
Yield (12M trailing)	1.6%	1.9%
R.O.E.	23%	16%
Market Cap (U.S. $ bn)	223.0	248.0

Sector Tilts (Detail)



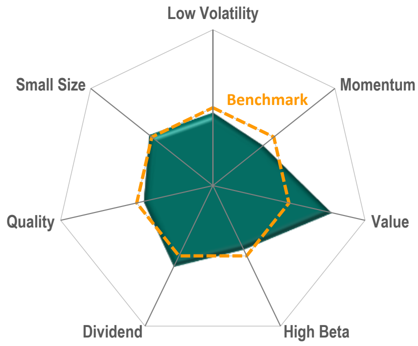
S&P 500 Revenue-Weighted

Description

The S&P 500 Revenue-Weighted comprises all the constituents of the S&P 500, weighted in proportion to revenues.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	2.2%	2.5%	20.7%	10.6%	13.2%	9.3%	13.7%	9.3%
Relative to Benchmark	0.0%	0.1%	-2.4%	-3.7%	-1.8%	-1.4%	0.0%	0.3%
Index Volatility				18.2%	13.1%	12.4%	13.2%	15.0%
Tracking Error				3.2%	3.2%	2.8%	2.5%	3.0%

Benchmark: S&P 500. 1 Yr trailing beta to benchmark = 0.96



Factor Exposure Chart

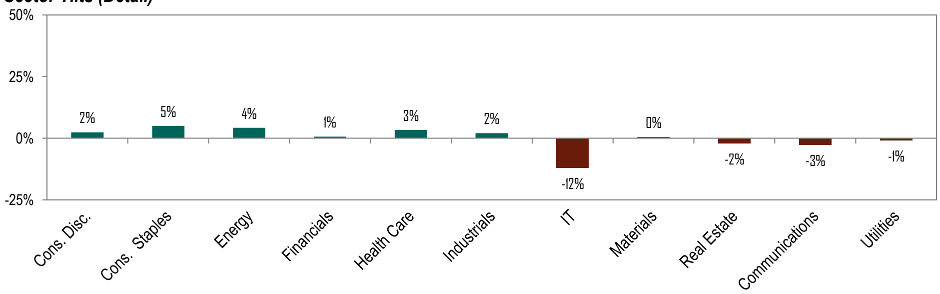
Portfolio Statistics	***Index***	***Bmark***
Active Share (Stock)	37%	0%
Active Share (Sector)	18%	0%
Concentration (HH Index)	88.0	93.1
Correlation (stock)	0.34	0.38
Ann. Turnover (last 10 yr)	0.19	0.05

Top Sector Tilts (versus benchmark)

Sector	***Index***	***Bmark***	***Difference***
Cons. Staples	12%	7%	5%
Energy	11%	4%	6%
Info Tech	10%	22%	12%
Health Care	9%	14%	5%

Index-Weighted Avg.	***Index***	***Bmark***
Stock Volatility	26%	26%
12M - 1M price return	-1%	5%
Book/Price	0.39	0.27
Earnings/Price	0.05	0.04
Sales/Price	1.38	0.46
Stock Beta	0.97	1.01
Yield (12M trailing)	2.3%	1.9%
R.O.E.	13%	16%
Market Cap (U.S. $ bn)	169.0	248.0

Sector Tilts (Detail)



Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of October 31, 2019.

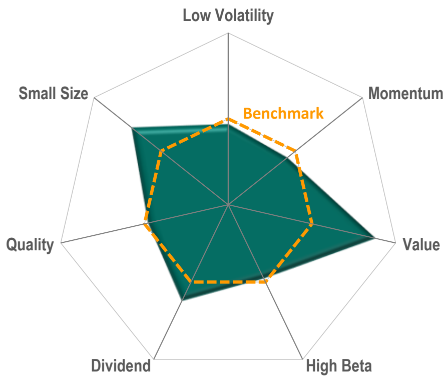
S&P 500 High Momentum Value

Description

The S&P 500 High Momentum Value is designed to measure the performance of the 100 stocks with the highest momentum selected from the 200 stocks in the S&P 500 with the highest value score, subject to turnover constraints. The weighting is proportional to the value score of each constituent.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	1.7%	1.2%	12.8%	2.4%	10.4%	7.8%	13.8%	11.1%
Relative to Benchmark	-0.4%	-1.3%	-10.3%	-11.9%	-4.5%	-3.0%	0.2%	2.1%
Index Volatility				20.9%	14.7%	13.4%	14.0%	18.2%
Tracking Error				6.9%	5.8%	5.3%	4.8%	7.7%

