

CONTRIBUTORS

Hong Xie, CFA
Director
Global Research & Design
hong.xie@spglobal.com

Aye M. Soe, CFA
Managing Director
Global Research & Design
aye.soe@spglobal.com

Rachel Du
Senior Analyst
Global Research & Design
rachel.du@spglobal.com

Combining Low Volatility and Dividend Yield in U.S. Preferred Stocks

INTRODUCTION

Preferred stocks are hybrid securities that sit between common stocks and bonds in a company's capital structure, therefore exhibiting blended characteristics of both asset classes. They have been favored by income-seeking investors due to the higher yields they offer in comparison with common stocks and corporate bonds.

Historically, dividends have been a dominating driver for the total return of preferred stocks. Therefore, many preferred strategies seek to capture the benefit of higher-dividend-yielding preferred stocks.

However, as with any income-oriented strategy, it is important to avoid falling into a yield trap. In particular, our research in equity dividends has shown that securities in the top quintile of the yield-ranked universe have higher volatility and lower risk-adjusted returns than those in other quintiles.¹ Similarly, this paper shows that higher-dividend-yielding preferred stocks also tend to exhibit higher volatility, and therefore an income strategy may require some form of volatility management for prudent portfolio construction.

Against that backdrop, we applied the low volatility factor, which is popular in equity investing, to preferred stocks. The low volatility effect refers to the finding that, historically, stocks with low volatility have tended to outperform their high volatility peers on a risk-adjusted basis. It has been extensively studied in equities by academics and practitioners alike and stock investment vehicles linked to low volatility strategies have grown significantly. Our analysis shows that the low volatility factor can be overlaid with a high-dividend strategy in preferred stocks to manage volatility while maintaining attractive yield levels.

The remainder of this paper is organized as follows. The first section explores a high-dividend investment strategy and extends the study of the low volatility effect in U.S. preferred stocks. The second section introduces the methodology of the [S&P U.S. Preferred Stock Low Volatility High](#)

¹ Luk, Priscilla. "[The Beauty of Simplicity: The S&P 500 Low Volatility High Dividend Index](#)." S&P Dow Jones Indices LLC. November 2017.

[Dividend Index](#). The third and fourth sections present back-tested performance and characteristics of the index, respectively.

HIGH-DIVIDEND INVESTING AND LOW VOLATILITY EFFECT IN PREFERRED STOCKS

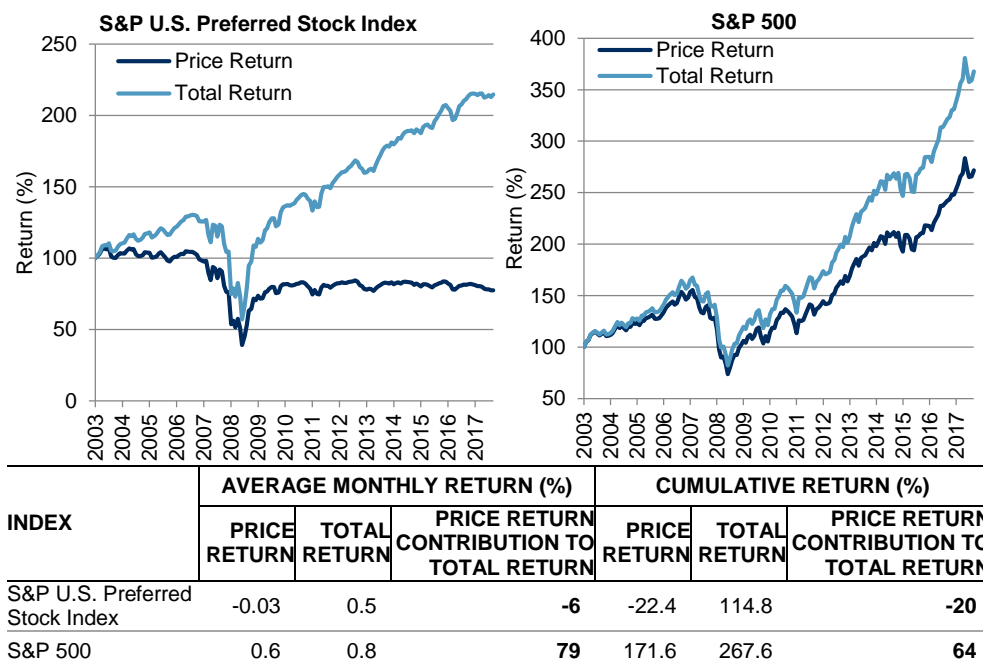
Preferred Stock Total Return Analysis

Preferred stocks exhibit blended characteristics of stocks and bonds. They represent ownership in companies, but they do not come with voting rights. Given their junior position to bonds in capital structure, preferred stocks generally offer higher yield than senior bonds, and higher stable dividends than common stocks, and therefore are popular instruments for income-seeking investors.

Historically, dividend income contributes significantly to the total return of preferred stocks.

Historically, dividend income contributes significantly to preferred stock total return. To illustrate, Exhibit 1 compares the price returns and total returns of the [S&P U.S. Preferred Stock Index](#) and [S&P 500®](#). From its inception in 2003 until May 31, 2018, the S&P U.S. Preferred Stock Index generated a cumulative total return of 114.8%, while its price return was -22%. This is in contrast with the S&P 500, for which total return followed price return closely, and price return contributed 64% of the total return since 2003.

Exhibit 1: Price Return and Total Return of Preferred Stocks and Common Stocks



Source: S&P Dow Jones Indices LLC. Data from Sept. 30, 2003, to May 31, 2018. Past performance is no guarantee of future results. Charts and table are provided for illustrative purposes and reflect hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Preferred stocks pay fixed or floating dividends with a preset schedule. Given the fact that dividends drive preferred stock total return, it makes sense that most preferred strategies seek to capture the income benefit of selecting high-dividend-yielding securities.

For the purpose of this paper, we used the S&P U.S. Preferred Stock Index to represent the U.S. preferred stock universe, or the opportunity set. The index's first value date was in September 2003, and its universe expanded significantly in October 2010 due to the methodology change that removed the limit to the number of lines of a single company's preferred stock that were allowed in the index. Therefore, we present our analysis for pre-2010, post-2010, and the full period separately, emphasizing the post-2010 period due to the increase in the size of the universe.

