

The Beauty of Simplicity: The S&P 500[®] Low Volatility High Dividend Index

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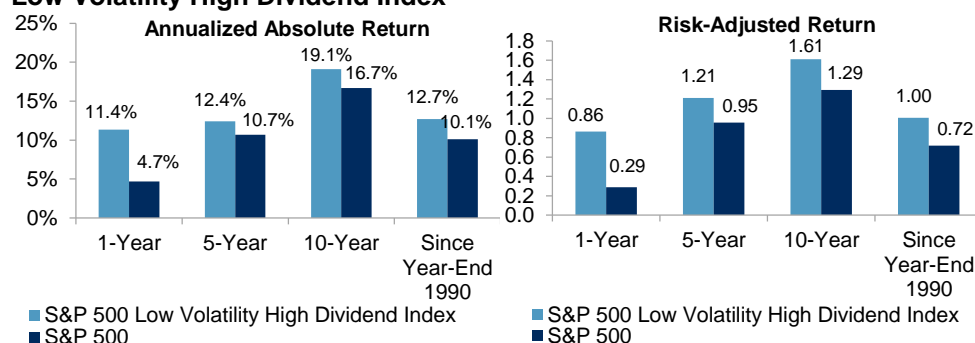
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EXECUTIVE SUMMARY

We take an in-depth look at the [S&P 500 Low Volatility High Dividend Index](#), examining how the simple, two-step constituent screening methodology captures the benefit of high dividend and low volatility strategies to achieve higher dividend yield and better risk-adjusted returns than other S&P Dow Jones Dividend Indices that use multiple dividend and fundamental quality screens.

- The low volatility screen acted as a quality measure to avoid high-yield stocks with sharp price drops and captured the low volatility factor for the S&P 500 Low Volatility High Dividend Index.
- The S&P 500 Low Volatility High Dividend Index historically delivered a higher absolute and risk-adjusted return than the [S&P 500](#) from December 1990 to February 2019.
- The index outperformed the S&P 500 73% of the time in down markets and underperformed 61% of the time in up markets. However, the level of outperformance in down markets was more pronounced than the level of underperformance in up markets.
- Compared with other S&P Dow Jones Dividend Indices in the U.S., the S&P 500 Low Volatility High Dividend Index achieved higher dividend yield and risk-adjusted returns historically.

Exhibit 1: Absolute and Risk-Adjusted Return of the S&P 500 and S&P 500 Low Volatility High Dividend Index



Source: S&P Dow Jones Indices LLC. Data as of Feb. 28, 2019. Index performance based on total return in USD. 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.

1. INTRODUCTION

With the S&P 500 Low Volatility High Dividend Index marking six and half years since its launch, we reexamined the advantage of incorporating a low volatility screen to a high-dividend-yield portfolio as a quality measure, and we compared the S&P 500 Low Volatility High Dividend Index to other S&P Dow Jones Dividend Indices in the U.S. market across various aspects such as sector composition, dividend yield, and historical return, among others.

Dividend investment strategies have inspired widespread academic research, and they have been adopted extensively by market participants. In response to the demand for benchmarks in this investment arena, S&P Dow Jones Indices offers a series of dividend strategy indices that are each designed to meet specific needs.

The [Dow Jones U.S. Select Dividend Index](#) is designed to measure U.S. companies that pay high dividends with sustainable dividend growth and payout ratios. The [S&P High Yield Dividend Aristocrats®](#) and the [S&P 500 Dividend Aristocrats](#) are designed to measure the performance of companies within the [S&P Composite 1500®](#) and the S&P 500 that have consistently increased dividends over the past 20 and 25 years, respectively. The [Dow Jones U.S. Dividend 100 Index](#) seeks to measure the performance of the highest-yielding U.S. companies with a consistent dividend payment history and robust financial strength. The [S&P 500 High Dividend Index](#) is designed to track S&P 500 members that offer high dividend yield.

In September 2012, S&P Dow Jones Indices launched the S&P 500 Low Volatility High Dividend Index, which is a unique, rules-based, dividend strategy index that is designed to deliver high dividend yield and low return volatility in a single index. The index uses a simple, two-step screening process to incorporate not only high dividend yield, but also the well-known low volatility strategy.

We first published this paper in October 2013 to share our analysis on the benefit of combining low volatility and high-dividend strategies in a single index. We concluded that simply excluding high volatility stocks from a high-dividend-yield portfolio may improve portfolio return on a risk-adjusted basis, and the S&P 500 Low Volatility High Dividend Index has achieved higher dividend yield and better risk-adjusted returns than other S&P Dow Jones Dividend Indices that use dividend history criteria and multiple fundamental quality screens.

The S&P 500 Low Volatility High Dividend Index incorporates high dividend yield and low volatility strategy...

...and has achieved higher dividend yield and better risk-adjusted returns than other S&P Dow Jones Dividend Indices.

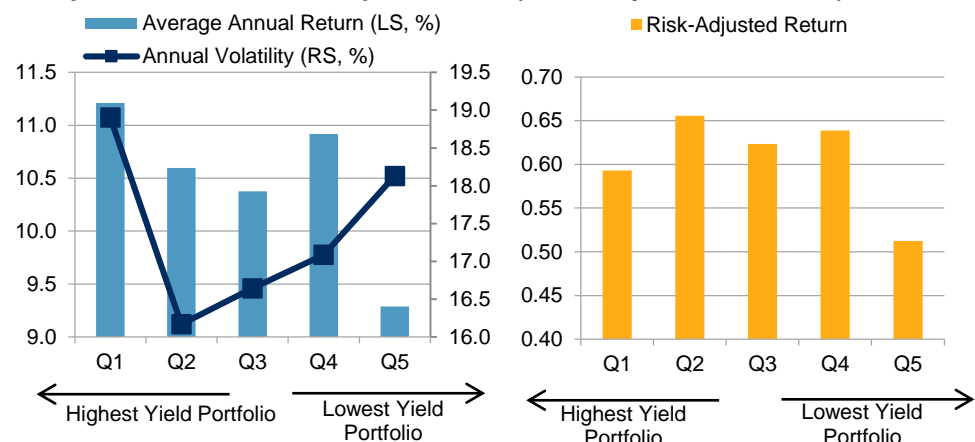
2. LOW VOLATILITY MEETS HIGH DIVIDEND YIELD IN THE S&P 500 LOW VOLATILITY HIGH DIVIDEND INDEX

2.1. Performance of High-Dividend-Yielding Stocks with Different Volatilities

To study the return characteristics of high-dividend-yield equities in the U.S., we divided the companies in the S&P Composite 1500 that paid dividends into hypothetical quintile portfolios sorted by dividend yield, and we measured their historical returns and volatility. All of the quintile portfolios were rebalanced annually in December based on historical dividend yield, and portfolio stocks were equally weighted. Based on the monthly total returns between year-end 1994 and year-end 2018, the highest-yielding quintile portfolio (Q1) delivered the best annualized return but with a much higher volatility than the lower-yielding quintile portfolios (Q2, Q3, Q4, and Q5). As a result, the highest-yielding quintile portfolio did not deliver better returns after adjusting for risk (see Exhibit 2).

The high volatility of the highest-yielding portfolio could be attributed to the inclusion of high-yield stocks.

Exhibit 2: Historical Average Annual Return, Annual Volatility, and Risk-Adjusted Return of the Quintile Portfolios from the Dividend-Paying Companies in the S&P Composite 1500 (Sorted by Dividend Yield)



Since dividend yield increases when price decreases...

Portfolios shown are hypothetical.

Source: S&P Dow Jones Indices LLC. Data based on hypothetical quintile portfolio returns between year-end 1994 and year-end 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.

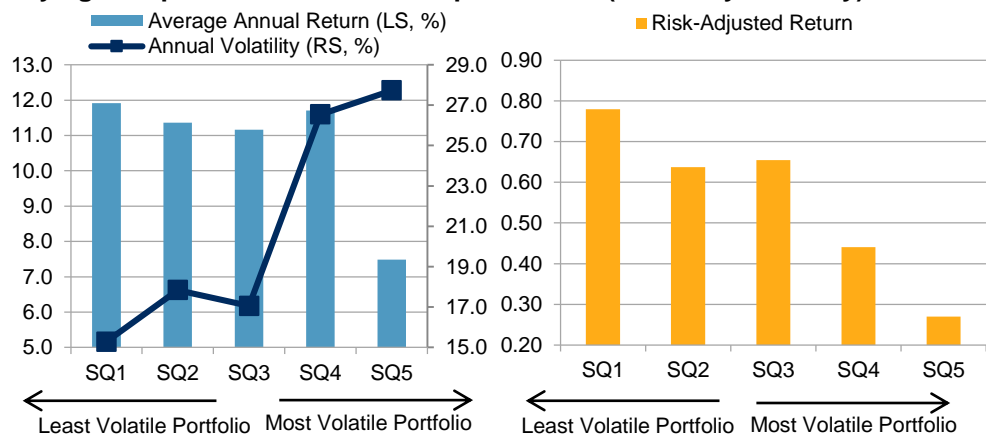
...any negative company/industry occurrence that causes a sharp price decrease would drive up the stock's dividend yield.

