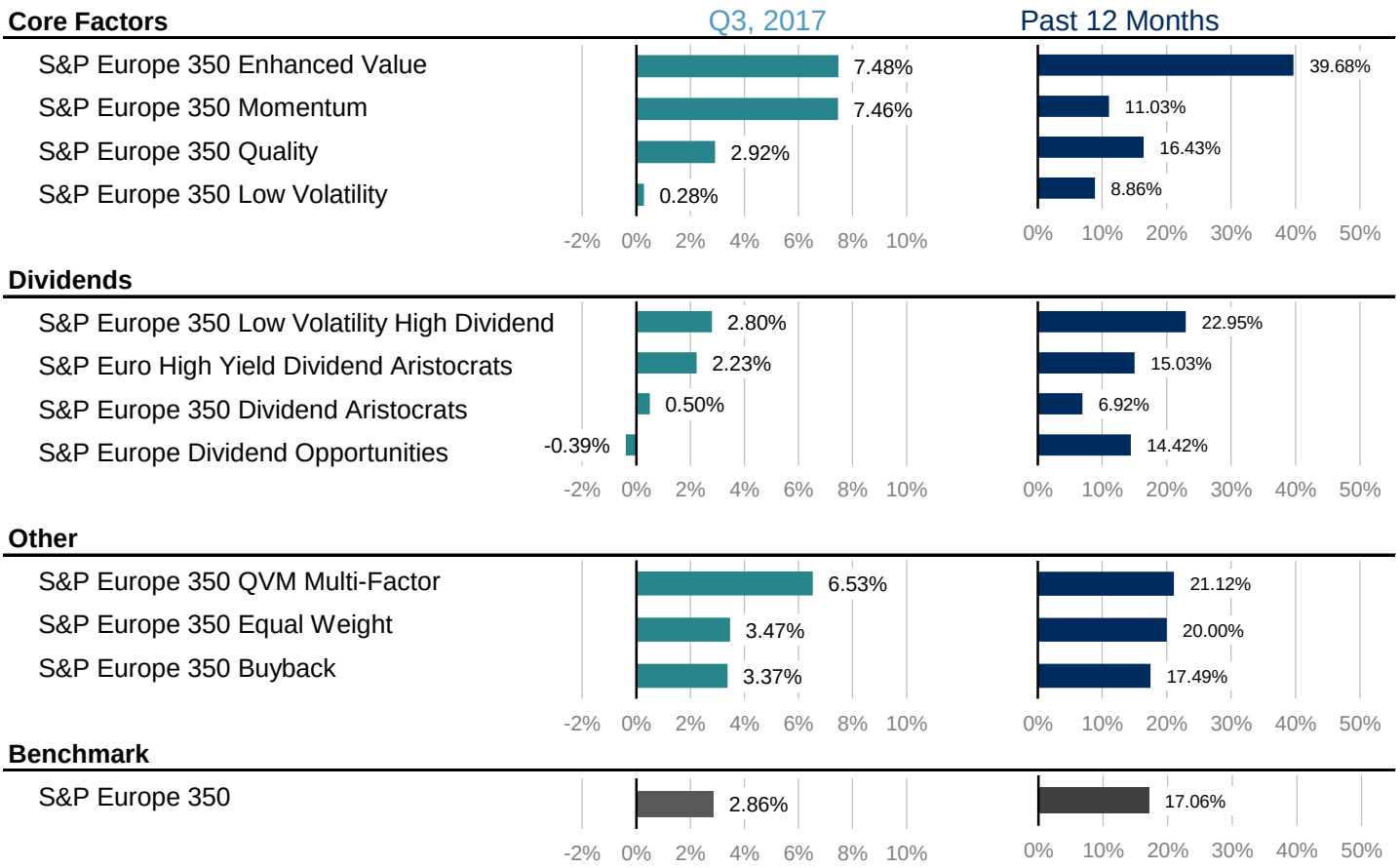
S&P Dow Jones Indices
A Division of S&P Global

Index Dashboard: S&P Europe 350® Factor Indices

Q3, 2017

RECENT PERFORMANCE



COMMENTARY

- Broadly speaking, the third quarter of 2017 saw a return to "risk on" dynamics. The U.S. dollar declined, Emerging Market equities outperformed Developed Market equities, VIX and the European VSTOXX volatility measures fell to near all-time lows, oil prices gained and the S&P 500 broke record highs.

- The difference to previous years' "Risk on / Risk off" dynamics was to be found in equity correlations- which have collapsed from record highs to decade-lows over the past two years. (See our latest dispersion dashboard for more details)

- The S&P Europe 350 rose by 4% in September to make it a positive quarter for European equities. Momentum and Value performed particularly well, beating the benchmark's total return by nearly 5% in the third quarter. With volatility declining - and equity markets rising - Low Volatility underperformed.

- The European Central Bank 's decision to leave rates on hold in September encouraged speculation that it was paving the way to begin tapering its asset purchase scheme in the near term. Growing expectations of a tightening in monetary policy - and the associated expectation of cheaper prices for more traditional sources of income - weighed on European dividend strategies (all four of which underperformed the benchmark this quarter). In our last report, we highlighted the potential differences in performance that might arise due to differences in valuations among dividend strategies; in this quarter as in the last, a bias towards "cheaper" dividend equities would have helped to protect returns.

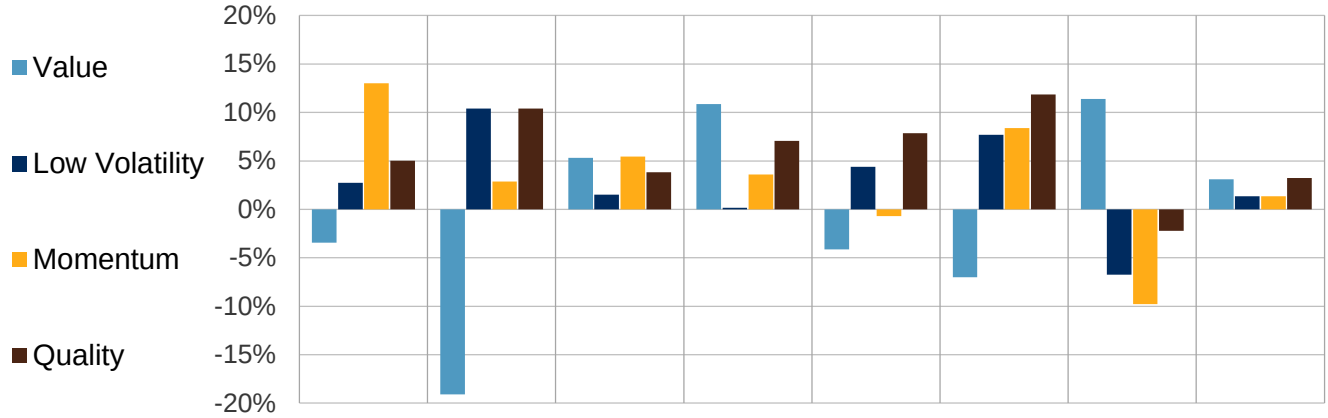
Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of September 29, 2017.

