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What Rising Rates Will Not Do

“It is always wise to look ahead, but difficult to look farther than you can see.”

- Winston Churchill (1952).

The prospect of rising interest rates is unsettling. Some of the unease may simply be due to unfamiliarity. As Exhibit 1 demonstrates, bonds have been in a bull market for more than 30 years. Generations of investors have no memory of a sustained period of rising rates. The last extended bear market in bonds ran from 1953 (when 10-Year U.S. Treasury rates were under 4%) to 1981, when rates peaked near 16%. The subsequent bull market was just as dramatic. The 10-Year U.S. Treasury rate fell below 3% in August 2011 and has lingered there ever since.

Exhibit 1: 10-Year U.S. Treasury Yield From 1953 Through 2015



Source: U.S. Federal Reserve. Data from April 1953 to June 2015.

Given the record low interest rates in the period following the financial crisis, the market consensus is clear: there is only one *direction* for rates to go, and only the *timing* and *pace* of that increase is up for debate.¹

¹ Plender, John, “[The dangers of living in a subnormal interest rate world.](#)” *Financial Times*, June 23, 2015.

The impact of rising rates, both on the real economy and the financial markets, is currently a topic of much discussion among economists and market observers, and we have no desire to wade into that debate. Instead, this paper will suggest that there are at least three things that rising interest rates will *not* do:

- They won't tell us whether the stock market is going up or down.
- They won't cause stock market dispersion to widen, providing an easier environment for active managers to add value.
- They won't tell us how to choose between pairs of nominally opposite factor indices.

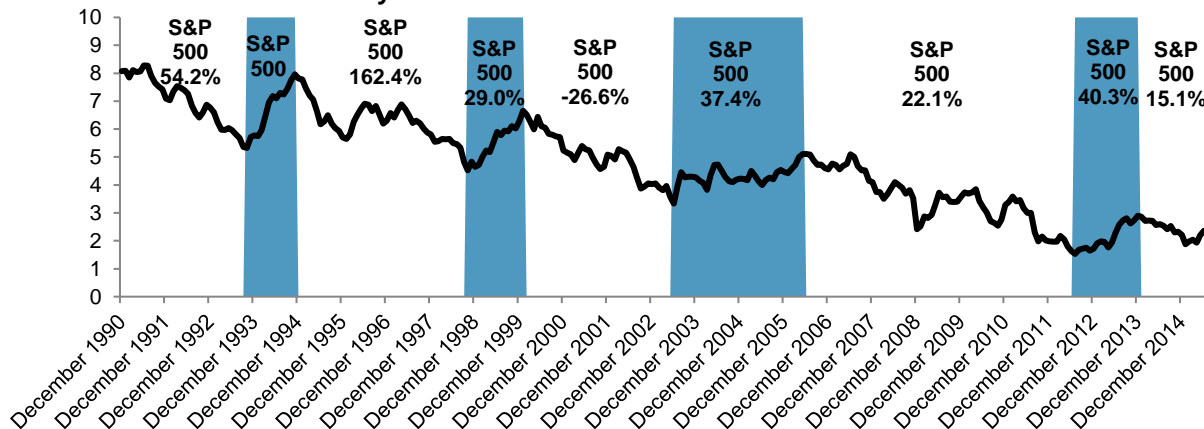
Interest Rates and Equity Performance

Conventional wisdom is that rising interest rates are bad for equities. There are good reasons for this assumption. For one thing, rising borrowing costs can inhibit corporate growth. Moreover, higher interest rates mean higher discount rates in equity valuation models, and higher discount rates mean lower (theoretical) equity prices.²

Despite the argument's appeal, however, for the last 25 years, the presumed relationship between equity performance and interest rates has been severely challenged.³ Windows of rising interest rates were generally small during this period compared to times when rates declined; the periods shaded in teal in Exhibit 2 highlight when the 10-Year U.S. Treasury rate increased. Notably, in the latest window of rising rates, the S&P 500® gained 40% as the 10-Year U.S. Treasury increased 137 basis points (bps) from a trough of 1.53% in mid-2012 to a peak of 2.90% in early 2013.

