

## Using Sentiment Analysis to Capture Short Term Inefficiencies in Stock Prices

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### Opportunity

This research aims to predict movements in stock prices using sentiment driven analysis. Bloomberg provides aggregate social media and news outlet sentiment data for most stocks. After considering volatility and other factors, this sentiment data is an effective indicator of price movement. Through various optimizations, we endeavor to produce a strategy capable of consistently generating positive returns.

Magnitude of the hedge fund industry:

**\$3,000,000,000,000**

Goal:

To develop a stock trading algorithm that consistently beats the market

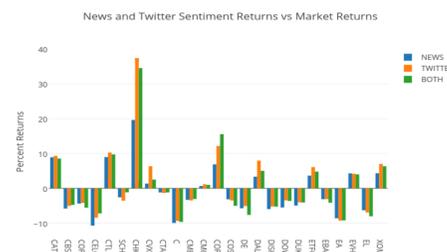
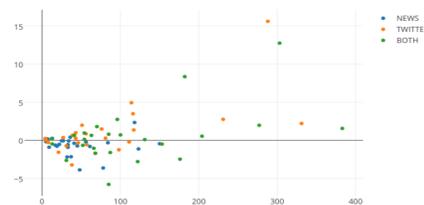
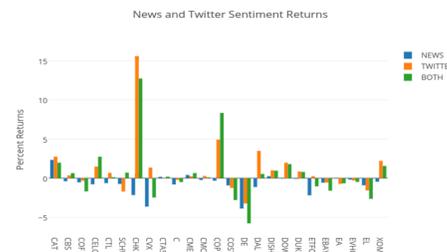
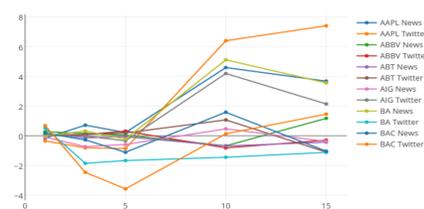
#### Short Term

- Continue to optimize the algorithm
- Import data on all stocks
- Fully account for transaction costs and slippage
- Develop risk management metrics

#### Long Term

- Develop our own AI to track sentiment across all news and social media
- Determine how much money we would need to successfully run the algorithm
- Seek external funding

### Data and Figures



Total market return: 0.0588%  
 Total news return: -0.7012%  
 Total twitter return: 1.1024%  
 Total return for both: 0.5667%

### Approach

We began by partitioning a trading day into intervals of different sizes and examined how the sentiment of a group of stocks changed over the interval. If the change was positive we would buy the stock, and if it was negative we would sell the stock. All data, including stock prices and sentiment analysis was provided by Bloomberg. To begin, all stocks were traded in equal proportions.



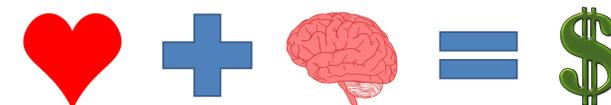
We then used this data to determine the optimal size of the trading interval, which turned out to be close to 10 minutes.

We looked specifically at how individual stocks were performing against the market for a news driven strategy and a twitter driven strategy. We found that Twitter generated more reliable returns than the news alone.

We also began assigning weights to stocks based off of the magnitude of the sentiment, and which direction the sentiment was going. We found that most stocks are more sensitive to negative press than positive sentiment.

### Impact

The unique feature of this research is the combination of very diverse data sets. Much of computational finance has been dominated by technical analysis, which relies heavily on historical stock and investment data to make predictions. Only recently have we been able to examine the news and social media on the scale that it would impact stock prices. To make money in this modern era of investing, you have to get into the **hearts** and the **minds** of the investors.



Managing money is a very challenging thing to do. It is so hard that people have written entire dissertations about how it is impossible to beat the market. Nevertheless, investing money is a necessary component of our society, and someone needs to do it. It funds our Universities, it keeps us on track for retirement, and it helps us pay for things like a car or a house. This research may be the answer to anyone looking for a unique and reliable way to invest money.

#### Acknowledgements

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All data was provided to us by Bloomberg