Benchmark: S&P 500. 1 Yr trailing beta to benchmark = 0.96



Factor Exposure Chart

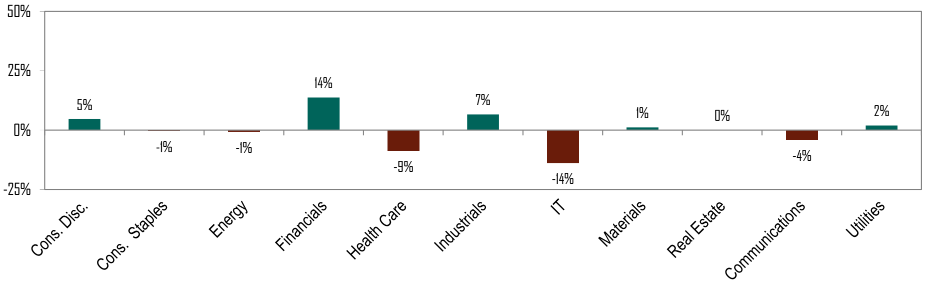
Portfolio Statistics	*Index*	*Bmark*
Active Share (Stock)	83%	0%
Active Share (Sector)	28%	0%
Concentration (HH Index)	112.0	93.1
Correlation (stock)	0.38	0.38
Ann. Turnover (last 10 yr)	0.81	0.05

Top Sector Tilts (versus benchmark)

Sector	*Index*	*Bmark*	*Difference*
Financials	27%	13%	14%
Materials	16%	9%	7%
Info Tech	8%	22%	14%
Health Care	5%	14%	9%

Index-Weighted Avg.	*Index*	*Bmark*
Stock Volatility	26%	26%
12M - 1M price return	1%	5%
Book/Price	0.53	0.27
Earnings/Price	0.08	0.04
Sales/Price	1.13	0.46
Stock Beta	0.97	1.01
Yield (12M trailing)	2.5%	1.9%
R.O.E.	15%	16%
Market Cap (U.S. $ bn)	52.3	248.0

Sector Tilts (Detail)



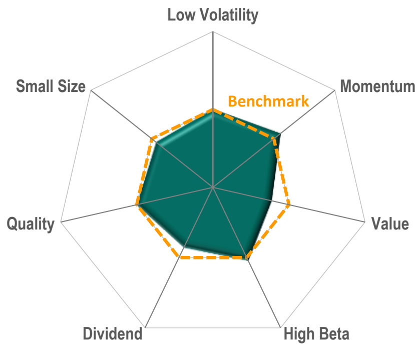
S&P 500 Growth

Description

The S&P 500 Growth is comprises S&P 500 stocks with above-average combinations of the ratio of earnings growth to price, sales growth, and momentum. The weighting is by capitalization, although the weight of some stocks is divided between the Value and Growth indices. As of Oct 31, 2019 the index comprised 296 constituents.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	1.7%	1.3%	23.2%	14.3%	17.2%	12.6%	14.9%	10.2%
Relative to Benchmark	-0.4%	-1.1%	0.0%	0.0%	2.3%	1.8%	1.2%	1.1%
Index Volatility				15.0%	12.0%	12.2%	12.6%	13.5%
Tracking Error				2.7%	3.5%	3.1%	2.7%	3.0%