Furthermore, between January 1991 and June 2015, the average monthly return for the S&P 500 was 0.88%. Paradoxically, in the four periods of rising rates, the average monthly return was 1.26%, compared with an average monthly return of 0.73% for the periods of declining rates. Rising rates have clearly not been bad for stocks over the past two decades.

Exhibit 2: 10-Year U.S. Treasury Yield and S&P 500 Performance



Source: S&P Dow Jones Indices LLC and U.S. Federal Reserve. Data from Dec. 31, 1990, to June 30, 2015. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

² See Chan, Fei Mei and Craig J. Lazzara, "[Much Ado About Interest Rates](#)," September 2013.

³ Ibid.

We parsed the monthly returns of the S&P 500 based on different interest rate environments, classifying the data into modified “quartiles” by first separating the months with declining and increasing interest rates, and then dividing each of those categories in half. As shown in Exhibit 3, the 78 months during which 10-Year U.S. Treasury yields declined the most (down an average 28 bps) were also the months when the S&P 500 rose the least (0.31% on average).⁴ **Overall, the average S&P 500 return during months when the 10-Year U.S. Treasury yield declined was 0.47% versus a 1.49% return in months when yields rose.**

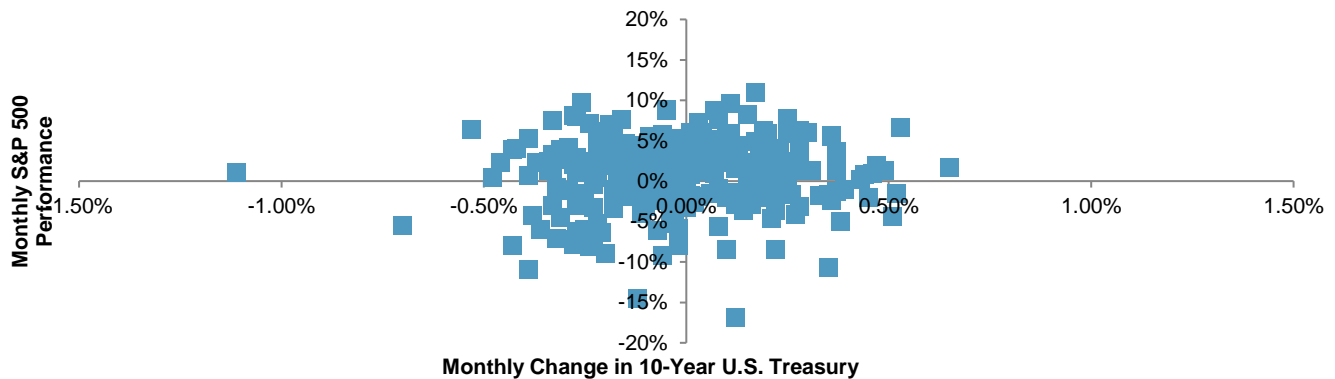
Exhibit 3: S&P 500 Performance in Various Interest Rate Regimes

	# OF MONTHS	AVERAGE MONTHLY CHANGE IN 10-YEAR U.S. TREASURY (BPS)	S&P 500 (%)
Biggest Declines	78	-28	0.31
Moderate Declines	90	-8	0.45
Moderate Increases	62	8	1.82
Biggest Increases	60	30	0.99
No Change	4	0	-0.25

Source: S&P Dow Jones Indices LLC and U.S. Federal Reserve. Data from Dec. 31, 1990, to June 30, 2015. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Finally, Exhibit 4 is a simple scatter plot of the monthly changes in the 10-Year U.S. Treasury rate against the monthly performance of the S&P 500. The amorphous blob confirms that there is no concrete relationship between the two. **Increases in rates, when they occur, have an essentially unpredictable effect on the direction of the equity market.**

Exhibit 4: Monthly Changes in 10-Year U.S. Treasury Rate and Monthly S&P 500 Performances



