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Street View

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EXECUTIVE SUMMARY Like much folk wisdom, the adage that "good news is bad news" seems more memorable than factual. Since 2003, "good" U.S. economic news has tended to correspond with positive equity returns. That relationship has proven statistically true over different time frames (e.g., when only evaluating data since 2011) and during periods of economic uncertainty (e.g., when future monetary policy is ambiguous). In other words, good economic news really is good news most of the time. Claims to the contrary may stem from behavioral biases.

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GOOD NEWS IS... GOOD NEWS

AT 8:30 AM ON MARCH 6, 2015, the U.S. Bureau of Labor Statistics (BLS) released its employment report for the month of February. The nonfarm payroll count increased by 295,000, and the unemployment rate edged down to 5.5 percent.[1] Most economists would consider this good news. One consensus measure forecasted that nonfarm payroll employment would increase by a strong but relatively less impressive 235,000 workers, and the unemployment rate would drop to 5.6 percent.[2] Despite the seemingly positive report, U.S. equity markets fell that day. By the 4:00 PM market close, the S&P 500 had declined 1.4 percent.

Many market commentators ascribed the loss to the persistent adage that "good news is bad news."[3] Good economic news, the self-conflicting logic suggests, increases the likelihood of the U.S. Federal Reserve tightening monetary policy sooner or more harshly (or by a greater amount) than the market currently expects. The resulting pressure on equity prices ostensibly outweighs the positive market effects of improving employment and economic growth.

Like much folk wisdom, this adage seems more memorable than factual. Since 2003, "good" U.S. economic news has tended to correspond with positive equity returns. That relationship has proven statistically true over different time frames (e.g., when only evaluating data since 2011) and during periods of economic uncertainty (e.g., when future monetary policy is ambiguous). In other words, good economic news really is good news most of the time.

EMPIRICAL ANALYSIS

Figure 1 depicts this relationship. The vertical axis reports the daily return to the S&P 500 for days on which important, periodic releases of six U.S. economic indicators became available. These economic indicators are: changes in nonfarm payrolls, durable goods orders, GDP growth, initial jobless claims, ISM manufacturing index, and the University of Michigan consumer sentiment.[4] The scatter plot covers the 1,442 days since January, 2003 on which updates to any of these indices were initially released.[5]

Since "news" for the market should be evaluated relative to market expectations (i.e., to what the market has already priced in), the important economic variable to consider is the difference between consensus expectations and the realized value.[6] The horizontal axis aggregates and normalizes these differences across each of the economic indices separately using z-scores. On March 6, 2015, the z-score for change in nonfarm payrolls was 0.86, indicating that the actual release exceeded expectations by less than one standard deviation.

The regression line in Figure 1 shows a positive and statistically significant relationship. The mean return for the S&P 500 was 37 percent greater than average on days when economic news exceeded expectations by one standard deviation. This result proves robust across a number of different tests. For example, the regression coefficient when using Citi's Economic Surprise index in lieu of the z-scores described above also appears positive and statistically significant.[7] The appendix reports some of these regression results.

1 U.S. Bureau of Labor Statistics, www.bls.gov/news.release/empsit.nr0.htm

2 Median estimates of nonfarm payrolls and unemployment rate sourced from Bloomberg's Survey of Economists.

3 See, for example, www.wsj.com/articles/u-s-stock-futures-rise-ahead-of-data-1426162780 and www.marketwatch.com/story/good-news-is-bad-again-economic-data-in-focus-this-week-2015-03-08.