Benchmark: S&P 500. 1 Yr trailing beta to benchmark = 1.06



Factor Exposure Chart

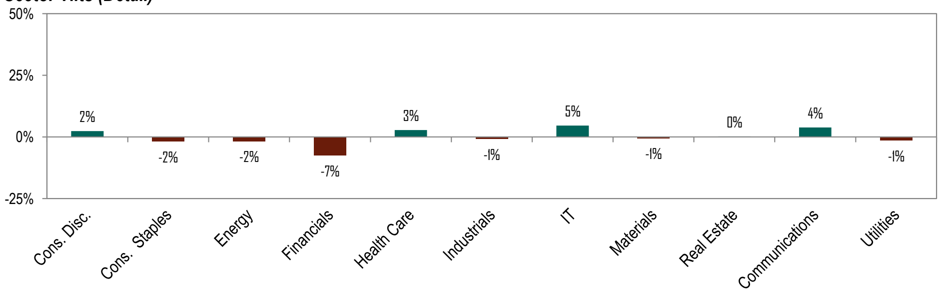
Portfolio Statistics	*Index*	*Bmark*
Active Share (Stock)	33%	0%
Active Share (Sector)	14%	0%
Concentration (HH Index)	181.6	93.1
Correlation (stock)	0.44	0.38
Ann. Turnover (last 10 yr)	0.26	0.05

Top Sector Tilts (versus benchmark)

Sector	*Index*	*Bmark*	*Difference*
Info Tech	27%	22%	5%
Communications	14%	10%	4%
Financials	5%	13%	7%
Cons. Staples	6%	7%	2%

Index-Weighted Avg.	*Index*	*Bmark*
Stock Volatility	26%	26%
12M - 1M price return	8%	5%
Book/Price	0.17	0.27
Earnings/Price	0.04	0.04
Sales/Price	0.27	0.46
Stock Beta	1.04	1.01
Yield (12M trailing)	1.5%	1.9%
R.O.E.	23%	16%
Market Cap (U.S. $ bn)	277.0	248.0

Sector Tilts (Detail)



S&P Dow Jones Indices

A Division of S&P Global

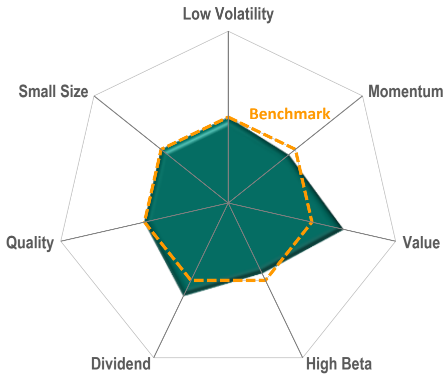
S&P 500 Value

Description

The S&P 500 Value comprises S&P 500 stocks with above-average combinations of book value-to-price, earnings-to-price, and sales-to-price. The weighting is by capitalization, although the weight of some stocks is divided between the Value and Growth indices. As of Oct 31, 2019 the index comprised 382 constituents.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	2.6%	3.7%	23.2%	14.5%	12.1%	8.6%	12.3%	7.7%
Relative to Benchmark	0.5%	1.3%	0.0%	0.1%	-2.8%	-2.1%	-1.4%	-1.3%
Index Volatility				18.1%	13.0%	12.3%	13.0%	14.8%
Tracking Error				3.2%	4.0%	3.5%	3.0%	3.3%

Benchmark: S&P 500. 1 Yr trailing beta to benchmark = 0.93



Factor Exposure Chart

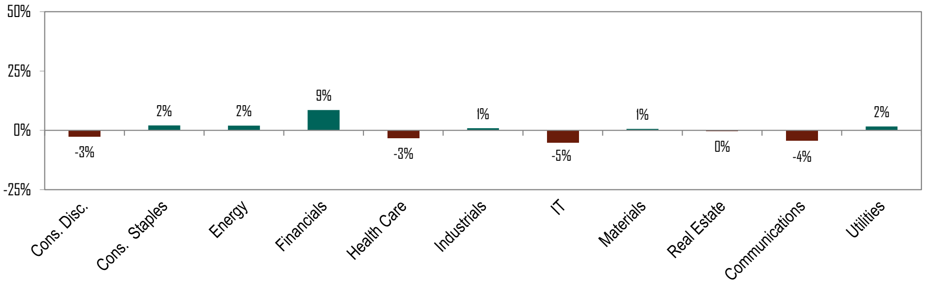
Portfolio Statistics	*Index*	*Bmark*
Active Share (Stock)	38%	0%
Active Share (Sector)	16%	0%
Concentration (HH Index)	150.3	93.1
Correlation (stock)	0.34	0.38
Ann. Turnover (last 10 yr)	0.27	0.05

