



# **Uncovering The Relationship Between Economic News and Daily Market Fluctuations: An Empirical Study**

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## Abstract

Our paper sought to quantify S&P 500 performance based on economic news sentiment data. If successful in finding a substantial correlation, we hoped to predict price changes based on the tone of economic news on any given day. Previous research has shown conflicting information regarding the correlation between economic news sentiment and stock price. Our results centered around two primary sources used to analyze economic news and assist us in understanding how positive, negative, or neutral economic news was on a given day. A single variate regression showed that our two primary datasets have a coefficient of correlation of approximately -0.0267953. This result suggests that economic news sentiment has little to no impact on the daily stock price of the S&P 500; however, negative news has a slightly more consistent impact on stock price than positive news.

## Introduction

Individuals' opinions are often shaped by the type of news content they encounter daily, leading them to favor certain viewpoints on various subjects. This also applies to economic news, with research demonstrating a correlation between economic news sentiment and daily stock prices. Daily economic news guides a shift in the perception of a particular company, industry, or certain business techniques and strategies. With the advent of the Internet, investors have essentially unlimited access to updated news, making it easier for news to consistently alter their sentiments and impact decisions to invest in certain companies or industries. Beyond influencing asset allocation, sentiment also provides insight into risk levels and market consensus, which is often reflected in stock market movements. Developing a News Sentiment Index involves using models to predict sentiment by analyzing pre-determined keywords and categorizing them as positive, negative, or neutral. Despite this, people attempt to interpret and define stock market movements differently. When consuming news, the headlines of various articles play an even more important role. Sentiment analysis may be used on these headlines targeted at a particular company or company to determine the effects of the headlines on the stock market. This study will focus on the Daily News Sentiment Index created by the Federal Reserve Bank of San Francisco and examine its relationship with the S&P 500, which will serve as our proxy for the stock market.

## Literature Review

The impact of economic news on daily stock prices is a subject of ongoing debate. Raza et al. (2023) highlight inconsistencies in how different types of news affect stock volatility. The review finds that bad news has a larger impact on a stock's volatility than good news. This indicates that negative breaking news has a more pronounced effect on stock volatility than positive news. Lastly, the review highlights the importance of watching international news and the risks that may occur due to negative news. ((L. Bartolini, L. Goldberg, & A. Sacarny. How economic news moves markets. *Current Issues in Economics and Finance*, **14**, 1-7 (2008).))' find that most economic news fails to generate a significant price response. A few exceptions, such as economic news in the ISM Manufacturing Report and the GDP Advance Release, affected asset prices more significantly than others. It is important to note that according to Bartolini's findings on Bond, Stock, and Foreign Exchange asset classes, the review finds that these announcements have the weakest impact on stock prices. ((D. Pearce, & V. V. Roley. Stock prices and economic news (1984).))' have found that announcements related to monetary policy have had a significantly negative effect on stock prices in the past. Despite this