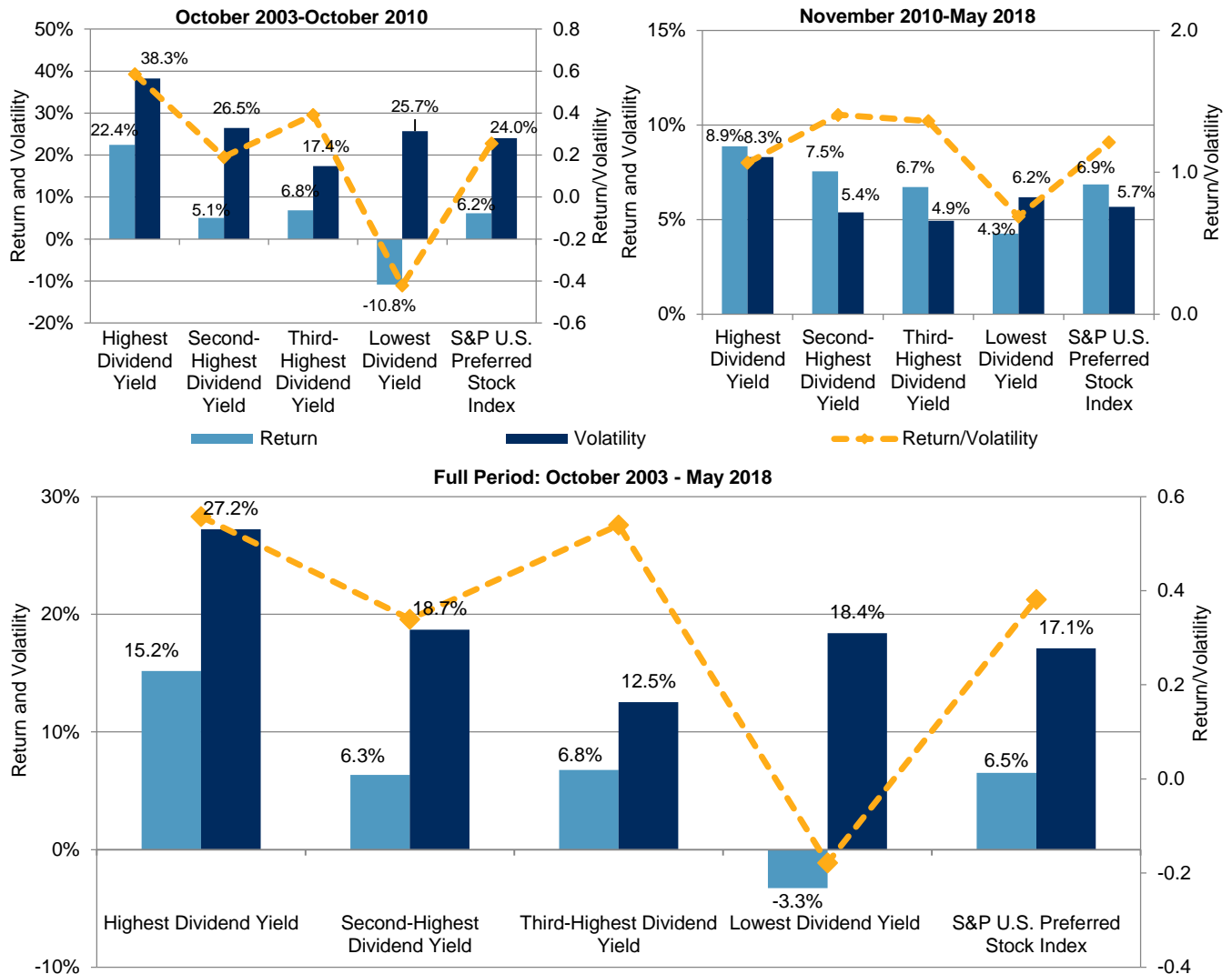
High-Dividend Strategy in Preferred Stocks

To compare the performance of high-dividend-yielding and low-dividend-yielding preferred stocks, we constructed quartile portfolios by dividing the preferred stock universe into quartiles ranked by current dividend yield. The quartile portfolios were rebalanced on a monthly basis and equally weighted.

The highest-dividend-yielding quartile showed the highest total return, but it also exhibited the highest return volatility.

Exhibit 2 presents back-tested performance for the quartile portfolios in three data periods. The highest-dividend-yielding quartile showed the highest total return, but it also exhibited the highest return volatility. Interestingly, the lowest-dividend-yielding quartile posted the lowest return but was not the least volatile. Consequently, its ratio of return to volatility was significantly lower than the other three quartiles, indicating its inefficiency in generating return for the volatility it exhibited. The lowest-dividend-yielding quartile was also the only quartile that consistently showed much lower return than the universe.

Exhibit 2: Risk/Return Profile for Quartile Portfolios by Current Dividend Yield



Dividend yield quartile portfolios are hypothetical portfolios. Source: S&P Dow Jones Indices LLC and FactSet. Data as of May 31, 2018. Past performance is no guarantee of future results. Charts are provided for illustrative purposes and reflect hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

This quartile analysis demonstrates the potential of applying a high-dividend investment strategy to preferred stocks, but it also exposes the cost of owning the most volatile preferred stocks. To construct a risk-efficient portfolio while capturing the benefit of high-dividend-yielding preferred stocks, it is important that the portfolio construction process take extra steps to manage volatility. It is for this purpose that we applied the low volatility effect analysis to the preferred stock universe.

The Low Volatility Effect in Preferred Stocks

The low volatility effect in equities refers to the finding that stocks that previously exhibited lower realized volatility tend to outperform those with higher volatility and the broad-based market on a risk-adjusted basis over the long-term investment horizon. It has been well documented in academic and practitioner research and widely adopted in investment product offerings in the market.

Our research in the equity dividend space shows that securities in the top quintile of the yield-ranked universe had higher volatility and lower risk-adjusted returns than those in other quintiles. After screening out the most volatile stocks from the high-yielding universe, the resulting portfolio had higher risk-adjusted returns than a simple highest-yielding portfolio and the broad market.²

Adapting that framework, we extended the low volatility analysis to U.S. preferred stocks to examine whether overlaying the volatility signal improved risk-adjusted returns and provided better downside protection.

To do so, we divided the index universe into quartiles by the preferred stocks' realized volatility over the past one-year period.³ The quartile portfolios were rebalanced on a monthly basis and equally weighted.

Exhibit 3 shows the risk/return profile for the quartile portfolios over the three time periods. As expected, the least volatile quartile had the lowest volatility across all three time periods, with the opposite observed for the most volatile quartile. Similar to the findings in equities, the results confirmed that ex-ante ranking of preferred securities by realized volatility can be effective in predicting ex-post volatility.