ANNUAL PERFORMANCE

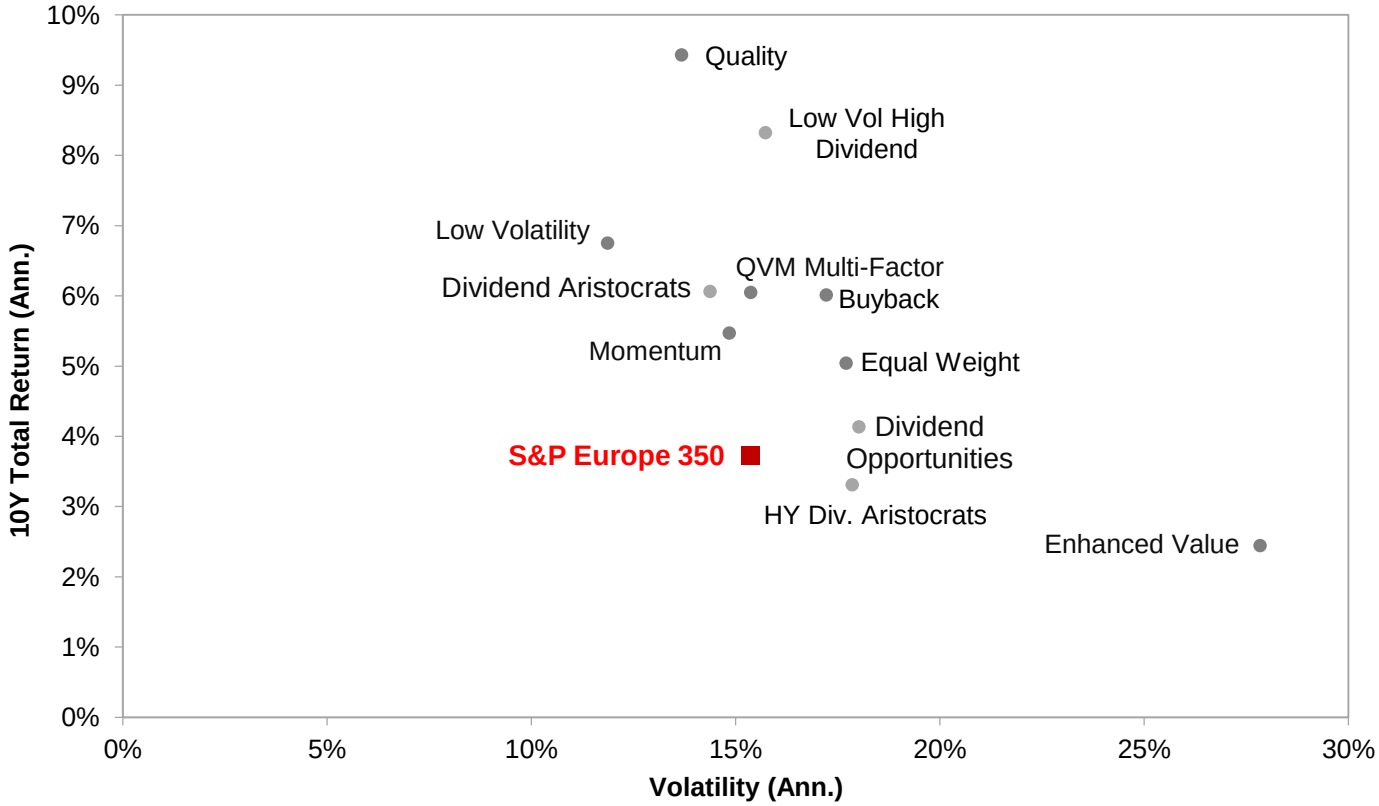
Core factor performance by calendar year, 2010-present:

Total Return	2010	2011	2012	2013	2014	2015	2016	YTD
Value	7.4%	-26.3%	23.3%	31.8%	3.7%	1.6%	14.8%	12.3%
Low Volatility	13.6%	3.1%	19.5%	21.1%	12.3%	16.3%	-3.3%	10.6%
Momentum	23.9%	-4.4%	23.5%	24.6%	7.2%	17.0%	-6.3%	10.6%
Quality	15.9%	3.2%	21.8%	28.0%	15.7%	20.5%	1.2%	12.5%
S&P Europe 350	10.8%	-7.3%	18.0%	21.0%	7.9%	8.6%	3.4%	9.2%

Relative to Benchmark 2010 2011 2012 2013 2014 2015 2016 YTD

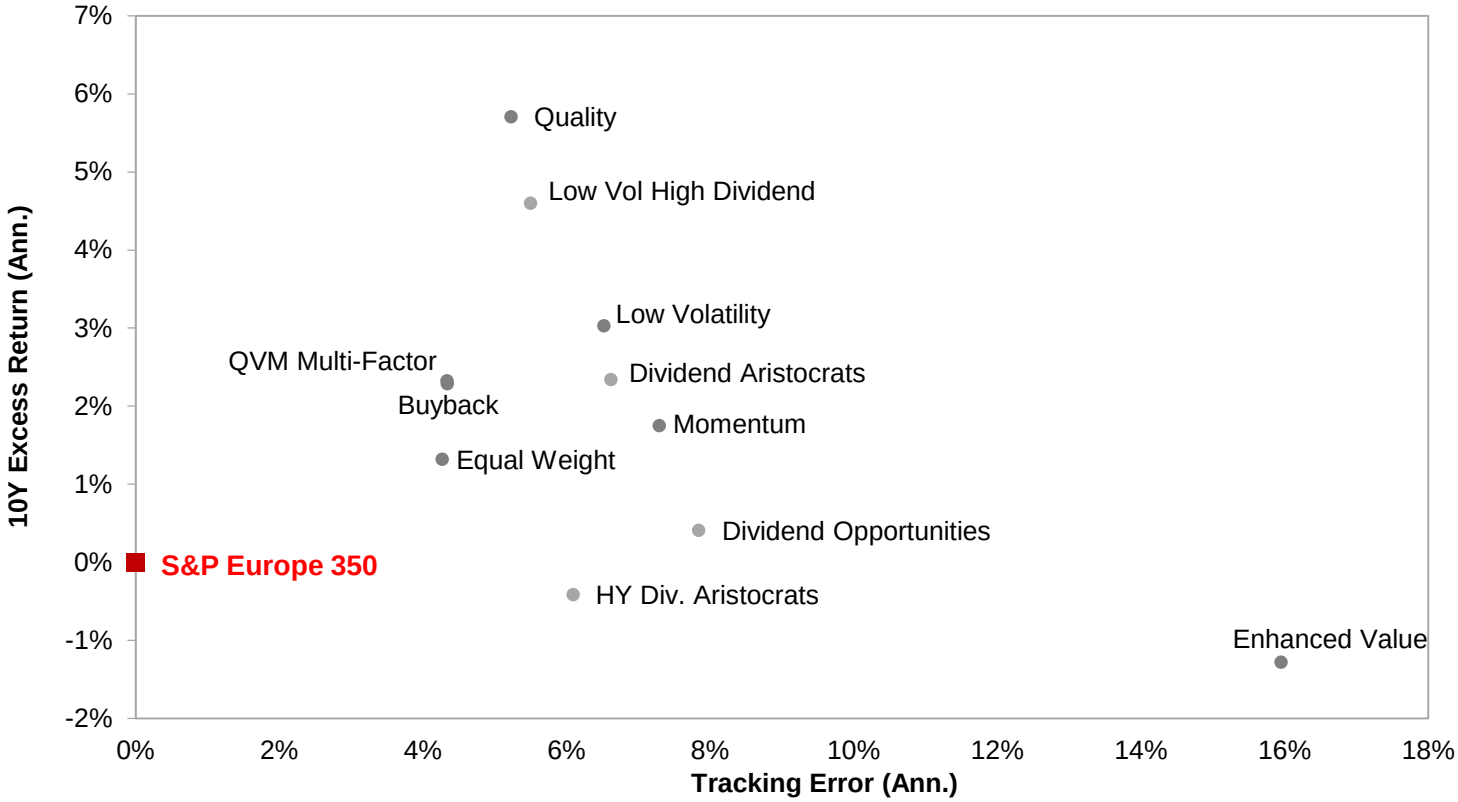


10-YEAR RISK / RETURN PROFILE



Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of September 29, 2017.

