S&P Dow Jones Indices
A Division of S&P Global
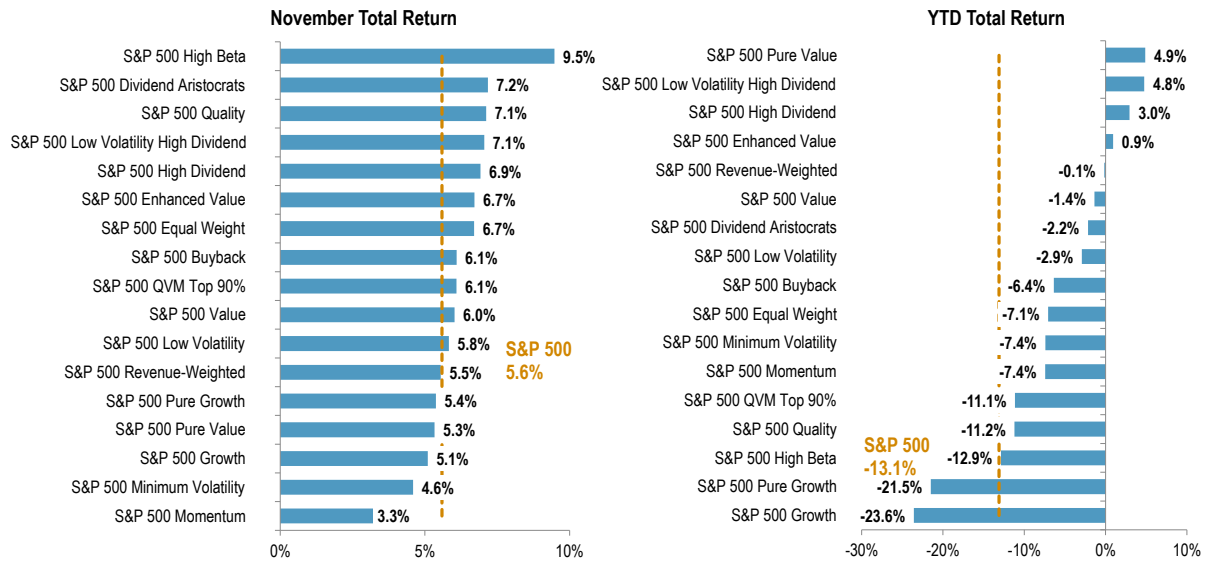
CORE PRODUCT MANAGEMENT: FACTORS
SPDJI-CoreFactorIndices@spglobal.com

Index Dashboard: S&P 500® Factor Indices
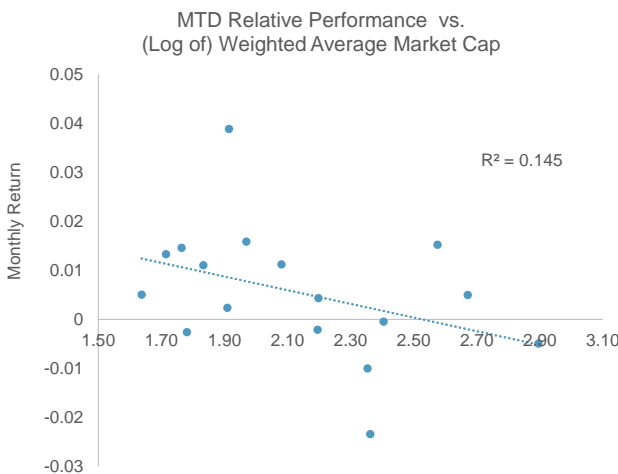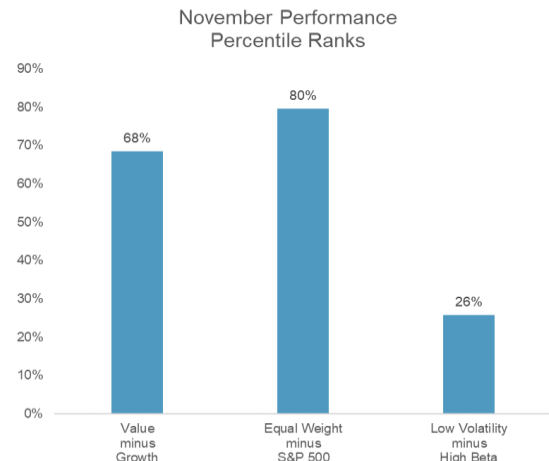**November 2022**

MONTHLY AND YTD PERFORMANCE SUMMARY

November Total Return

Index	Return
S&P 500 High Beta	9.5%
S&P 500 Dividend Aristocrats	7.2%
S&P 500 Quality	7.1%
S&P 500 Low Volatility High Dividend	7.1%
S&P 500 High Dividend	6.9%
S&P 500 Enhanced Value	6.7%
S&P 500 Equal Weight	6.7%
S&P 500 Buyback	6.1%
S&P 500 QVM Top 90%	6.1%
S&P 500 Value	6.0%
S&P 500 Low Volatility	5.8%
S&P 500 Revenue-Weighted	5.5%
S&P 500 Pure Growth	5.4%
S&P 500 Pure Value	5.3%
S&P 500 Growth	5.1%
S&P 500 Minimum Volatility	4.6%
S&P 500 Momentum	3.3%

S&P 500 5.6%

YTD Total Return

Index	Return
S&P 500 Pure Value	4.9%
S&P 500 Low Volatility High Dividend	4.8%
S&P 500 High Dividend	3.0%
S&P 500 Enhanced Value	0.9%
S&P 500 Revenue-Weighted	-0.1%
S&P 500 Value	-1.4%
S&P 500 Dividend Aristocrats	-2.2%
S&P 500 Low Volatility	-2.9%
S&P 500 Buyback	-6.4%
S&P 500 Equal Weight	-7.1%
S&P 500 Minimum Volatility	-7.4%
S&P 500 Momentum	-7.4%
S&P 500 QVM Top 90%	-11.1%
S&P 500 Quality	-11.2%
S&P 500 High Beta	-12.9%
S&P 500 Pure Growth	-21.5%
S&P 500 Growth	-23.6%

S&P 500 -13.1%

COMMENTARY

The S&P 500 continued its advance in November, albeit at a reduced pace. The index finished the month up a very respectable 5.6%, a slowdown from October's 8.1% gain but still well above its historical average. Every factor index gained as well, with (unsurprisingly) High Beta leading the way.

Last month we commented that it is relatively unusual for Value to outperform Growth in a month when the S&P 500 rises. It's still unusual, despite now happening for two months running (although both the Value-Growth spread and the S&P 500's return were lower in November than in October). Our first chart compares the returns of three sets of notionally opposite indices. The spread between Value and Growth, though down from last month, was still well above median. Meanwhile the gap between Equal Weight and the S&P 500 was in the top quintile of historical experience, suggesting strong payoffs to value and (especially) small size tilts.

November Performance Percentile Ranks

	Value minus Growth	Equal Weight minus S&P 500	Low Volatility minus High Beta
	68%	80%	26%

In contrast, the Low Vol-High Beta spread was below average, as expected in a month with strongly positive index returns.

We've commented before on the importance of the size factor to factor indices generally. The weighted average capitalization of most factor indices is below that of the S&P 500. Other things equal, therefore, most factor indices will benefit from a tailwind when smaller companies outperform. In November, e.g., only six factor indices lagged the S&P 500, while 11 outperformed. Our second chart illustrates the impact of capitalization on returns in November. If the relationship was not overwhelmingly important, neither was it negligible. Of our 8 largest-cap factor indices, only three outperformed and five lagged; of our 9 smallest-cap factors, all but one outperformed.

MTD Relative Performance vs. (Log of) Weighted Average Market Cap

R² = 0.145

Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of November 30, 2022. Returns in U.S. dollars.

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ANNUAL PERFORMANCE

Core factor performance by calendar year, 2007-present:

Total Return	2007	2008	2009	2010	2011	2012	2013	2014
Value	1.99%	-39.22%	21.18%	15.10%	-0.48%	17.68%	31.99%	12.36%
Low Volatility	0.58%	-21.41%	19.22%	13.36%	14.78%	10.30%	23.59%	17.49%
Momentum	9.89%	-34.56%	17.24%	18.72%	1.60%	17.33%	31.42%	11.23%
Quality	15.50%	-34.06%	30.46%	14.95%	10.89%	14.68%	34.24%	14.95%
S&P 500	5.49%	-37.00%	26.46%	15.06%	2.11%	16.00%	32.39%	13.69%

Relative to Benchmark
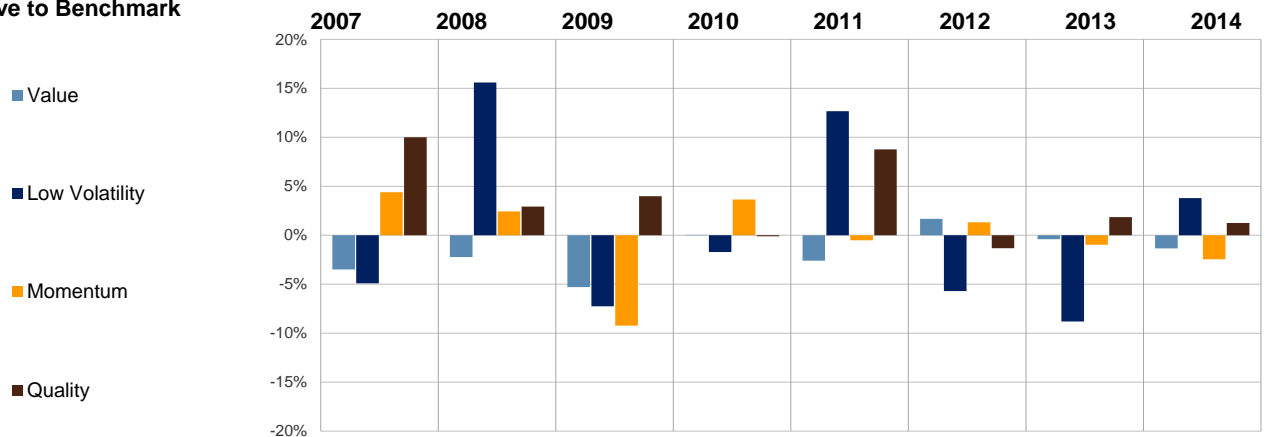
Total Return	2015	2016	2017	2018	2019	2020	2021	2022
Value	-3.13%	17.40%	15.36%	-8.95%	31.93%	1.36%	24.90%	-1.36%
Low Volatility	4.34%	10.37%	17.41%	0.27%	28.26%	-1.11%	24.42%	-2.91%
Momentum	5.56%	5.70%	28.27%	-0.04%	26.25%	28.32%	22.79%	-7.43%
Quality	0.38%	9.56%	19.51%	-6.79%	33.91%	17.55%	28.16%	-11.22%
S&P 500	1.38%	11.96%	21.83%	-4.38%	31.49%	18.40%	28.71%	-13.10%

Relative to Benchmark
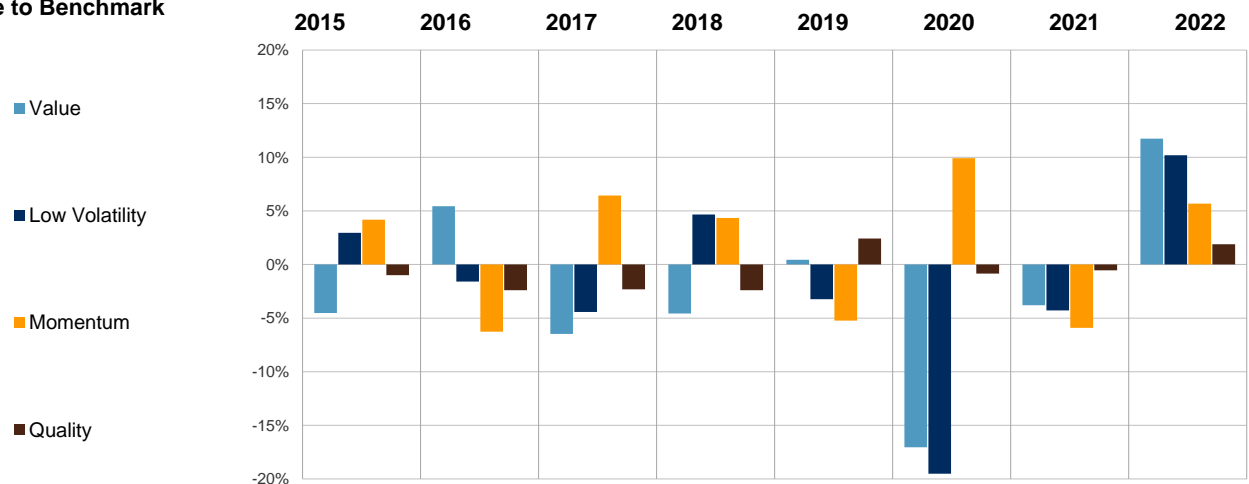
Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of November 30, 2022. Returns in U.S. dollars.