Source: S&P Dow Jones Indices LLC and U.S. Federal Reserve. Data from Dec. 31, 1990, to June 30, 2015. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

Interest Rates and Dispersion

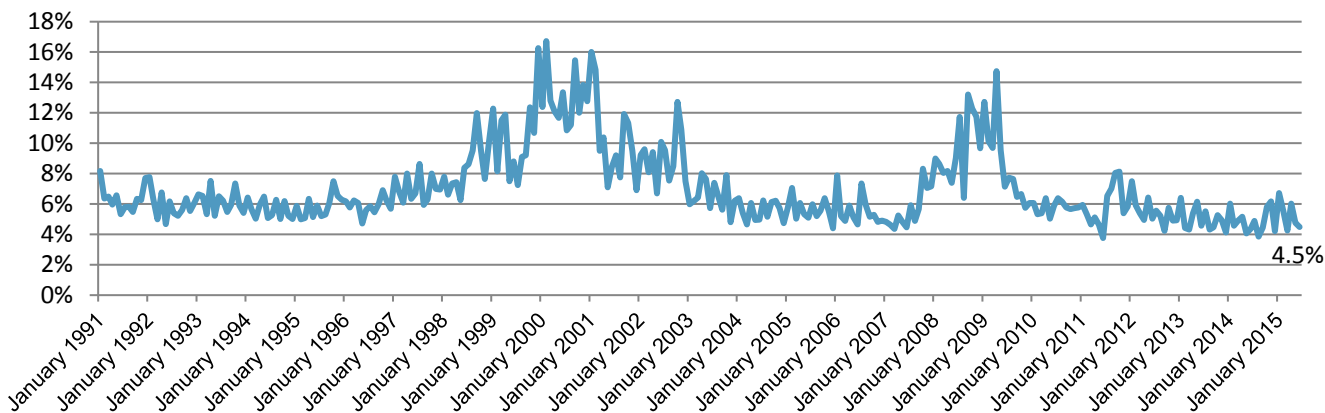
Dispersion is a statistical measure of the degree of variation in the returns of an index’s components. It provides a rigorous way of measuring the gap between the “best” and “worst” performers in a market over a defined period of time.⁵ In periods when the gap between the “best” and “worst” stocks is wide, active investment managers will have a relatively easier time adding value; when the gap is narrow, the

⁴ This represents a shift in the relationship between interest rates and stock returns. Between 1953 and approximately 1997, negative stock returns were much more likely to accompany rising interest rates. See Chan, Fei Mei and Craig J. Lazzara, “[Much Ado About Interest Rates](#),” September 2013.

⁵ See Edwards, Tim and Craig J. Lazzara, “[Dispersion: Measuring Market Opportunity](#),” December 2013.

opportunity to add value decreases. So low dispersion reduces the value of skill, and in a low dispersion environment, active managers will be especially challenged.⁶ This has certainly been true of late, as dispersion (shown for the S&P 500 in Exhibit 5) has hovered near record-low levels.

Exhibit 5: S&P 500 Dispersion



Source: S&P Dow Jones Indices LLC. Data from Dec. 31, 1990, to June 30, 2015. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

If rates go up, will dispersion increase? Arguably, changes in interest rates and dispersion should exhibit positive correlation. Imagine two otherwise-identical companies with different degrees of financial leverage. The earnings of the more-levered company will always be lower, obviously, because of its higher interest expense. But in a period of low rates, the disadvantage of higher leverage is suppressed; when rates rise, the impact on the more highly-levered company’s earnings will be more severe. So rising rates will widen the gap in earnings between more- and less-leveraged companies, and it’s a reasonable conjecture that more disperse earnings will lead to more disperse stock performance.

