Does the proportion of positive news articles cause significant movements in stock prices?

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The Problem

- Some say that all publicity is good publicity, but is the same true for stocks?
  - Earnings reports or guidance adjustments typically follow a well-defined cause and effect relationship.
  - Many other news elements about a specific company provide less concrete data.
  - Does the aggregate proportion of positive articles (aside from earnings reports) have a statistically significant effect on the movement of a stock?

Limitations

- Investors are not always rational, so the relationship between our independent and dependent variables won't necessarily be as clear cut as modeling a physical process.
- Time limitations limit the number of different publications included in the sample as well as the number of companies surveyed. A larger sample size and wider array of publications would have been more preferable.
- The interpretation and separation of articles into the positive vs. not positive categories is a subjective process.

Hypothesis

- Null: regardless of the proportion of positive articles, the price of a stock will remain within 1.96 standard deviations of its 2 week volatility (extrapolated from trailing 12 months)
- Alternate: if the absolute value of p - .5 is greater than .1, the stock will move more than 1.96 standard deviations of its 2 week volatility.

Designing the Experiment (Data Set)

- Countless publications and several thousand public companies exist and could be considered our population.
- In order to choose a manageable sample set, I chose 9 random companies from the S&P500.
  - Chosen companies included (tickers)YHOO, AAPL, AA, HD, MSFT, GE, BAC, F, and LUV.
  - Stocks from a few different sectors were chosen in an attempt to find a sample more representative of the market

Designing the Experiment (Data Set)

- Publications chosen to be included in each respective security's positive proportion were *Barron's, The Wall Street Journal, Forbes, CNBC, Bloomberg, CNN, Fortune,* and *Reuter's*

Data Collection

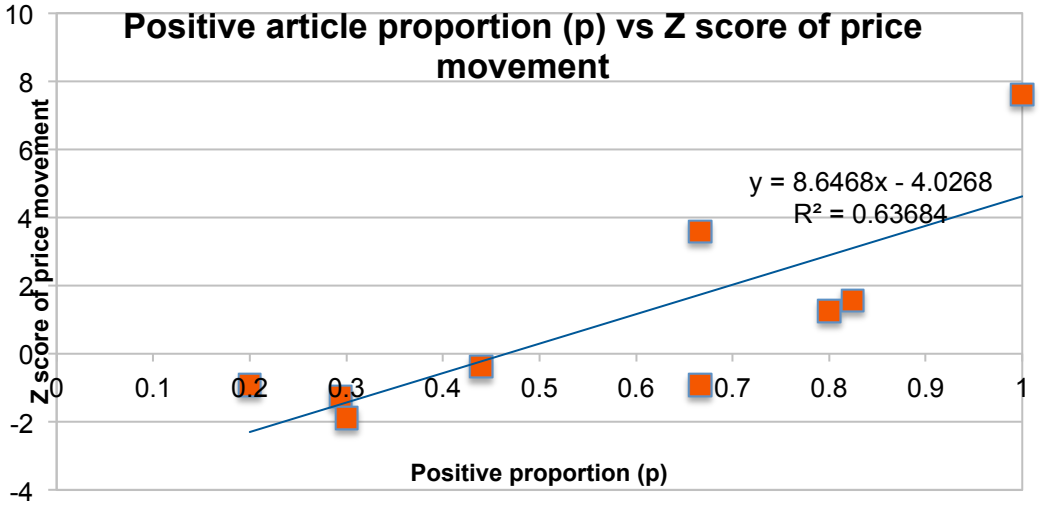
- Over the course of 1 business week, articles published by the aforementioned publications about companies in our sample will be read and labeled as positive or not positive (not necessarily negative).
- During that week, the price information for each of the 9 stocks was also recorded.
- Price information was recorded for the two business weeks following the article sample to assess the impact of that week's press.

Analysis

- Stock data taken from the year preceding the experiment (provided by Yahoo Finance) was downloaded and analyzed to determine the standard deviation of price movements over the week, two-week, and one month intervals.
- Price movements for each stock during the experiment period were compared with historical data. Movements were also normalized with the market movement of the overall S&P 500 index (using a stock's beta = Cov(market, stock)/ Var(stock)).
- Data was normalized with regard to each stock's

Results

- The average movement of stocks within the sample which fit our criteria of Abs(p-.5) > .1 was 2.44 standard deviations, which surpassed the specified criteria to invalidate the null hypothesis. The sample was biased however and was heavily influenced by one stock.
- In most behavioral finance and/or psychology studies, R^2 >= .5 defines a relatively strong correlation.



Conclusion

- While the sample set was limited, the movement of a stock based on its recent proportion of positive articles did have a statistically significant correlation.
- The correlation in our sample was not high enough to suggest it as an active trading strategy, although it could serve as a barometer when evaluating an equity position.
- Its usefulness appears to be most apparent at the extremes, so refining the alternative hypothesis to cover fewer cases of p might also yield more meaningful results.