information, their review also finds that announcements related to inflation or real economic activity have not impacted stock prices much in the past. Additional findings include that anticipation regarding economic announcements does not significantly affect daily stock price movements, which aligns with the efficient markets hypothesis. According to ((G. Birz. Stale economic news, media, and the stock market. *Journal of Economic Psychology*, **61**, 87-102 (2017).)), investors are more impacted by salient (noteworthy) information, and the research supports the hypothesis that many investors typically overreact to stale macroeconomic news reported in newspapers. This hypothesis was created by looking at statistically and economically significant correlations between cumulative daily stock prices in the following weeks of unemployment releases and information in newspaper headlines about unemployment releases. ((B. Fazlija, & P. Harder. . Using financial news sentiment for stock price direction prediction. *Mathematics*, **10**, 2156, (2022).))' found that economic news sentiment indexes, calculated using NLP methods, can help project stock prices based on sentiment analysis. In addition, their review also finds that specific news reports may be used to discover whether a company takes ethical or ecological aspects into account, and by using automation in the reading of the reports, a shortlist of the most sustainable and least sustainable companies can be made. From a data perspective, this review states that the author proposes to use news on all companies included in the stock market index. ((S. Chowdury, S. Routh, & S. Chakrabarti. News analytics and sentiment analysis to predict stock price trends. *International Journal of Computer Science and Information Technologies*, **5**, 3595-3604 (2014).))' examine the overall impact of news on the stock market, focusing on its effect on investors' opinions and beliefs. This review finds that extreme news tends to have an impact on a portion of investors which sometimes leads to an increase in trade and volatility. The review also highlights the benefit of using computing to determine which news sources are most important and relevant to give them real-time sentiments, as well as the model's ability to sniff out articles that include extreme opinions or biases. The review concludes that news sentiment does have a strong correlation to stock prices, several 67%. ((A. E. Khedr, S. E. Salama, & N. Yaseen. Predicting stock market behavior using data mining technique and news sentiment analysis. *International Journal of Intelligent Systems and Applications*, **9**, 22-30 (2017).))' explore the use of data mining techniques to compute and analyze complex financial data which leads to more accurate predictions for stock market behavior. It also highlights the risks of news mining, which includes the unstructured nature of news. This review concluded that the use of algorithms to determine news polarities as being either positive or negative was effective and the results of the model as a whole support the idea that there is a strong correlation between stock news and stock price. ((L. Nemes, & A. Kiss. Prediction of stock values changes using sentiment analysis of stock news headlines. *Journal of Information and Telecommunication*, **5**, 375-394 (2021).))' question how much influence headlines alone without the economic news context as a whole have, and if it has any measurable effect. Their review contained different sentiment analysis tools to emotionally analyze and classify different economic news headlines and examine their impact on different stock market value changes even without their full context. Overall, they found that economic news headlines have an impact on stock market values, despite having limited to no context. The goal we would like to achieve in our research is to provide further empirical data regarding the impact of economic news on daily stock prices.

## Results



Our linear regression analysis revealed a correlation coefficient of approximately  $-0.0268$  among both datasets. This result indicates that the Daily News Sentiment has virtually no impact on the daily stock price of the S&P 500, although negative news has a slightly more consistent impact on stock price as opposed to positive news.

### **Discussion/Interpretation of Results**

As stated in our results, the Daily Sentiment for Economic News has very little to no accuracy in predicting the stock price of the S&P 500 for that day. Our research shows that there are quite a few reasons as to why this may be the case. One essential factor contributing to the lack of correlation between our datasets is the significance of salient information. Our findings align with Birz's conclusion that salient information—i.e., recent and noteworthy—can significantly influence investors, who need to differentiate between salient and stale information. Within that same review, we also agree upon the idea oftentimes stock prices slightly adjust to economic news announcements before their coverage in newspapers. In addition, investors tend to overreact to outdated macroeconomic news that no longer influences stock prices. This hypothesis was created by statistically and economically noteworthy correlations between information in newspaper headlines about cumulative daily stock prices and unemployment released throughout the two weeks following the day of unemployment releases. In addition to this explanation, other research done by Pearce and Roley aligns with our idea that only economic news related to monetary policy may account for some slight correlation between economic news and the daily price of the S&P 500. Besides this, only a limited amount of evidence has been found to portray an impact from inflation surprises and there hasn't been evidence found of any impact from real activity surprises on announcement days. There is also only weak evidence of fluctuating stock prices due to surprises beyond the everyday news. Lastly, anticipation regarding economic announcements does not significantly affect daily stock price movements. This ties into the importance of salient information and continues to explain a lack of reaction to stale or irrelevant macroeconomic information. To expand upon this, there are a variety of other factors that may contribute to the volatile nature of the stock market on top of investor sentiment. Other factors contributing to stock market volatility may include corporate performance and economic shifts. Our results also agree with the idea presented by Reza et al. which states that while economic factors may have a better explanation for monthly movements, research shows that daily changes are very challenging to predict but may still be approached through analysis of news impact. Building off of this, our results are in line with those of Bartolini et al., which highlight the extreme difficulty in predicting specific effects of economic news on stock prices and the fact that increased knowledge, research, and understanding of economic news may yield more predictable results. Our general research and this review agree that both of these things can be true at the same time. Our research has shown that this increased knowledge and understanding can entail researching Economic announcements in the ISM Manufacturing Report on Business. Despite this allowing for a potentially higher correlation for more experienced investors, this report may see more sustainable results when investing in Asset Classes and Bonds as opposed to stocks, which is solely what is being researched in our report. Those looking for a steady basis to become more knowledgeable on the impact of economic news on the stock and other financial markets will continue to understand that the instant impact of more salient news causes a greater shift in stock price and that other news has virtually no impact on stock prices.