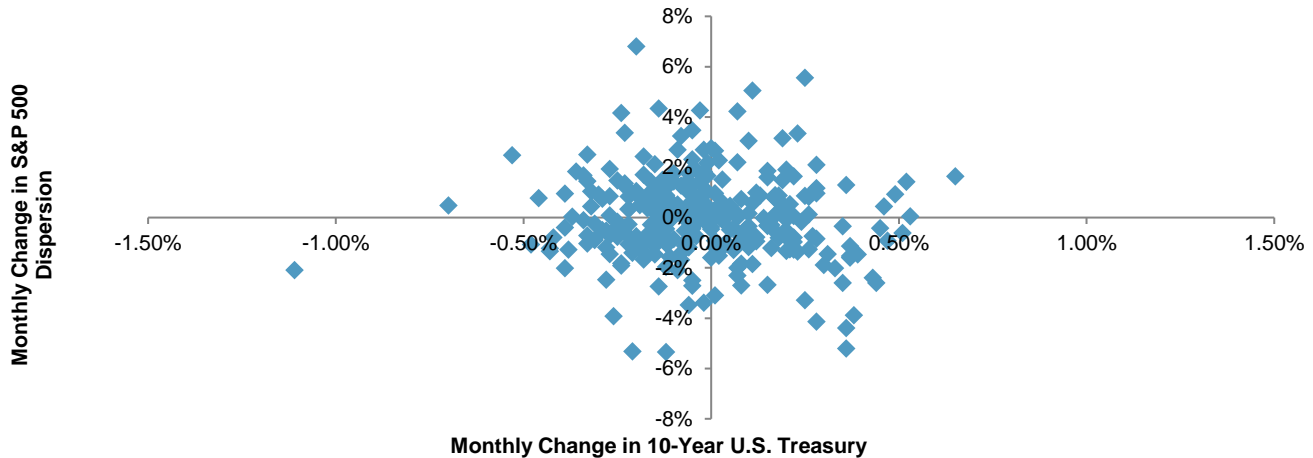
But nay. As Exhibits 6 and 7 demonstrate, **in periods during which rates have increased, there’s no tendency for dispersion to do the same.** Admittedly, rate increases since 1990 have not been nearly as extreme as those of the late 1970s and early 1980s, but the periods of rate increases did not result in higher dispersion as we had conjectured. If anything, in fact, the result was the opposite of our expectation, as the quartile in which rates increased the most (averaging 30 bps) was the quartile in which dispersion declined the most. Between 1991 and 2015, the correlation between the 10-Year U.S. Treasury yield and the dispersion of the S&P 500 was -0.06..

Exhibit 6: Dispersion Changes in Various Interest Rate Regimes

	# OF MONTHS	AVERAGE MONTHLY CHANGE IN 10-YEAR U.S. TREASURY (BPS)	CHANGE IN S&P 500 DISPERSION
Biggest Declines	78	-28	0.00%
Moderate Declines	90	-8	0.21%
Moderate Increases	62	8	-0.01%
Biggest Increases	60	30	-0.36%
No Change	4	0	0.09%

Source: S&P Dow Jones Indices LLC and U.S. Federal Reserve. Data from Dec. 31, 1990, to June 30, 2015. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

⁶ Lazzara, Craig, [“The Value of Skill,”](#) March 20, 2015.

Exhibit 7: Monthly Changes in 10-Year U.S. Treasury Rate and Monthly Changes in S&P 500 Dispersion

Source: S&P Dow Jones Indices LLC and U.S. Federal Reserve. Data from Dec. 31, 1990, to June 30, 2015. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

It may well be that dispersion will increase in late 2015 and 2016; if it does, we would expect more opportunity for active managers to add (or subtract) value relative to their index benchmarks. **But the data give us no reason to assume that increasing rates will drive dispersion higher.**

Interest Rates and Factor Index Performance

Finally, we address the question of whether rising rates tell us anything about the relative performance of factor-based index strategies.⁷ Factor performance always needs to be put into context, since it is quite often dependent on the nature of the market regime in which it occurs.⁸ Using the same delineations for interest rate changes as those in Exhibits 3 and 6, Exhibit 8a shows the monthly performance of the S&P 500 and several of its factor-based grandchildren. We'd draw three conclusions from this exhibit:

