

## Statistical interaction between twitter activity and the prices of stocks

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We propose a machine learning time series approach to analyzing the streaming Twitter data. The key motivation is that the Twitter stream may reflect knowledge that people possess about specific stocks which is likely to be correlated with the market performance in a short time frame.

According to the Efficient Market Hypothesis (EMH), market prices reflect all relevant information available in the market and stocks are always traded at their fair value. The bottom line of the EMH is that beating the market with consistency would be impossible. The EMH is challenged by the field of behavioral finance, which argues that stock prices can deviate from their fair value. If the EMH holds then attempts to predict the stock market will be ineffective.

This research seeks to investigate this issue, by examine whether there is any valuable information concerning stocks shared on Twitter. Specifically, we examine the relationship between stock specific tweets and stock returns by analyzing them quantitatively and examining the sentiment contained in them.

Our findings suggest that in some cases a significant burst in stock specific tweets predicts the behavior of the stock in the following day, this can be used in real world scenarios.

Our work differs from previous work in this aspects:

1. We use machine learning to infer which tweets refer to the stock market.
2. We focus on individual stocks and utilize mass Twitter data in order to predict change in their behavior.
3. We focus on small companies (under \$1B market cap).