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15 YEAR RISK & RETURN - ABSOLUTE
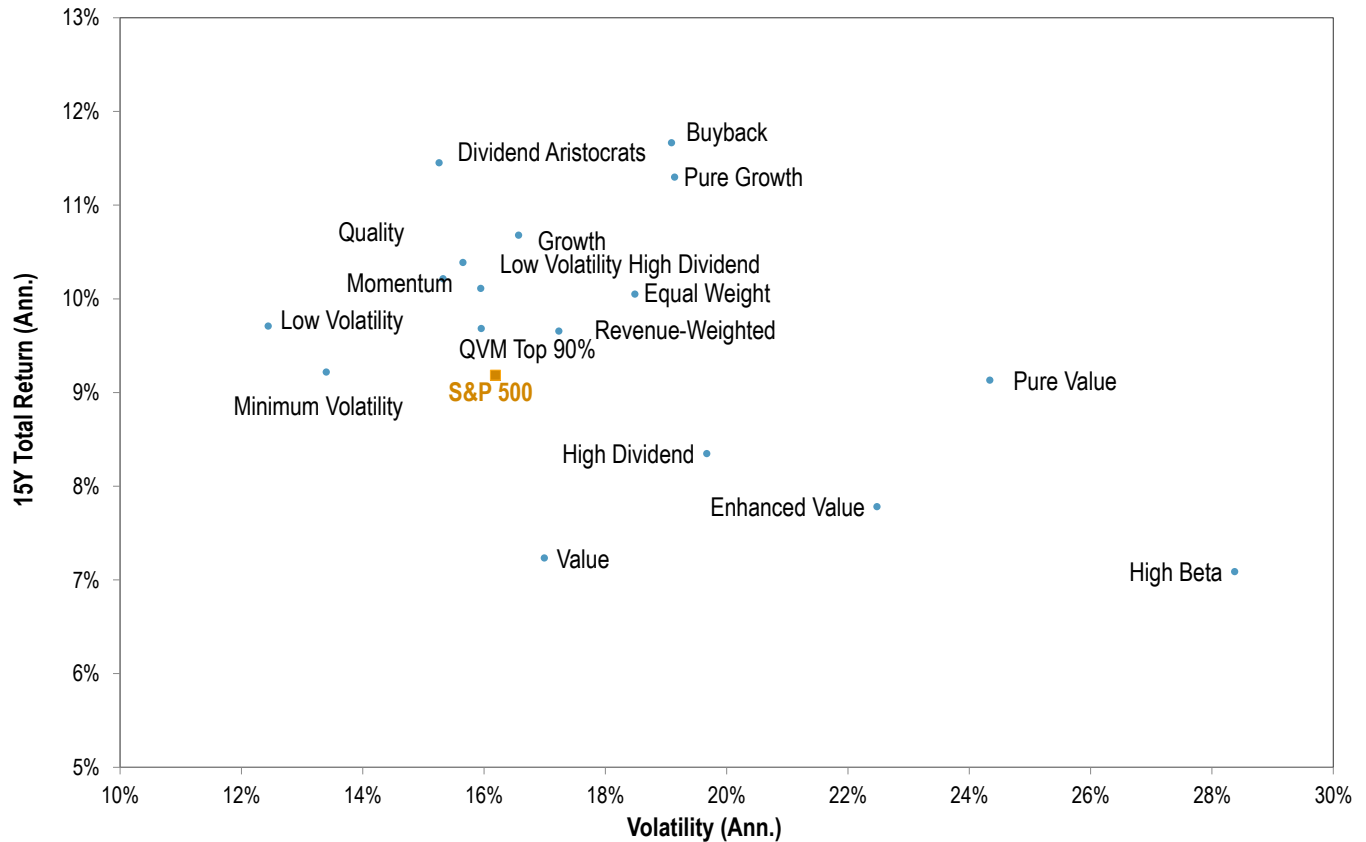
TOTAL RETURN	1M	3M	12M	3Y	5Y	10Y	15Y
S&P 500 Buyback	6.1%	8.3%	-0.7%	11.5%	11.2%	14.6%	11.7%
S&P 500 Dividend Aristocrats	7.2%	7.5%	5.0%	10.9%	11.2%	13.4%	11.5%
S&P 500 Pure Growth	5.4%	3.5%	-22.1%	10.6%	10.1%	14.0%	11.3%
S&P 500 Growth	5.1%	-1.1%	-21.7%	11.5%	12.2%	14.5%	10.7%
S&P 500 Low Volatility High Dividend	7.1%	5.1%	13.9%	6.8%	6.1%	11.0%	10.4%
S&P 500 Quality	7.1%	6.9%	-6.8%	11.4%	11.1%	13.1%	10.2%
S&P 500 Momentum	3.3%	9.3%	-4.9%	14.2%	13.1%	14.2%	10.1%
S&P 500 Equal Weight	6.7%	6.3%	-1.3%	11.8%	10.4%	13.2%	10.1%
S&P 500 Low Volatility	5.8%	3.8%	6.5%	6.7%	8.7%	11.6%	9.7%
S&P 500 QVM Top 90%	6.1%	4.7%	-6.7%	12.0%	11.7%	13.7%	9.7%
S&P 500 Revenue-Weighted	5.5%	6.9%	6.4%	13.4%	11.7%	13.9%	9.7%
S&P 500 Minimum Volatility	4.6%	4.3%	-1.0%	9.0%	9.7%	12.6%	9.2%
S&P 500 Pure Value	5.3%	8.2%	11.7%	9.8%	7.7%	12.3%	9.1%
S&P 500 High Dividend	6.9%	4.9%	10.5%	7.5%	7.1%	11.7%	8.3%
S&P 500 Enhanced Value	6.7%	8.9%	7.8%	8.1%	7.9%	12.8%	7.8%
S&P 500 Value	6.0%	8.2%	5.6%	8.8%	8.8%	11.5%	7.2%
S&P 500 High Beta	9.5%	6.1%	-9.8%	17.8%	12.5%	14.5%	7.1%
S&P 500	5.6%	3.6%	-9.2%	10.9%	11.0%	13.3%	9.2%

VOLATILITY (ANN.)	12M	3Y	5Y	10Y	15Y
S&P 500 Buyback	23.1%	24.3%	21.9%	17.6%	19.1%
S&P 500 Dividend Aristocrats	21.0%	19.9%	17.5%	14.1%	15.3%
S&P 500 Pure Growth	28.3%	25.6%	22.2%	17.5%	19.1%
S&P 500 Growth	25.4%	23.0%	20.0%	15.7%	16.6%
S&P 500 Low Volatility High Dividend	20.6%	21.9%	18.8%	14.8%	15.7%
S&P 500 Quality	22.5%	19.6%	17.6%	14.2%	15.3%
S&P 500 Momentum	22.6%	20.0%	18.0%	14.5%	15.9%
S&P 500 Equal Weight	22.6%	22.6%	20.0%	15.8%	18.5%
S&P 500 Low Volatility	18.5%	17.3%	14.9%	12.3%	12.4%
S&P 500 QVM Top 90%	21.8%	20.3%	18.2%	14.5%	16.0%
S&P 500 Revenue-Weighted	21.5%	20.9%	18.9%	15.1%	17.2%
S&P 500 Minimum Volatility	18.7%	18.0%	15.9%	12.7%	13.4%
S&P 500 Pure Value	22.7%	28.5%	24.9%	19.8%	24.3%
S&P 500 High Dividend	21.8%	25.8%	21.8%	16.9%	19.7%
S&P 500 Enhanced Value	24.6%	27.7%	24.2%	19.4%	22.5%
S&P 500 Value	20.9%	20.3%	18.4%	14.7%	17.0%
S&P 500 High Beta	30.5%	33.8%	29.6%	23.8%	28.4%
S&P 500	22.2%	20.5%	18.3%	14.6%	16.2%

Performance figures for more than one year are annualized.

TO S&P 500
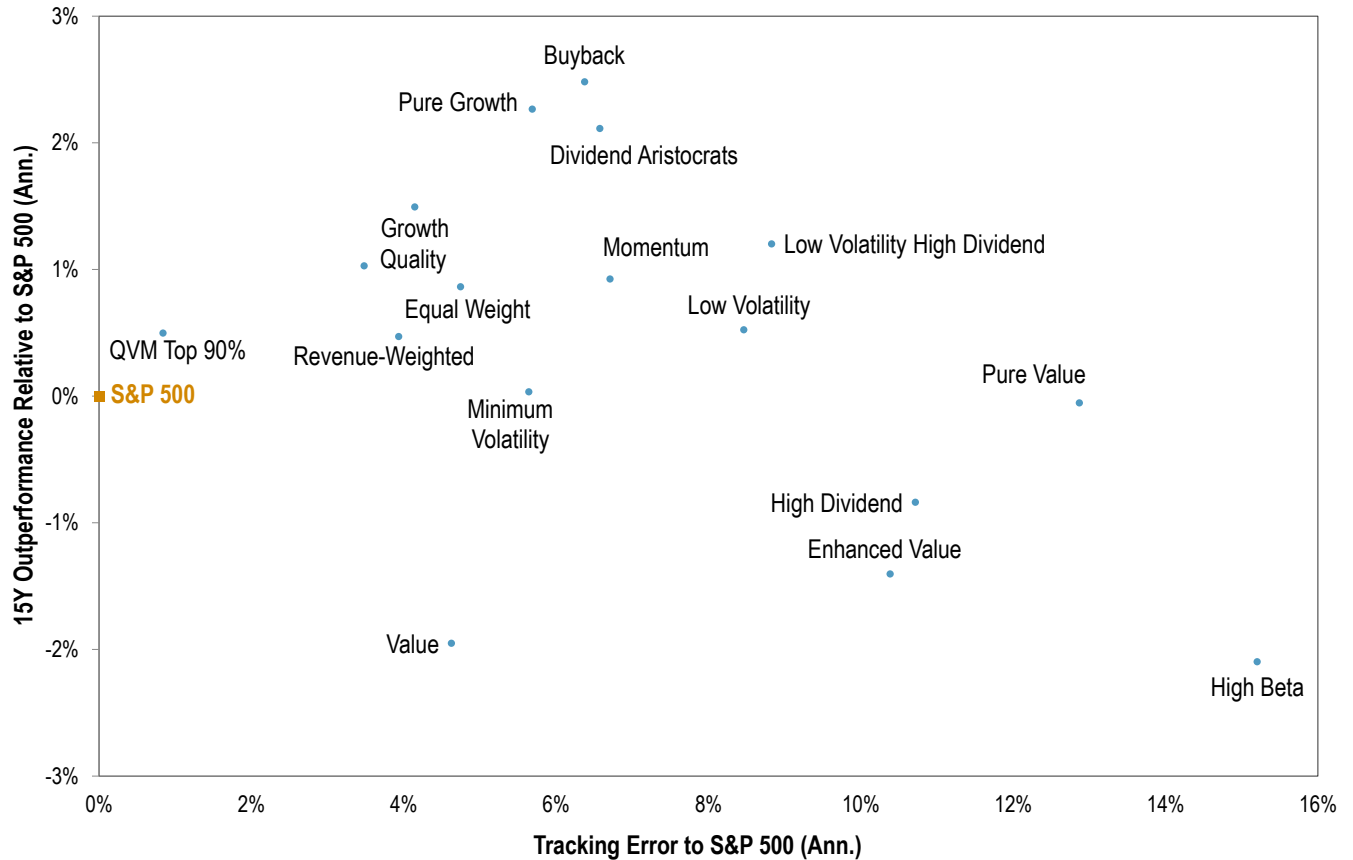
RELATIVE RETURN AND TRACKING ERROR