The high volatility of the highest-yielding quintile portfolio (Q1) could be attributed to the inclusion of high-yield stocks that have had a depressed stock price. Since dividend yield increases when price decreases, any negative company or industry occurrence that causes a sharp price decrease would drive up the stock's dividend yield. These stocks tend to be more sensitive to news announcements and have more volatile price movements, which could contribute to the high level of volatility in the highest-yielding quintile portfolio (Q1). Since a sharp price drop would also drive up a stock's historical volatility, excluding high volatility stocks from the high-yield portfolio may help to avoid the effects of price shocks.

Higher volatility, high-yield portfolios underperformed the lower volatility, high-yield portfolios on a risk-adjusted basis...

To further examine the performance of high-dividend-yielding stocks with different volatilities, we divided the highest-yielding quintile portfolio (Q1) into five hypothetical, volatility-sorted quintile subportfolios and measured their returns. All volatility subportfolios were rebalanced annually in December based on their historical 252-day return volatility, and all portfolio stocks were equally weighted. The result showed that portfolios with historically high volatility (SQ4 and SQ5) had more volatile returns in the year after the portfolios were formed. Historically, the higher volatility, high-yield portfolios (SQ4 and SQ5) underperformed the lower volatility, high-yield portfolios (SQ1, SQ2, and SQ3) on a risk-adjusted basis (see Exhibit 3). This result is consistent with the well-documented low volatility anomaly, whereby high volatility stocks tend to underperform low volatility stocks on a risk-adjusted basis. This result also implies that simply excluding high volatility stocks from a high-dividend-yield portfolio may improve portfolio return on a risk-adjusted basis.

Exhibit 3: Historical Average Annual Return, Annual Volatility, and Risk-Adjusted Return of the High-Yield Quintile Subportfolios from the Dividend-Paying Companies of the S&P Composite 1500 (Sorted by Volatility)



...which means that excluding high volatility stocks from a high-dividend-yield portfolio may improve performance...

Portfolios shown are hypothetical.

Source: S&P Dow Jones Indices LLC. Data based on hypothetical quintile subportfolio returns between year-end 1994 and year-end 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.

2.2. Adapting the Low Volatility Strategy to a High-Dividend-Yielding Portfolio

...and the S&P 500 Low Volatility High Dividend Index exploits this advantage.

The S&P 500 Low Volatility High Dividend Index exploited the advantage of excluding high volatility stocks from a high-dividend-yield portfolio, rather than using fundamental measures like company's earnings or dividend growth to filter high dividend stocks. The S&P 500 Low Volatility High Dividend Index selects its members based on two simple screens—volatility and dividend yield. The index is formed by first selecting the 75 companies in the S&P 500 with the highest historical dividend yield. Then, the 50 highest-yielding stocks with the lowest historical volatility are added to the index.

To demonstrate the value added by combining the low volatility and high-dividend-yield screens, we created three hypothetical high dividend portfolios and measured their historical returns from January 1990 to February 2019.

The 75-stock/high-yield portfolio outperformed the S&P 500 by 2.1% per year...

1. High-yield portfolio: 75 stocks from the S&P 500 with the highest dividend yield.
2. Low volatility/high-yield portfolio: 50 lowest volatility stocks selected from the high-yield portfolio.
3. High volatility/high-yield portfolio: 25 highest volatility stocks selected from the high-yield portfolio.

All portfolios were semiannually rebalanced in January and July, and all portfolio members were equally weighted (see Exhibit 4).

...but with high volatility and a greater maximum drawdown.

Exhibit 4: Risk/Return Summary of the Hypothetical High Dividend Portfolios

PERIOD	75-STOCK/ HIGH-YIELD PORTFOLIO	50-STOCK/LOW VOLATILITY/HIGH- YIELD PORTFOLIO	25-STOCK/HIGH VOLATILITY/HIGH- YIELD PORTFOLIO	S&P 500
ANNUALIZED RETURN (%)				
1-Year	6.0	10.8	-4.4	4.7
5-Year	10.3	12.3	5.6	10.7
10-Year	20.6	19.0	23.7	16.7
Since January 1990	12.0	12.1	11.3	9.9
ANNUALIZED VOLATILITY (%)				
1-Year	14.7	13.4	19.1	16.2
5-Year	10.8	10.0	17.8	11.2
10-Year	14.0	11.5	23.9	12.9
Since January 1990	14.9	12.6	22.9	14.2
RISK-ADJUSTED RETURN				
1-Year	0.41	0.80	-0.23	0.29
5-Year	0.95	1.23	0.32	0.95
10-Year	1.47	1.65	0.99	1.29
Since January 1990	0.81	0.97	0.49	0.70
12-MONTH MAXIMUM DRAWDOWN (%)				
Since January 1990	-48.8	-39.3	-68.8	-46.4

Whereas the 50-stock/low volatility/high-yield portfolio had similar returns...

...but with 16% less volatility and a smaller 12-month maximum drawdown.

Portfolios shown are hypothetical.

Source: S&P Dow Jones Indices LLC. Data based on hypothetical portfolio returns between January 1990 and February 2019. 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.

Over the entire period studied, the 75-stock/high-yield portfolio outperformed the S&P 500 by 2.1% per year, but with higher return volatility and a greater 12-month maximum drawdown. With the addition of the low volatility screen, the 50-stock/low volatility/high-yield portfolio achieved

The low volatility screen acted as a quality measure and captured the low volatility factor.

similar annualized return as the 75-stock/high-yield portfolio, but with 16% less volatility and a smaller 12-month maximum drawdown. In contrast, the 25-stock/high volatility/high-yield portfolio was 83% more volatile and had a much greater 12-month maximum drawdown than the 50-stock/low volatility/high-yield portfolio, but the higher risk was not compensated with higher absolute returns. Of the three hypothetical portfolios, the 50-stock/low volatility/high-yield portfolio delivered the highest risk-adjusted return and had the most pronounced maximum drawdown reduction compared with the S&P 500. This result demonstrates the potential benefit of combining the low volatility and high-dividend-yield screens in constructing a high dividend index.

The simple low volatility screen not only acted as a quality measure to avoid including high-yield stocks with sharp price drops, it also captured the low volatility factor, which has delivered persistent risk-adjusted outperformance historically.

3. PORTFOLIO AND RETURN CHARACTERISTICS OF THE S&P 500 LOW VOLATILITY HIGH DIVIDEND INDEX

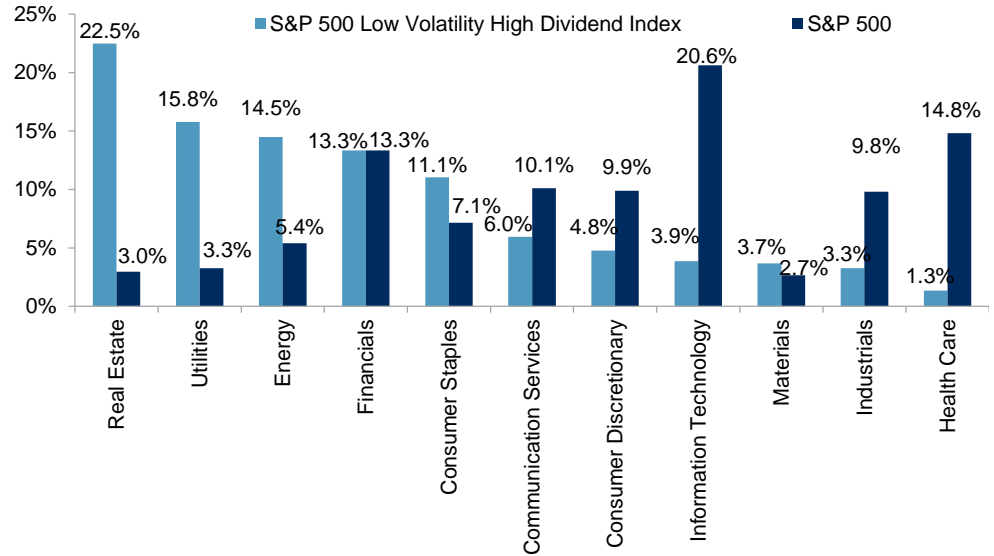
3.1. Sector Exposure

The S&P 500 Low Volatility High Dividend Index is diversified in sectors, but sector bias exists compared to the S&P 500.