- Growth and value indices tend to move in opposite directions. When one outperforms the S&P 500, the other underperforms. This is completely unsurprising given the methodology by which these indices are constructed.⁹
- Low volatility and high beta indices also move in opposite directions, and their movements are driven by the movements of the benchmark S&P 500. We know that the S&P 500 Low Volatility Index tends to attenuate the movements of the market, while the S&P 500 High Beta Index usually accentuates market movements.¹⁰ The patterns in Exhibit 8a demonstrate that the *relative* performance spread between high beta or low volatility and the S&P 500 is heavily dependent on the *absolute* performance of the S&P 500.
- Most importantly, **there is no consistent relationship between changes in interest rates and changes in the relative performance of our factor index sample.**

⁷ For a general reference on factor indices, see Mainie, Sunjiv, "[The Story of Factor-Based Investing](#)," February 2015.

⁸ See Lazzara, Craig J., "[The Limits of History](#)," January 2013.

⁹ The S&P Dow Jones Indices [style index methodology](#) is updated on our website.

¹⁰ "The Limits of History", *op.cit.*

Exhibit 8a: S&P 500 and Strategy Indices' Performance Spreads in Different Interest Rate Regimes

	AVERAGE MONTHLY CHANGE IN 10-YEAR U.S. TREASURY (BPS)	S&P 500 (%)	S&P 500 LOW VOLATILITY INDEX SPREAD (%)	S&P 500 HIGH BETA INDEX SPREAD (%)	S&P 500 MOMENTUM INDEX SPREAD (%)	S&P 500 EQUAL WEIGHT INDEX SPREAD (%)	S&P 500 GROWTH INDEX SPREAD (%)	S&P 500 VALUE INDEX SPREAD (%)
Biggest Declines	-0.28	-0.10	1.18	-1.80	-0.03	-0.14	0.02	-0.08
Moderate Declines	-0.08	0.21	0.36	-0.90	0.24	0.25	-0.26	0.22
Moderate Increases	0.09	1.76	-0.89	1.94	-0.21	0.40	0.02	-0.02
Biggest Increases	0.30	1.41	-0.37	0.50	0.43	0.17	0.27	-0.30

Source: S&P Dow Jones Indices LLC and U.S. Federal Reserve. Data from June 30, 1995, to June 30, 2015. Past performance is not a 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.

Exhibit 8b extends this analysis by comparing the relative returns of *pairs* of factor indices. Rather than analyze factors in isolation, we looked at pairs of factor indices, which, if not diametric opposites, at least tend to have opposing performance cycles: S&P 500 High Beta Index versus S&P 500 Low Volatility Index, S&P 500 Momentum Index versus S&P 500 Equal Weight Index, and S&P 500 Growth Index versus S&P 500 Value Index. To incorporate a treatment of the size factor, we also included the spreads between the S&P SmallCap 600[®] and the S&P 500, and the S&P MidCap 400[®] and the S&P 500.

With one exception, we can discern no convincing relationship between the pattern of interest rate changes in Exhibit 8b and the relative performance of any factor pair. There are fluctuations, to be sure, but for only one pair is there a monotonic relationship between interest rate changes and factor performance.

Exhibit 8b: Strategy Pair Indices' Performance Spreads in Different Interest Rate Regimes

	Average Monthly Change in 10-Year U.S. Treasury (bps)	S&P 500 (%)	S&P 500 Low Volatility Index Minus S&P 500 High Beta Index Spread (%)	S&P 500 Momentum Index Minus S&P 500 Equal Weight Index Spread (%)	S&P 500 Value Index Minus S&P 500 Growth Index Spread (%)	S&P SmallCap 600 Minus S&P 500 Spread (%)	S&P MidCap 400 Minus S&P 500 Spread (%)
Biggest Declines	-0.28	-0.10	-2.98	0.11	-0.10	-0.14	0.03
Moderate Declines	-0.08	0.21	-1.26	-0.01	0.49	0.22	0.29
Moderate Increases	0.09	1.76	2.83	-0.62	-0.04	0.35	0.16
Biggest Increases	0.30	1.41	0.86	0.26	-0.57	0.38	0.62