PERFORMANCE v S&P 500	1M	3M	1YR	3YR	5YR	10YR	15YR	TRACKING ERROR v S&P 500 (ANN.)	1YR	3YR	5YR	10YR	15YR
S&P 500 Buyback	0.5%	4.7%	8.6%	0.6%	0.2%	1.3%	2.5%	S&P 500 Buyback	6.9%	8.9%	7.6%	6.3%	6.4%
S&P 500 Dividend Aristocrats	1.6%	3.9%	14.2%	0.0%	0.2%	0.0%	2.3%	S&P 500 Dividend Aristocrats	6.4%	6.5%	5.9%	4.9%	5.7%
S&P 500 Pure Growth	-0.2%	-0.1%	-12.9%	-0.3%	-0.9%	0.6%	2.1%	S&P 500 Pure Growth	11.5%	9.5%	8.0%	6.6%	6.6%
S&P 500 Growth	-0.5%	-4.8%	-12.5%	0.6%	1.2%	1.1%	1.5%	S&P 500 Growth	6.8%	6.7%	5.5%	4.4%	4.1%
S&P 500 Low Volatility High Dividend	1.5%	1.5%	23.1%	-4.1%	-4.9%	-2.3%	1.2%	S&P 500 Low Volatility High Dividend	11.7%	12.0%	10.5%	8.9%	8.8%
S&P 500 Quality	1.5%	3.3%	2.4%	0.5%	0.1%	-0.3%	1.0%	S&P 500 Quality	5.0%	4.5%	4.0%	3.2%	3.5%
S&P 500 Momentum	-2.3%	5.7%	4.3%	3.3%	2.1%	0.9%	0.9%	S&P 500 Momentum	7.2%	7.4%	6.9%	5.9%	6.7%
S&P 500 Equal Weight	1.1%	2.7%	7.9%	0.9%	-0.6%	-0.1%	0.9%	S&P 500 Equal Weight	4.0%	6.1%	5.2%	4.0%	4.7%
S&P 500 Low Volatility	0.2%	0.2%	15.7%	-4.2%	-2.3%	-1.7%	0.5%	S&P 500 Low Volatility	10.1%	9.7%	9.2%	8.0%	8.5%
S&P 500 QVM Top 90%	0.5%	1.0%	2.5%	1.1%	0.7%	0.4%	0.5%	S&P 500 QVM Top 90%	1.6%	1.2%	1.0%	0.8%	0.8%
S&P 500 Revenue-Weighted	0.0%	3.3%	15.6%	2.5%	0.7%	0.6%	0.5%	S&P 500 Revenue-Weighted	5.1%	6.2%	5.2%	4.1%	3.9%
S&P 500 Minimum Volatility	-1.0%	0.7%	8.2%	-1.9%	-1.2%	-0.7%	0.0%	S&P 500 Minimum Volatility	6.3%	5.5%	4.8%	4.8%	5.6%
S&P 500 Pure Value	-0.3%	4.6%	20.9%	-1.1%	-3.3%	-1.0%	-0.1%	S&P 500 Pure Value	11.4%	16.1%	13.3%	10.3%	12.9%
S&P 500 High Dividend	1.3%	1.3%	19.7%	-3.4%	-3.8%	-1.6%	-0.8%	S&P 500 High Dividend	11.4%	14.6%	12.2%	9.9%	10.7%
S&P 500 Enhanced Value	1.1%	5.2%	17.1%	-2.8%	-3.0%	-0.6%	-1.4%	S&P 500 Enhanced Value	11.0%	14.5%	12.2%	9.8%	10.4%
S&P 500 Value	0.4%	4.6%	14.8%	-2.1%	-2.2%	-1.8%	-2.0%	S&P 500 Value	6.8%	7.5%	6.2%	4.9%	4.6%
S&P 500 High Beta	3.9%	2.4%	-0.6%	6.9%	1.5%	1.2%	-2.1%	S&P 500 High Beta	11.5%	18.3%	15.3%	12.9%	15.2%

Performance figures for more than one year are annualized.

DEGREE OF PORTFOLIO OVERLAP AND RELATIVE RETURN CORRELATIONS

PORTFOLIO OVERLAP

	Momentum	Growth	Quality	Pure Growth	Low Volatility	Minimum Volatility	QVM Top 90%	Dividend Aristocrats	Low Volatility High Dividend	High Dividend	Revenue-Weighted	Value	Equal Weight	Pure Value	Buyback	Enhanced Value	High Beta	S&P 500
S&P 500 Momentum	100%	12%	28%	6%	23%	20%	25%	13%	7%	11%	30%	31%	19%	19%	12%	14%	2%	22%
S&P 500 Growth	12%	100%	25%	28%	6%	23%	57%	7%	2%	2%	33%	27%	30%	0%	9%	5%	22%	61%
S&P 500 Quality	28%	25%	100%	9%	9%	17%	33%	18%	7%	9%	23%	26%	19%	11%	15%	11%	11%	31%
S&P 500 Pure Growth	6%	28%	9%	100%	1%	13%	15%	4%	2%	1%	11%	0%	11%	0%	13%	5%	34%	17%
S&P 500 Low Volatility	23%	6%	9%	1%	100%	28%	22%	28%	19%	21%	18%	30%	20%	18%	11%	6%	0%	21%
S&P 500 Minimum Volatility	20%	23%	17%	13%	28%	100%	29%	16%	9%	10%	25%	30%	18%	13%	7%	10%	9%	31%
S&P 500 QVM Top 90%	25%	57%	33%	15%	22%	29%	100%	17%	9%	13%	58%	66%	50%	17%	13%	15%	16%	88%
S&P 500 Dividend Aristocrats	13%	7%	18%	4%	28%	16%	17%	100%	17%	19%	17%	22%	13%	10%	8%	7%	2%	16%
S&P 500 Low Volatility High Dividend	7%	2%	7%	2%	19%	9%	9%	17%	100%	58%	12%	14%	10%	17%	7%	13%	0%	8%
S&P 500 High Dividend	11%	2%	9%	1%	21%	10%	13%	19%	58%	100%	19%	19%	16%	33%	14%	21%	4%	12%
S&P 500 Revenue-Weighted	30%	33%	23%	11%	18%	25%	58%	17%	12%	19%	100%	61%	49%	35%	21%	31%	14%	62%
S&P 500 Value	31%	27%	26%	0%	30%	30%	66%	22%	14%	19%	61%	100%	54%	25%	15%	21%	8%	66%
S&P 500 Equal Weight	19%	30%	19%	11%	20%	18%	50%	13%	10%	16%	49%	54%	100%	24%	20%	19%	20%	52%
S&P 500 Pure Value	19%	0%	11%	0%	18%	13%	17%	10%	17%	33%	35%	25%	24%	100%	33%	48%	8%	16%
S&P 500 Buyback	12%	9%	15%	13%	11%	7%	13%	8%	7%	14%	21%	15%	20%	33%	100%	28%	18%	13%
S&P 500 Enhanced Value	14%	5%	11%	5%	6%	10%	15%	7%	13%	21%	31%	21%	19%	48%	28%	100%	10%	13%
S&P 500 High Beta	2%	22%	11%	34%	0%	9%	16%	2%	0%	4%	14%	8%	20%	8%	18%	10%	100%	18%

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

RELATIVE RETURN CORRELATIONS

	Momentum	Growth	Quality	Pure Growth	Low Volatility	Minimum Volatility	QVM Top 90%	Dividend Aristocrats	Low Volatility High Dividend	High Dividend	Revenue-Weighted	Value	Equal Weight	Pure Value	Buyback	Enhanced Value	High Beta
S&P 500 Momentum	1.00	0.23	0.33	0.28	0.11	0.02	0.08	-0.36	-0.35	-0.44	-0.33	-0.32	-0.42	-0.39	-0.38	-0.42	-0.54
S&P 500 Growth	0.23	1.00	-0.10	0.47	-0.51	-0.43	-0.40	-0.82	-0.87	-0.82	-0.87	-0.98	-0.75	-0.78	-0.63	-0.77	-0.33
S&P 500 Quality	0.33	-0.10	1.00	0.00	-0.07	0.02	0.04	0.02	-0.17	-0.21	0.01	0.06	-0.15	-0.18	-0.14	-0.16	-0.27
S&P 500 Pure Growth	0.28	0.47	0.00	1.00	-0.34	-0.30	0.07	-0.46	-0.42	-0.27	-0.46	-0.46	-0.02	-0.18	0.05	-0.17	0.19
S&P 500 Low Volatility	0.11	-0.51	-0.07	-0.34	1.00	0.81	0.35	0.58	0.59	0.36	0.31	0.48	0.24	0.16	0.13	0.17	-0.34
S&P 500 Minimum Volatility	0.02	-0.43	0.02	-0.30	0.81	1.00	0.27	0.53	0.49	0.24	0.25	0.40	0.15	0.04	0.01	0.05	-0.37
S&P 500 QVM Top 90%	0.08	-0.40	0.04	0.07	0.35	0.27	1.00	0.32	0.46	0.44	0.23	0.38	0.47	0.45	0.53	0.47	0.20
S&P 500 Dividend Aristocrats	-0.36	-0.82	0.02	-0.46	0.58	0.53	0.32	1.00	0.82	0.71	0.78	0.84	0.70	0.60	0.55	0.61	0.25
S&P 500 Low Volatility High Dividend	-0.35	-0.87	-0.17	-0.42	0.59	0.49	0.46	0.82	1.00	0.92	0.79	0.88	0.79	0.79	0.69	0.79	0.37
S&P 500 High Dividend	-0.44	-0.82	-0.21	-0.27	0.36	0.24	0.44	0.71	0.92	1.00	0.79	0.86	0.88	0.92	0.81	0.91	0.61
S&P 500 Revenue-Weighted	-0.33	-0.87	0.01	-0.46	0.31	0.25	0.23	0.78	0.79	0.79	1.00	0.90	0.74	0.80	0.65	0.81	0.43
S&P 500 Value	-0.32	-0.98	0.06	-0.46	0.48	0.40	0.38	0.84	0.88	0.86	0.90	1.00	0.80	0.81	0.68	0.81	0.41
S&P 500 Equal Weight	-0.42	-0.75	-0.15	-0.02	0.24	0.15	0.47	0.70	0.79	0.88	0.74	0.80	1.00	0.90	0.91	0.89	0.77
S&P 500 Pure Value	-0.39	-0.78	-0.18	-0.18	0.16	0.04	0.45	0.60	0.79	0.92	0.80	0.81	0.90	1.00	0.87	0.97	0.74
S&P 500 Buyback	-0.38	-0.63	-0.14	0.05	0.13	0.01	0.53	0.55	0.69	0.81	0.65	0.68	0.91	0.87	1.00	0.89	0.74
S&P 500 Enhanced Value	-0.42	-0.77	-0.16	-0.17	0.17	0.05	0.47	0.61	0.79	0.91	0.81	0.81	0.89	0.97	0.89	1.00	0.73
S&P 500 High Beta	-0.54	-0.33	-0.27	0.19	-0.34	-0.37	0.20	0.25	0.37	0.61	0.43	0.41	0.77	0.74	0.74	0.73	1.00