The highest volatility quartile consistently did not compensate for that higher risk with extra return, therefore resulting in significantly lower risk-adjusted return.

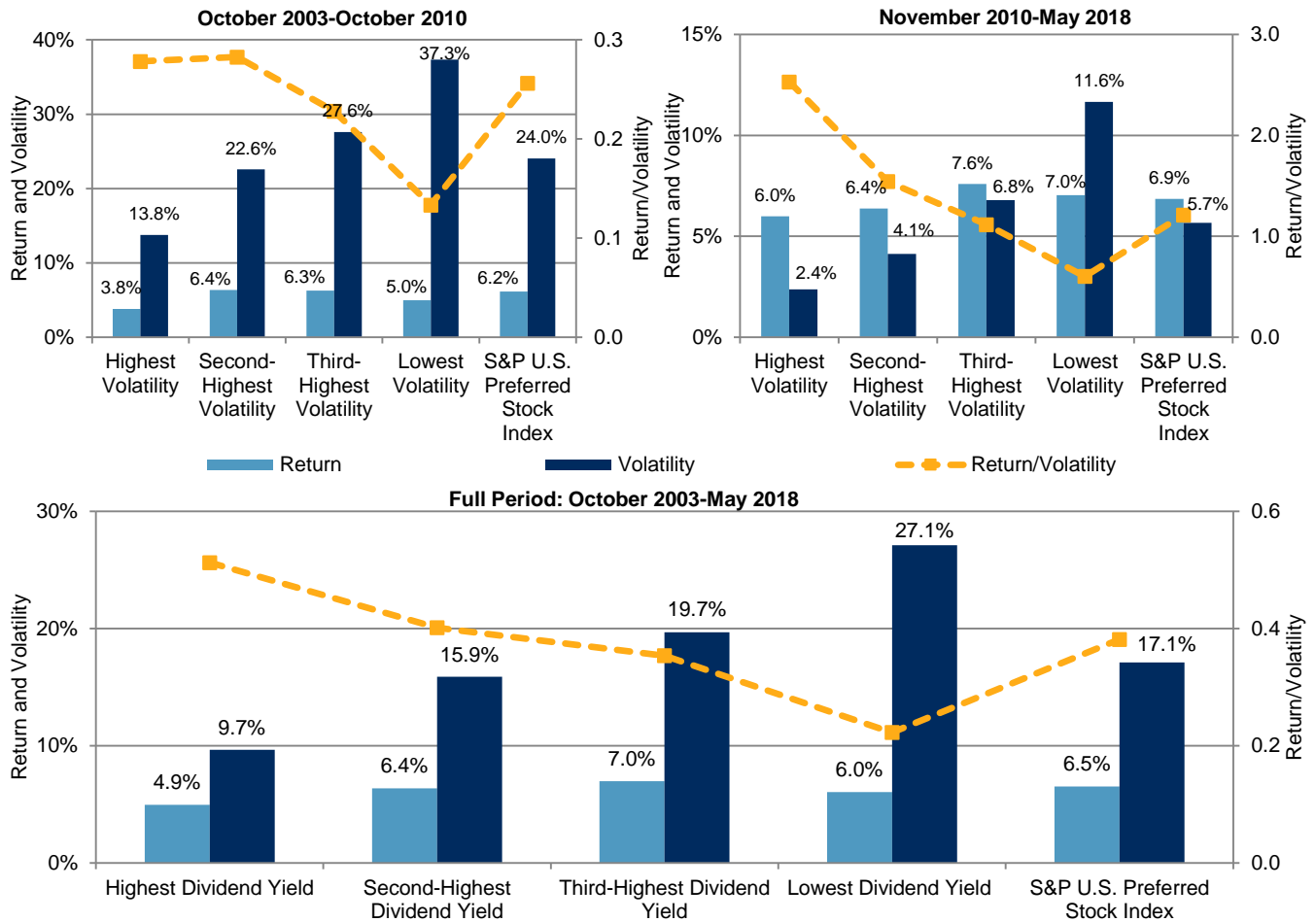
On the other hand, return variation among the quartiles was not as linear or monotonic. For example, in the post-2010 period, return increased from the lowest volatility quartile to the second and third quartiles but then decreased for the highest volatility quartile. This means the incremental volatility of the highest volatility quartile from the third quartile is not compensated with return. Consequently, the risk-adjusted return, calculated as the ratio of return to volatility, was lowered from 1.12 for the third quartile to 0.60 for the most volatile quartile. The top two least volatile quartiles outperformed the investment universe as a whole in terms of risk-adjusted return.

Our quartile analysis indicates the potential of a low volatility factor strategy to reduce return volatility of a U.S. preferred stock portfolio. In particular, the most volatile quartile consistently did not compensate for that higher risk with extra return, therefore resulting in significantly lower risk-adjusted return.

² Luk, Priscilla. "[The Beauty of Simplicity: the S&P 500 Low Volatility High Dividend Index.](#)" S&P Dow Jones Indices. November 2017.

³ For empirical evidence on why realized volatility was used, please refer to "[Can Realized Volatility Predict Future Volatility for Preferred Securities?](#)"

Exhibit 3: Risk/Return Profile for Quartile Portfolios by Volatility



Volatility quartile portfolios are hypothetical portfolios.
 Source: S&P Dow Jones Indices LLC and FactSet. Data as of May 31, 2018. Past performance is no guarantee of future results. Charts are provided for illustrative purposes and reflect hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

High-Dividend Investment Strategy in Low Volatility Preferred Stocks

Next, we explored overlaying the low volatility factor with a high-dividend investing strategy to construct a preferred stock portfolio in order to improve portfolio return while mitigating volatility. We applied the low volatility and high dividend yield factors in sequential order.

We first constructed a low volatility preferred universe by excluding securities in the most volatile quartile. Then, we divided the low volatility universe into halves after sorting each preferred stock’s trailing 12-month dividend yield. We also reversed the order of implementing the two factors and obtained two sub-portfolios by volatility rank from a high-dividend-yield universe that excluded the lowest-dividend-yielding quartile. The sub-portfolios were rebalanced on a monthly basis and equally weighted.

Exhibit 4 presents the risk/return profiles of the sub-portfolios when overlaying low volatility and high dividend on each other, both in sequential order. It demonstrates that the sub-portfolios that combined low volatility and high dividend outperformed the investment universe in terms of absolute and risk-adjusted return, regardless of the order in which the factors were applied.