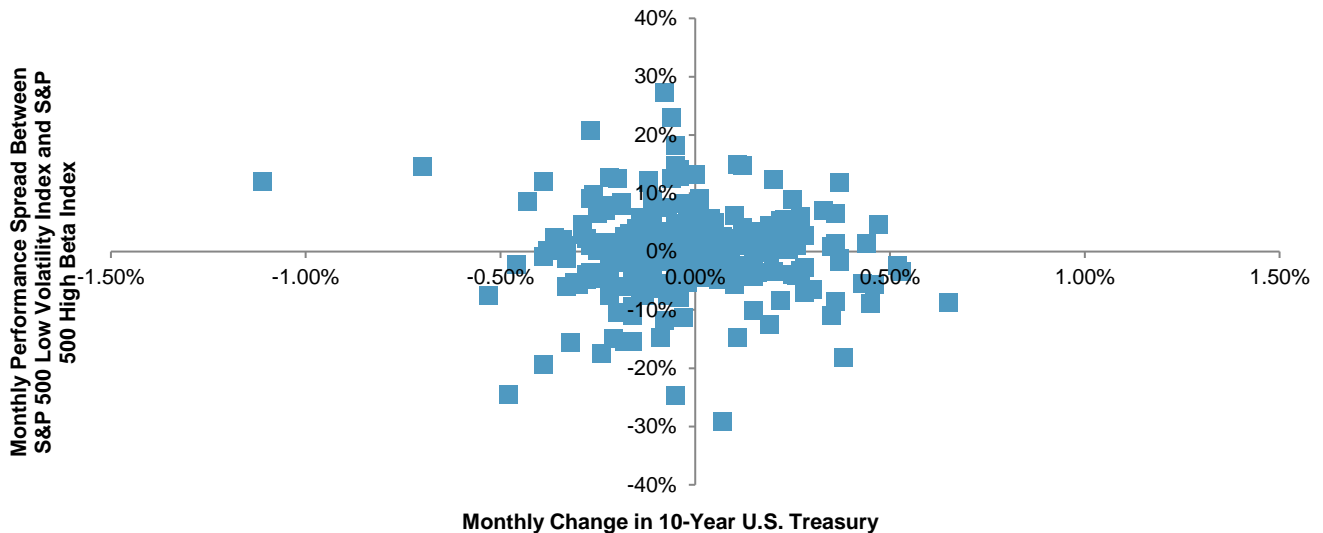
Source: S&P Dow Jones Indices LLC and U.S. Federal Reserve. Data from June 30, 1995, to June 30, 2015. Past performance is not a guarantee of future results. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosures at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

The exceptional index pair is the S&P SmallCap 600 versus the S&P 500. As rates increase, the margin of outperformance of the small-cap index grows steadily. Unfortunately, however, we see a much less convincing pattern when we compare the S&P MidCap 400 with the S&P 500. There, the quartile of largest rate increases also corresponds to the biggest margin of the mid-cap index's outperformance. However, the second-largest outperformance occurred when rates declined modestly.

So while the evidence may be intriguing, we're unable to conclude that smaller companies tend to outperform more when rates are rising.

Exhibit 9 provides a graphical representation of the paired data for the S&P 500 High Beta Index and the S&P Low Volatility Index pair. (Scatter plots for our other index pairs are included in the appendix.) Consistent with previous scatters, the patterns (or lack thereof) are strikingly inchoate.

Exhibit 9: Monthly Changes in 10-Year U.S. Treasury Rate and Performance Spreads Between S&P 500 Low Volatility Index and S&P High Beta Index