Top Sector Tilts (versus benchmark)

Sector	*Index*	*Bmark*	*Difference*
Financials	21%	13%	9%
Cons. Staples	10%	7%	2%
Info Tech	17%	22%	5%
Communications	6%	10%	4%

Index-Weighted Avg.	*Index*	*Bmark*
Stock Volatility	26%	26%
12M - 1M price return	0%	5%
Book/Price	0.40	0.27
Earnings/Price	0.05	0.04
Sales/Price	0.67	0.46
Stock Beta	0.97	1.01
Yield (12M trailing)	2.4%	1.9%
R.O.E.	13%	16%
Market Cap (U.S. $ bn)	214.0	248.0

Sector Tilts (Detail)



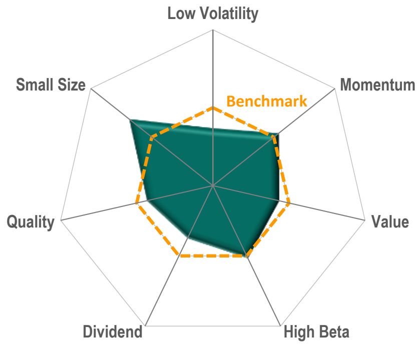
S&P 500 Pure Growth

Description

The S&P 500 Pure Growth comprises those S&P 500 stocks with 100% of their market cap in the S&P 500 Growth index and a growth score in the highest quartile. The weighting is proportional to the growth score. As of Oct 31, 2019 the index comprised 104 constituents.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	0.7%	-0.6%	20.8%	11.8%	14.3%	9.6%	15.6%	10.9%
Relative to Benchmark	-1.5%	-3.0%	-2.4%	-2.5%	-0.6%	-1.1%	1.9%	1.9%
Index Volatility				16.5%	13.3%	12.9%	14.6%	15.9%
Tracking Error				3.2%	4.9%	4.5%	5.3%	5.3%

Benchmark: S&P 500. 1 Yr trailing beta to benchmark = 1.07



Factor Exposure Chart

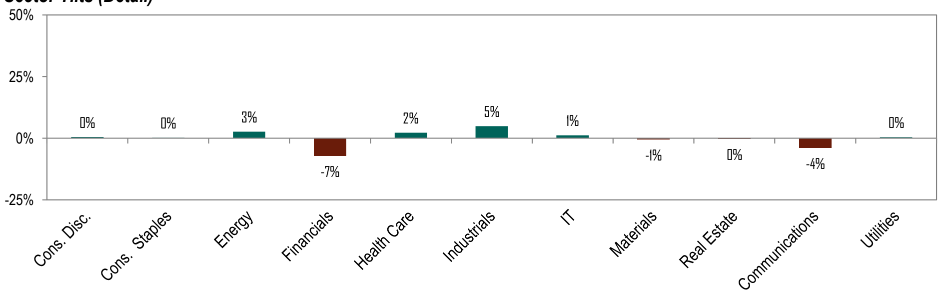
Portfolio Statistics	*Index*	*Bmark*
Active Share (Stock)	78%	0%
Active Share (Sector)	12%	0%
Concentration (HH Index)	110.7	93.1
Correlation (stock)	0.38	0.38
Ann. Turnover (last 10 yr)	0.63	0.05

Top Sector Tilts (versus benchmark)

Sector	*Index*	*Bmark*	*Difference*
Materials	14%	9%	5%
Energy	7%	4%	3%
Financials	6%	13%	7%
Communications	6%	10%	4%

Index-Weighted Avg.	*Index*	*Bmark*
Stock Volatility	28%	26%
12M - 1M price return	7%	5%
Book/Price	0.20	0.27
Earnings/Price	0.04	0.04
Sales/Price	0.35	0.46
Stock Beta	1.03	1.01
Yield (12M trailing)	1.2%	1.9%
R.O.E.	19%	16%
Market Cap (U.S. $ bn)	62.8	248.0