The S&P 500 Low Volatility High Dividend Index is diversified in sectors, but sector bias exists compared to the S&P 500 due to the concentration gradient of high-dividend-yielding stocks in different sectors. As of month-end February 2019, the S&P 500 Low Volatility High Dividend Index had higher concentrations in the Real Estate and Utilities sectors in terms of absolute weight and relative to the S&P 500, since companies from these sectors have historically paid higher dividends. In contrast, the index had much lower weighting in the Information Technology, Health Care, and Industrials sectors than the S&P 500 (see Exhibit 5).

Exhibit 5: Sector Weights of the S&P 500 and the S&P 500 Low Volatility High Dividend Index

The S&P 500 Low Volatility High Dividend Index had higher concentrations in Real Estate and Utilities...

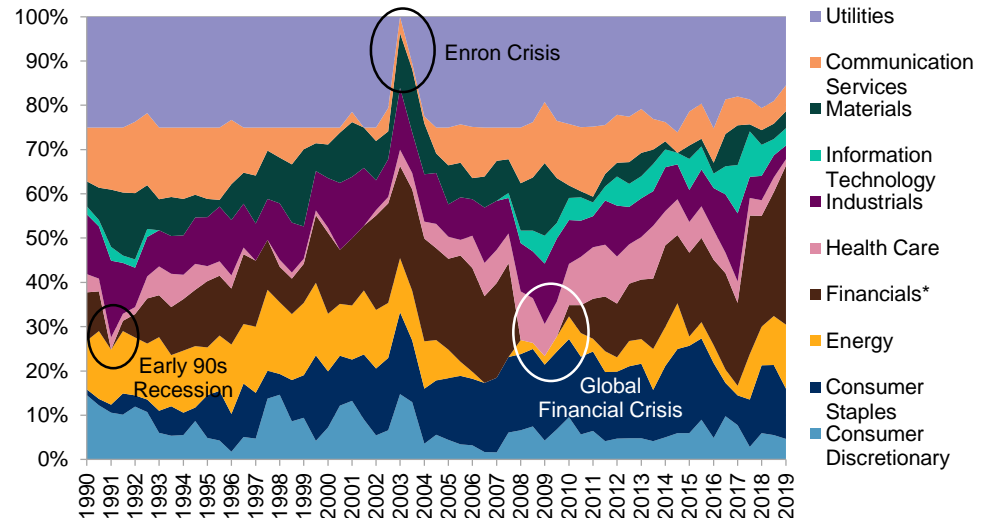


Source: S&P Dow Jones Indices LLC. Data as of Feb. 28, 2019. Chart is provided for illustrative purposes.

The sector allocation of the S&P 500 Low Volatility High Dividend Index has changed more dynamically than that of a typical high-dividend-yield strategy due to its low volatility screen. The weighting of the Financials sector was reduced to zero during the recession of the early 1990s and the global financial crisis in 2008-2009, as these were times when Financials stocks experienced high volatility and severe price drops. Utilities stocks were also completely excluded from the index during the Enron crisis in early 2003, when most Utilities stocks were unusually volatile (see Exhibit 6).

...and its sector allocation has changed more dynamically than that of other high-dividend-yield strategies.

Exhibit 6: Historical Sector Weight of the S&P 500 Low Volatility High Dividend Index



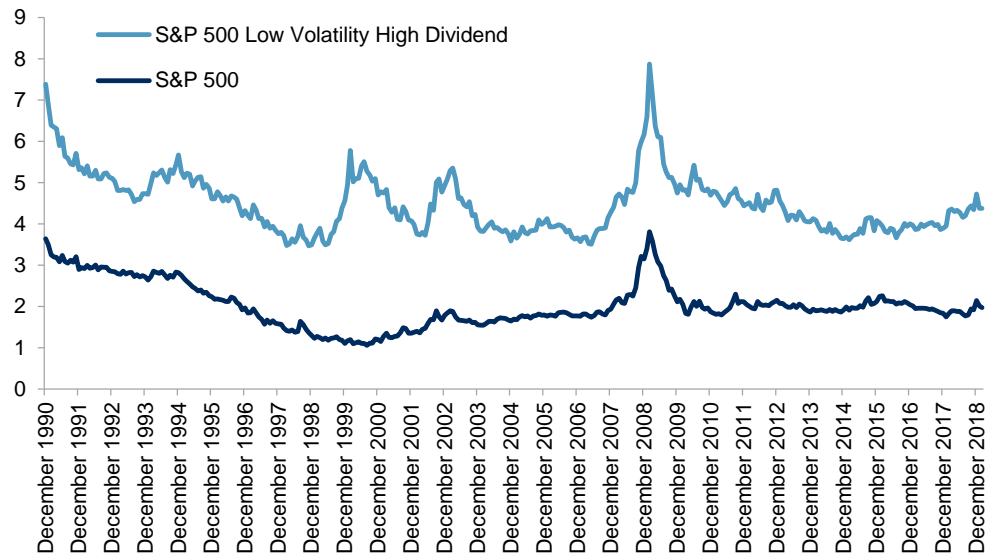
*Financials incorporates both the Financials and Real Estate sectors in this chart.
 Source: S&P Dow Jones Indices LLC, Trucost Plc. Data as of Jan. 31, 2019. Chart is provided for illustrative purposes.

3.2. Dividend Yield

The S&P 500 Low Volatility High Dividend Index has historically offered a high dividend yield. From December 1990 to February 2019, the index had a long-term median dividend yield of 4.4% and stayed above 3.5%—much higher than the S&P 500, which had a long-term median dividend yield of 1.9% and a maximum yield of 3.8% during the same period. Historically, the dividend yield gap between the two indices has ranged from 1.6% to as high as 4.6%, with a median value of 2.4% (see Exhibit 7).

The index had a median dividend yield of 4.4% and stayed above 3.5%—much higher than the S&P 500...

Exhibit 7: Historical Dividend Yield of the S&P 500 and S&P 500 Low Volatility High Dividend Index



Source: S&P Dow Jones Indices LLC. Data as of Feb. 28, 2019. 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.

...which had a median dividend yield of 1.9% and a maximum yield of 3.8%.

3.3. Historical Performance

Based on total return performance from year-end 1990 through month-end February 2019, the S&P 500 Low Volatility High Dividend Index outperformed the S&P 500 by 2.6% annually, with a 10.4% volatility reduction and smaller maximum drawdown in the total return. The index delivered a higher risk-adjusted return than the S&P 500 for the entire back-tested history. Even based on price returns excluding the compounding effect of dividend income, the S&P 500 Low Volatility High Dividend Index delivered slightly better risk-adjusted returns than the S&P 500 for the entire back-tested history, with lower volatility and reduced maximum drawdown (see Exhibit 8).

Exhibit 8: Return/Risk Summary of the S&P 500 and S&P 500 Low Volatility High Dividend Index

PERIOD	PRICE RETURN		TOTAL RETURN	
	S&P 500 LOW VOLATILITY HIGH DIVIDEND INDEX	S&P 500	S&P 500 LOW VOLATILITY HIGH DIVIDEND INDEX	S&P 500
ANNUALIZED RETURN (%)				
1-Year	6.4	2.6	11.4	4.7
5-Year	7.8	8.4	12.4	10.7
10-Year	13.8	14.2	19.1	16.7
Since Year-End 1990	7.6	7.9	12.7	10.1
ANNUALIZED VOLATILITY (%)				
1-Year	13.2	16.2	13.2	16.2
5-Year	10.2	11.1	10.2	11.2
10-Year	11.8	12.9	11.9	12.9
Since Year-End 1990	12.6	14.1	12.7	14.1
RISK-ADJUSTED RETURN (%)				
1-Year	0.49	0.16	0.86	0.29
5-Year	0.76	0.75	1.21	0.95
10-Year	1.17	1.11	1.61	1.29
Since Year-End 1990	0.61	0.56	1.00	0.72
12-MONTH MAXIMUM DRAWDOWN (%)				
Since Year-End 1990	-41.4	-47.5	-38.8	-46.4

The S&P 500 Low Volatility High Dividend Index outperformed the S&P 500 by 2.6% annually...

...with a 10.4% volatility reduction and smaller maximum drawdown in the total return.