RELATIVE RISK/RETURN PROFILE



PAIRWISE EXCESS RETURN CORRELATIONS

	Enhanced Value	Equal Weight	Buyback	Low Vol High Dividend	Quality	Euro HY Div. Aristocrats	QVM Multi-Factor	Momentum	Dividend Aristocrats	Quality	Low Volatility
S&P Europe 350 Enhanced Value	1.00	0.45	0.20	0.17	0.02	-0.27	-0.12	-0.55	-0.54	-0.65	-0.67
S&P Europe 350 Equal Weight	0.45	1.00	0.64	0.15	0.41	0.20	0.11	-0.17	-0.01	-0.15	-0.06
S&P Europe 350 Buyback	0.20	0.64	1.00	0.07	0.33	0.18	0.08	0.02	0.03	0.01	0.04
S&P Europe 350 Low Volatility High Dividend	0.17	0.15	0.07	1.00	0.43	0.33	-0.05	-0.18	0.00	-0.15	0.09
S&P Europe Dividend Opportunities	0.02	0.41	0.33	0.43	1.00	0.51	0.15	0.02	0.22	0.08	0.38
S&P Euro High Yield Dividend Aristocrats	-0.27	0.20	0.18	0.33	0.51	1.00	0.25	0.23	0.18	0.31	0.57
S&P Europe 350 QVM Multi-Factor	-0.12	0.11	0.08	-0.05	0.15	0.25	1.00	0.45	0.04	0.40	0.29
S&P Europe 350 Momentum	-0.55	-0.17	0.02	-0.18	0.02	0.23	0.45	1.00	0.21	0.47	0.55
S&P Europe 350 Dividend Aristocrats	-0.54	-0.01	0.03	0.00	0.22	0.18	0.04	0.21	1.00	0.52	0.62
S&P Europe 350 Quality	-0.65	-0.15	0.01	-0.15	0.08	0.31	0.40	0.47	0.52	1.00	0.68
S&P Europe 350 Low Volatility	-0.67	-0.06	0.04	0.09	0.38	0.57	0.29	0.55	0.62	0.68	1.00

Correlation of weekly excess total returns (versus S&P Europe 350), past 3 years.

Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of September 29, 2017.

INDEX FACTOR SCORES - EXPLAINED

Every index is provided with a factor score between -100% and + 100% in each of Beta, Volatility, Momentum, Dividend, Size, Value and Quality.

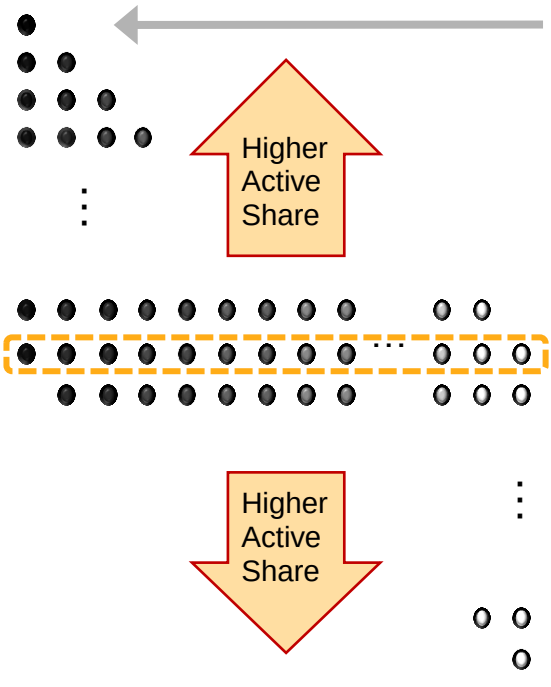
The score relates to the total trading required (sometimes called "active share") to convert a benchmark-replicating portfolio to a cap-weighted portfolio of ranked stocks with the same factor exposure.

The first step is to calculate the **factor scores of each constituent in the benchmark S&P Europe 350**. These measurements are based on the manner in which S&P Dow Jones Indices ranks stocks at the rebalance date for the relevant factor index, summarized below:

Beta	Trailing 1 year beta of stock daily returns to the benchmark's return.
Volatility	Trailing 12-month daily return 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.
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.
Size	Free-float market capitalization.

The next step is to use the ranked list of stocks create **comparison portfolios for each factor.** These are hypothetical portfolios, including greater or fewer stocks with higher and lower factor scores.

Comparison Portfolio Formation and Ranking



Single stock 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) stocks with higher or lower factor scores.

Portfolios with fewer stocks have more extreme (positive or negative) factor tilts, while by definition the benchmark portfolio has no factor tilt.

Benchmark portfolio, containing 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.

The most extreme portfolios are single-stock porttfolios containing only the stock with the highest or lowest factor score.

Single stock with the lowest possible factor score

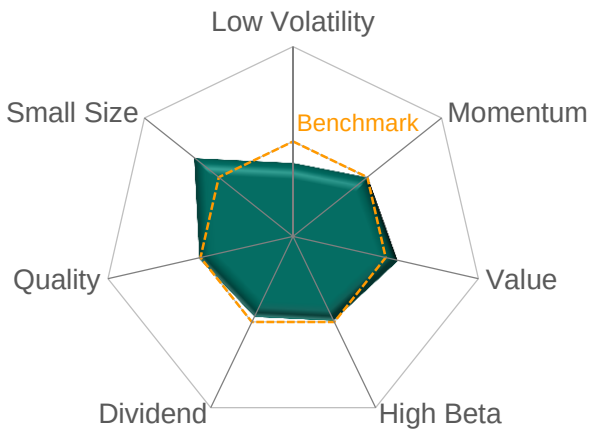
Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of September 29, 2017.

INDEX FACTOR SCORES - CONT'D

For each index and each factor, the **index factor score** is equal to the active share of the comparison portfolio whose weighted-average constituent factor score matches that of the index. The score is positive for tilts towards the factor, negative for tilts away from the factor.

For example, the chart below shows the current factor scores for the S&P Europe 350 Equal Weight Index, together with a table summarizing the values. The benchmark S&P Europe 350 is included for purposes of comparison.

Example: S&P Europe 350 Equal Weight Factor Scores



Factor	Score	Versus Benchmark Portfolio
Low Volatility	-22.4%	Higher volatility stocks
Momentum	0.0%	Similar Characteristics
Value	12.1%	Cheaper stocks
High Beta	-2.9%	Lower beta stocks
Dividend	-7.2%	Lower yielding stocks
Quality	0.8%	Similar Characteristics
Small Size	32.3%	Smaller stocks

As of the most recent quarter-end, the index-weighted average free-float market capitalization of the consitutuents of the S&P Europe 350 Equal Weight was EUR 34.1 billion, compared to EUR 63.7 billion for the S&P Europe 350. In order to match the size score of the S&P Europe 350 Equal Weight, one would need to exclude the largest 32.3% of stocks in the benchmark by capitalization. Accordingly, the Small Size score of the S&P Europe 350 Equal Weight is 32.3 %.

For more details on how we provide factor scores, see our post on Indexology. Notes on additional statistics provided in our dashboard follow below.

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. The Active Share (Stock) for each index is calculated as the absolute sum of difference between benchmark weights and index weights in each constituent, divided by two.
Active Share (Sector)	The Active Share (Sector) is the absolute sum of difference between benchmark sector weights and index sector weights, divided by two.
Concentration (HH Index)	The Herfindahl-Hirschman ("HH") concentration measure is equal to the sum of an 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 one year trailing daily variance of current index constituents, divided by the index variance. The value approximates an average stock-to-stock correlation of index constituents, weighted proportionally to both constituent weight and constituent volatility.

Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of September 29, 2017.