Sector Tilts (Detail)



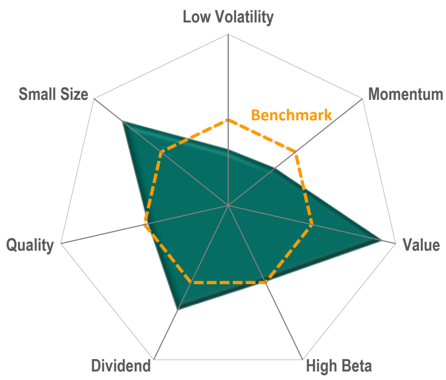
S&P 500 Pure Value

Description

The S&P 500 Pure Value comprises S&P 500 stocks with 100% of their market cap in the S&P 500 Value index and a value score in the highest quartile. The weighting is proportional to the value score. As of Oct 31, 2019 the index comprised 118 constituents.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	1.0%	0.9%	17.8%	4.1%	10.4%	6.4%	14.3%	9.8%
Relative to Benchmark	-1.2%	-1.5%	-5.4%	-10.3%	-4.5%	-4.3%	0.6%	0.7%
Index Volatility				23.3%	16.1%	15.4%	16.3%	21.2%
Tracking Error				9.0%	7.3%	6.7%	6.8%	11.0%

Benchmark: S&P 500. 1 Yr trailing beta to benchmark = 1.01



Factor Exposure Chart

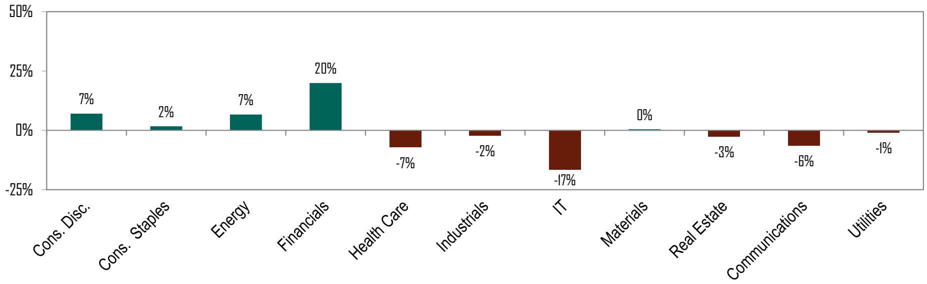
Portfolio Statistics	*Index*	*Bmark*
Active Share (Stock)	86%	0%
Active Share (Sector)	36%	0%
Concentration (HH Index)	110.9	93.1
Correlation (stock)	0.36	0.38
Ann. Turnover (last 10 yr)	0.51	0.05

Top Sector Tilts (versus benchmark)

Sector	*Index*	*Bmark*	*Difference*
Financials	33%	13%	20%
Cons. Disc.	17%	10%	7%
Info Tech	6%	22%	17%
Health Care	7%	14%	7%

Index-Weighted Avg.	*Index*	*Bmark*
Stock Volatility	29%	26%
12M - 1M price return	-4%	5%
Book/Price	0.76	0.27
Earnings/Price	0.04	0.04
Sales/Price	1.64	0.46
Stock Beta	1.00	1.01
Yield (12M trailing)	2.8%	1.9%
R.O.E.	5%	16%
Market Cap (U.S. $ bn)	34.7	248.0

Sector Tilts (Detail)



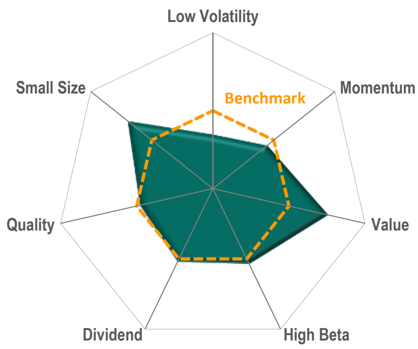
S&P 500 Buyback

Description

The S&P 500 Buyback is designed to measure the performance of the top 100 stocks in the S&P 500 by buyback ratio. The components are equally weighted.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	2.6%	2.0%	23.2%	13.0%	14.5%	9.7%	15.8%	11.3%
Relative to Benchmark	0.4%	-0.4%	0.1%	-1.4%	-0.4%	-1.1%	2.1%	2.3%
Index Volatility				21.2%	15.0%	14.6%	14.1%	16.2%
Tracking Error				6.7%	5.2%	5.0%	4.6%	5.3%