## Methodology

This study examines several datasets to assess the impact of economic news on the stock market. The first primary data source used to analyze economic news was the Daily News Sentiment Index created by the Federal Reserve Bank of San Francisco. This data set assists researchers in understanding how positive, negative, or neutral economic news was on a given day. On the other hand, we needed a data set to represent the stock market to compare the two. The second primary data set used to represent the stock market was the daily price of the S&P 500. We then compared compatible data points from July 30, 2014, to July 19, 2024. Before we could do that, however, we took every compatible date between both data sets and compared the opening price to the closing price of the S&P 500 for each day to find the daily percent change. Once this was done, we conducted a simple linear regression on the datasets to determine the correlation coefficient. If our data were to show a relatively high positive coefficient, it would demonstrate that positive economic news tends to have a strong yet positive impact on intraday stock trends. On the other hand, a relatively high negative coefficient would demonstrate that negative economic news accurately predicts negative intraday stock trends. Meanwhile, a coefficient close to zero would represent little to no correlation.

## Conclusion

Our research aimed to determine how economic news sentiment affects the daily performance of the S&P 500. While some research has suggested a correlation between economic news sentiment and stock prices, our research, supported by others, indicates that predicting the impact of economic news on stock prices is extremely challenging. Usually, stock prices will rise or fall depending on the stream of expected future dividends or the discount rate including risk compensation reacts more to economic news. This also applies to the reaction of stock prices to news of inflation as inflation increases anticipated nominal future earnings and the nominal rate at such earnings is discounted. To find our results, we used two primary sources to analyze economic news and assist us in understanding how positive, negative, or neutral economic news was on a given day. The additional data set used to represent the stock market was the daily price of the S&P 500. After gathering our data, we used both primary data sets to run a single variate regression to determine the coefficient of correlation between the two datasets. After running our single variate regression, our results showed that our two datasets have a coefficient of correlation of approximately  $-0.0267953$ . This indicates that the Daily News Sentiment has little to no impact on the daily stock price of the S&P 500. A key reason for our results is the significance of salient information. Oftentimes, investors can be subject to overreactions to macroeconomic news that is no longer salient and therefore no longer have any impact on stock price. In addition to general economic news, other forms of media like social media may be studied to find a greater and more consistent correlation between the stock market and various forms of economic media.

## References

- A. E. Khedr, S. E. Salama, & N. Yaseen. Predicting stock market behavior using data mining technique and news sentiment analysis. *International Journal of Intelligent Systems and Applications*, **9**, 22-30 (2017). <https://doi.org/10.5815/ijisa.2017.07.03>
- B. Fazlija, & P. Harder. . Using financial news sentiment for stock price direction prediction. *Mathematics*, **10**, 2156, (2022). <https://doi.org/10.3390/math10132156>
- D. Pearce, & V. V. Roley. Stock prices and economic news (1984). <https://doi.org/10.3386/w1296>
- G. Birz. Stale economic news, media and the stock market. *Journal of Economic Psychology*, **61**, 87-102 (2017). <https://doi.org/10.1016/j.joep.2017.03.002>
- L. Bartolini, L. Goldberg, & A. Sacarny. How economic news moves markets. *Current Issues in Economics and Finance*, **14**, 1-7 (2008). [https://www.newyorkfed.org/medialibrary/media/research/current\\_issues/ci14-6.pdf](https://www.newyorkfed.org/medialibrary/media/research/current_issues/ci14-6.pdf)
- L. Nemes, & A. Kiss. Prediction of stock values changes using sentiment analysis of stock news headlines. *Journal of Information and Telecommunication*, **5**, 375-394 (2021). <https://doi.org/10.1080/24751839.2021.1874252>
- S. Chowdhury, S. Routh, & S. Chakrabarti. News analytics and sentiment analysis to predict stock price trends. *International Journal of Computer Science and Information Technologies*, **5**, 3595-3604 (2014). <https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=57abadf88a1470daebe9e54a02b845bfb54866c3>
- S. Raza, S. Baiqing, P. Kay-Khine, & M. A. Kemal. Uncovering the effect of news signals on daily stock market performance: An econometric analysis. *International Journal of Financial Studies*, **11**, 99 (2023). <https://doi.org/10.3390/ijfs11030099>.