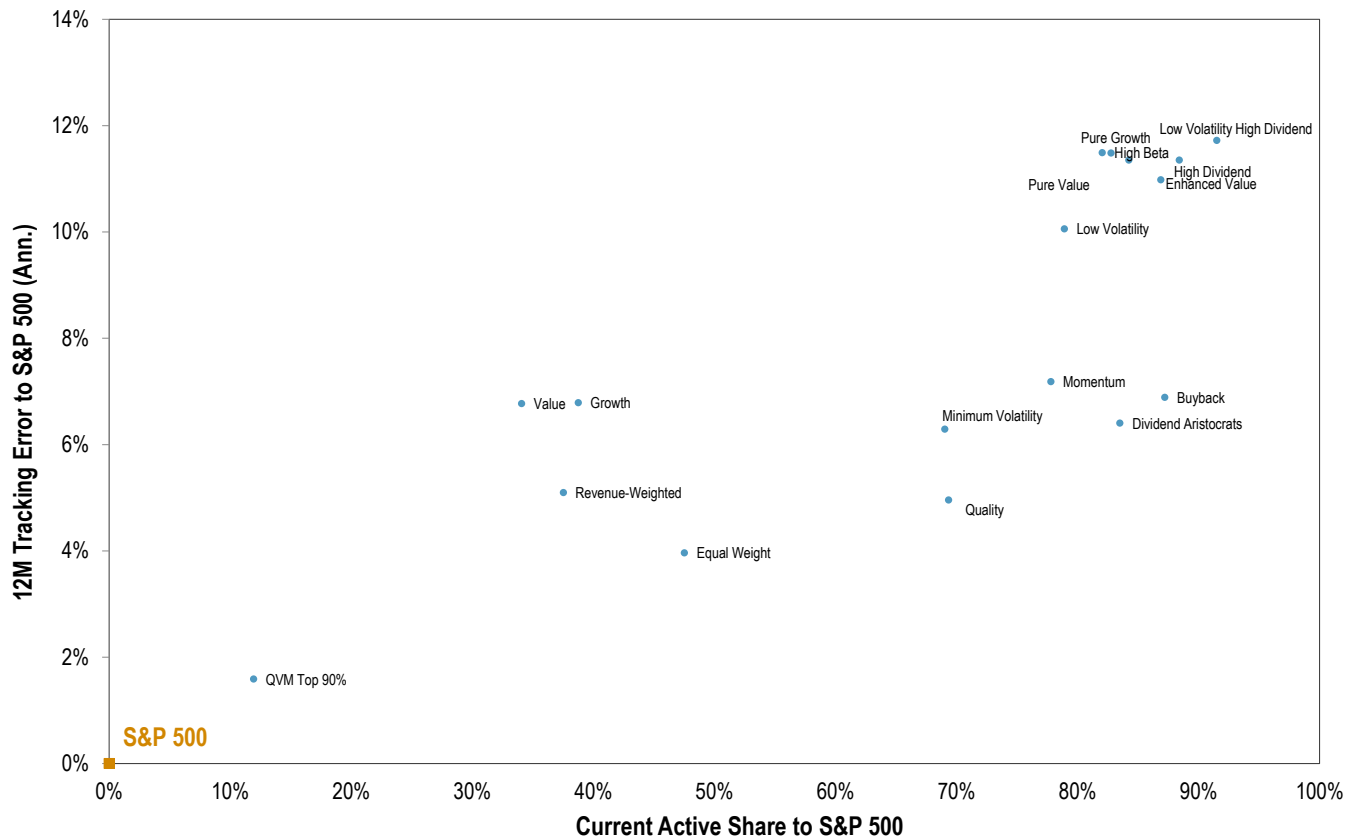*Correlation of weekly excess total returns (versus S&P 500), last three years*

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

FACTOR EXPOSURE SUMMARY (See following pages for factor details)

INDEX	PAGE No.	LOW VOLATILITY	MOMENTUM	VALUE	HIGH BETA	DIVIDEND	QUALITY	SMALL SIZE
S&P 500 Low Volatility	7	71.4%	33.6%	8.1%	-62.4%	44.9%	-10.6%	42.0%
S&P 500 Minimum Volatility	7	28.0%	18.3%	-2.0%	-34.3%	13.9%	-9.6%	12.1%
S&P 500 Low Volatility High Dividend	8	37.4%	11.0%	57.7%	-47.7%	87.0%	-15.5%	53.7%
S&P 500 High Dividend	8	11.1%	4.7%	69.7%	-30.1%	85.1%	-10.6%	57.9%
S&P 500 Quality	9	1.7%	19.9%	9.2%	-5.9%	13.9%	40.1%	6.5%
S&P 500 Dividend Aristocrats	9	27.6%	6.8%	10.4%	-23.0%	33.9%	-0.2%	38.9%
S&P 500 Momentum	10	20.3%	76.3%	38.5%	-53.7%	32.4%	9.0%	12.1%
S&P 500 Revenue-Weighted	10	3.3%	26.9%	57.2%	-21.7%	16.5%	2.5%	12.1%
S&P 500 QVM Top 90%	11	1.7%	4.9%	7.5%	-2.7%	4.3%	2.9%	-4.1%
S&P 500 Growth	11	-31.4%	-15.0%	-19.4%	34.5%	-22.8%	1.1%	-45.5%
S&P 500 Value	12	17.9%	22.6%	30.6%	-30.9%	32.4%	-1.4%	19.3%
S&P 500 Pure Growth	12	-69.8%	-3.5%	-1.5%	48.8%	-17.1%	-52.4%	21.1%
S&P 500 Pure Value	13	3.3%	38.5%	86.7%	-30.1%	38.6%	6.0%	52.5%
S&P 500 Buyback	13	-20.3%	7.6%	69.7%	-1.3%	21.4%	7.2%	62.2%
S&P 500 High Beta	14	-81.4%	-38.3%	7.8%	77.9%	-39.3%	-50.7%	34.1%
S&P 500 Enhanced Value	14	-1.4%	3.6%	89.0%	-10.8%	44.9%	-15.5%	27.2%
S&P 500 Equal Weight	15	-8.3%	-1.6%	29.8%	-2.3%	12.4%	-17.1%	48.5%

Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of November 30, 2022. Returns in U.S. dollars.

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. As of November 30, 2022 the index comprised 100 constituents.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	5.8%	3.8%	-2.9%	6.5%	6.7%	8.7%	11.6%	9.7%
Relative to Benchmark	0.2%	0.2%	10.2%	15.7%	-4.2%	-2.3%	-1.7%	0.5%
Index Volatility				18.5%	17.3%	14.9%	12.3%	12.4%
Tracking Error				10.1%	9.7%	9.2%	8.0%	8.5%

Benchmark: S&P 500.   1 Yr trailing beta to benchmark = 0.56

Portfolio Statistics	Index	Bmark
Active Share (Stock)	79%	0%
Active Share (Sector)	45%	0%
Concentration (HH Index)	100.7	124.5
Correlation (stock)	0.49	0.47
Ann. Turnover (last 10 yr)	0.64	0.04

Top Sector Tilts (versus benchmark)

Sector	Index	Bmark	Difference
Utilities	26%	3%	23%
Cons. Staples	22%	7%	15%
IT	3%	26%	23%
Cons. Disc.	3%	10%	7%

Index-Weighted Avg.	Index	Bmark
Stock Volatility	24%	35%
12M - 1M price return	7%	-6%
Book/Price	0.31	0.24
Earnings/Price	0.04	0.05
Sales/Price	0.42	0.41
Stock Beta	0.62	0.98
Yield (12M trailing)	2.6%	1.7%
R.O.E.	23%	34%
Market Cap (U.S. $ bn)	84.2	448.8

Sector Tilts (Detail)

Cons. Disc. -7%, Cons. Staples 15%, Energy -5%, Financials 0%, Health Care 0%, Industrials 4%, IT -23%, Materials -2%, Real Estate 3%, Communications -6%, Utilities 23%

Factor Exposure Chart (Low Volatility, Momentum, Value, High Beta, Dividend, Quality, Small Size — Benchmark)

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 November 30, 2022 the index comprised 92 constituents.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	4.6%	4.3%	-7.4%	-1.0%	9.0%	9.7%	12.6%	9.2%
Relative to Benchmark	-1.0%	0.7%	5.7%	8.2%	-1.9%	-1.2%	-0.7%	0.0%
Index Volatility				18.7%	18.0%	15.9%	12.7%	13.4%
Tracking Error				6.3%	5.5%	4.8%	4.8%	5.6%

Benchmark: S&P 500.   1 Yr trailing beta to benchmark = 0.78

Portfolio Statistics	Index	Bmark
Active Share (Stock)	69%	0%
Active Share (Sector)	18%	0%
Concentration (HH Index)	157.7	124.5
Correlation (stock)	0.46	0.47
Ann. Turnover (last 10 yr)	0.28	0.04

Top Sector Tilts (versus benchmark)

Sector	Index	Bmark	Difference
Cons. Staples	12%	7%	5%
Health Care	20%	15%	5%
Energy	0%	5%	5%
Industrials	4%	8%	4%
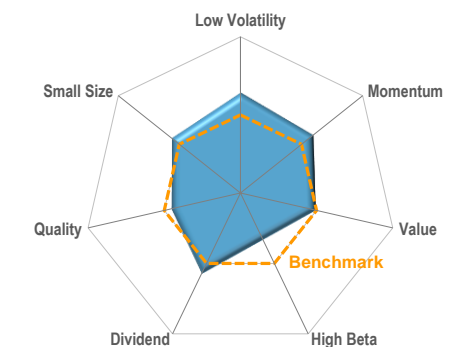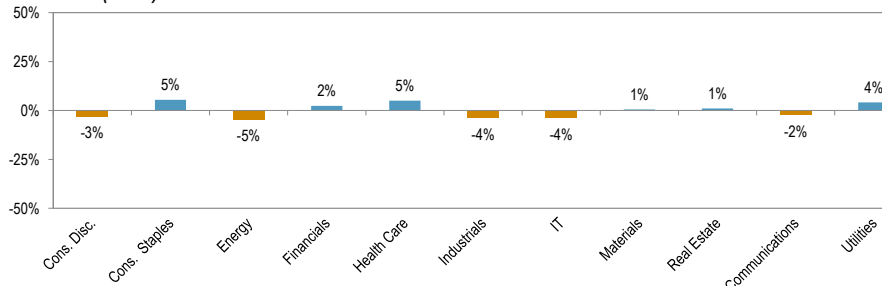
Index-Weighted Avg.	Index	Bmark
Stock Volatility	30%	35%
12M - 1M price return	1%	-6%
Book/Price	0.27	0.24
Earnings/Price	0.04	0.05
Sales/Price	0.35	0.41
Stock Beta	0.79	0.98
Yield (12M trailing)	1.9%	1.7%
R.O.E.	30%	34%
Market Cap (U.S. $ bn)	231.7	448.8

Sector Tilts (Detail)

Cons. Disc. -3%, Cons. Staples 5%, Energy -5%, Financials 2%, Health Care 5%, Industrials -4%, IT -4%, Materials 1%, Real Estate 1%, Communications -2%, Utilities 4%

Factor Exposure Chart (Low Volatility, Momentum, Value, High Beta, Dividend, Quality, Small Size — Benchmark)

Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of November 30, 2022. Returns in U.S. dollars.