Benchmark: S&P 500. 1 Yr trailing beta to benchmark = 1.05



Factor Exposure Chart

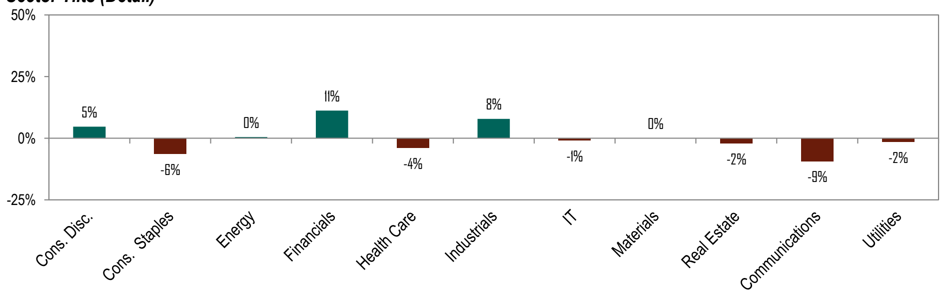
Portfolio Statistics	*Index*	*Bmark*
Active Share (Stock)	82%	0%
Active Share (Sector)	24%	0%
Concentration (HH Index)	100.3	93.1
Correlation (stock)	0.36	0.38
Ann. Turnover (last 10 yr)	0.91	0.05

Top Sector Tilts (versus benchmark)

Sector	*Index*	*Bmark*	*Difference*
Financials	24%	13%	11%
Materials	17%	9%	8%
Communications	1%	10%	9%
Cons. Staples	1%	7%	6%

Index-Weighted Avg.	*Index*	*Bmark*
Stock Volatility	29%	26%
12M - 1M price return	1%	5%
Book/Price	0.40	0.27
Earnings/Price	0.06	0.04
Sales/Price	0.78	0.46
Stock Beta	1.06	1.01
Yield (12M trailing)	2.0%	1.9%
R.O.E.	15%	16%
Market Cap (U.S. $ bn)	58.2	248.0

Sector Tilts (Detail)



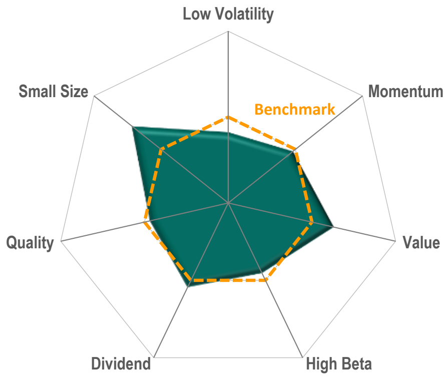
S&P 500 Equal Weight

Description

The S&P 500 Equal Weight comprises all 500 stocks in the S&P 500, equally weighted.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	1.3%	1.2%	21.6%	12.8%	12.4%	9.1%	14.0%	9.9%
Relative to Benchmark	-0.9%	-1.3%	-1.5%	-1.5%	-2.5%	-1.7%	0.3%	0.8%
Index Volatility				18.3%	12.9%	12.4%	13.6%	16.0%
Tracking Error				3.4%	3.0%	2.8%	2.9%	4.1%