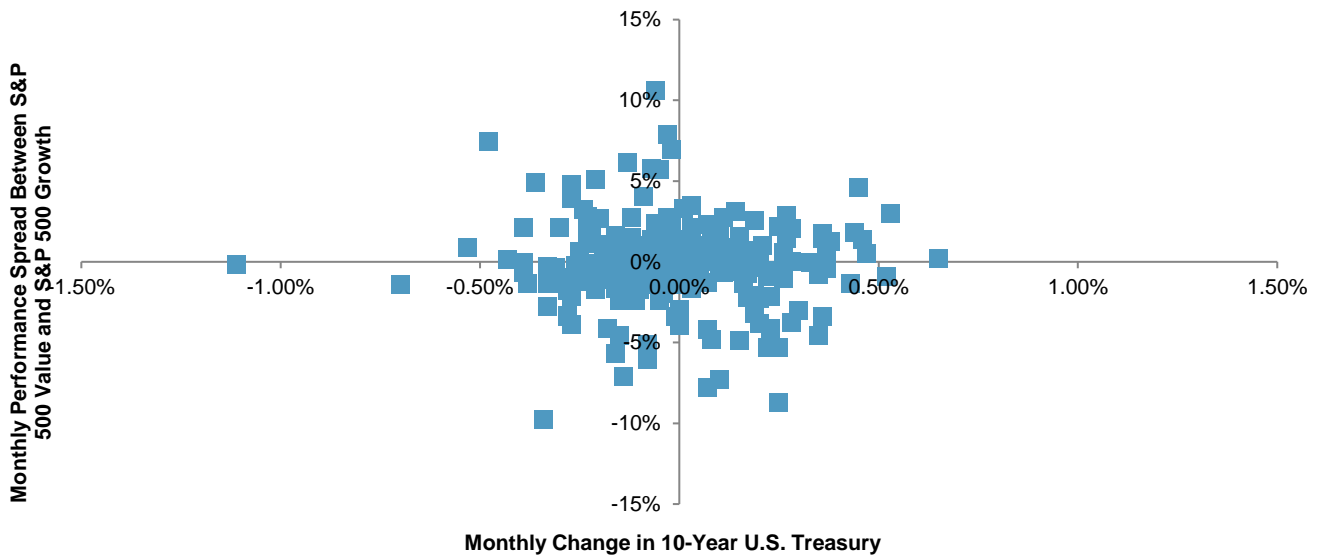
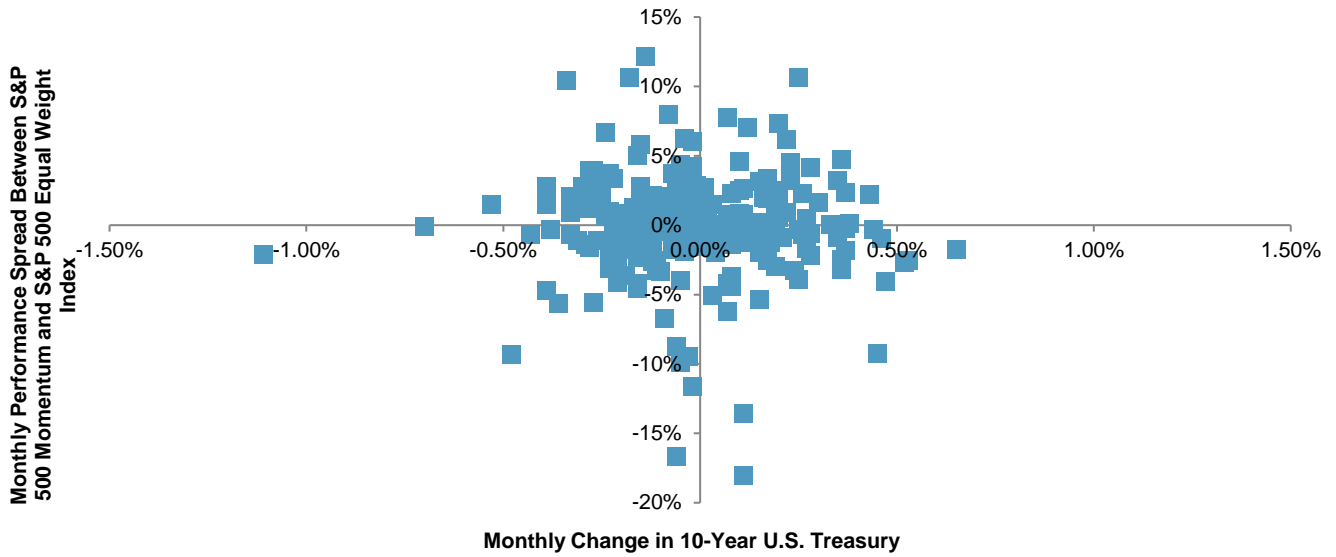