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S&P Dow Jones Indices
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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. As of November 30, 2022 the index comprised 50 constituents.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	7.1%	5.1%	4.8%	13.9%	6.8%	6.1%	11.0%	10.4%
Relative to Benchmark	1.5%	1.5%	17.9%	23.1%	-4.1%	-4.9%	-2.3%	1.2%
Index Volatility				20.6%	21.9%	18.8%	14.8%	15.7%
Tracking Error				11.7%	12.0%	10.5%	8.9%	8.8%

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

Portfolio Statistics	Index	Bmark
Active Share (Stock)	92%	0%
Active Share (Sector)	47%	0%
Concentration (HH Index)	211.1	124.5
Correlation (stock)	0.39	0.47
Ann. Turnover (last 10 yr)	0.63	0.04

Top Sector Tilts (versus benchmark)

Sector	Index	Bmark	Diff.
Real Estate	18%	3%	16%
Utilities	18%	3%	15%
IT	5%	26%	21%
Cons. Disc.	1%	10%	9%

Index-Weighted Avg.	Index	Bmark
Stock Volatility	29%	35%
12M - 1M price return	-1%	-6%
Book/Price	0.50	0.24
Earnings/Price	0.06	0.05
Sales/Price	0.66	0.41
Stock Beta	0.72	0.98
Yield (12M trailing)	4.5%	1.7%
R.O.E.	20%	34%
Market Cap (U.S. $ bn)	61.3	448.8

Sector Tilts (Detail)
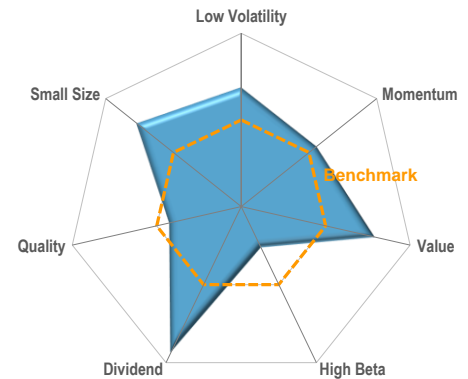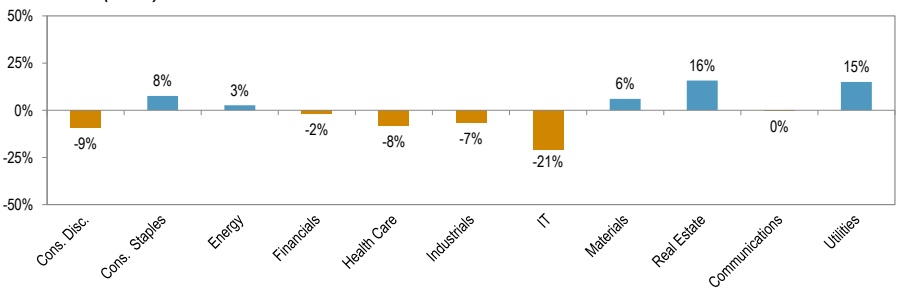
Factor Exposure Chart

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. As of November 30, 2022 the index comprised 80 constituents.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	6.9%	4.9%	3.0%	10.5%	7.5%	7.1%	11.7%	8.3%
Relative to Benchmark	1.3%	1.3%	16.1%	19.7%	-3.4%	-3.8%	-1.6%	-0.8%
Index Volatility				21.8%	25.8%	21.8%	16.9%	19.7%
Tracking Error				11.4%	14.6%	12.2%	9.9%	10.7%

Benchmark: S&P 500. 1 Yr trailing beta to benchmark = 0.7

Portfolio Statistics	Index	Bmark
Active Share (Stock)	88%	0%
Active Share (Sector)	43%	0%
Concentration (HH Index)	128.3	124.5
Correlation (stock)	0.38	0.47
Ann. Turnover (last 10 yr)	0.41	0.04

Top Sector Tilts (versus benchmark)

Sector	Index	Bmark	Diff.
Utilities	15%	3%	12%
Real Estate	14%	3%	12%
IT	5%	26%	22%
Health Care	7%	15%	8%
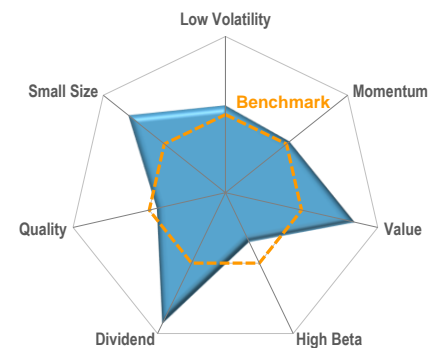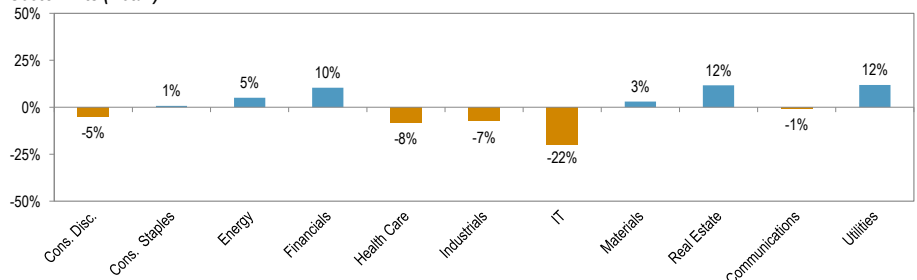
Index-Weighted Avg.	Index	Bmark
Stock Volatility	32%	35%
12M - 1M price return	-3%	-6%
Book/Price	0.53	0.24
Earnings/Price	0.07	0.05
Sales/Price	0.83	0.41
Stock Beta	0.82	0.98
Yield (12M trailing)	4.3%	1.7%
R.O.E.	21%	34%
Market Cap (U.S. $ bn)	54.2	448.8

Sector Tilts (Detail)

Factor Exposure Chart

Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of November 30, 2022. Returns in U.S. dollars.

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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. As of November 30, 2022 the index comprised 99 constituents.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	7.1%	6.9%	-11.2%	-6.8%	11.4%	11.1%	13.1%	10.2%
Relative to Benchmark	1.5%	3.3%	1.9%	2.4%	0.5%	0.1%	-0.3%	1.0%
Index Volatility				22.5%	19.6%	17.6%	14.2%	15.3%
Tracking Error				5.0%	4.5%	4.0%	3.2%	3.5%

Benchmark: S&P 500.   1 Yr trailing beta to benchmark = 0.98

Portfolio Statistics	Index	Bmark
Active Share (Stock)	69%	0%
Active Share (Sector)	27%	0%
Concentration (HH Index)	253.5	124.5
Correlation (stock)	0.49	0.47
Ann. Turnover (last 10 yr)	0.63	0.04

Top Sector Tilts (versus benchmark)

Sector	Index	Bmark	Diff.
Energy	13%	5%	8%
IT	35%	26%	8%
Cons. Disc.	2%	10%	8%
Health Care	7%	15%	8%

Index-Weighted Avg.	Index	Bmark
Stock Volatility	34%	35%
12M - 1M price return	3%	-6%
Book/Price	0.24	0.24
Earnings/Price	0.06	0.05
Sales/Price	0.39	0.41
Stock Beta	0.94	0.98
Yield (12M trailing)	1.9%	1.7%
R.O.E.	42%	34%
Market Cap (U.S. $ bn)	379.2	448.8
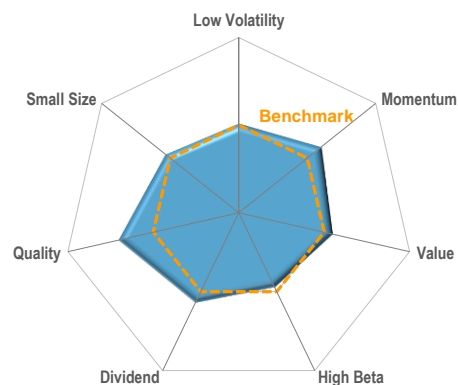
Factor Exposure Chart

Sector Tilts (Detail)
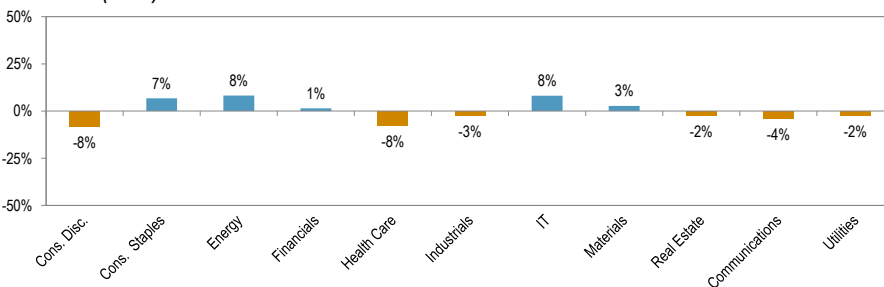
S&P 500 Dividend Aristocrats

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 November 30, 2022 the index comprised 64 constituents.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	7.2%	7.5%	-2.2%	5.0%	10.9%	11.2%	13.4%	11.5%
Relative to Benchmark	1.6%	3.9%	10.9%	14.2%	0.0%	0.2%	0.0%	2.3%
Index Volatility				21.0%	19.9%	17.5%	14.1%	15.3%
Tracking Error				6.4%	6.5%	5.9%	4.9%	5.7%

Benchmark: S&P 500.   1 Yr trailing beta to benchmark = 0.74

Portfolio Statistics	Index	Bmark
Active Share (Stock)	84%	0%
Active Share (Sector)	39%	0%
Concentration (HH Index)	156.9	124.5
Correlation (stock)	0.41	0.47
Ann. Turnover (last 10 yr)	0.18	0.04

Top Sector Tilts (versus benchmark)