Overlaying a low volatility factor with a high-dividend investing strategy in either sequential order improved absolute and risk-adjusted returns of a preferred stock portfolio.

Exhibit 4: Risk/Return Summary of Overlaying Low Volatility and High Dividend Yield in U.S. Preferred Stocks

PERIOD	HIGHER YIELDING IN LOW VOLATILITY PORTFOLIO	LOWER YIELDING IN LOW VOLATILITY PORTFOLIO	LOW VOLATILITY PORTFOLIO (EX. THE MOST VOLATILE QUARTILE)	LOW VOLATILITY IN HIGH DIVIDEND PORTFOLIO	HIGH VOLATILITY IN HIGH DIVIDEND PORTFOLIO	HIGH DIVIDEND PORTFOLIO (EX. THE LOWEST DIVIDEND YIELD QUARTILE)	S&P U.S. PREFERRED STOCK INDEX
ANNUALIZED RETURN (%)							
3-Year	5.6	5.1	5.4	5.5	5.5	5.5	4.6
5-Year	6.8	5.7	6.2	6.4	6.5	6.5	5.6
10-Year	11.0	3.7	7.4	10.7	12.2	11.8	7.4
Since Oct. 31, 2003	9.4	3.0	6.2	8.5	9.9	9.5	6.5
ANNUALIZED VOLATILITY (%)							
3-Year	3.0	5.2	4.1	3.3	4.9	3.9	4.4
5-Year	3.4	5.3	4.3	3.2	5.7	4.3	4.7
10-Year	20.6	13.0	16.4	17.1	26.9	20.9	19.5
Since Oct. 31, 2003	18.1	11.9	14.7	15.0	23.6	18.4	17.1
RISK-ADJUSTED RETURN							
3-Year	1.87	0.98	1.32	1.65	1.12	1.40	1.03
5-Year	1.98	1.07	1.46	2.00	1.15	1.52	1.19
10-Year	0.53	0.28	0.45	0.62	0.45	0.56	0.38
Since Oct. 31, 2003	0.52	0.25	0.42	0.57	0.42	0.52	0.38

All portfolios are hypothetical portfolios.

Source: S&P Dow Jones Indices LLC and FactSet. Data as of May 31, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

THE S&P U.S. PREFERRED STOCK LOW VOLATILITY HIGH DIVIDEND INDEX

The low volatility analysis demonstrates the potential benefits of applying the volatility factor in preferred stock portfolio construction to reduce return volatility. It also identifies the most volatile quartile as the least efficient return-generating portion of the opportunity set.

Performance comparison of high-dividend-yielding and low-dividend-yielding preferred stocks supports the idea that high-dividend investing strategies can effectively improve total return by capturing high dividend income in preferred stocks for which dividend income has been the major driver of total return.

The S&P U.S. Preferred Stock Low Volatility High Dividend Index combines the low volatility and high-dividend investing strategies to reduce volatility and improve return. It excludes the most volatile preferred stocks and then selects the higher-dividend-yielding preferred stocks.

Starting from the underlying universe, the S&P U.S. Preferred Stock Index, the S&P U.S. Preferred Stock Low Volatility High Dividend Index is constructed as follows.⁴

The S&P U.S. Preferred Stock Low Volatility High Dividend Index combines the low volatility and high-dividend investing strategies to reduce volatility and improve return.

1. Eligible Universe: Preferred stocks with at least a one-year trading history and available dividend yield are eligible.
2. Low Volatility Universe: Preferred stocks in the eligible universe are then ranked by realized volatility over the trailing 252 trading days. The low volatility universe is formed by excluding the 25% most volatile preferred stocks.
3. Preferred stocks in the low volatility universe are then ranked by indicated dividend yield. The top 50% of stocks with the highest indicated yield in the low volatility universe are selected to form the index.

In order to reduce turnover, a 10% buffer based on indicated yield is applied to step three of the constituent selection process at each index rebalancing. Current constituents in the low volatility universe remain in the index if they are within the top 60% of the low volatility universe by indicated yield rank.

The index is weighted by dividend yield, with issuer weight capped at 5%, and it is rebalanced quarterly. Its first rebalance was in October 2010, when the underlying universe expanded significantly and allowed for a selection process.⁵

BACK-TESTED PERFORMANCE OF THE S&P U.S. PREFERRED STOCK LOW VOLATILITY HIGH DIVIDEND INDEX

Performance Comparison Within the U.S. Preferred Stock Index Series

Exhibit 5 presents performance statistics of the S&P U.S. Preferred Stock Low Volatility High Dividend Index alongside those of other preferred stock indices. The S&P U.S. Preferred Stock Low Volatility High Dividend Index consistently demonstrated volatility reduction with investment horizons of three or more years compared with the other U.S. preferred stock indices,

⁴ Please see the [methodology](#) for the S&P U.S. Preferred Stock Low Volatility High Dividend Index for more details.

⁵ In 2010, the methodology of the S&P U.S. Preferred Stock Index changed to remove the limit to the number of lines of a single company's preferred stock allowed in the index.

including the broad-based S&P U.S. Preferred Stock Index and the [S&P U.S. High Quality Preferred Stock Index](#), which includes only fixed-coupon, investment-grade preferred stocks.

The maximum drawdown of the S&P U.S. Preferred Stock Low Volatility High Dividend Index, at -2.8%, was the least among its peers and the underlying broad market index. Returns of the S&P U.S. Preferred Stock Low Volatility High Dividend Index over investment horizons of five or more years tended to be on the high end within the preferred stock index series. As a result, the S&P U.S. Preferred Stock Low Volatility High Dividend Index had the highest risk-adjusted return of its peer preferred stock indices.