S&P Europe 350 Low Volatility

Description

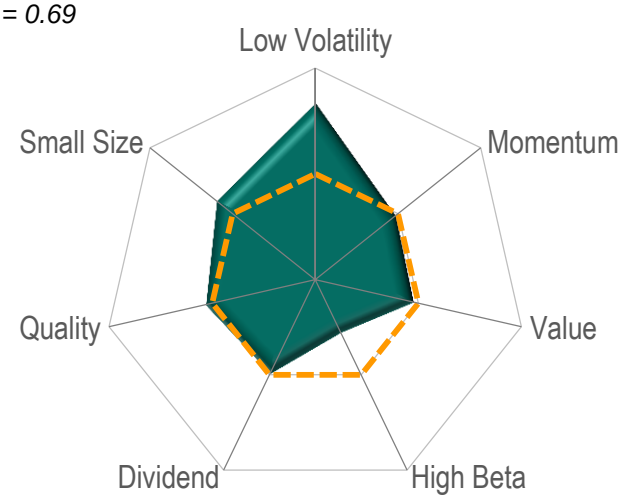
The S&P Europe 350 Low Volatility measures the performance of the 100 least-volatile stocks in the S&P Europe 350. Constituents are weighted relative to the inverse of their corresponding volatility, with the least volatile stocks receiving the highest weights.

Index Statistics	**1M**	**3M**	**12M**	**3Y**	**5Y**	**10Y**	**15Y**
Total Return (Ann)	2.4%	0.3%	8.9%	8.4%	11.3%	6.8%	10.4%
Relative to Benchmark	-1.6%	-2.6%	-8.2%	1.2%	0.2%	3.0%	2.5%
Index Volatility			9.3%	12.1%	10.6%	11.9%	11.1%
Tracking Error			4.4%	4.5%	4.3%	6.5%	6.4%

Benchmark: S&P Europe 350. 1 Yr trailing beta to benchmark = 0.69

Top Sector Tilts (versus benchmark)	*Index Weight*	*Difference v Bmark*
Industrials	21%	+8%
Real Estate	4%	+3%
Energy	2%	-5%
Health Care	7%	-6%

Portfolio Statistics	
Active Share (Stock)	69%
Active Share (Sector)	17%
Concentration (HH Index)	103.0
Correlation (stock)	0.28
Average Market Cap (EUR bn)	39.91



S&P Europe 350 Quality

Description

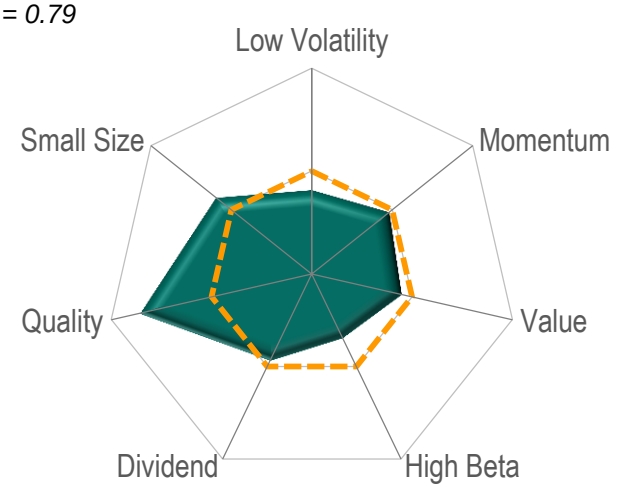
The S&P Europe 350 Quality measures the performance of the 50 stocks in the S&P Europe 350 with the highest quality score, based on return on equity, accruals ratio and financial leverage ratio. The weighting is proportional to both the quality score and the market capitalization of each component, subject to turnover and diversification constraints.

Index Statistics	**1M**	**3M**	**12M**	**3Y**	**5Y**	**10Y**	**15Y**
Total Return (Ann)	2.9%	2.9%	16.4%	13.0%	16.4%	9.4%	11.5%
Relative to Benchmark	-1.1%	0.1%	-0.6%	5.7%	5.4%	5.7%	3.5%
Index Volatility			7.8%	12.5%	10.9%	13.7%	13.2%
Tracking Error			3.2%	4.2%	3.6%	5.2%	4.7%

Benchmark: S&P Europe 350. 1 Yr trailing beta to benchmark = 0.79

Top Sector Tilts (versus benchmark)	*Index Weight*	*Difference v Bmark*
Industrials	34%	+21%
Consumer Discretionary	19%	+9%
Energy	1%	-7%
Financials	14%	-8%

Portfolio Statistics	
Active Share (Stock)	89%
Active Share (Sector)	31%
Concentration (HH Index)	309.8
Correlation (stock)	0.15
Average Market Cap (EUR bn)	40.38



Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of September 29, 2017.

S&P Europe 350 Momentum

Description

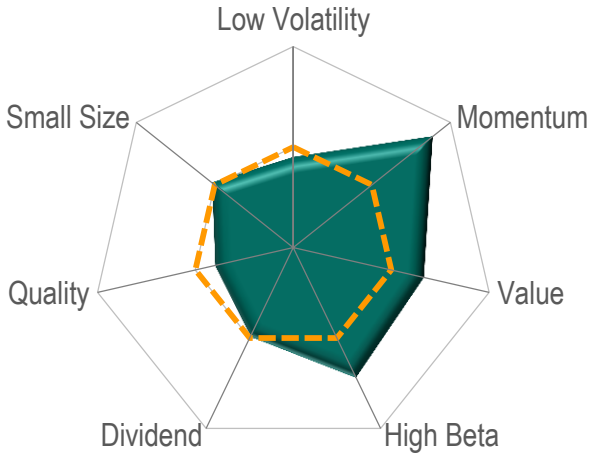
The S&P Europe 350 Momentum measures the performance of securities within the S&P Europe 350 that are in the top quintile of recent risk-adjusted return. The weighting is proportional to the momentum score, and to market capitalization, subject to turnover and concentration constraints. As of June 30, 2017, the index comprised 73 constituents.

Index Statistics	**1M**	**3M**	**12M**	**3Y**	**5Y**	**10Y**	**15Y**
Total Return (Ann)	5.3%	7.5%	11.0%	7.5%	11.4%	5.5%	9.7%
Relative to Benchmark	1.3%	4.6%	-6.0%	0.2%	0.4%	1.7%	1.7%
Index Volatility			10.8%	13.6%	11.9%	14.8%	14.0%
Tracking Error			7.4%	5.7%	5.7%	7.3%	7.1%

Benchmark: S&P Europe 350. 1 Yr trailing beta to benchmark = 0.81

Top Sector Tilts (versus benchmark)	*Index Weight*	*Difference v Bmark*
Financials	65%	+44%
Consumer Discretionary	12%	+2%
Health Care	2%	-11%
Consumer Staples	0%	-14%

Portfolio Statistics	
Active Share (Stock)	81%
Active Share (Sector)	45%
Concentration (HH Index)	325.6
Correlation (stock)	0.25
Average Market Cap (EUR bn)	55.00



S&P Europe 350 Enhanced Value

Description

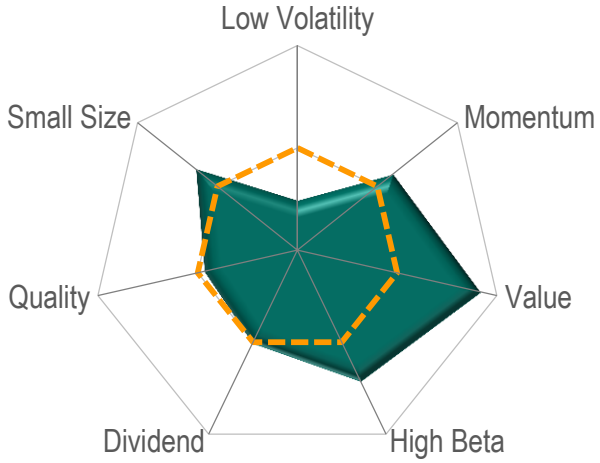
The S&P Europe 350 Enhanced Value is designed to measure the performance of the 50 stocks in the S&P Europe 350 with the highest average book value-to-price, earnings-to-price, and sales-to-price ratios. The weighting is proportional to both the value score and the market capitalization of each component.