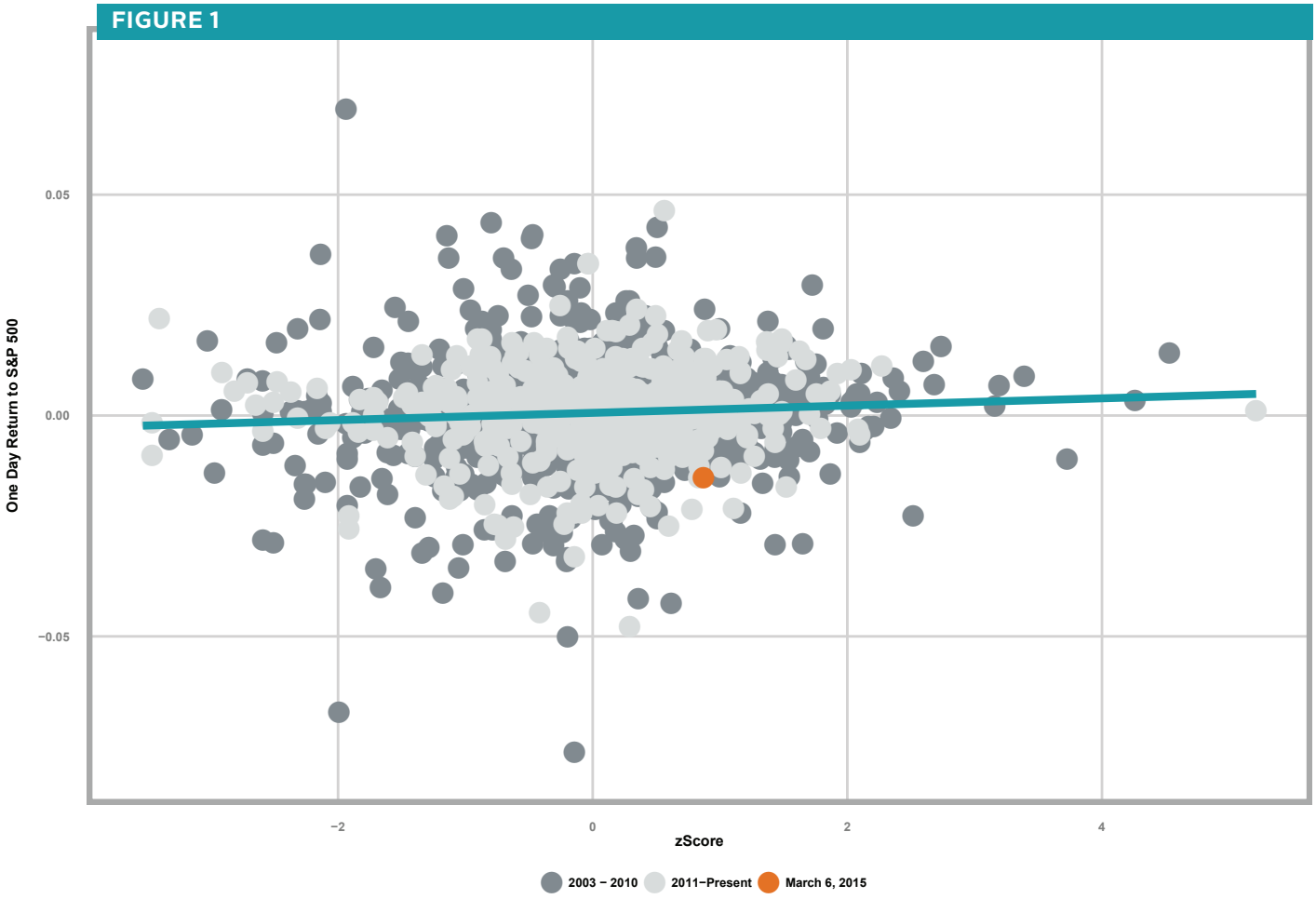
4 These six indices were selected for their high relevance score in Bloomberg's Economic Calendar. They are all available over the full period of the analysis and cover a broad spectrum of economic indicators.

5 Data does not include most recent NFP release (April 3), as the U.S. equity markets were closed that day.

6 Economic data series and consensus expectations from Bloomberg's Economic Calendar.

7 Citi Economic Surprise Index for the U.S. is available in Bloomberg under CESIUSD Index and measures daily data surprises relative to market expectations. It selects from a broader set of economic events than described in Figure 1 but utilizes a similar methodology.

FIGURE 1



NOTES
Data from Bloomberg. Line plots ordinary least squares regression. Slope of the line is not significantly different when comparing the full samples to the post-2011 sample. See appendix Table 2 for details

The regression results also prove robust across time horizons and monetary policy regimes. There exists no statistically significant difference when restricting the data to post-2011, a period when the market's level of uncertainty on the Fed's monetary policy became particularly stark (Baker, Bloom, and Davis, 2014). Similarly, using an interaction term in the regression to control for economic policy uncertainty does not meaningfully alter the results or conclusions. Good news is still good news even when the market harbors concerns that the Fed might tighten monetary policy sooner or more harshly than expected.

Plainly speaking, good economic news is typically good news for U.S. equity markets no matter the circumstances. The result on March 6 (orange dot in Figure 1), when equity markets declined following a better than expected nonfarm payrolls, represents an aberration and not a statistical norm.

IMPLICATIONS FOR INVESTORS

Aberrations (particularly outliers) tend to make good stories. For market commentators trying to explain the complex behavior of equity markets on a daily basis, such stories can make life easier. Behavioral economics also suggests that outliers tend to stick in human brains more than a fully rational mind might assume (Tversky and Kahneman, 1974, 1983). Perhaps that explains why the "good news is bad news" adage persists despite the data.