Sector	Index	Bmark	Diff.
Cons. Staples	22%	7%	15%
Industrials	19%	8%	11%
IT	5%	26%	22%
Communications	0%	7%	7%
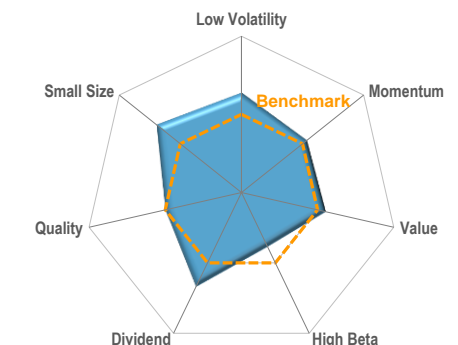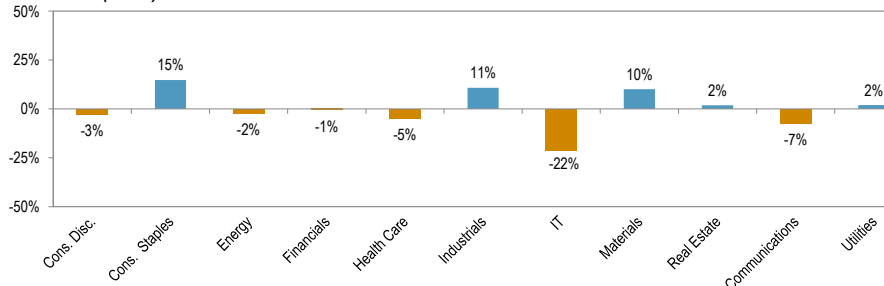
Index-Weighted Avg.	Index	Bmark
Stock Volatility	30%	35%
12M - 1M price return	-2%	-6%
Book/Price	0.24	0.24
Earnings/Price	0.05	0.05
Sales/Price	0.54	0.41
Stock Beta	0.84	0.98
Yield (12M trailing)	2.4%	1.7%
R.O.E.	33%	34%
Market Cap (U.S. $ bn)	92.5	448.8

Factor Exposure Chart

Sector Tilts (Detail)

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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. As of November 30, 2022 the index comprised 99 constituents.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	3.3%	9.3%	-7.4%	-4.9%	14.2%	13.1%	14.2%	10.1%
Relative to Benchmark	-2.3%	5.7%	5.7%	4.3%	3.3%	2.1%	0.9%	0.9%
Index Volatility				22.6%	20.0%	18.0%	14.5%	15.9%
Tracking Error				7.2%	7.4%	6.9%	5.9%	6.7%

Benchmark: S&P 500.   1 Yr trailing beta to benchmark = 0.9

Portfolio Statistics	Index	Bmark
Active Share (Stock)	78%	0%
Active Share (Sector)	49%	0%
Concentration (HH Index)	333.8	124.5
Correlation (stock)	0.57	0.47
Ann. Turnover (last 10 yr)	1.16	0.04

Top Sector Tilts (versus benchmark)

Sector	Index	Bmark	Diff.
Energy	30%	5%	25%
Health Care	31%	15%	15%
IT	4%	26%	23%
Cons. Disc.	2%	10%	8%

Index-Weighted Avg.	Index	Bmark
Stock Volatility	30%	35%
12M - 1M price return	37%	-6%
Book/Price	0.27	0.24
Earnings/Price	0.06	0.05
Sales/Price	0.63	0.41
Stock Beta	0.68	0.98
Yield (12M trailing)	2.3%	1.7%
R.O.E.	34%	34%
Market Cap (U.S. $ bn)	236.9	448.8

Sector Tilts (Detail)

Cons. Disc. -8%, Cons. Staples 4%, Energy 25%, Financials -3%, Health Care 15%, Industrials -5%, IT -23%, Materials -1%, Real Estate -2%, Communications -7%, Utilities 4%

Factor Exposure Chart (Low Volatility, Momentum, Value, High Beta, Dividend, Quality, Small Size) — Benchmark

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. As of November 30, 2022 the index comprised 499 constituents.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	5.5%	6.9%	-0.1%	6.4%	13.4%	11.7%	13.9%	9.7%
Relative to Benchmark	0.0%	3.3%	13.0%	15.6%	2.5%	0.7%	0.6%	0.5%
Index Volatility				21.5%	20.9%	18.9%	15.1%	17.2%
Tracking Error				5.1%	6.2%	5.2%	4.1%	3.9%

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

Portfolio Statistics	Index	Bmark
Active Share (Stock)	38%	0%
Active Share (Sector)	18%	0%
Concentration (HH Index)	93.1	124.5
Correlation (stock)	0.38	0.47
Ann. Turnover (last 10 yr)	0.20	0.04

Top Sector Tilts (versus benchmark)

Sector	Index	Bmark	Diff.
Cons. Staples	12%	7%	5%
Energy	10%	5%	5%
IT	11%	26%	16%
Real Estate	1%	3%	2%
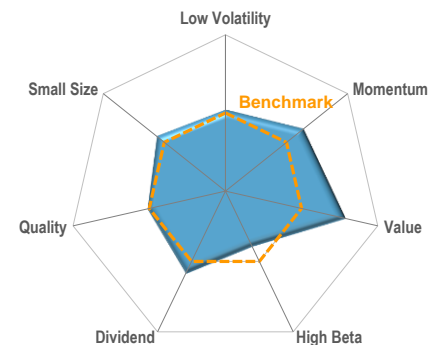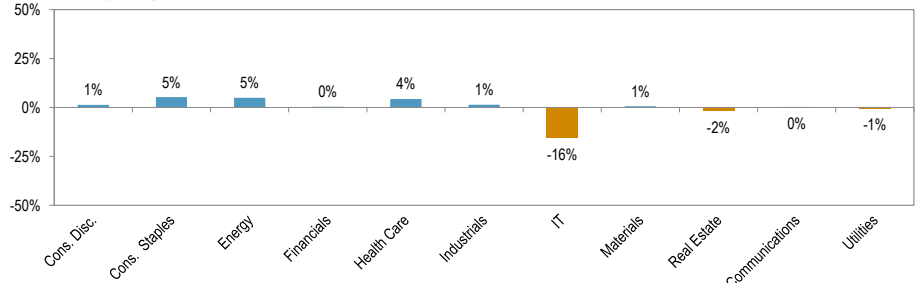
Index-Weighted Avg.	Index	Bmark
Stock Volatility	34%	35%
12M - 1M price return	5%	-6%
Book/Price	0.33	0.24
Earnings/Price	0.06	0.05
Sales/Price	1.00	0.41
Stock Beta	0.87	0.98
Yield (12M trailing)	2.0%	1.7%
R.O.E.	27%	34%
Market Cap (U.S. $ bn)	252.9	448.8

Sector Tilts (Detail)

Cons. Disc. 1%, Cons. Staples 5%, Energy 5%, Financials 0%, Health Care 4%, Industrials 1%, IT -16%, Materials 1%, Real Estate -2%, Communications 0%, Utilities -1%

Factor Exposure Chart (Low Volatility, Momentum, Value, High Beta, Dividend, Quality, Small Size) — Benchmark

S&P 500 QVM Top 90%

Description
The S&P 500 Quality, Value & Momentum Top 90% Multi-factor Index is designed to measure the performance of 90% of the stocks within the S&P 500, after excluding those with the lowest quality, value, and momentum as determined by a multi-factor score. As of November 30, 2022 the index comprised 448 constituents.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	6.1%	4.7%	-11.1%	-6.7%	12.0%	11.7%	13.7%	9.7%
Relative to Benchmark	0.5%	1.0%	2.0%	2.5%	1.1%	0.7%	0.4%	0.5%
Index Volatility				21.8%	20.3%	18.2%	14.5%	16.0%
Tracking Error				1.6%	1.2%	1.0%	0.8%	0.8%

Benchmark: S&P 500.   1 Yr trailing beta to benchmark = 0.97

Portfolio Statistics	Index	Bmark
Active Share (Stock)	12%	0%
Active Share (Sector)	5%	0%
Concentration (HH Index)	153.8	124.5
Correlation (stock)	0.45	0.47
Ann. Turnover (last 10 yr)	0.19	0.04

Top Sector Tilts (versus benchmark)

Sector	Index	Bmark	Diff.
IT	28%	26%	1%
Financials	13%	12%	1%
Cons. Disc.	6%	10%	4%
Real Estate	2%	3%	0%

Index-Weighted Avg.	Index	Bmark
Stock Volatility	34%	35%
12M - 1M price return	-4%	-6%
Book/Price	0.26	0.24
Earnings/Price	0.05	0.05
Sales/Price	0.42	0.41
Stock Beta	0.96	0.98
Yield (12M trailing)	1.7%	1.7%
R.O.E.	35%	34%
Market Cap (U.S. $ bn)	467.4	448.8

Sector Tilts (Detail)

Cons. Disc. -4%, Cons. Staples 0%, Energy 1%, Financials 1%, Health Care 1%, Industrials 0%, IT 1%, Materials 0%, Real Estate 0%, Communications 0%, Utilities 0%

Factor Exposure Chart — Benchmark (Low Volatility, Momentum, Value, High Beta, Dividend, Quality, Small Size)

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 November 30, 2022 the index comprised 242 constituents.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	5.1%	-1.1%	-23.6%	-21.7%	11.5%	12.2%	14.5%	10.7%
Relative to Benchmark	-0.5%	-4.8%	-10.5%	-12.5%	0.6%	1.2%	1.1%	1.5%
Index Volatility				25.4%	23.0%	20.0%	15.7%	16.6%
Tracking Error				6.8%	6.7%	5.5%	4.4%	4.1%

Benchmark: S&P 500.   1 Yr trailing beta to benchmark = 1.25

Portfolio Statistics	Index	Bmark
Active Share (Stock)	39%	0%
Active Share (Sector)	24%	0%
Concentration (HH Index)	441.4	124.5
Correlation (stock)	0.60	0.47
Ann. Turnover (last 10 yr)	0.24	0.04

Top Sector Tilts (versus benchmark)

Sector	Index	Bmark	Diff.
IT	44%	26%	18%
Cons. Disc.	15%	10%	4%
Cons. Staples	2%	7%	5%
Industrials	4%	8%	5%
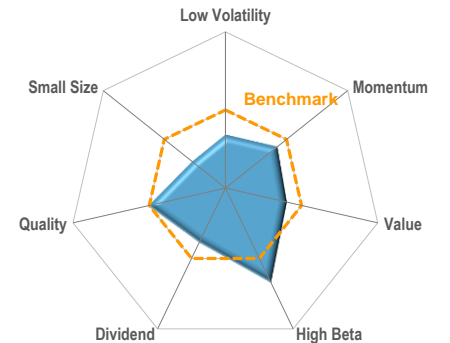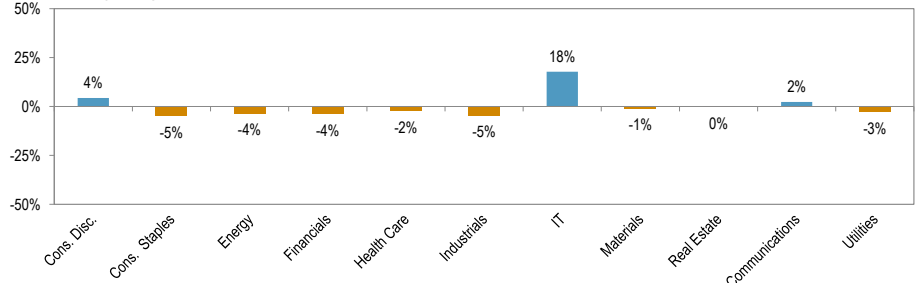
Index-Weighted Avg.	Index	Bmark
Stock Volatility	40%	35%
12M - 1M price return	-17%	-6%
Book/Price	0.13	0.24
Earnings/Price	0.04	0.05
Sales/Price	0.25	0.41
Stock Beta	1.19	0.98
Yield (12M trailing)	1.0%	1.7%
R.O.E.	44%	34%
Market Cap (U.S. $ bn)	771.2	448.8

Sector Tilts (Detail)

Cons. Disc. 4%, Cons. Staples -5%, Energy -4%, Financials -4%, Health Care -2%, Industrials -5%, IT 18%, Materials -1%, Real Estate 0%, Communications 2%, Utilities -3%

Factor Exposure Chart — Benchmark (Low Volatility, Momentum, Value, High Beta, Dividend, Quality, Small Size)

Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of November 30, 2022. Returns in U.S. dollars.