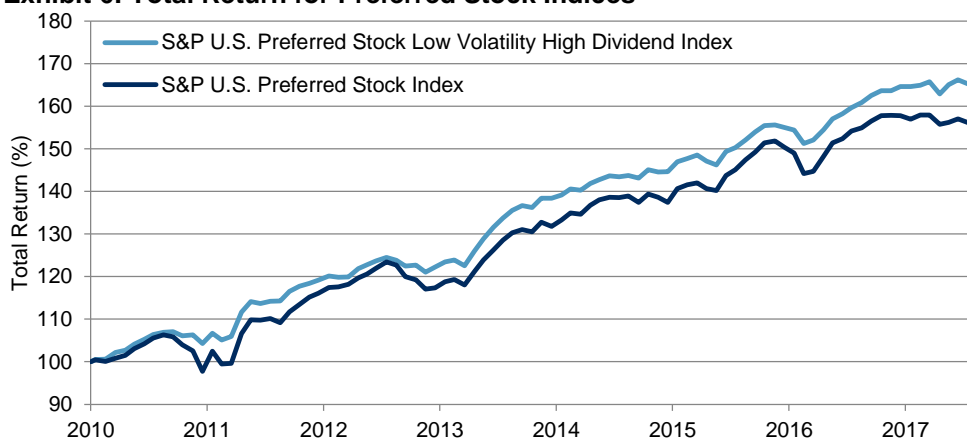
Exhibit 5: Risk/Return Summary of the S&P U.S. Preferred Stock Low Volatility High Dividend Index Versus the Preferred Stock Index Series

PERIOD	S&P U.S. PREFERRED STOCK LOW VOLATILITY HIGH DIVIDEND INDEX	S&P U.S. PREFERRED STOCK INDEX	S&P U.S. FIXED RATE PREFERRED STOCK INDEX	S&P U.S. FLOATING RATE PREFERRED STOCK INDEX	S&P U.S. VARIABLE RATE PREFERRED STOCK INDEX	S&P U.S. INVESTMENT GRADE PREFERRED STOCK INDEX	S&P U.S. HIGH YIELD PREFERRED STOCK INDEX	S&P U.S. NOT RATED PREFERRED STOCK INDEX	S&P U.S. HIGH QUALITY PREFERRED STOCK INDEX	
ANNUAL RETURN (%)										
1-Year	3.8	1.6	1.6	1.5	1.6	2.7	2.2	-2.7	2.1	
3-Year	5.1	4.3	3.8	7.2	5.8	5.7	5.2	-2.2	4.8	
5-Year	6.2	5.1	5.0	4.6	6.2	5.7	5.9	0.6	5.1	
Since Inception (Oct. 15, 2010)	7.0	6.1	6.0	6.4	7.0	5.9	7.2	1.6	5.7	
ANNUAL VOLATILITY (%)										
1-Year	2.9	2.4	2.3	4.8	3.4	3.2	2.7	4.9	3.7	
3-Year	3.2	4.2	4.0	7.1	5.0	4.6	3.9	7.2	4.9	
5-Year	3.4	4.2	4.1	7.9	4.4	5.0	3.8	6.5	5.9	
Since Inception (Oct. 15, 2010)	3.8	5.4	5.2	10.8	5.5	4.7	7.6	6.9	5.2	
RETURN/VOLATILITY										
1-Year	1.29	0.67	0.70	0.32	0.47	0.84	0.84	-0.55	0.55	
3-Year	1.59	1.02	0.94	1.02	1.17	1.23	1.34	-0.31	0.98	
5-Year	1.81	1.21	1.20	0.58	1.43	1.15	1.56	0.09	0.87	
Since Inception (Oct. 15, 2010)	1.83	1.14	1.14	0.59	1.27	1.25	0.95	0.23	1.10	
MAXIMUM DRAWDOWN (%)										
Since Inception (Oct. 15, 2010)	-2.8	-8.0	-7.3	-20.3	-8.8	-8.3	-14.4	-11.7	-12.1	

Source: S&P Dow Jones Indices LLC. Data as of May 31, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

U.S. preferred stocks have experienced a few episodes of market downturn since 2010 (see Exhibit 6). Exhibit 7 details the return comparison of the S&P U.S. Preferred Stock Low Volatility High Dividend Index and its broad-based underlying index when preferred stocks experienced down markets, and it shows that the S&P U.S. Preferred Stock Low Volatility High Dividend Index outperformed the broad-based underlying index in major bear markets since 2010.

Exhibit 6: Total Return for Preferred Stock Indices



Source: S&P Dow Jones Indices LLC. Data as of May 31, 2018. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

S&P U.S. Preferred Stock Low Volatility High Dividend Index outperformed the broad-based underlying index in major bear markets since 2010.

Exhibit 7: Cumulative Returns for Preferred Stock Indices During Bear Markets

RETURNS (%)	S&P U.S. PREFERRED STOCK LOW VOLATILITY HIGH DIVIDEND INDEX	S&P U.S. PREFERRED STOCK INDEX	S&P 500	S&P U.S. AGGREGATE BOND INDEX
U.S. Credit Downgrade (April-September 2011)	-1.0	-6.2	-13.8	5.9
Fed Taper Tantrum (May-December 2013)	-1.6	-4.4	17.4	-2.6
Correction After Recession Worry (July-December 2016)	-1.2	-3.0	7.8	-2.3

Source: S&P Dow Jones Indices LLC. Data as of May 31, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

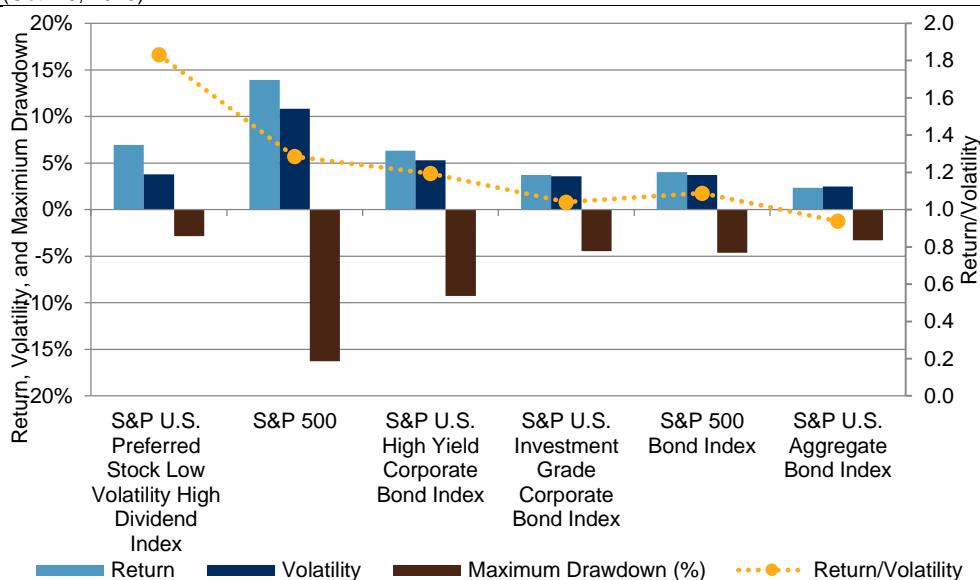
Performance Comparison Within the Multi-Asset Framework

In this section, we compare the S&P U.S. Preferred Stock Low Volatility High Dividend Index with common stocks and bonds. Exhibit 8 shows that the S&P U.S. Preferred Stock Low Volatility High Dividend Index delivered higher return than high-yield corporate bonds with similar volatility levels to investment-grade bonds. Over investment horizons of three or more years, the S&P U.S. Preferred Stock Low Volatility High Dividend Index had a higher return-to-volatility ratio than stocks and bonds, while its maximum drawdown was less severe.