Index Statistics	**1M**	**3M**	**12M**	**3Y**	**5Y**	**10Y**	**15Y**
Total Return (Ann)	5.8%	7.5%	39.7%	9.6%	15.8%	2.4%	10.0%
Relative to Benchmark	1.8%	4.6%	22.6%	2.4%	4.8%	-1.3%	2.0%
Index Volatility			12.0%	19.0%	17.3%	27.8%	25.8%
Tracking Error			9.1%	9.8%	9.5%	16.0%	14.0%

Benchmark: S&P Europe 350. 1 Yr trailing beta to benchmark = 1.28

Top Sector Tilts (versus benchmark)	*Index Weight*	*Difference v Bmark*
Financials	40%	+19%
Consumer Discretionary	25%	+14%
Industrials	3%	-10%
Health Care	0%	-13%

Portfolio Statistics	
Active Share (Stock)	88%
Active Share (Sector)	40%
Concentration (HH Index)	299.5
Correlation (stock)	0.35
Average Market Cap (EUR bn)	34.13



Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of September 29, 2017.

S&P Europe 350 Dividend Aristocrats

Description

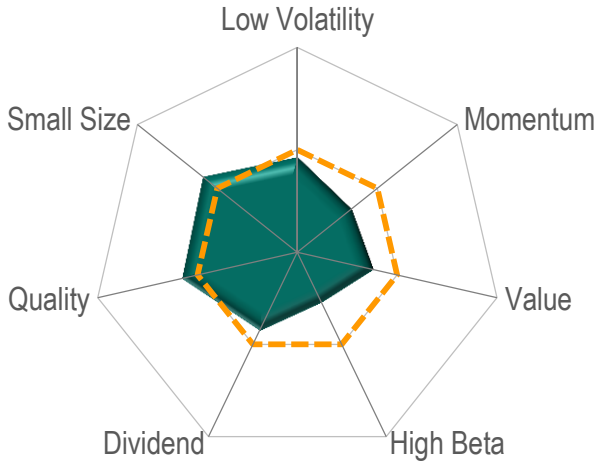
The S&P Europe 350 Dividend Aristocrats measure the performance of S&P Europe 350 constituents that have consistently maintained or increased their dividends. The constituents are equally weighted. As of June 30, 2017, the index comprised 40 constituents.

Index Statistics	**1M**	**3M**	**12M**	**3Y**	**5Y**	**10Y**	**15Y**
Total Return (Ann)	3.2%	0.5%	6.9%	5.5%	9.2%	6.1%	N/A
Relative to Benchmark	-0.8%	-2.4%	-10.1%	-1.8%	-1.8%	2.3%	N/A
Index Volatility			11.1%	12.6%	10.9%	14.4%	N/A
Tracking Error			5.9%	5.4%	5.1%	6.6%	N/A

Benchmark: S&P Europe 350. 1 Yr trailing beta to benchmark = 0.81

Top Sector Tilts (versus benchmark)	*Index Weight*	*Difference v Bmark*
Consumer Discretionary	20%	+9%
Health Care	21%	+8%
Energy	2%	-5%
Financials	5%	-17%

Portfolio Statistics	
Active Share (Stock)	81%
Active Share (Sector)	30%
Concentration (HH Index)	246.1
Correlation (stock)	0.21
Average Market Cap (EUR bn)	41.04



S&P Europe Dividend Opportunities

Description

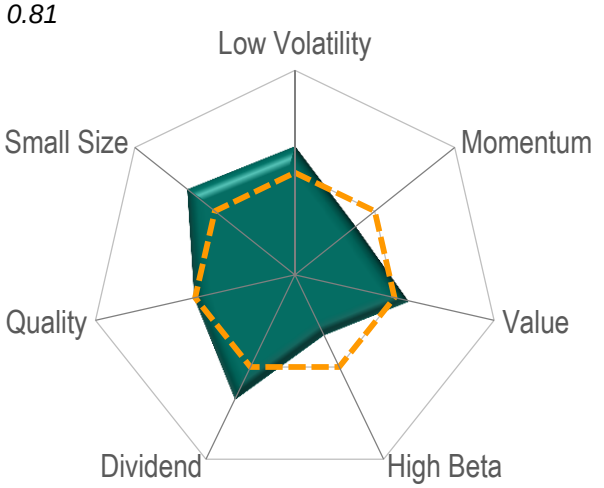
The S&P Europe Dividend Opportunities measures the performance of the 100 highest-yielding stocks in the wider European equity market, subject to diversification, stability, and tradability requirements. The weighting is according to dividend yield, subject to diversification constraints.

Index Statistics	**1M**	**3M**	**12M**	**3Y**	**5Y**	**10Y**	**15Y**
Total Return (Ann)	3.1%	-0.4%	14.4%	9.1%	12.8%	4.1%	10.6%
Relative to Benchmark	-0.9%	-3.2%	-2.6%	1.9%	1.8%	0.4%	2.6%
Index Volatility			9.3%	12.3%	11.0%	18.0%	16.9%
Tracking Error			3.8%	4.0%	4.1%	7.8%	7.0%

Benchmark: S&P Europe 350. 1 Yr trailing beta to benchmark = 0.81

Top Sector Tilts (versus benchmark)	*Index Weight*	*Difference v Bmark*
Real Estate	10%	+9%
Utilities	11%	+7%
Materials	3%	-5%
Health Care	3%	-10%

Portfolio Statistics	
Active Share (Stock)	80%
Active Share (Sector)	23%
Concentration (HH Index)	115.7
Correlation (stock)	0.23
Average Market Cap (EUR bn)	28.93



S&P Euro High Yield Dividend Aristocrats

Description

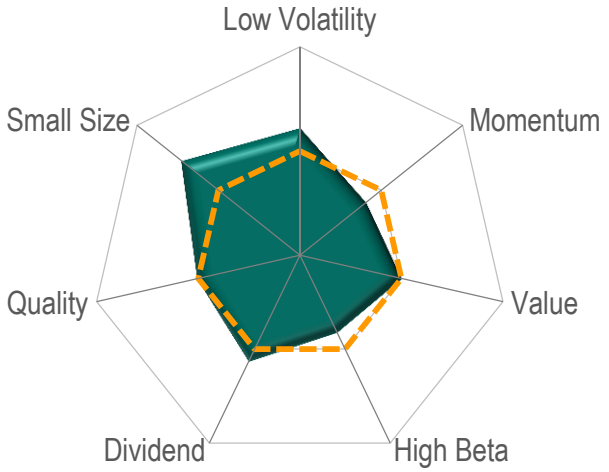
The S&P Euro High Yield Dividend Aristocrats measures the performance of the 40 highest-yielding Eurozone companies within the broader european equity market that have consistently maintained or increased their dividends. The weighting is proportional to dividend yield, subject to concentration constraints.