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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 November 30, 2022 the index comprised 445 constituents.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	6.0%	8.2%	-1.4%	5.6%	8.8%	8.8%	11.5%	7.2%
Relative to Benchmark	0.4%	4.6%	11.7%	14.8%	-2.1%	-2.2%	-1.8%	-2.0%
Index Volatility				20.9%	20.3%	18.4%	14.7%	17.0%
Tracking Error				6.8%	7.5%	6.2%	4.9%	4.6%

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

Portfolio Statistics	Index	Bmark
Active Share (Stock)	34%	0%
Active Share (Sector)	21%	0%
Concentration (HH Index)	72.2	124.5
Correlation (stock)	0.38	0.47
Ann. Turnover (last 10 yr)	0.25	0.04

Top Sector Tilts (versus benchmark)

Sector	Index	Bmark	Diff.
Cons. Staples	11%	7%	4%
Industrials	13%	8%	4%
IT	11%	26%	16%
Cons. Disc.	7%	10%	4%

Index-Weighted Avg.	Index	Bmark
Stock Volatility	31%	35%
12M - 1M price return	4%	-6%
Book/Price	0.34	0.24
Earnings/Price	0.05	0.05
Sales/Price	0.55	0.41
Stock Beta	0.80	0.98
Yield (12M trailing)	2.2%	1.7%
R.O.E.	25%	34%
Market Cap (U.S. $ bn)	165.4	448.8

Factor Exposure Chart (radar: Low Volatility, Momentum, Value, High Beta, Dividend, Quality, Small Size) — Benchmark

Sector Tilts (Detail)

Bar chart: Cons. Disc. -4%, Cons. Staples 4%, Energy 3%, Financials 4%, Health Care 2%, Industrials 4%, IT -16%, Materials 1%, Real Estate 0%, Communications -2%, Utilities 3%

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 November 30, 2022 the index comprised 58 constituents.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	5.4%	3.5%	-21.5%	-22.1%	10.6%	10.1%	14.0%	11.3%
Relative to Benchmark	-0.2%	-0.1%	-8.4%	-12.9%	-0.3%	-0.9%	0.6%	2.1%
Index Volatility				28.3%	25.6%	22.2%	17.5%	19.1%
Tracking Error				11.5%	9.5%	8.0%	6.6%	6.6%

Benchmark: S&P 500.   1 Yr trailing beta to benchmark = 1.31

Portfolio Statistics	Index	Bmark
Active Share (Stock)	83%	0%
Active Share (Sector)	19%	0%
Concentration (HH Index)	211.6	124.5
Correlation (stock)	0.47	0.47
Ann. Turnover (last 10 yr)	0.64	0.04

Top Sector Tilts (versus benchmark)

Sector	Index	Bmark	Diff.
IT	36%	26%	10%
Cons. Disc.	14%	10%	4%
Cons. Staples	0%	7%	7%
Communications	4%	7%	4%
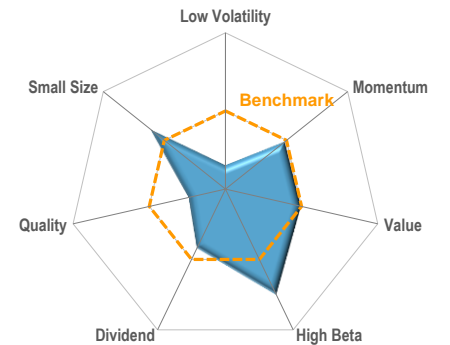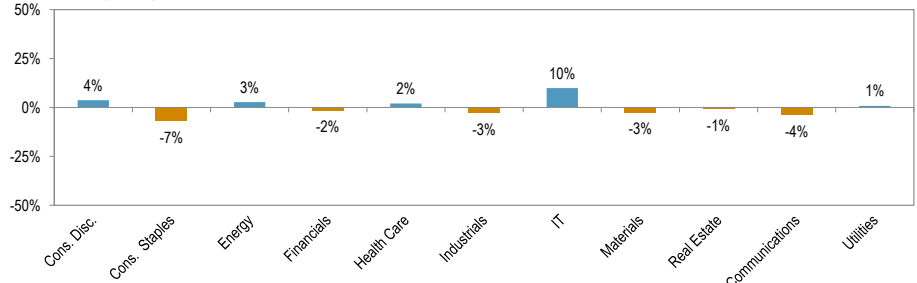
Index-Weighted Avg.	Index	Bmark
Stock Volatility	48%	35%
12M - 1M price return	-10%	-6%
Book/Price	0.17	0.24
Earnings/Price	0.06	0.05
Sales/Price	0.37	0.41
Stock Beta	1.26	0.98
Yield (12M trailing)	1.1%	1.7%
R.O.E.	40%	34%
Market Cap (U.S. $ bn)	157.3	448.8

Factor Exposure Chart (radar: Low Volatility, Momentum, Value, High Beta, Dividend, Quality, Small Size) — Benchmark

Sector Tilts (Detail)

Bar chart: Cons. Disc. 4%, Cons. Staples -7%, Energy 3%, Financials -2%, Health Care 2%, Industrials -3%, IT 10%, Materials -3%, Real Estate -1%, Communications -4%, Utilities 1%

Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of November 30, 2022. Returns in U.S. dollars.

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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 November 30, 2022 the index comprised 119 constituents.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	5.3%	8.2%	4.9%	11.7%	9.8%	7.7%	12.3%	9.1%
Relative to Benchmark	-0.3%	4.6%	18.0%	20.9%	-1.1%	-3.3%	-1.0%	-0.1%
Index Volatility				22.7%	28.5%	24.9%	19.8%	24.3%
Tracking Error				11.4%	16.1%	13.3%	10.3%	12.9%

Benchmark: S&P 500.   1 Yr trailing beta to benchmark = 0.79

Portfolio Statistics	Index	Bmark
Active Share (Stock)	84%	0%
Active Share (Sector)	37%	0%
Concentration (HH Index)	117.5	124.5
Correlation (stock)	0.42	0.47
Ann. Turnover (last 10 yr)	0.45	0.04

Index-Weighted Avg.	Index	Bmark
Stock Volatility	34%	35%
12M - 1M price return	11%	-6%
Book/Price	0.67	0.24
Earnings/Price	0.08	0.05
Sales/Price	1.35	0.41
Stock Beta	0.81	0.98
Yield (12M trailing)	2.5%	1.7%
R.O.E.	16%	34%
Market Cap (U.S. $ bn)	63.4	448.8

Top Sector Tilts (versus benchmark)

Sector	Index	Bmark	Diff.
Financials	31%	12%	19%
Energy	11%	5%	6%
IT	4%	26%	22%
Cons. Disc.	6%	10%	5%

Sector Tilts (Detail)
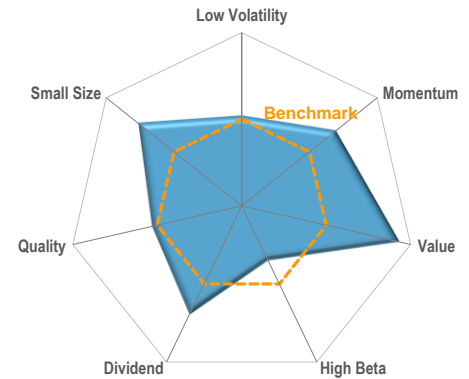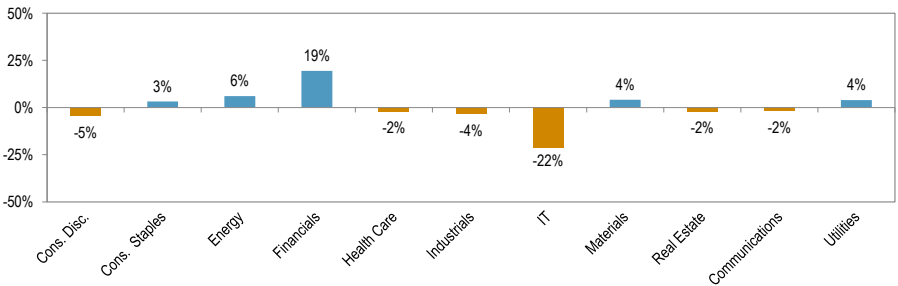
Factor Exposure Chart

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. As of November 30, 2022 the index comprised 100 constituents.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	6.1%	8.3%	-6.4%	-0.7%	11.5%	11.2%	14.6%	11.7%
Relative to Benchmark	0.5%	4.7%	6.7%	8.6%	0.6%	0.2%	1.3%	2.5%
Index Volatility				23.1%	24.3%	21.9%	17.6%	19.1%
Tracking Error				6.9%	8.9%	7.6%	6.3%	6.4%

Benchmark: S&P 500.   1 Yr trailing beta to benchmark = 0.95

Portfolio Statistics	Index	Bmark
Active Share (Stock)	87%	0%
Active Share (Sector)	31%	0%
Concentration (HH Index)	101.0	124.5
Correlation (stock)	0.40	0.47
Ann. Turnover (last 10 yr)	0.93	0.04

Index-Weighted Avg.	Index	Bmark
Stock Volatility	38%	35%
12M - 1M price return	-2%	-6%
Book/Price	0.42	0.24
Earnings/Price	0.08	0.05
Sales/Price	0.93	0.41
Stock Beta	0.97	0.98
Yield (12M trailing)	2.1%	1.7%
R.O.E.	31%	34%
Market Cap (U.S. $ bn)	46.9	448.8

Top Sector Tilts (versus benchmark)

Sector	Index	Bmark	Diff.
Financials	26%	12%	14%
Cons. Disc.	19%	10%	9%
IT	14%	26%	13%
Health Care	10%	15%	5%

Sector Tilts (Detail)
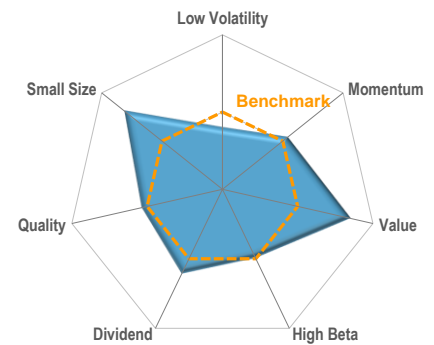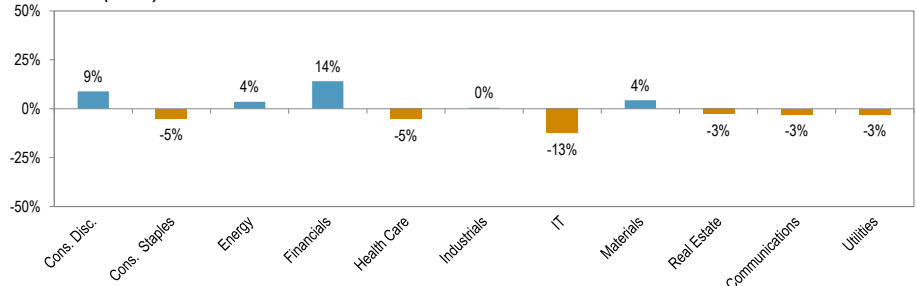
Factor Exposure Chart

Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of November 30, 2022. Returns in U.S. dollars.