Benchmark: S&P 500. 1 Yr trailing beta to benchmark = 0.96



Factor Exposure Chart

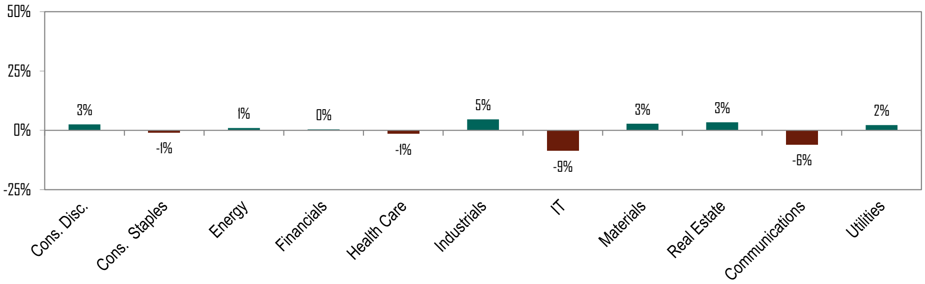
Portfolio Statistics	*Index*	*Bmark*
Active Share (Stock)	47%	0%
Active Share (Sector)	17%	0%
Concentration (HH Index)	20.0	93.1
Correlation (stock)	0.32	0.38
Ann. Turnover (last 10 yr)	0.21	0.05

Top Sector Tilts (versus benchmark)

Sector	*Index*	*Bmark*	*Difference*
Materials	14%	9%	5%
Real Estate	7%	3%	3%
Info Tech	14%	22%	9%
Communications	4%	10%	6%

Index-Weighted Avg.	*Index*	*Bmark*
Stock Volatility	27%	26%
12M - 1M price return	2%	5%
Book/Price	35%	27%
Earnings/Price	4%	4%
Sales/Price	66%	46%
Stock Beta	96%	101%
Dividend (12M trailing)	2.1%	1.9%
ROE	12%	16%
Market Capitalization	52.9	248.0

Sector Tilts (Detail)



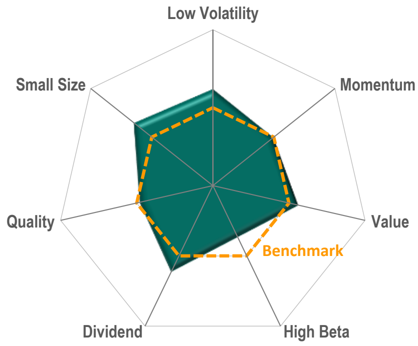
S&P 500 Dividend Aristocrats

Description

The S&P 500 Dividend Aristocrats measures the performance S&P 500 companies that have increased dividends every year for the last 25 consecutive years. The Index is equally weighted at each rebalance. As of Oct 31, 2019 the index comprised 57 constituents.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	1.3%	4.1%	21.8%	17.7%	14.7%	11.1%	14.9%	10.9%
Relative to Benchmark	-0.9%	1.7%	-1.3%	3.4%	-0.2%	0.3%	1.2%	1.9%
Index Volatility				14.7%	11.0%	11.0%	11.2%	12.8%
Tracking Error				5.3%	4.3%	4.4%	4.5%	5.2%

Benchmark: S&P 500. 1 Yr trailing beta to benchmark = 0.84



Factor Exposure Chart

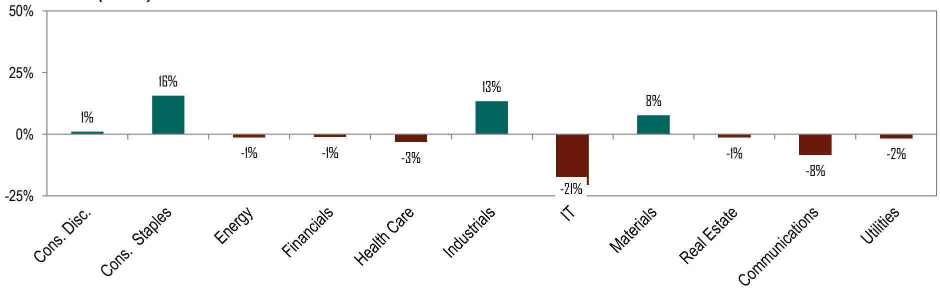
Portfolio Statistics	*Index*	*Bmark*
Active Share (Stock)	83%	0%
Active Share (Sector)	38%	0%
Concentration (HH Index)	176.7	93.1
Correlation (stock)	0.38	0.38
Ann. Turnover (last 10 yr)	0.19	0.05

