**Twitter Sentiment and Stock Market Reactions:**

**Evidence from U.S. Airlines during the Covid-19**

Team 5

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Investor sentiment has frequently been considered an important factor in determining asset prices. Traditionally, sentiment is measured by observing analyst estimates, survey data, news stories, and technical indicators such as put/call ratios and relative strength indicators. However, these indicators only reflect a limited subset of investors and usually they are measured untimely. Nowadays, with the rise of social media like Twitter, where people freely express their attitude toward companies, we are able to overcome these drawbacks and measure the sentiment of a large group of individuals in real time.

To understand the effectiveness of using Twitter sentiment analysis as an indicator of stock market reactions, we focus on U.S. airline companies during Covid-19. The airlines have remained one of the hardest-hit global industries since the pandemic. The frequent changes of travel policy and crisis outlook have greatly affected investor sentiment and stock performance during the time, which provide more variations for our analysis.

Using Tweets data from Twitter API and market data from Yahoo Finance, we plan to examine the association between community sentiment and the changes in stock price. To be specific, we will be exploring the following questions in our investigation:

1. Could Twitter sentiment predict stock market reactions (asset returns, shifts in volatility, and abnormal trading volume), or does sentiment follow the stock market performance?

2. What kind of users are more influential in determining the stock prices?

3. The possibility of building a dynamic tweet-based asset allocation strategy.

Data Sources

Twitter API: <https://developer.twitter.com/en/docs/twitter-api>

Yahoo Finance or WRDS (account from Columbia Business School)

Time Schedule

Week 1: API setup and debugging; data download and preprocessing

Week 2-3: Natural language processing - model training and testing

Week 4-5: Data analysis and trading strategy construction

Week 6: Final project report write-up

We plan to meet weekly via Zoom/in-person to track the progress.