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S&P Dow Jones Indices

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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. As of November 30, 2022 the index comprised 100 constituents.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	9.5%	6.1%	-12.9%	-9.8%	17.8%	12.5%	14.5%	7.1%
Relative to Benchmark	3.9%	2.4%	0.2%	-0.6%	6.9%	1.5%	1.2%	-2.1%
Index Volatility				30.5%	33.8%	29.6%	23.8%	28.4%
Tracking Error				11.5%	18.3%	15.3%	12.9%	15.2%

Benchmark: S&P 500.   1 Yr trailing beta to benchmark = 1.43

Portfolio Statistics	Index	Bmark
Active Share (Stock)	82%	0%
Active Share (Sector)	29%	0%
Concentration (HH Index)	103.5	124.5
Correlation (stock)	0.47	0.47
Ann. Turnover (last 10 yr)	0.93	0.04

Top Sector Tilts (versus benchmark)

Sector	Index	Bmark	Diff.
IT	42%	26%	15%
Cons. Disc.	24%	10%	14%
Health Care	6%	15%	9%
Cons. Staples	1%	7%	6%

Index-Weighted Avg.	Index	Bmark
Stock Volatility	54%	35%
12M - 1M price return	-33%	-6%
Book/Price	30%	24%
Earnings/Price	4%	5%
Sales/Price	54%	41%
Stock Beta	146%	98%
Yield (12M trailing)	0.6%	1.7%
R.O.E.	23%	34%
Market Cap (U.S. $ bn)	107.3	448.8

Sector Tilts (Detail)
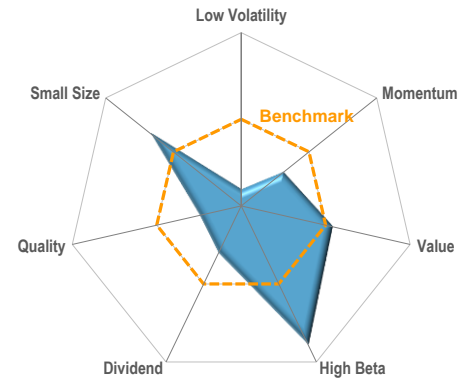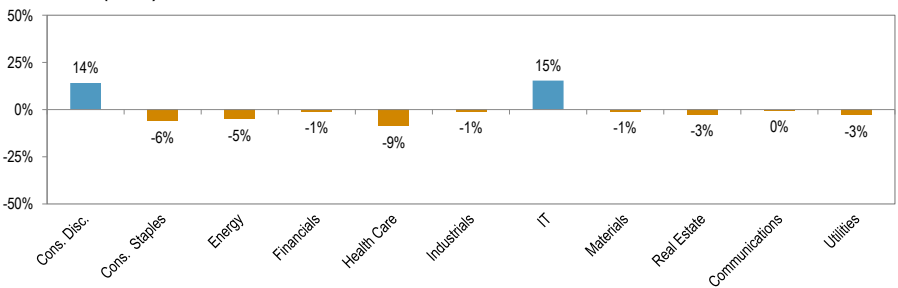
Factor Exposure Chart

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. As of November 30, 2022 the index comprised 98 constituents.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	6.7%	8.9%	0.9%	7.8%	8.1%	7.9%	12.8%	7.8%
Relative to Benchmark	1.1%	5.2%	14.0%	17.1%	-2.8%	-3.0%	-0.6%	-1.4%
Index Volatility				24.6%	27.7%	24.2%	19.4%	22.5%
Tracking Error				11.0%	14.5%	12.2%	9.8%	10.4%

Benchmark: S&P 500.   1 Yr trailing beta to benchmark = 0.86

Portfolio Statistics	Index	Bmark
Active Share (Stock)	87%	0%
Active Share (Sector)	34%	0%
Concentration (HH Index)	237.2	124.5
Correlation (stock)	0.42	0.47
Ann. Turnover (last 10 yr)	0.41	0.04

Top Sector Tilts (versus benchmark)

Sector	Index	Bmark	Diff.
Financials	42%	12%	31%
Materials	5%	3%	2%
IT	7%	26%	19%
Industrials	2%	8%	7%
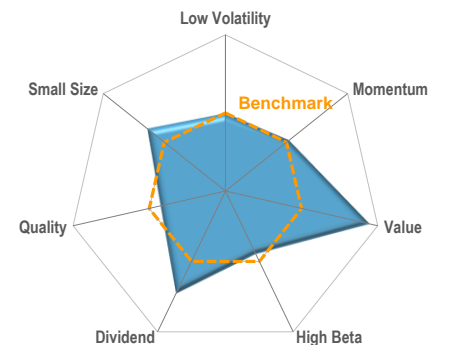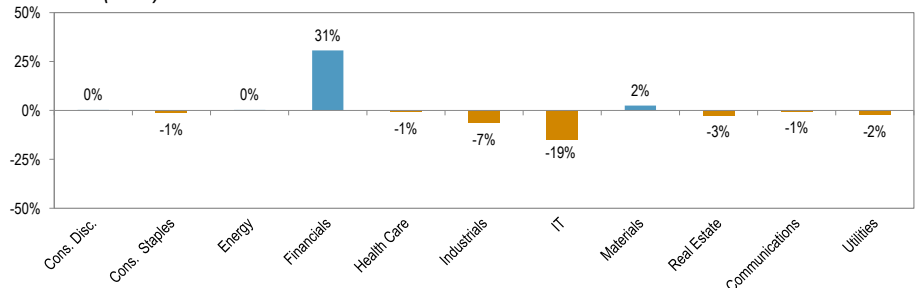
Index-Weighted Avg.	Index	Bmark
Stock Volatility	35%	35%
12M - 1M price return	-4%	-6%
Book/Price	0.72	0.24
Earnings/Price	0.09	0.05
Sales/Price	1.25	0.41
Stock Beta	0.91	0.98
Yield (12M trailing)	2.6%	1.7%
R.O.E.	16%	34%
Market Cap (U.S. $ bn)	130.1	448.8

Sector Tilts (Detail)

Factor Exposure Chart

Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of November 30, 2022. Returns in U.S. dollars.

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S&P Dow Jones Indices
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S&P 500 Equal Weight

Description

The S&P 500 Equal Weight comprises all the constituents in the S&P 500, equally weighted at each quarterly rebalance. As of November 30, 2022 the index comprised 503 constituents.

Index Statistics	1M	3M	YTD	12M	3Y	5Y	10Y	15Y
Total Return (Ann)	6.7%	6.3%	-7.1%	-1.3%	11.8%	10.4%	13.2%	10.1%
Relative to Benchmark	1.1%	2.7%	6.0%	7.9%	0.9%	-0.6%	-0.1%	0.9%
Index Volatility				22.6%	22.6%	20.0%	15.8%	18.5%
Tracking Error				4.0%	6.1%	5.2%	4.0%	4.7%

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

Portfolio Statistics	Index	Bmark
Active Share (Stock)	48%	0%
Active Share (Sector)	18%	0%
Concentration (HH Index)	20.3	124.5
Correlation (stock)	0.40	0.47
Ann. Turnover (last 10 yr)	0.22	0.04

Top Sector Tilts (versus benchmark)

Sector	Index	Bmark	Diff.
Industrials	15%	8%	6%
Real Estate	6%	3%	3%
IT	15%	26%	12%
Communications	4%	7%	3%

Index-Weighted Avg.	Index	Bmark
Stock Volatility	36%	35%
12M - 1M price return	-6%	-6%
Book/Price	0.33	0.24
Earnings/Price	0.05	0.05
Sales/Price	0.57	0.41
Stock Beta	0.96	0.98
Yield (12M trailing)	1.9%	1.7%
R.O.E.	25%	34%
Market Cap (U.S. $ bn)	70.9	448.8

Sector Tilts (Detail)

Factor Exposure Chart
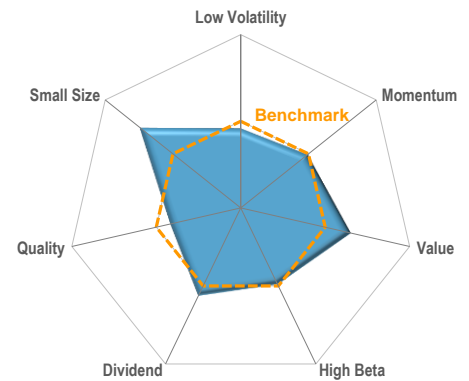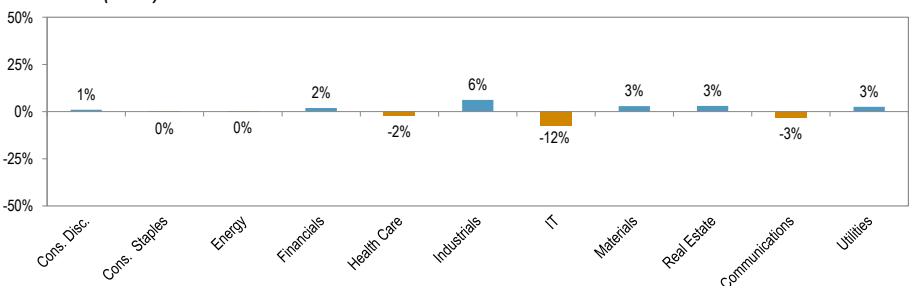
More Factor Resources

Factor Allocator is a complementary web-based tool from Optimal Asset Management that allows advisors to build and analyse simulated portfolios using S&P Factor Indices. Using 15 years of S&P factor index data, explore how individual risk factors behave together and in different market conditions to meet specific performance goals.
Visit **factorallocator.com/spdji.**

Access our latest research, education, videos, and webinars on smart beta at **spglobal.com/spdji/en/landing/investment-themes/factors/**

Hear directly from thought leader on the latest developments at **indexologyblog.com/category/factors**

For more about S&P DJI's approach to factors, read "**Factor Indices: A Simple Compendium**" **spglobal.com/spdji/en/research/article/factor-indices-a-simple-compendium**

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.
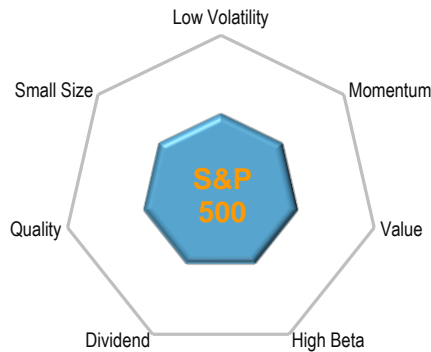
Factor	Measurement at single-stock level
Volatility	Trailing 12-month daily volatility.
Momentum	Twelve-month total return change as of one month ago ("13 minus 1 momentum"), divided by the daily volatility during the twelve-month period that ended one month prior. For more details, see the S&P Momentum 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

Portfolios with a tilt against the factor begin by excluding the highest-ranked stock and end up concentrated in the lowest-ranked 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	13M - 1M Return	Daily Price Volatility
S&P 500 index-weighted average	0.046	0.245	0.406	9.85%	33.66%	1.27	-6.03%	2.16%
S&P 500 index-weighted standard deviation	0.036	0.258	0.462	17.90%	29.16%	1.09	30.13%	0.70%

Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of November 30, 2022. Returns in U.S. dollars.

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