Top Sector Tilts (versus benchmark)

Sector	*Index*	*Bmark*	*Difference*
Cons. Staples	23%	7%	16%
Materials	23%	9%	13%
Info Tech	2%	22%	21%
Communications	2%	10%	8%

Index-Weighted Avg.	*Index*	*Bmark*
Stock Volatility	23%	26%
12M - 1M price return	4%	5%
Book/Price	0.26	0.27
Earnings/Price	0.05	0.04
Sales/Price	0.74	0.46
Stock Beta	0.85	1.01
Yield (12M trailing)	2.5%	1.9%
R.O.E.	18%	16%
Market Cap (U.S. $ bn)	80.3	248.0

Sector Tilts (Detail)



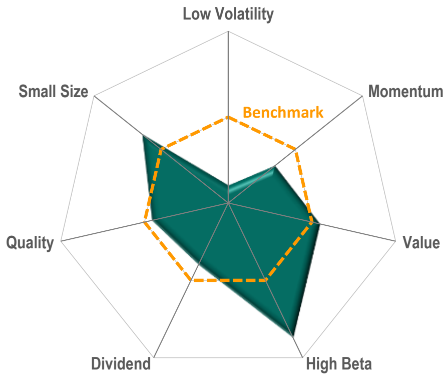
S&P 500 High Beta

Description

The S&P 500 High Beta is designed to measure the performance of the top 100 stocks in the S&P 500 by sensitivity to market returns. The weighting is in proportional to the beta coefficient of each constituent.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	2.5%	-0.9%	21.4%	10.0%	11.4%	6.2%	11.2%	5.1%
Relative to Benchmark	0.3%	-3.4%	-1.8%	-4.3%	-3.5%	-4.5%	-2.4%	-4.0%
Index Volatility				25.0%	19.4%	19.4%	21.1%	25.1%
Tracking Error				9.6%	9.9%	10.5%	11.0%	13.6%

Benchmark: S&P 500. 1 Yr trailing beta to benchmark = 1.39



Factor Exposure Chart

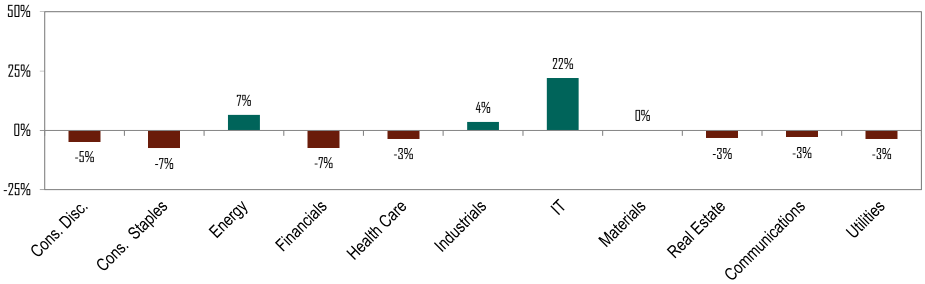
Portfolio Statistics	***Index***	***Bmark***
Active Share (Stock)	80%	0%
Active Share (Sector)	32%	0%
Concentration (HH Index)	105.2	93.1
Correlation (stock)	0.40	0.38
Ann. Turnover (last 10 yr)	0.82	0.05

Top Sector Tilts (versus benchmark)

Sector	***Index***	***Bmark***	***Difference***
Info Tech	44%	22%	22%
Energy	11%	4%	7%
Cons. Staples	0%	7%	7%
Financials	6%	13%	7%

Index-Weighted Avg.	***Index***	***Bmark***
Stock Volatility	37%	26%
12M - 1M price return	-5%	5%
Book/Price	0.33	0.27
Earnings/Price	0.04	0.04
Sales/Price	0.52	0.46
Stock Beta	1.47	1.01
Yield (12M trailing)	1.3%	1.9%
R.O.E.	13%	16%
Market Cap (U.S. $ bn)	82.9	248.0

Sector Tilts (Detail)



More Factor Resources

factor ALLOCATOR

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