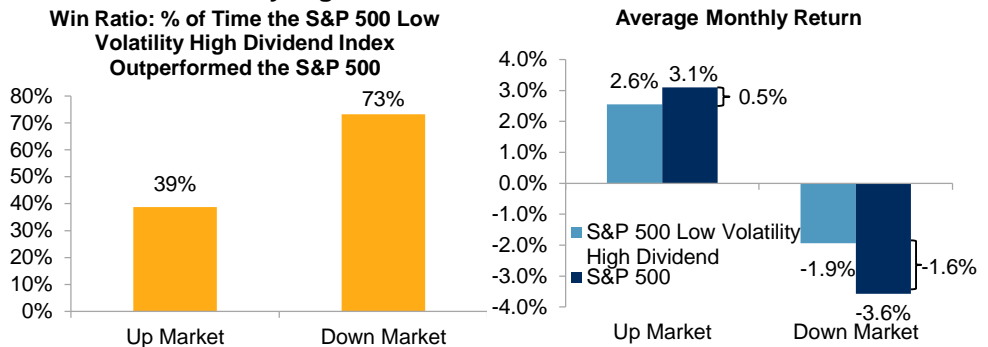
It delivered a higher risk-adjusted return than the S&P 500 for the entire back-tested history.

Source: S&P Dow Jones Indices LLC. Data as of Feb. 28, 2019. 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.

As the S&P 500 Low Volatility High Dividend Index has had less volatile performance than the S&P 500, it is expected to provide a level of downside reduction during bear markets at the cost of underperforming in bull markets. Based on monthly total returns starting at year-end 1990, the S&P 500 Low Volatility High Dividend Index outperformed the S&P 500 73% of the time during down markets, but it underperformed 61% of the time during up markets. As the level of underperformance during up markets (0.5%) was much less than the level of outperformance during down markets (1.7%), the S&P 500 Low Volatility High Dividend Index outperformed the S&P 500 over the long term (see Exhibit 9).

Exhibit 9: Capture Ratios and Average Monthly Return of the S&P 500 and S&P 500 Low Volatility High Dividend Index Since 1990

The level of underperformance during up markets was less than the level of outperformance during down markets.



Source: S&P Dow Jones Indices LLC. Data as of Feb. 28, 2019. 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.

4. COMPARISON WITH OTHER S&P DOW JONES DIVIDEND INDICES

Finally, we compare the S&P 500 Low Volatility High Dividend Index to other S&P Dow Jones Dividend Indices focused on the U.S. For readers who are also interested in how the S&P 500 Low Volatility High Dividend Index is different from the [S&P 500 Low Volatility Index](#), please see the Appendix.

4.1. Index Objectives and Stock-Selection Mechanisms

Quality measures can help market participants interested in dividend strategies avoid dividend yield traps.

Besides screening for high-dividend-yielding stocks, quality measures can help market participants interested in dividend strategies to avoid dividend yield traps.¹ Historical dividend policy, dividend growth, dividend payout ratios, and other fundamental ratios that measure companies' earnings and financial strengths are commonly employed in dividend strategies.

For example, the S&P 500 Dividend Aristocrats and the S&P High Yield Dividend Aristocrats emphasize consistent dividend history rather than high dividend yield in their stock-selection criteria. The indices only include companies that follow a dividend policy of increasing dividends consistently for the past 25 or 20 years, respectively. Dividend yield is not part of their stock-selection criteria. The Dow Jones U.S. Dividend 100 Index and the Dow Jones U.S. Select Dividend Index are designed to provide dividend sustainability and high dividend yield. Companies must have produced 10 or 5 years of dividend history, respectively, to be eligible for inclusion. Other fundamental measures also factor into the member selection process. On the other hand, the S&P 500 High Dividend Index aims to purely include high-dividend-yielding members of the S&P 500 without any other fundamental or quality screening.

¹ Dividend yield traps refer to companies that promise high dividends or used to pay high dividends but do not have strong enough cash flow to support the dividend payments. These companies have historically high dividend yield, but it is not sustainable.

The S&P 500 Low Volatility High Dividend Index emphasizes high dividend yield and disregards consistent dividend history as a requirement for inclusion. It uses a simple two-step screening process to select members, accounting for volatility and dividend yield, while the Dow Jones Dividend Indices leverage dividend growth history and multiple fundamental ratios. As explained in section 2, the low volatility screen used by the S&P 500 Low Volatility High Dividend Index not only acts as a quality measure to ensure that stocks with sharp price drops are excluded from the index, but it also captures the low volatility anomaly.

While other S&P Dow Jones Dividend Indices with fundamental screenings are mostly rebalanced once per year, the S&P 500 Low Volatility High Dividend Index is rebalanced semiannually to capture the more frequently changing price volatility. To maximize the dividend yield of the index, members of the S&P 500 Low Volatility High Dividend Index are weighted by their dividend yield (see Exhibit 10).

Exhibit 10: Index Construction of S&P Dow Jones Dividend Indices in the U.S.						
CATEGORY	S&P 500 DIVIDEND ARISTOCRATS	S&P HIGH YIELD DIVIDEND ARISTOCRATS	DOW JONES U.S. DIVIDEND 100 INDEX	DOW JONES U.S. SELECT DIVIDEND INDEX	S&P 500 HIGH DIVIDEND INDEX	S&P 500 LOW VOLATILITY HIGH DIVIDEND INDEX
Benchmark Index	S&P 500	S&P Composite 1500	Dow Jones U.S. Broad Stock Market Index (excluding REITs)	Dow Jones U.S. Index (excluding REITs)	S&P 500	S&P 500
Number of Index Members	Floating	Floating	100	100	80	50
Size Criteria	Float-adjusted market cap above USD 3 billion	Float-adjusted market cap above USD 2 billion	Float-adjusted market cap above USD 500 million	Float-adjusted market cap above USD 3 billion	N/A	N/A
Liquidity Criteria	Three-month ADTV above USD 5 million	Three-month ADTV above USD 5 million	Three-month ADTV above USD 2 million	Three-month ADTV above 200,000 shares	N/A	N/A
Eligible Criteria	Minimum 25 consecutive years of increasing DPS history	Minimum 20 consecutive years of increasing DPS history	Minimum 10 consecutive years of dividend payments	Minimum 5 consecutive years of dividend payments; non-negative five-year DPS growth; five-year dividend payout ratio not greater 60%	80 highest dividend yielding stocks	75 highest-dividend-yielding stocks with minimum trading days above 252
Additional Member Selection Factors	N/A	N/A	Highest cash flow-to-total debt, return on equity, dividend yield and five-year dividend growth rate	Highest dividend yield	N/A	Lowest historical return volatility
Weighting Method	Equal	Dividend yield	Market cap	Dividend yield	Equal	Dividend yield
Sector Diversification Criteria	Each GICS® sector weight is restricted to 30%	N/A	Each ICB industry weight is restricted to 25%	Each GICS sector weight is restricted to 30%	N/A	Number of stock from each GICS sector is limited to 10, and each GICS sector weight is restricted to 25%
Rebalance Frequency	Annual	Annual	Annual	Annual	Semiannual	Semiannual

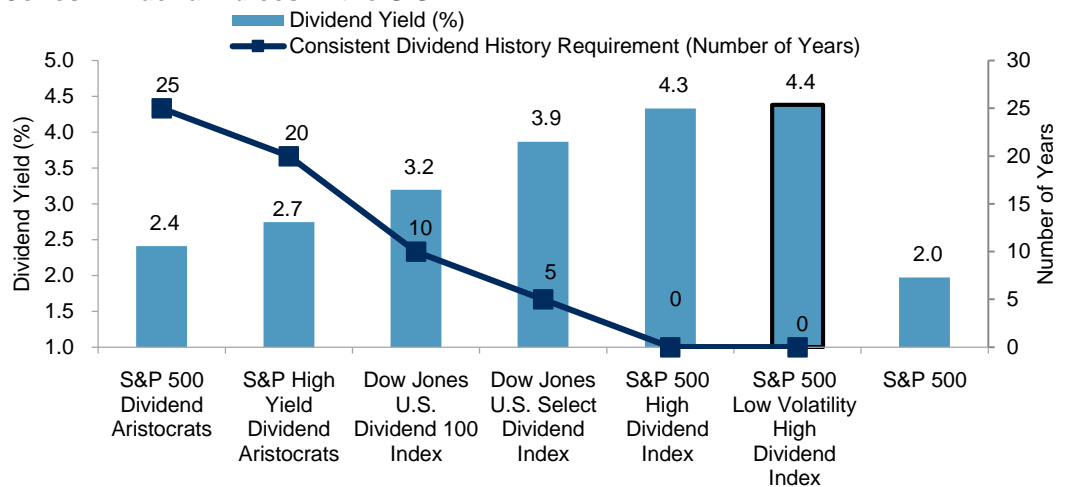
Source: S&P Dow Jones Indices LLC. Data as of Feb. 28, 2019. Table is provided for illustrative purposes.