Exhibit 8: Performance Comparison With Common Stocks and Bonds

PERIOD	S&P U.S. PREFERRED STOCK LOW VOLATILITY HIGH DIVIDEND INDEX	S&P 500	S&P U.S. HIGH YIELD CORPORATE BOND INDEX	S&P U.S. INVESTMENT GRADE CORPORATE BOND INDEX	S&P 500 BOND INDEX	S&P U.S. AGGREGATE BOND INDEX
ANNUAL RETURN (%)						
1-Year	3.8	14.4	2.3	0.0	0.0	-0.3
3-Year	5.1	11.0	4.6	2.3	2.6	1.3
5-Year	6.2	13.0	4.6	2.8	3.1	1.8
Since Inception (Oct. 15, 2010)	7.0	13.9	6.3	3.7	4.0	2.3
ANNUAL VOLATILITY (%)						
1-Year	2.9	8.6	2.1	2.5	2.6	2.0
3-Year	3.2	10.3	5.5	3.3	3.5	2.4
5-Year	3.4	9.9	5.1	3.5	3.6	2.5
Since Inception (Oct. 15, 2010)	3.8	10.8	5.3	3.6	3.7	2.5
RETURN/VOLATILITY						
1-Year	1.29	1.67	1.08	-0.01	-0.01	-0.13
3-Year	1.59	1.07	0.84	0.70	0.74	0.52
5-Year	1.81	1.32	0.90	0.82	0.85	0.71
Since Inception (Oct. 15, 2010)	1.83	1.28	1.19	1.04	1.09	0.94
MAXIMUM DRAWDOWN (%)						
Since Inception (Oct. 15, 2010)	-2.8	-16.3	-9.3	-4.5	-4.6	-3.3

The S&P U.S. Preferred Stock Low Volatility High Dividend Index delivered higher return than high-yield corporate bonds with similar volatility levels to investment-grade bonds.



Source: S&P Dow Jones Indices LLC. Data from October 2010 to May 2018. Past performance is no guarantee of future results. Chart and table are provided for illustrative purposes and reflect hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Historically, the S&P U.S. Preferred Stock Low Volatility High Dividend Index has shown some correlation with equities and bonds, at 0.41 and 0.37, respectively (see Exhibit 9). Given the relatively low correlation, preferred stocks could offer some diversification benefits with equities and bonds.

Exhibit 9: Correlations of Monthly Returns

INDEX	S&P U.S. PREFERRED STOCK INDEX	S&P 500	S&P U.S. AGGREGATE BOND INDEX
S&P U.S. Preferred Stock Low Volatility High Dividend Index	0.93	0.41	0.37

Source: S&P Dow Jones Indices LLC. Data from October 2010 to May 2018. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

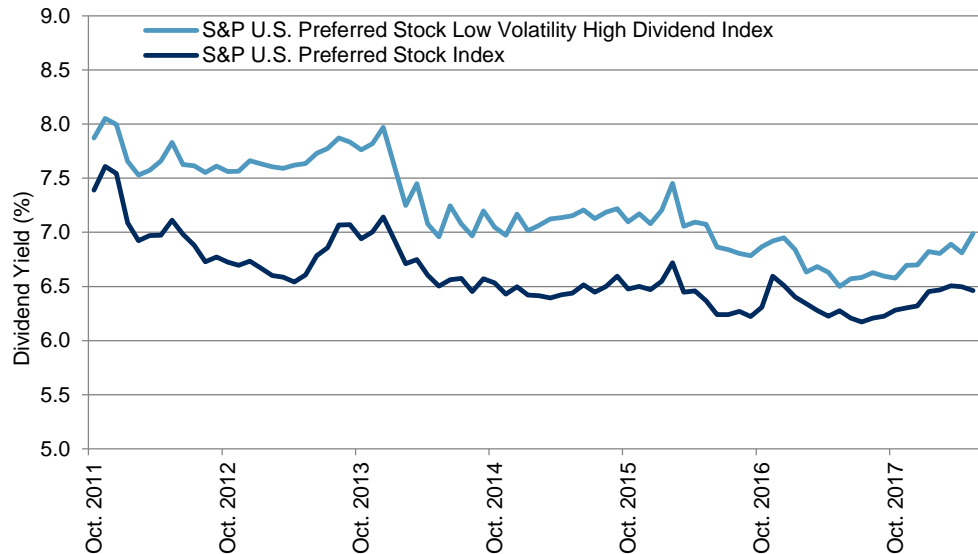
S&P U.S. PREFERRED STOCK LOW VOLATILITY HIGH DIVIDEND INDEX CHARACTERISTICS

Dividend Yield

The S&P U.S. Preferred Stock Low Volatility High Dividend Index has offered higher dividend yield than the S&P U.S. Preferred Stock Index since its inception. Historically, the dividend yield difference ranged between 0.21% and 1.10%, with a median value of 0.63% (see Exhibit 10).

The S&P U.S. Preferred Stock Low Volatility High Dividend Index offered an increase in dividend yield over the preferred universe, ranging between 0.21% and 1.10%, historically.