Source: S&P Dow Jones Indices LLC and U.S. Federal Reserve. Data from June 30, 1995, to June 30, 2015. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

Interest Rates and the Trifecta of Things They Won't Do

We find no evidence that changes in interest rates can reliably predict equity market performance, equity market dispersion, or the relative performance of equity factor indices. As the U.S. Federal Reserve Board contemplates the timing and extent of its monetary tightening, it's good to remember this short list of what rising interest rates *won't* do. The list is unlikely to be exhaustive, but rather it's a reminder that, anxiety notwithstanding, analyzing the behavior of the equity market involves more than just the Fed's decrees.

APPENDIX A: 10-YEAR U.S. TREASURY AND FACTOR INDEX PAIR PERFORMANCE SPREADS

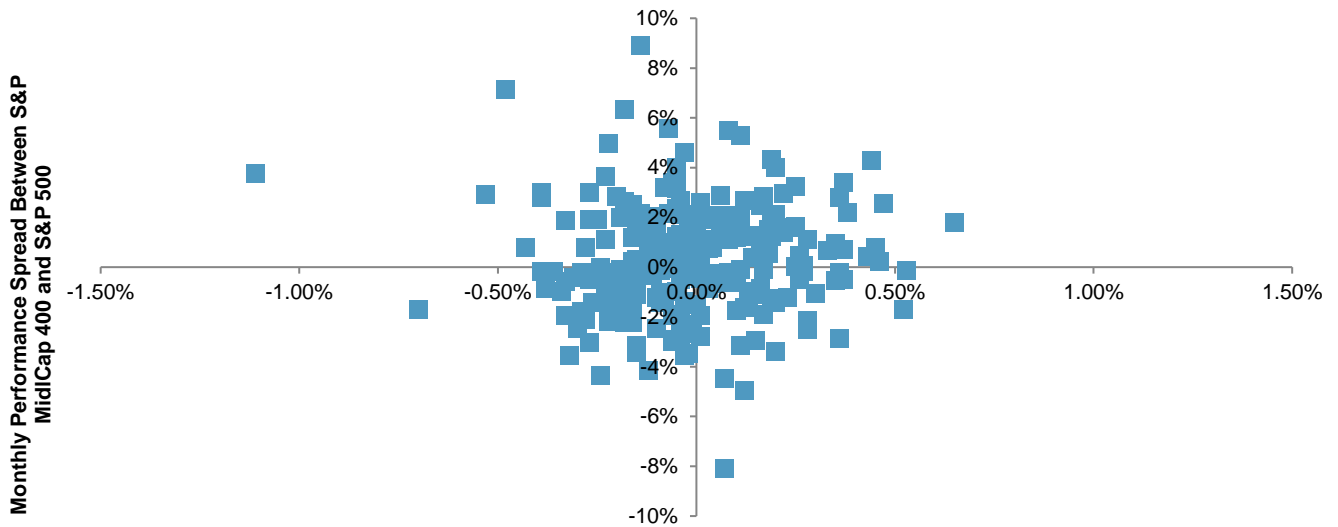


Source: S&P Dow Jones Indices LLC and U.S. Federal Reserve. Data from June 30, 1995, to June 30, 2015. Past performance is no guarantee of future results. Charts are provided for illustrative purposes.

APPENDIX A (CONT.): 10-YEAR U.S. TREASURY AND FACTOR INDEX PAIR PERFORMANCE SPREADS



Monthly Change in 10-Year U.S. Treasury



Monthly Change in 10-Year U.S. Treasury

Source: S&P Dow Jones Indices LLC and U.S. Federal Reserve. Data from June 30, 1995, to June 30, 2015. Past performance is no guarantee of future results. Charts are provided for illustrative purposes.

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