4.2. Dividend Yield

Due to differences in their stock-selection criteria and member weighting methods, the S&P Dow Jones Dividend Indices offer different ranges of dividend yields. The more stringent the dividend history requirements and quality criteria, the fewer high-yield stocks that are eligible for selection. The S&P 500 Dividend Aristocrats, which most strongly emphasizes consistent dividend history, had a dividend yield of 2.4% as of month-end February 2019—the lowest among all the S&P Dow Jones Dividend Indices. In contrast, the S&P 500 Low Volatility High Dividend Index, which selects members based on a low volatility screen, and the S&P 500 High Dividend Index, which purely includes high-dividend-yielding stocks, offered the highest dividend yield compared with other S&P Dow Jones Dividend Indices. The indices offered a dividend yield of 4.4% and 4.3%, respectively, as of month-end February 2019—2.4% and 2.3% above that of the S&P 500, respectively (see Exhibit 11).

The index uses a simple two-step screening process to select members, accounting for volatility and dividend yield.

Exhibit 11: Dividend History Requirement and Dividend Yield of the S&P Dow Jones Dividend Indices in the U.S.



The S&P 500 Low Volatility High Dividend Index offered the highest dividend yield among the S&P Dividend Indices.

Source: S&P Dow Jones Indices LLC. Data as of Feb. 28, 2019. 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.

4.3. Historical Performance

From year-end 1999 to February 2019, the S&P 500 Low Volatility High Dividend Index offered higher dividend yield than most of the other S&P Dow Jones Dividend Indices, and it also captured the benefit of the low volatility strategy. But how exactly did this simple low volatility, high dividend methodology, with no dividend history criteria or fundamental quality screens, result in higher returns and lower risk compared with the other dividend indices?

Before the inclusion of dividend reinvestment income...

Based on monthly price returns from December 1999 to February 2019, the S&P 500 Low Volatility High Dividend Index did not stand out as the best performer for the historical absolute or risk-adjusted returns compared with other S&P Dow Jones Dividend Indices, before the inclusion of dividend reinvestment income (see Exhibit 12). However, when dividend income reinvestment return was accounted for, the S&P 500 Low Volatility High Dividend Index delivered the best absolute returns since year-end 1990 as well as the best historical risk-adjusted return of all the S&P Dow Jones Dividend Indices (see Exhibit 14). Its historical volatility was less than that of three other S&P Dow Jones Dividend Indices, and its historical maximum drawdown (12-month) was less than that of four other S&P Dow Jones Dividend Indices.

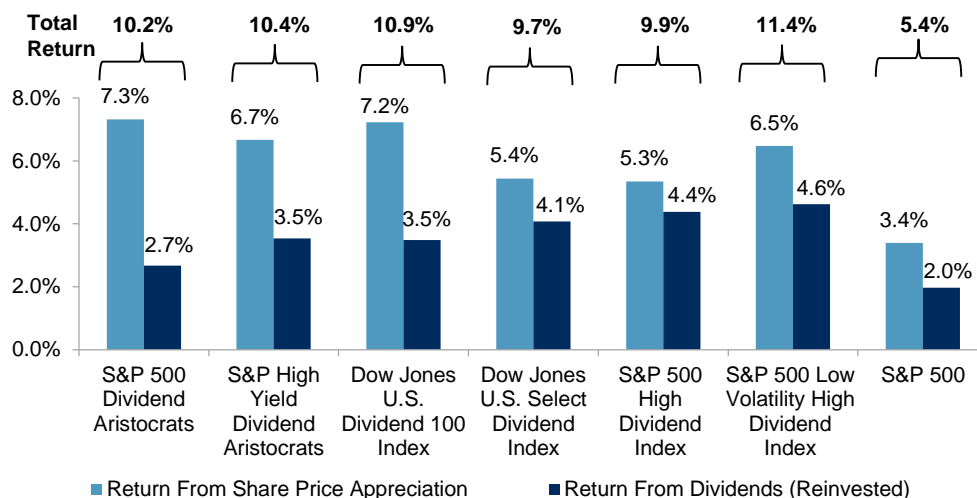
...the S&P 500 Low Volatility High Dividend Index did not stand out as the best performer.

Exhibit 12: Risk/Return Summary of S&P Dow Jones Dividend Indices in the U.S. (Before Inclusion of Dividend Reinvestment Income)

PERIOD	S&P 500 DIVIDEND ARISTOCRATS	S&P HIGH YIELD DIVIDEND ARISTOCRATS	DOW JONES U.S. DIVIDEND 100 INDEX	DOW JONES U.S. SELECT DIVIDEND INDEX	S&P 500 HIGH DIVIDEND INDEX	S&P 500 LOW VOLATILITY HIGH DIVIDEND INDEX	S&P 500
ANNUALIZED RETURN (%)							
1-Year	6.2	8.4	2.3	1.7	4.9	6.4	2.6
5-Year	8.6	8.4	7.1	6.3	7.1	7.8	8.4
10-Year	15.4	13.8	13.8	12.7	16.0	13.8	14.2
Since Year-End 1999	7.3	6.7	7.2	5.4	5.3	6.5	3.4
ANNUALIZED VOLATILITY (%)							
1-Year	14.6	14.1	14.6	12.6	13.7	13.2	16.2
5-Year	10.5	10.5	10.5	9.4	10.4	10.2	11.1
10-Year	12.2	12.3	11.9	11.1	13.9	11.8	12.9
Since Year-End 1999	13.2	13.8	13.3	14.5	16.5	13.4	14.6
RISK-ADJUSTED RETURN							
1-Year	0.43	0.59	0.16	0.13	0.36	0.49	0.16
5-Year	0.82	0.80	0.67	0.67	0.68	0.76	0.75
10-Year	1.27	1.12	1.16	1.14	1.15	1.17	1.11
Since Year-End 1999	0.55	0.48	0.54	0.37	0.32	0.48	0.23
12-MONTH MAXIMUM DRAWDOWN (%)							
Since Year-End 1999	-39.4	-43.2	-42.5	-49.6	-60.4	-41.4	-47.5

Source: S&P Dow Jones Indices LLC. Data from December 1999 to February 2019. 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.

Exhibit 13: Annualized Price Return and Dividend Income of the S&P Dow Jones Dividend Indices in the U.S.



Source: S&P Dow Jones Indices LLC. Data from December 1999 to February 2019. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosures at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Exhibit 14: Risk/Return Summary of the S&P Dow Jones Dividend Indices in the U.S. (After Inclusion of Dividend Reinvestment Income)

PERIOD	S&P 500 DIVIDEND ARISTOCRATS	S&P HIGH YIELD DIVIDEND ARISTOCRATS	DOW JONES U.S. DIVIDEND 100 INDEX	DOW JONES U.S. SELECT DIVIDEND INDEX	S&P 500 HIGH DIVIDEND INDEX	S&P 500 LOW VOLATILITY HIGH DIVIDEND INDEX	S&P 500
ANNUALIZED RETURN (%)							
1-Year	8.9	11.5	5.7	5.7	9.7	11.4	4.7
5-Year	11.3	11.4	10.6	10.4	11.7	12.4	10.7
10-Year	18.5	17.5	17.5	17.2	21.2	19.1	16.7
Since Year-End 1999	10.2	10.4	10.9	9.7	9.9	11.4	5.4
ANNUALIZED VOLATILITY (%)							
1-Year	14.6	14.1	14.8	12.7	13.7	13.2	16.2
5-Year	10.5	10.5	10.6	9.4	10.4	10.2	11.2
10-Year	12.2	12.4	11.9	11.1	14.0	11.9	12.9
Since Year-End 1999	13.2	13.8	13.4	14.6	16.6	13.4	14.6
RISK-ADJUSTED RETURN							
1-Year	0.61	0.81	0.39	0.45	0.70	0.86	0.29
5-Year	1.07	1.09	1.00	1.10	1.12	1.21	0.95
10-Year	1.52	1.42	1.47	1.55	1.52	1.61	1.29
Since Year-End 1999	0.77	0.76	0.82	0.67	0.60	0.85	0.37
12-MONTH MAXIMUM DRAWDOWN (%)							
Since Year-End 1999	-37.7	-40.6	-40.5	-47.4	-58.4	-38.8	-46.4

Source: S&P Dow Jones Indices LLC. Data from December 1999 to February 2019. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosures at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

However, when dividend income reinvestment return was accounted for...

...the S&P 500 Low Volatility High Dividend Index delivered the best historical risk-adjusted return.