Index Statistics	**1M**	**3M**	**12M**	**3Y**	**5Y**	**10Y**	**15Y**
Total Return (Ann)	2.2%	2.2%	15.0%	11.3%	13.3%	3.3%	N/A
Relative to Benchmark	-1.7%	-0.6%	-2.0%	4.1%	2.3%	-0.4%	N/A
Index Volatility			10.8%	12.7%	11.7%	17.9%	N/A
Tracking Error			5.8%	5.2%	4.9%	6.1%	N/A

Benchmark: S&P Europe 350. 1 Yr trailing beta to benchmark = 0.89

Top Sector Tilts (versus benchmark)	*Index Weight*	*Difference v Bmark*
Utilities	15%	+11%
Industrials	24%	+10%
Financials	9%	-12%
Consumer Staples	1%	-13%

Portfolio Statistics	
Active Share (Stock)	89%
Active Share (Sector)	35%
Concentration (HH Index)	289.5
Correlation (stock)	0.30
Average Market Cap (EUR bn)	23.23



S&P Europe 350 Low Volatility High Dividend

Description

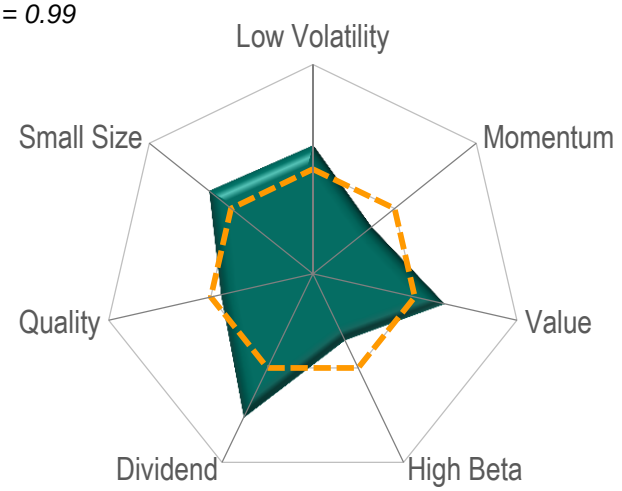
The S&P Europe 350 Low Volatility High Dividend is designed to measure the performance of 50 high-yielding companies within the S&P Europe 350, while meeting diversification, volatility and tradability requirements.

Index Statistics	**1M**	**3M**	**12M**	**3Y**	**5Y**	**10Y**	**15Y**
Total Return (Ann)	1.6%	2.8%	23.0%	9.9%	15.0%	8.3%	12.6%
Relative to Benchmark	-2.4%	-0.1%	5.9%	2.7%	4.0%	4.6%	4.6%
Index Volatility			9.5%	12.2%	11.2%	15.7%	14.8%
Tracking Error			5.2%	4.4%	4.4%	5.5%	5.3%

Benchmark: S&P Europe 350. 1 Yr trailing beta to benchmark = 0.99

Top Sector Tilts (versus benchmark)	*Index Weight*	*Difference v Bmark*
Utilities	25%	+22%
Telecommunication Services	18%	+14%
Consumer Staples	4%	-10%
Health Care	0%	-13%

Portfolio Statistics	
Active Share (Stock)	82%
Active Share (Sector)	48%
Concentration (HH Index)	200.7
Correlation (stock)	0.33
Average Market Cap (EUR bn)	34.38



Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of September 29, 2017.

S&P Europe 350 Equal Weight

Description

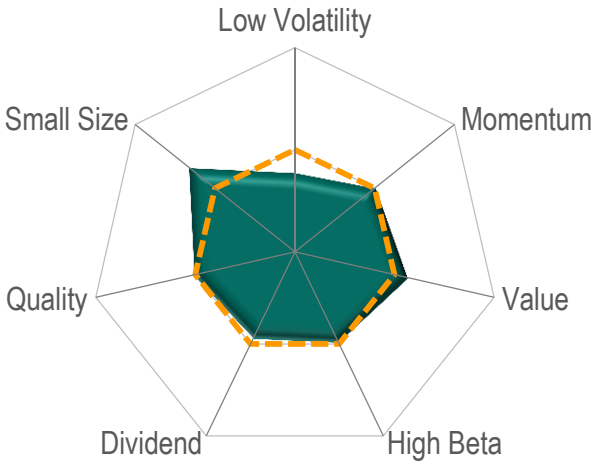
The S&P Europe 350 Equal Weight comprises all the constituents of the S&P Europe 350, equally weighted.

Index Statistics	**1M**	**3M**	**12M**	**3Y**	**5Y**	**10Y**	**15Y**
Total Return (Ann)	3.9%	3.5%	20.0%	9.4%	13.2%	5.0%	10.3%
Relative to Benchmark	0.0%	0.6%	2.9%	2.1%	2.2%	1.3%	2.3%
Index Volatility			8.2%	13.7%	12.2%	17.7%	17.3%
Tracking Error			1.3%	2.5%	2.5%	4.3%	4.3%

Benchmark: S&P Europe 350. 1 Yr trailing beta to benchmark = 0.99

Top Sector Tilts (versus benchmark)	*Index Weight*	*Difference v Bmark*
Industrials	21%	+8%
Consumer Discretionary	15%	+5%
Consumer Staples	9%	-5%
Health Care	6%	-7%

Portfolio Statistics	
Active Share (Stock)	41%
Active Share (Sector)	18%
Concentration (HH Index)	28.2
Correlation (stock)	0.18
Average Market Cap (EUR bn)	30.11



S&P Europe 350 Buyback

Description

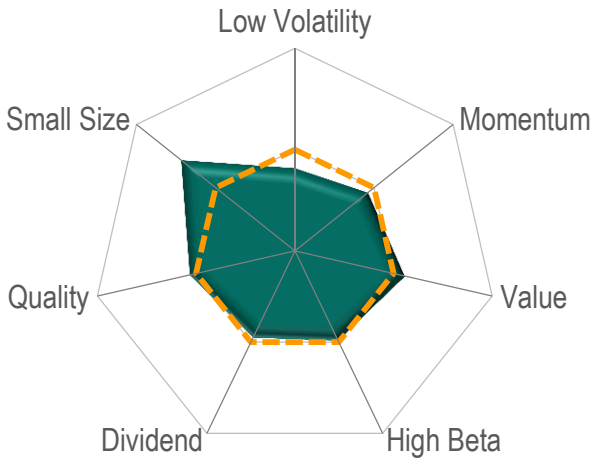
The S&P Europe 350 Buyback measures the performance of the 70 stocks with the highest buyback ratio in the S&P Europe 350, equally weighted.

Index Statistics	**1M**	**3M**	**12M**	**3Y**	**5Y**	**10Y**	**15Y**
Total Return (Ann)	3.8%	3.4%	17.5%	10.1%	14.2%	6.0%	10.2%
Relative to Benchmark	-0.2%	0.5%	0.4%	2.8%	3.2%	2.3%	2.2%
Index Volatility			8.1%	13.5%	12.0%	17.2%	16.0%
Tracking Error			2.4%	3.2%	3.2%	4.3%	4.1%

Benchmark: S&P Europe 350. 1 Yr trailing beta to benchmark = 1.03

Top Sector Tilts (versus benchmark)	*Index Weight*	*Difference v Bmark*
Industrials	26%	+13%
Consumer Discretionary	18%	+8%
Health Care	7%	-6%
Consumer Staples	8%	-6%

Portfolio Statistics	
Active Share (Stock)	81%
Active Share (Sector)	22%
Concentration (HH Index)	145.9
Correlation (stock)	0.21
Average Market Cap (EUR bn)	24.15



Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of September 29, 2017.

S&P Europe 350 Quality, Value & Momentum Multi-Factor

Description

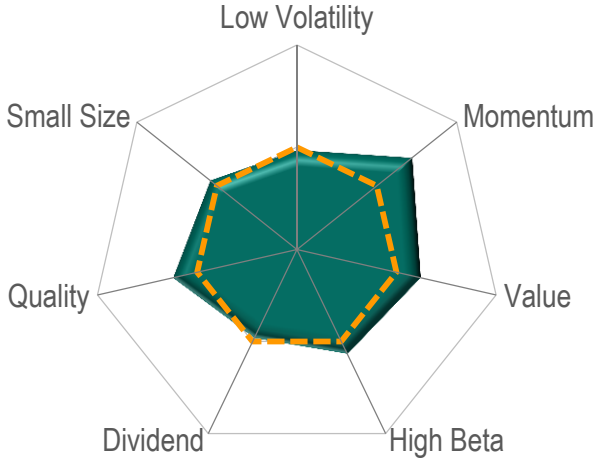
The S&P Europe 350 Quality, Value & Momentum Multi-Factor comprises the 70 stocks with the highest combined quality, value and momentum scores, weighted in proportion to both market capitalization and multifactor score.