At 8:30 AM on April 3, nonfarm payrolls for March missed expectations. The number of jobs increased by only 126,000 versus median expectations of 245,000. A holiday closed the market that day, but S&P 500 futures fell nearly 22 points (-1.0%) on the news, prompting one market commentator to write, "Bad news is back to being bad news" (Citi Equities, 2015). Yet when markets reopened on April 6 and gained nearly 0.7 percent,

Table 1:
Equity Returns on Days When Economic Indicator News is Released

	Daily Return of S&P 500		
	(1)	(2)	(3)
zScore	0.00082***		0.00063
	(0.00031)		(0.00034)
Citi Surprise Index		0.00010**	0.00007
		(0.00004)	(0.00005)
Constant	0.00060**	0.00059*	0.00060**
	(0.00030)	(0.00030)	(0.00030)
Observations	1,442	1,442	1,442
R^2	0.00481	0.00390	0.00636
Adjusted R^2	0.00412	0.00321	0.00497

NOTES
Dependent variable is the daily return to the S&P 500 Index on a day in which U.S. economic indicator news is released. zScore represents the normalized difference between announced and forecast values of six economic indicators (changes in nonfarm payrolls, durable goods orders, GDP growth, initial jobless claims, ISM manufacturing index, and the University of Michigan consumer sentiment). Data on realized values and expectations based on Bloomberg. Citi Economic Surprise Index for the U.S. is available in Bloomberg under CESIUSD Index and measures daily data surprises relative to market expectations. Methodology is similar to the zScore but it selects from a broader set of economic events.

***Significant at the 1 percent level **Significant at the 5 percent level *Significant at the 10 percent level

Table 2:
Economic News and Equity Returns during Different Economic Regimes

	Daily Return of S&P 500		
	(1)	(2)	(3)
zScore	0.00082***	0.00084**	0.00083***
	(0.00031)	(0.00038)	(0.00031)
Post 2011		0.00046	
		(0.00063)	
zScore* Post 2011		−0.00007	
		(0.00067)	
Economic Uncertainty Index			0.00000
			(0.00000)
zScore* Economic Uncertainty Index			0.00000
			(0.00000)
Constant	0.00060**	0.00044	0.00060**
	(0.00030)	(0.00037)	(0.00030)
Observations	1,442	1,442	1,442
R^2	0.00481	0.00518	0.00528
Adjusted R^2	0.00412	0.00311	0.0032197

NOTES
Dependent variable is the daily return to the S&P 500 Index on a day in which U.S. economic indicator news is released. zScore represents the normalized difference between announced and forecast values of six economic indicators (changes in nonfarm payrolls, durable goods orders, GDP growth, initial jobless claims, ISM manufacturing index, and the University of Michigan consumer sentiment). Data on realized values and expectations based on Bloomberg. Economic Uncertainty Index based on Baker, Bloom, and Davis (2013) meant to proxy for the degree to which economic uncertainty might induce the Fed to change its monetary policy.

***Signicant at the 1 percent level **Signicant at the 5 percent level *Signicant at the 10 percent level

another market commentator wrote, "Bad news is good news again."[8]

Behavioral economists might ascribe this irrational effect to what they call "confirmation bias." Another example of confirmation bias, and one that seems both relevant and applicable as a cautionary tale for events like the one observed on March 6, comes from an old baseball story.[9] In his book *Moneyball*, Michael Lewis (2003) describes scouts at a baseball game who conclude that a player has batting skill based on his physical makeup and a few observations of his at-bats. More efficient and accurate (i.e., less biased) approaches existed to evaluate batting skill (e.g., studying summary batting statistics for a large number of observations), yet scouts largely ignored them in favor of "real life experience" and visual confirmation during limited observations, which inspired more confidence in the observers' minds (Thaler and Sunnstein, 2004).

Similarly, the "real life experience" from March 6, 2015 of improving U.S. employment and falling equity markets confirmed for many market observers that an inverse relationship exists between positive economic developments and equity market returns. In other words, one data point supported the "good news was bad news" belief, and many seemed to latch onto it. Yet just like in baseball, more efficient and less biased approaches exist to evaluating repeated events. Investors would do well to free themselves of cognitive biases, lest they fall prey to seemingly intuitive but counterproductive heuristics.

References

Baker, Scott R., Nicholas Bloom, and Steven J. Davis. "Measuring economic policy uncertainty." Chicago Booth Research Paper 13-02 (2013).

Citi Equities. "Citi Equities Strategy. Macro Week Ahead: April 5 - April 11." April 3 (2015).

Lewis, Michael. *Moneyball: The art of winning an unfair game*. WW Norton & Company. (2004).

Thaler, Richard H., and Cass R. Sunstein. "Market Efficiency and Rationality: The Peculiar Case of Baseball." *Michigan Law Review* Vol. 102, No. 6, (2004): 1390–1403.

Tversky, Amos, and Daniel Kahneman. "Judgment under uncertainty: Heuristics and biases." *Science* 185, no. 4157 (1974): 1124–1131.

Tversky, Amos, and Daniel Kahneman. "Extensional versus intuitive reasoning: The conjunction fallacy in probability judgment." *Psychological Review* 90, no. 4 (1983): 293.

8 See, for example, http://blogs.wsj.com/moneybeat/2015/04/06/on-monday-bad-news-is-good-news-again/.

9 Then again, the beginning of the baseball season in spring might represent an availability heuristic for the authors of this Two Sigma Street View.

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