4.4. Sector Exposure

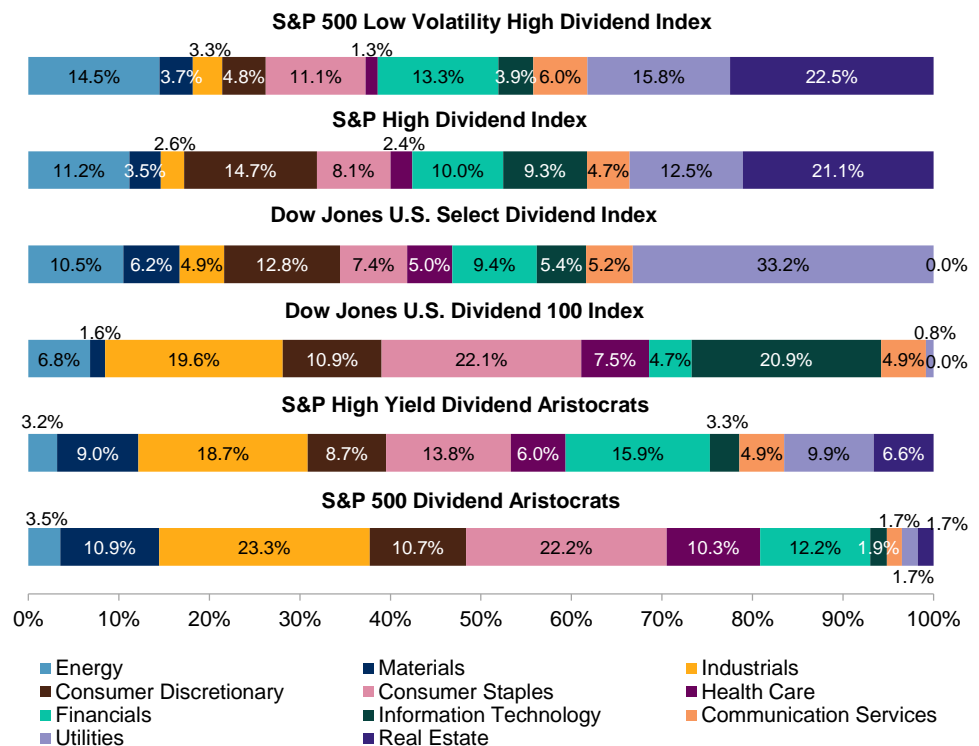
Exhibit 15 displays how the S&P 500 Low Volatility High Dividend Index differs from other S&P Dow Jones Dividend Indices in terms of sector weighting as of February 2019. Compared with the S&P 500 High Dividend Index, which includes high-dividend-yielding stocks without any form of additional screening, the S&P 500 Low Volatility High Dividend Index had higher weighting in Energy, Financials, and Utilities, and less weight in Consumer Discretionary and Information Technology. Compared with other dividend indices with different measures of quality overlay, the S&P 500 Low Volatility High Dividend Index had relatively high exposure to the Real Estate and Energy sectors and low exposure to the Industrials, Consumer Discretionary, and Health Care sectors. As the S&P 500 Low Volatility High Dividend Index is most strongly focused on high dividend yield, its sector exposure is more dependent on the concentration gradient of high-dividend-yield stocks across sectors. Therefore, its sector weighting is most in contrast to the S&P Dividend Aristocrats Indices, which disregard dividend yield in their stock-selection criteria.

Relative to other dividend indices, the index has had high exposure to Real Estate and Energy...

...and low exposure to Industrials, Consumer Discretionary, and Health Care.

Its sector exposure is more dependent on the concentration gradient of high-dividend-yield stocks across sectors.

Exhibit 15: Sector Composition of the S&P Dow Jones Dividend Indices in the U.S.

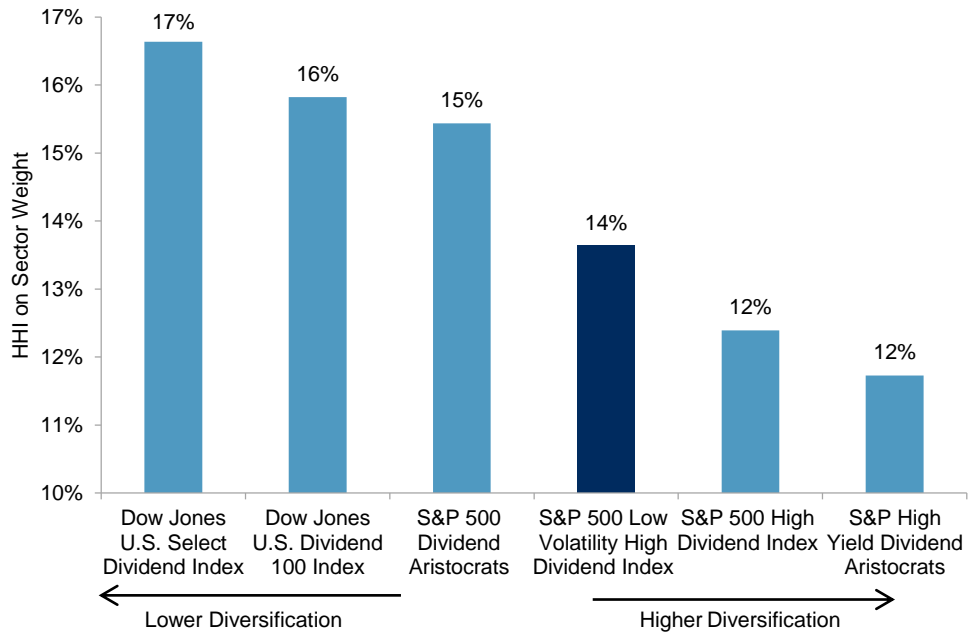


Source: S&P Dow Jones Indices LLC. Data as of Feb. 28, 2019. Chart is provided for illustrative purposes.

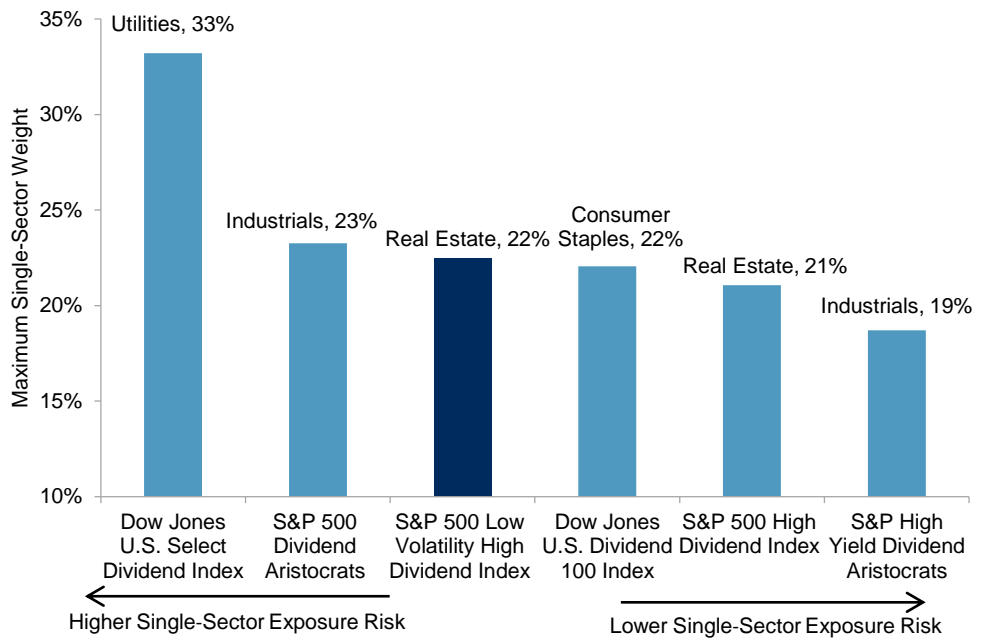
Based on its sector composition as of February 2019, the S&P 500 Low Volatility High Dividend Index had a moderate level of sector concentration risk. The index had a lower Herfindahl-Hirschman Index (HHI) than most S&P Dow Jones Dividend Indices, which implies lower sector concentration. It had a maximum single-sector exposure of 22.5%, which was lower than that of the Dow Jones U.S. Select Dividend Index and the S&P 500 Dividend Aristocrats (see Exhibit 16).

Exhibit 16: Sector Concentration of the S&P Dow Jones Dividend Indices

The S&P 500 Low Volatility High Dividend Index had lower sector concentration than most dividend indices.



It had a maximum single-sector exposure of 22.5%, lower than that of the Dow Jones U.S. Select Dividend Index and the S&P 500 Dividend Aristocrats.



Source: S&P Dow Jones Indices LLC. Data as of Feb. 28, 2019. Past performance is no guarantee of future results. Charts are provided for illustrative purposes. Note: The Herfindahl-Hirschman Index (HHI) is calculated as the sum of the square of the 11 sectors' weighting. A higher number implies lower diversification (higher concentration) and vice versa.