Index Statistics	**1M**	**3M**	**12M**	**3Y**	**5Y**	**10Y**	**15Y**
Total Return (Ann)	4.7%	6.5%	21.1%	10.3%	14.2%	6.0%	10.7%
Relative to Benchmark	0.7%	3.7%	4.1%	3.1%	3.2%	2.3%	2.8%
Index Volatility			8.0%	13.2%	11.8%	15.4%	14.7%
Tracking Error			3.1%	3.9%	3.8%	4.3%	4.4%

Benchmark: S&P Europe 350. 1 Yr trailing beta to benchmark = 0.91

Top Sector Tilts (versus benchmark)	*Index Weight*	*Difference v Bmark*
Industrials	25%	+12%
Consumer Discretionary	20%	+10%
Health Care	5%	-8%
Consumer Staples	1%	-13%

Portfolio Statistics	
Active Share (Stock)	83%
Active Share (Sector)	34%
Concentration (HH Index)	259.4
Correlation (stock)	0.19
Average Market Cap (EUR bn)	49.83



Source: S&P Dow Jones Indices LLC and/or its affiliates. Data as of September 29, 2017.

Disclaimer

Copyright © 2017 S&P Dow Jones Indices LLC, a division of S&P Global. All rights reserved. STANDARD & POOR'S, S&P, SPDR, S&P 500, S&P EUROPE 350, S&P 100, S&P 1000, S&P COMPOSITE 1500, S&P MIDCAP 400, S&P SMALLCAP 600, GIVI, GLOBAL TITANS, S&P RISK CONTROL INDICES, S&P GLOBAL THEMATIC INDICES, S&P TARGET DATE INDICES, S&P TARGET RISK INDICES, DIVIDEND ARISTOCRATS, STARS, GICS, HOUSINGVIEWS, INDEX ALERT, INDEXOLOGY, MARKET ATTRIBUTES, PRACTICE ESSENTIALS, S&P HEALTHCARE MONITOR, SPICE, and SPIVA are registered trademarks of Standard & Poor's Financial Services LLC, a division of S&P Global ("S&P"). DOW JONES, DJ, DJIA and DOW JONES INDUSTRIAL AVERAGE are registered trademarks of Dow Jones Trademark Holdings LLC ("Dow Jones"). These trademarks together with others have been licensed to S&P Dow Jones Indices LLC. Redistribution, reproduction and/or photocopying in whole or in part are prohibited without written permission. This document does not constitute an offer of services in jurisdictions where S&P Dow Jones Indices LLC, Dow Jones, S&P or their respective affiliates (collectively "S&P Dow Jones Indices") do not have the necessary licenses. All information provided by S&P Dow Jones Indices is impersonal and not tailored to the needs of any person, entity or group of persons. S&P Dow Jones Indices receives compensation in connection with licensing its indices to third parties. Past performance of an index is not a guarantee of future results.

It is not possible to invest directly in an index. Exposure to an asset class represented by an index is available through investable instruments based on that index. S&P Dow Jones Indices does not sponsor, endorse, sell, promote or manage any investment fund or other investment vehicle that is offered by third parties and that seeks to provide an investment return based on the performance of any index. S&P Dow Jones Indices makes no assurance that investment products based on the index will accurately track index performance or provide positive investment returns. S&P Dow Jones Indices LLC is not an investment advisor, and S&P Dow Jones Indices makes no representation regarding the advisability of investing in any such investment fund or other investment vehicle. A decision to invest in any such investment fund or other investment vehicle should not be made in reliance on any of the statements set forth in this document. Prospective investors are advised to make an investment in any such fund or other vehicle only after carefully considering the risks associated with investing in such funds, as detailed in an offering memorandum or similar document that is prepared by or on behalf of the issuer of the investment fund or other investment product or vehicle. S&P Dow Jones Indices LLC is not a tax advisor. A tax advisor should be consulted to evaluate the impact of any tax-exempt securities on portfolios and the tax consequences of making any particular investment decision. Inclusion of a security within an index is not a recommendation by S&P Dow Jones Indices to buy, sell, or hold such security, nor is it considered to be investment advice. Closing prices for S&P Dow Jones Indices' US benchmark indices are calculated by S&P Dow Jones Indices based on the closing price of the individual constituents of the index as set by their primary exchange. Closing prices are received by S&P Dow Jones Indices from one of its third party vendors and verified by comparing them with prices from an alternative vendor. The vendors receive the closing price from the primary exchanges. Real-time intraday prices are calculated similarly without a second verification.

These materials have been prepared solely for informational purposes based upon information generally available to the public and from sources believed to be reliable. No content contained in these materials (including index data, ratings, credit-related analyses and data, research, valuations, model, software or other application or output therefrom) or any part thereof ("Content") may be modified, reverse-engineered, reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of S&P Dow Jones Indices. The Content shall not be used for any unlawful or unauthorized purposes. S&P Dow Jones Indices and its third-party data providers and licensors (collectively "S&P Dow Jones Indices Parties") do not guarantee the accuracy, completeness, timeliness or availability of the Content. S&P Dow Jones Indices Parties are not responsible for any errors or omissions, regardless of the cause, for the results obtained from the use of the Content. THE CONTENT IS PROVIDED ON AN "AS IS" BASIS. S&P DOW JONES INDICES PARTIES DISCLAIM ANY AND ALL EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, FREEDOM FROM BUGS, SOFTWARE ERRORS OR DEFECTS, THAT THE CONTENT'S FUNCTIONING WILL BE UNINTERRUPTED OR THAT THE CONTENT WILL OPERATE WITH ANY SOFTWARE OR HARDWARE CONFIGURATION. In no event shall S&P Dow Jones Indices Parties be liable to any party for any direct, indirect, incidental, exemplary, compensatory, punitive, special or consequential damages, costs, expenses, legal fees, or losses (including, without limitation, lost income or lost profits and opportunity costs) in connection with any use of the Content even if advised of the possibility of such damages.

Credit-related information and other analyses, including ratings, research and valuations are generally provided by licensors and/or affiliates of S&P Dow Jones Indices, including but not limited to S&P Global's other divisions such as Standard & Poor's Financial Services LLC and S&P Capital IQ LLC. Any credit-related information and other related analyses and statements in the Content are statements of opinion as of the date they are expressed and not statements of fact. Any opinion, analyses and rating acknowledgement decisions are not recommendations to purchase, hold, or sell any securities or to make any investment decisions, and do not address the suitability of any security. S&P Dow Jones Indices does not assume any obligation to update the Content following publication in any form or format. The Content should not be relied on and is not a substitute for the skill, judgment and experience of the user, its management, employees, advisors and/or clients when making investment and other business decisions. S&P Dow Jones Indices LLC does not act as a fiduciary or an investment advisor. While S&P Dow Jones Indices has obtained information from sources they believe to be reliable, S&P Dow Jones Indices does not perform an audit or undertake any duty of due diligence or independent verification of any information it receives.

To the extent that regulatory authorities allow a rating agency to acknowledge in one jurisdiction a rating issued in another jurisdiction for certain regulatory purposes, S&P Global Ratings Services reserves the right to assign, withdraw or suspend such acknowledgement at any time and in its sole discretion. S&P Dow Jones Indices, including S&P Global Ratings Services, disclaim any duty whatsoever arising out of the assignment, withdrawal or suspension of an acknowledgement as well as any liability for any damage alleged to have been suffered on account thereof.