Exhibit 10: Dividend Yield



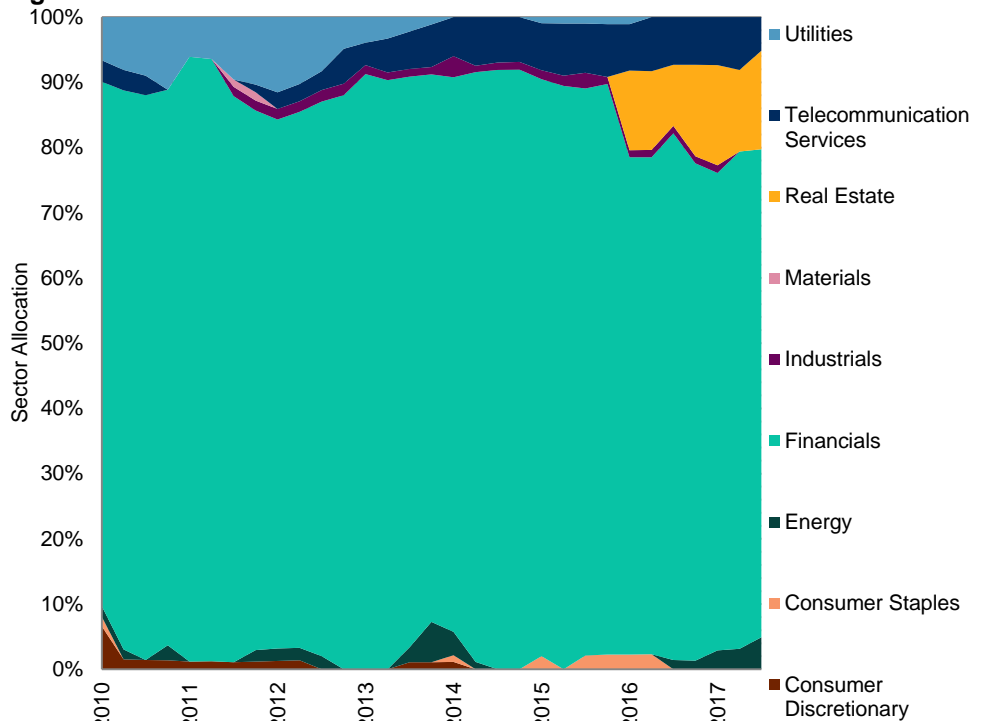
Source: S&P Dow Jones Indices LLC. Data from October 2011 to May 2018. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Sector Allocation

The U.S. preferred stock market is dominated by the financials sector; on average, the sector has made up 82% of the S&P U.S. Preferred Stock Index's weight since 2010. Similarly, the S&P U.S. Preferred Stock Low Volatility High Dividend Index had an 85% weight in financials (see Exhibit 11). However, the S&P U.S. Preferred Stock Low Volatility High Dividend Index also historically showed active sector over- and underweights compared with the underlying index (see Exhibit 12).

The S&P U.S. Preferred Stock Low Volatility High Dividend Index historically showed active sector over- and underweights compared with the underlying index.

Exhibit 11: Sector Allocation of the S&P U.S. Preferred Stock Low Volatility High Dividend Index



Source: S&P Dow Jones Indices LLC. Data from October 2010 to April 2018. Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Exhibit 12: Sector Overweights and Underweights of the S&P U.S. Preferred Stock Low Volatility High Dividend Index Versus the S&P U.S. Preferred Stock Index

DATE	CONSUMER DISCRETIONARY	CONSUMER STAPLES	ENERGY	FINANCIALS	HEALTH CARE	INDUSTRIALS	INFORMATION TECHNOLOGY	MATERIALS	REAL ESTATE	TELECOM-MUNICATION SERVICES	UTILITIES
Oct. 18, 2010	1	0	0	-5	0	-2	0	0	0	2	4
Jan. 24, 2011	-7	-1	0	5	0	-3	0	-1	0	2	5
April 18, 2011	-4	-1	-1	3	0	-3	0	-1	0	2	6
July 18, 2011	-5	0	1	2	0	-3	0	-1	0	-2	8
Oct. 24, 2011	-5	0	-1	10	0	-4	0	-1	0	-2	3
Jan. 23, 2012	-4	0	-1	8	0	-4	0	-1	0	-2	3
April 23, 2012	-2	0	-1	0	0	-2	0	1	0	-1	6
July 23, 2012	-2	0	1	-3	0	-2	0	1	0	-1	6
Oct. 22, 2012	-2	0	1	-5	0	-2	0	0	0	1	8
Jan. 22, 2013	-2	0	1	-5	0	0	0	0	0	1	6
April 22, 2013	-3	0	1	0	0	0	0	-1	0	1	4
July 22, 2013	-4	0	-2	4	0	0	0	-2	0	3	1
Oct. 21, 2013	-4	0	-1	6	0	0	0	-2	0	1	0
Jan. 21, 2014	-1	0	-1	3	0	-1	0	-2	0	2	-1
April 21, 2014	1	-1	1	0	0	-1	0	-2	0	3	-2
July 21, 2014	1	-1	5	-5	0	-1	0	-2	0	4	-2
Oct. 20, 2014	1	0	2	-3	0	1	0	-2	0	4	-3
Jan. 20, 2015	0	-1	0	2	0	-1	0	-2	0	5	-3
April 20, 2015	0	-1	-2	8	-3	-1	0	-2	0	4	-3
July 20, 2015	0	-1	-2	9	-3	-1	0	-1	0	3	-3
Oct. 19, 2015	0	1	-1	5	-3	-1	0	-1	0	3	-2
Jan. 19, 2016	0	-1	-1	5	-3	-1	0	0	0	4	-2
April 18, 2016	0	1	-2	3	-2	0	0	-1	0	4	-2
July 18, 2016	0	1	-3	4	-2	-1	0	-1	0	4	-2
Oct. 24, 2016	0	1	-3	4	-2	-1	0	-1	1	4	-2
Jan. 23, 2017	0	1	-3	4	-2	-1	0	-1	1	5	-3
April 24, 2017	0	-2	-1	8	-3	-1	0	-1	-1	4	-4
July 24, 2017	0	-2	-1	5	-4	-2	0	0	4	5	-3
Oct. 23, 2017	0	-2	0	1	-4	-1	0	0	4	5	-2
Jan. 23, 2018	0	1	0	3	-4	-3	0	0	0	6	-2
April 20, 2018	0	3	1	-2	-2	-2	0	0	3	3	-4

Source: S&P Dow Jones Indices LLC. Data from October 2010 to April 2018. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Quality and Coupon Type Breakdown

Exhibit 13 shows the allocation comparison of investment-grade and fixed-coupon preferred stocks in the S&P U.S. Preferred Stock Low Volatility High Dividend Index and the underlying index. Compared with the S&P U.S. Preferred Stock Index, the S&P U.S. Preferred Stock Low Volatility High Dividend Index was underweight in investment-grade preferred stocks and overweight in fixed-coupon preferred stocks.

Compared with the S&P U.S. Preferred Stock Index, the S&P U.S. Preferred Stock Low Volatility High Dividend Index was underweight in investment-grade preferred stocks and overweight in fixed-coupon preferred stocks.