4.5. Factor Exposure

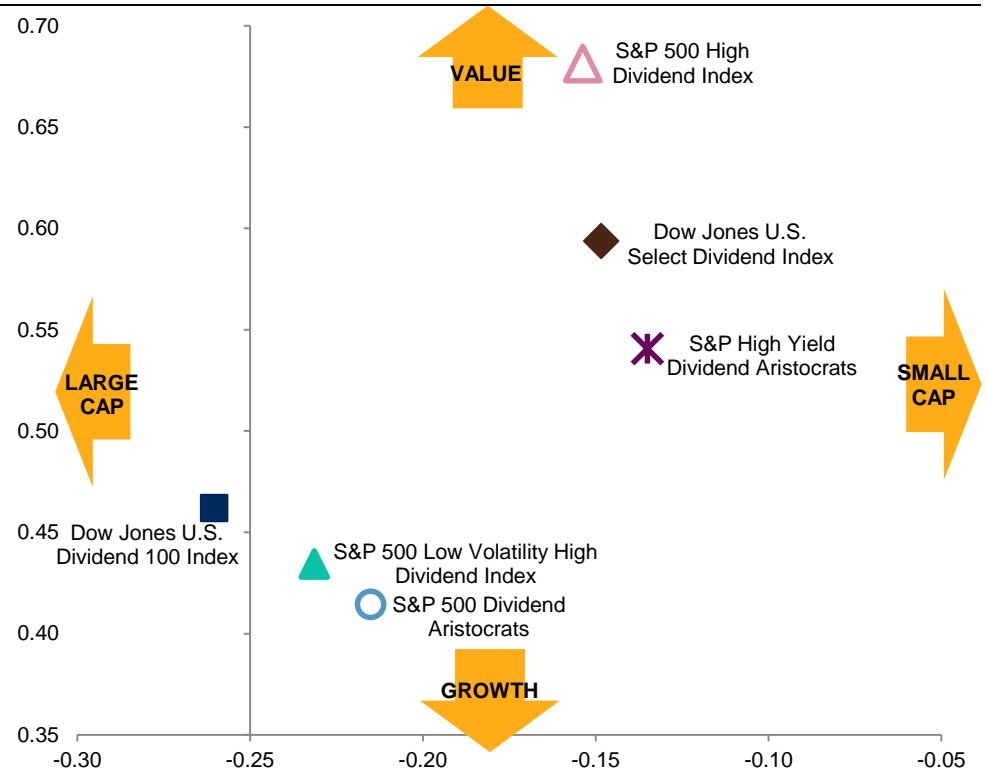
The S&P 500 Low Volatility High Dividend Index had significant market, large-cap, and value exposures between December 1999 and January 2019, as seen with the Fama-French Three Factor model. It had lower market beta than the other S&P Dow Jones Dividend Indices, as high return volatility stocks are excluded from the index. The S&P 500 Low Volatility High Dividend Index also had small value bias among all the S&P Dow Jones Dividend Indices, as the low volatility screen ruled out deep value stocks produced by sharp price drops from the index (see Exhibit 17).

The index had lower market beta than the other S&P Dow Jones Dividend Indices.

Exhibit 17: Factor Exposure of the S&P Dow Jones Dividend Indices

FACTORS	S&P 500 DIVIDEND ARISTOCRATS	S&P HIGH YIELD DIVIDEND ARISTOCRATS	DOW JONES U.S. DIVIDEND 100 INDEX	DOW JONES U.S. SELECT DIVIDEND INDEX	S&P 500 HIGH DIVIDEND INDEX	S&P 500 LOW VOLATILITY HIGH DIVIDEND INDEX
Market	0.76	0.73	0.75	0.76	0.87	0.70
<i>t-stat</i>	30.02	24.03	28.29	23.37	23.90	21.35
Size	-0.22	-0.14	-0.26	-0.15	-0.15	-0.23
<i>t-stat</i>	-6.20	-3.25	-7.19	-3.35	-3.10	-5.13
Value	0.41	0.54	0.46	0.59	0.68	0.43
<i>t-stat</i>	11.73	12.78	12.52	13.13	13.49	9.45
R-Squared	0.82	0.77	0.81	0.76	0.77	0.71

It also had small value bias among all other indices.



Source: S&P Dow Jones Indices LLC. Data from December 1999 to Jan. 31, 2019. 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.

5. CONCLUSION

With a simple two-step constituent screening method accounting for price volatility and dividend yield...

...the S&P 500 Low Volatility High Dividend Index is designed to capture the benefit of high-dividend and low volatility strategies.

"Investors should remember that their scorecard is not computed using Olympic-diving methods: Degree-of-difficulty doesn't count. If you are right about a business whose value is largely dependent on a single key factor that is both easy to understand and enduring, the payoff is the same as if you had correctly analyzed an investment alternative characterized by many constantly shifting and complex variables" (Warren Buffet, Letter to shareholders, 1994).

While each of the S&P Dow Jones Dividend Indices has different characteristics, with a simple two-step constituent screening method accounting for price volatility and dividend yield, the S&P 500 Low Volatility High Dividend Index is designed to capture the benefit of high dividend and low volatility strategies. Combined, these strategies have achieved higher dividend yield and better risk-adjusted returns than other S&P Dow Jones Dividend Indices that use dividend history criteria and multiple fundamental quality screens. The S&P 500 Low Volatility High Dividend Index shows the beauty of a simple and effective index.

APPENDIX

Comparison with the S&P 500 Low Volatility Index

The S&P 500 Low Volatility High Dividend Index is a U.S. market dividend strategy index that uses a low volatility screen as a quality measure. The S&P 500 Low Volatility Index serves as a benchmark for low volatility strategies in the U.S. market. While both indices incorporate low volatility strategies, their ultimate goals are different. The S&P 500 Low Volatility High Dividend Index's stock selection and member weighting criteria are designed to maximize the dividend yield of the index, while those of the S&P 500 Low Volatility Index are designed to minimize the volatility of the index. See Exhibit 18 for a list of differences in their index construction mechanisms.

MECHANISM	S&P 500 LOW VOLATILITY INDEX	S&P 500 LOW VOLATILITY HIGH DIVIDEND INDEX
Benchmark Index	S&P 500	S&P 500
Number of Index Members	100	50
Eligibility Criteria	Minimum trading days above 252	75 highest dividend-yielding stocks with minimum trading days above 252
Member Selection Factors	100 stocks with lowest historical return volatility	50 stocks with lowest historical return volatility
Weighting Method	Inverse of volatility figure	Dividend yield
Sector Diversification Criteria	N/A	Number of stock from each GICS sector is limited to 10 and each GICS sector weight is restricted to 25%
Rebalance Frequency	Quarterly	Semiannually

Source: S&P Dow Jones Indices LLC. Table is provided for illustrative purposes.

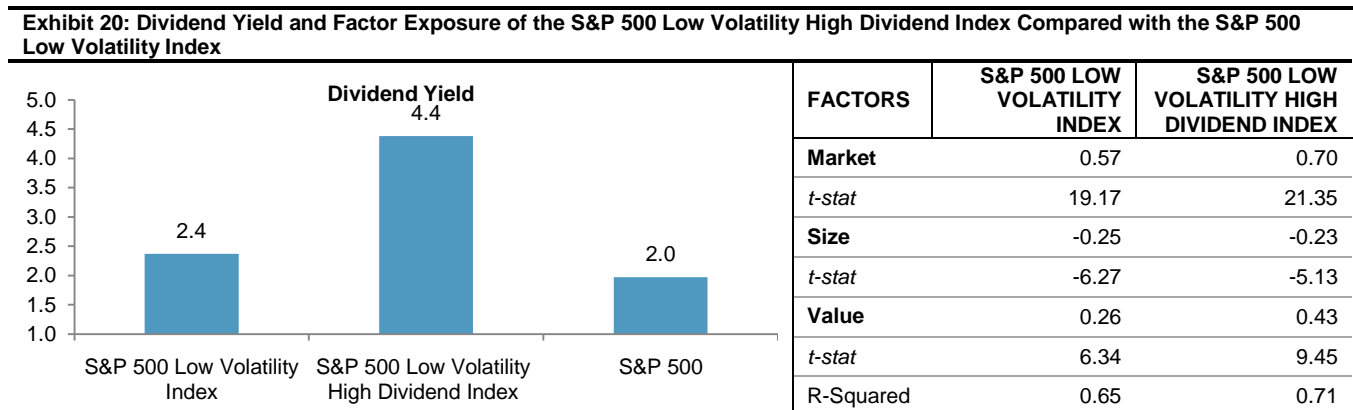
As of February 2019, both the S&P 500 Low Volatility High Dividend Index and the S&P 500 Low Volatility Index were well diversified among the 11 sectors. Compared with the S&P 500, both the S&P 500 Low Volatility High Dividend Index and S&P 500 Low Volatility Index held more weight in the Real Estate and Utilities sectors, which tend to have a higher concentration of high dividend payers and have lower return volatilities than other sectors in recent market conditions.