Affiliates of S&P Dow Jones Indices LLC, including S&P Global Ratings Services, may receive compensation for its ratings and certain credit-related analyses, normally from issuers or underwriters of securities or from obligors. Such affiliates of S&P Dow Jones Indices LLC, including S&P Global Ratings Services, reserve the right to disseminate its opinions and analyses. Public ratings and analyses from S&P Global Ratings Services are made available on its Web sites, www.standardandpoors.com (free of charge), and www.ratingsdirect.com and www.globalcreditportal.com (subscription), and may be distributed through other means, including via S&P Global Rating Services publications and third-party redistributors. Additional information about our ratings fees is available at www.standardandpoors.com/usratingsfees.
S&P Global keeps certain activities of its various divisions and business units separate from each other in order to preserve the independence and objectivity of their respective activities. As a result, certain divisions and business units of S&P Global may have information that is not available to other business units. S&P Global has established policies and procedures to maintain the confidentiality of certain non-public information received in connection with each analytical process.

In addition, S&P Dow Jones Indices provides a wide range of services to, or relating to, many organizations, including issuers of securities, investment advisers, broker-dealers, investment banks, other financial institutions and financial intermediaries, and accordingly may receive fees or other economic benefits from those organizations, including organizations whose securities or services they may recommend, rate, include in model portfolios, evaluate or otherwise address.

The Global Industry Classification Standard (GICS®) was developed by and is the exclusive property and a trademark of Standard & Poor's and MSCI. Neither MSCI, Standard & Poor's nor any other party involved in making or compiling any GICS classifications makes any express or implied warranties or representations with respect to such standard or classification (or the results to be obtained by the use thereof), and all such parties hereby expressly disclaim all warranties of originality, accuracy, completeness, merchantability or fitness for a particular purpose with respect to any of such standard or classification. Without limiting any of the foregoing, in no event shall MSCI, Standard & Poor's, any of their affiliates or any third party involved in making or compiling any GICS classifications have any liability for any direct, indirect, special, punitive, consequential or any other damages (including lost profits) even if notified of the possibility of such damages.

TSX is a trademark of TSX, Inc. and has been licensed for use by S&P Dow Jones Indices. RAFI is a trademark of Research Affiliates, LLC and has been licensed for use by S&P Dow Jones Indices. CASE-SHILLER is a registered trademark of CoreLogic Case-Shiller, LLC and has been licensed for use by S&P Dow Jones Indices. LSTA is a trademark of Loan Syndications and Trading Association, Inc. and has been licensed for use by S&P Dow Jones Indices. VIX is a trademark of Chicago Board Options Exchange, Incorporated and has been licensed for use by S&P Dow Jones Indices. BVL is a trademark of Bolsa de Valores de Lima S.A. and has been licensed for use by S&P Dow Jones Indices. VALMER is a trademark of Bolsa Mexicana de Valores, S.A.B. de C.V. and has been licensed for use by S&P Dow Jones Indices. NZX is a trademark of NZX Limited and has been licensed for use by S&P Dow Jones Indices. ISDA is a trademark of the International Swaps & Derivatives Association, Inc. and has been licensed for use by S&P Dow Jones Indices. GSCI is a registered trademark of The Goldman Sachs Group, Inc. ("Goldman") and has been licensed for use by S&P Dow Jones Indices. The S&P GSCI index is not created, owned, endorsed, sponsored, sold or promoted by Goldman or its affiliates and Goldman bears no liability with respect to such index or data related thereto. Goldman provides no guarantee as to the accuracy and/or the completeness of the S&P GSCI index or any data related thereto.

All trade names, trademarks and service marks, and attendant goodwill, now owned by Citigroup Index LLC or any of its affiliates and used in connection with the S&P/Citigroup International Treasury Bond (Ex-US) Indices shall remain its or its affiliates' respective sole property, and all rights accruing from their use shall inure solely to the benefit of Citigroup Index LLC or any of its affiliates.

IN NO EVENT WHATSOEVER SHALL CITIGROUP INDEX LLC OR ANY OF ITS AFFILIATES BE LIABLE WITH RESPECT TO SUCH INDICES FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO, LOSS OF PROFITS, LOST TIME OR GOODWILL, EVEN IF IT THEY HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, REGARDLESS OF THE FORM OF ACTION, WHETHER IN CONTRACT, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY OR OTHERWISE.

Brookfield Redding, Inc. and/or its affiliates (including but not limited to Brookfield Asset Management Inc., collectively "Co-Publisher") own certain intellectual property rights with respect to the Dow Jones Brookfield Infrastructure Indexes, which rights have been licensed to S&P for use.

SAM Indexes Gmbh and/or its successors or affiliates (collectively, "SAM") own certain intellectual property rights with respect to the Dow Jones Sustainability Indexes, which rights have been licensed to S&P for use.

Performance Disclosure
Charts and graphs are provided for illustrative purposes. Past performance is not an indication or guarantee of future results. The charts and graphs may reflect hypothetical historical performance. All information presented prior to the launch date is back-tested. Back-tested performance is not actual performance, but is hypothetical. The back-test calculations are based on the same methodology that was in effect when the index(es) was officially launched. However, it should be noted that the historic calculations of an Economic Index may change from month to month based on revisions to the underlying economic data used in the calculation of the index. Complete index methodology details are available at www.spdji.com. It is not possible to invest directly in any index.

S&P Dow Jones Indices defines various dates to assist our clients in providing transparency on their products. The First Value Date is the first day for which there is a calculated value (either live or back-tested) for a given index. The Base Date is the date at which a given index is set at a fixed value for calculation purposes. The Launch Date designates the date upon which the values of a given index are first considered live: index values provided for any date or time period prior to the index's Launch Date are considered back-tested. S&P Dow Jones Indices defines the Launch Date as the date by which the values of an index are known to have been released to the public, for example via S&P Dow Jones Indices's public website or its datafeed to external parties. For Dow Jones-branded indices introduced prior to May 31, 2013, the Launch Date (which prior to May 31, 2013, was termed "Date of introduction") is set at a date upon which no further changes were permitted to be made to the index methodology, but that may have been prior to the index's public release date.

Prospective application of the methodology used to construct the index(es) as well as revisions to economic data may not result in performance commensurate with the back-test returns shown. The back-test period does not necessarily correspond to the entire available history of the index(es). Please refer to the index methodology for the particular index in question, available at www.spdji.com, for more details about such index, including the manner in which it is rebalanced, the timing of such rebalancing, criteria for additions and deletions, as well as all index calculations.

Another limitation of using back-tested information is that the back-tested calculation is generally prepared with the benefit of hindsight. Back-tested data and/or information reflects the application of the index methodology and selection of index constituents in hindsight. No hypothetical record can completely account for the impact of financial risk in actual trading. For example, there are numerous factors related to the equities, fixed income, or commodities markets in general which cannot be, and have not been accounted for in the preparation of the index information set forth, all of which can affect actual performance.

The index returns shown do not represent the results of actual trading of investable assets/securities. S&P Dow Jones Indices LLC maintains the index(es) and calculates the index levels and performance shown or discussed, but does not manage actual assets. Index returns do not reflect payment of any sales charges or fees an investor may pay to purchase the securities underlying the index(es) or investment funds that are intended to track the performance of the index(es). The imposition of these fees and charges would cause actual and back-tested performance of the securities/fund to be lower than the index performance shown. As a simple example, if an index returned 10% on a US $100,000 investment for a 12-month period (or US $10,000) and an actual asset-based fee of 1.5% was imposed at the end of the period on the investment plus accrued interest (or US $1,650), the net return would be 8.35% (or US $8,350) for the year. Over a three year period, an annual 1.5% fee taken at year end with an assumed 10% return per year would result in a cumulative gross return of 33.10%, a total fee of US $5,375, and a cumulative net return of 27.2% (or US $27,200).