OCTOBER REBALANCE	WEIGHT OF INVESTMENT-GRADE PREFERRED STOCKS (%)		WEIGHT OF FIXED-COUPON PREFERRED STOCKS (%)	
	S&P U.S. PREFERRED STOCK LOW VOLATILITY HIGH DIVIDEND INDEX	S&P U.S. PREFERRED STOCK INDEX	S&P U.S. PREFERRED STOCK LOW VOLATILITY HIGH DIVIDEND INDEX	S&P U.S. PREFERRED STOCK INDEX
2010	53	61	90	87
2011	49	57	86	85
2012	32	41	96	87
2013	28	38	96	84
2014	24	38	92	79
2015	28	42	87	80
2016	36	45	89	79
2017	24	44	92	76

Source: S&P Dow Jones Indices LLC. Data from October 2010 to October 2017. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

CONCLUSION

A high-dividend investment strategy could be particularly useful to improve the return profile of a U.S. preferred stock portfolio, given the fact that dividend income has historically been a major driver of total return for U.S. preferred stocks. To reduce return volatility, a low volatility factor can be added to the selection process of the high-dividend investment strategy. The S&P U.S. Preferred Stock Low Volatility High Dividend Index implements such a strategy and is designed to measure the performance of high-dividend-yielding preferred stocks among the historically least volatile constituents of the S&P U.S. Preferred Stock Index. Back-tested results showed that the incorporation of low volatility and yield screening of a universe of preferred stocks can result in lower volatility and higher dividend yield.

S&P DJI RESEARCH CONTRIBUTORS		
Sunjiv Mainie, CFA, CQF	Global Head	sunjiv.mainie@spglobal.com
Jake Vukelic	Business Manager	jake.vukelic@spglobal.com
GLOBAL RESEARCH & DESIGN		
AMERICAS		
Aye M. Soe, CFA	Americas Head	aye.soe@spglobal.com
Phillip Brzenk, CFA	Director	phillip.brzenk@spglobal.com
Smita Chirputkar	Director	smita.chirputkar@spglobal.com
Rachel Du	Senior Analyst	rachel.du@spglobal.com
Bill Hao	Director	wenli.hao@spglobal.com
Qing Li	Director	qing.li@spglobal.com
Berlinda Liu, CFA	Director	berlinda.liu@spglobal.com
Maria Sanchez	Associate Director	maria.sanchez@spglobal.com
Kelly Tang, CFA	Director	kelly.tang@spglobal.com
Hong Xie, CFA	Director	hong.xie@spglobal.com
APAC		
Priscilla Luk	APAC Head	priscilla.luk@spglobal.com
Utkarsh Agrawal, CFA	Associate Director	utkarsh.agrawal@spglobal.com
Akash Jain	Associate Director	akash.jain@spglobal.com
Liyu Zeng, CFA	Director	liyu.zeng@spglobal.com
EMEA		
Sunjiv Mainie, CFA, CQF	EMEA Head	sunjiv.mainie@spglobal.com
Leonardo Cabrer, PhD	Senior Analyst	leonardo.cabrer@spglobal.com
Andrew Cairns	Senior Analyst	andrew.cairns@spglobal.com
Andrew Innes	Associate Director	andrew.innes@spglobal.com
INDEX INVESTMENT STRATEGY		
Craig J. Lazzara, CFA	Global Head	craig.lazzara@spglobal.com
Fei Mei Chan	Director	feimei.chan@spglobal.com
Tim Edwards, PhD	Managing Director	tim.edwards@spglobal.com
Anu R. Ganti, CFA	Director	anu.ganti@spglobal.com
Hamish Preston	Senior Associate	hamish.preston@spglobal.com
Howard Silverblatt	Senior Index Analyst	howard.silverblatt@spglobal.com

PERFORMANCE DISCLOSURE

The S&P U.S. Preferred Stock Index was launched on September 15, 2006. The S&P U.S. Preferred Stock Low Volatility High Dividend Index was launched on April 16, 2018. The S&P Fixed Rate Preferred Stock Index, S&P U.S. Floating Rate Preferred Stock Index, and S&P U.S. Variable Rate Preferred Stock Index were launched on October 25, 2013. The S&P U.S. Investment Grade Preferred Stock Index, S&P U.S. High Yield Preferred Stock Index, and S&P U.S. Not Rated Preferred Stock Index were launched on July 21, 2014. The S&P U.S. High Quality Preferred Stock Index was launched on December 28, 2015. The S&P U.S. High Yield Corporate Bond Index was launched on December 15, 2016. The S&P 500 Bond Index was launched on July 8, 2015. The S&P U.S. Investment Grade Corporate Bond Index was launched on July 31, 2017. The S&P U.S. Aggregate Bond Index was launched on July 15, 2014. All information presented prior to an index's Launch Date is hypothetical (back-tested), not actual performance. The back-test calculations are based on the same methodology that was in effect on the index Launch Date. Complete index methodology details are available at www.spdji.com.

S&P Dow Jones Indices defines various dates to assist our clients in providing transparency. 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 the Index is set at a fixed value for calculation purposes. The Launch Date designates the date upon which the values of an 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 the company'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.

Past performance of the Index is not an indication of future results. Prospective application of the methodology used to construct the Index 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. Please refer to the methodology paper for the Index, available at www.spdji.com for more details about the 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 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 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 or investment funds that are intended to track the performance of the Index. 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).

GENERAL DISCLAIMER

Copyright © 2018 S&P Dow Jones Indices LLC. All rights reserved. STANDARD & POOR'S, S&P, S&P 500, S&P 500 LOW VOLATILITY INDEX, S&P 100, S&P COMPOSITE 1500, S&P MIDCAP 400, S&P SMALLCAP 600, S&P GIVI, GLOBAL TITANS, DIVIDEND ARISTOCRATS, S&P TARGET DATE INDICES, GICS, SPIVA, SPDR and INDEXOLOGY 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 or reproduction in whole or in part are prohibited without written permission of S&P Dow Jones Indices LLC. This document does not constitute an offer of services in jurisdictions where S&P Dow Jones Indices LLC, S&P, Dow Jones or their respective affiliates (collectively "S&P Dow Jones Indices") do not have the necessary licenses. Except for certain custom index calculation services, 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 and providing custom calculation services. Past performance of an index is not an indication or guarantee of future results.

It is not possible to invest directly in an index. Exposure to an asset class represented by an index may be 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.

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.

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.