SECTOR	S&P 500	S&P 500 LOW VOLATILITY INDEX		S&P 500 LOW VOLATILITY HIGH DIVIDEND INDEX	
	SECTOR WEIGHT (%)	SECTOR WEIGHT (%)	WEIGHT BIAS COMPARED WITH S&P 500 (%)	SECTOR WEIGHT (%)	WEIGHT BIAS COMPARED WITH S&P 500 (%)
Energy	5.4	0.9	-4.5	14.5	9.1
Materials	2.7	2.1	-0.5	3.7	1.0
Industrials	9.8	5.2	-4.6	3.3	-6.5
Consumer Discretionary	9.9	5.0	-4.9	4.8	-5.1
Consumer Staples	7.1	8.9	1.7	11.1	3.9
Health Care	14.8	5.7	-9.1	1.3	-13.5
Financials	13.3	18.7	5.4	13.3	0.0
Information Technology	20.6	6.7	-13.9	3.9	-16.8
Communication Services	10.1	1.9	-8.2	6.0	-4.1
Utilities	3.3	24.7	21.4	15.8	12.5
Real Estate	3.0	20.0	17.0	22.5	19.5

Source: S&P Dow Jones Indices LLC. Data as of February 2019. Table is provided for illustrative purposes.

While the S&P 500 Low Volatility Index is not designed to capture high-dividend-paying stocks, its sector bias to the Real Estate and Utilities sectors results in a higher dividend yield than the S&P 500. However, the S&P 500 Low Volatility High Dividend Index, which is designed to measure the highest-dividend-yielding stocks, has historically had a much higher dividend yield than the S&P 500 Low Volatility Index (see Exhibit 20).

As one might expect, the S&P 500 Low Volatility Index, which is designed to track the least volatile stocks from the S&P 500, has historically had much lower beta than the S&P 500 Low Volatility High Dividend Index. Based on the Fama-French Three Factor Model, the S&P 500 Low Volatility High Dividend Index has historically had more significant value bias but slightly less large-cap bias than the S&P 500 Low Volatility Index (see Exhibit 20).



Source: S&P Dow Jones Indices LLC. Dividend yield data as of Feb. 28, 2019. Factor exposure analysis based on data from December 1999 to January 2019. 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.

Historical Performance

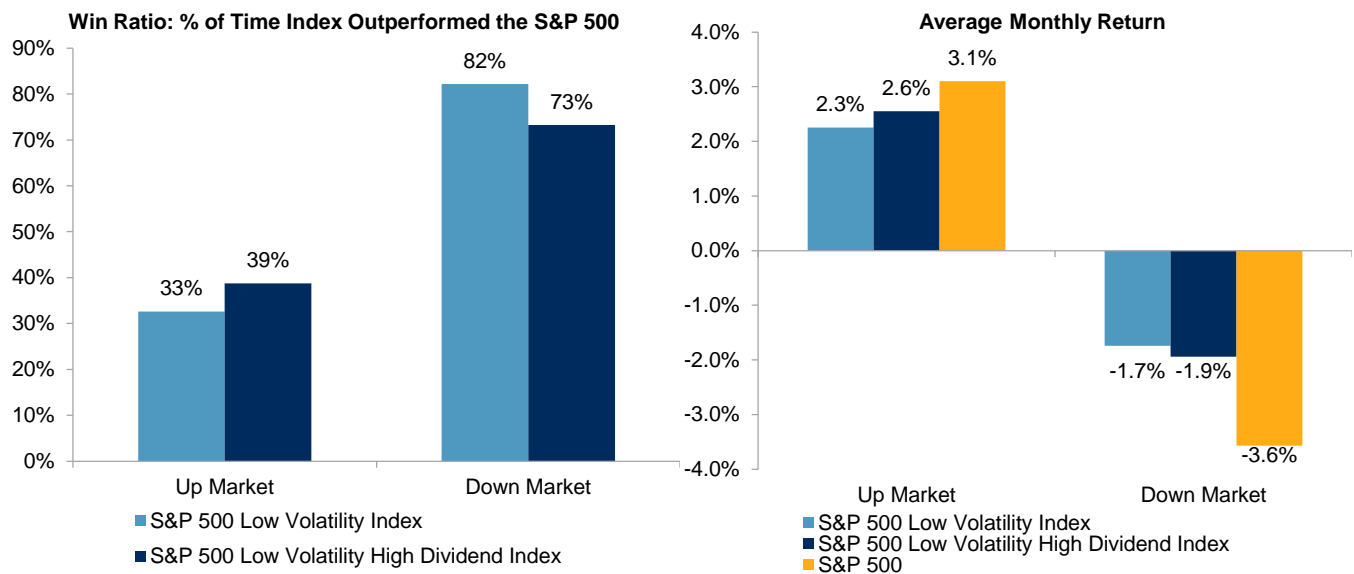
Based on monthly price returns from December 1990 to February 2019, the S&P 500 Low Volatility High Dividend Index delivered similar absolute returns and lower risk-adjusted returns compared with the S&P 500 Low Volatility Index before inclusion of dividend income. However, once dividend income reinvestment return was included, the S&P 500 Low Volatility High Dividend Index delivered higher absolute returns and similar risk-adjusted returns compared with the S&P 500 Low Volatility Index. The S&P 500 Low Volatility Index exhibited lower return volatility and smaller maximum drawdown historically. During up markets, the S&P 500 Low Volatility High Dividend Index had a higher win ratio and average monthly return than the S&P 500 Low Volatility Index, and the opposite held true for down markets. After adjusting for risk, the S&P 500 Low Volatility High Dividend Index offered similar returns to the S&P 500 Low Volatility Index (see Exhibits 21 and 22).

Exhibit 21: Risk/Return Summary of the S&P 500, S&P 500 Low Volatility Index, and S&P 500 Low Volatility High Dividend Index

ANNUALIZED PRICE RETURN (%)				ANNUALIZED TOTAL RETURN (%)			
PERIOD	S&P 500 LOW VOLATILITY INDEX	S&P 500 LOW VOLATILITY HIGH DIVIDEND INDEX	S&P 500	PERIOD	S&P 500 LOW VOLATILITY INDEX	S&P 500 LOW VOLATILITY HIGH DIVIDEND INDEX	S&P 500
1-Year	10.4	6.4	2.6	1-Year	13.3	11.4	4.7
5-Year	9.1	7.8	8.4	5-Year	11.8	12.4	10.7
10-Year	12.5	13.8	14.2	10-Year	15.7	19.1	16.7
Since Year-End 1990	7.7	7.6	7.9	Since Year-End 1990	11.1	12.7	10.1
ANNUALIZED VOLATILITY (%)							
1-Year	12.6	13.2	16.2	1-Year	12.6	13.2	16.2
5-Year	9.6	10.2	11.1	5-Year	9.6	10.2	11.2
10-Year	9.5	11.8	12.9	10-Year	9.5	11.9	12.9
Since Year-End 1990	10.9	12.6	14.1	Since Year-End 1990	10.9	12.7	14.1
RISK-ADJUSTED RETURN							
1-Year	0.83	0.49	0.16	1-Year	1.05	0.86	0.29
5-Year	0.95	0.76	0.75	5-Year	1.23	1.21	0.95
10-Year	1.32	1.17	1.11	10-Year	1.66	1.61	1.29
Since Year-End 1990	0.71	0.61	0.56	Since Year-End 1990	1.02	1.00	0.72
12-MONTH MAXIMUM DRAWDOWN (%)							
Since Year-End 1990	-30.6	-41.4	-47.5	Since Year-End 1990	-29.0	-38.8	-46.4

Source: S&P Dow Jones Indices LLC. Data from December 1990 to February 2019. Performance is based on total return and price return in USD. 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.

Exhibit 22: Capture Ratios and Average Monthly Return of the S&P 500, the S&P 500 Low Volatility Index, and the S&P 500 Low Volatility High Dividend Index Over the Last 20 Years



Source: S&P Dow Jones Indices LLC. Data from December 1990 to February 2019. 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.

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PERFORMANCE DISCLOSURE

The S&P 500 Dividend Aristocrats was launched May 2, 2005. The S&P High Yield Dividend Aristocrats was launched November 9, 2005. The Dow Jones U.S. Dividend 100 Index was launched August 31, 2011. The Dow Jones U.S. Select Dividend Index was launched November 3, 2003. The S&P 500 Low Volatility High Dividend Index was launched September 17, 2012. The S&P 500 High Dividend Index was launched September 21, 2015. The S&P Composite 1500 was launched May 18, 1995. The S&P 500 Low Volatility Index was launched April 4, 2011. 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.

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