TRINITY COLLEGE DUBLIN

Abstract

Faculty of Engineering, Mathematics and Science
School of Engineering

Masters in Computer Engineering

Weather and sentiment analysis in the commodities market

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This project involves an investigation of the impact of the effect of exogenous and qualitative analysis on the spot price of commodities. The commodities market is a complex system and to estimate the effect of weather and sentiment articulated in news and comments requires a number of different analysis techniques. To calculate the impact of the weather analysis on the commodities market a large collection of historical data was aggregated. A weather model was then formed using cumulative heating degree days, mean temperature and a stochastic process, the accuracy of this model is then tested using vector autoregression.

The investigation into the impact of sentiment analysis on the project was conducted by identifying formal and social news sources and then analysing the sentiment content of the news. The sentiment of the corpus of text is analysed using the Rocksteady program which has been developed in Trinity, using a general and domain specific dictionary. The time series sentiment analysis is then analysed through the use of vector autoregression.

The key findings from the research into the analysis techniques in the commodities market has shown that weather analysis is more effective at predicting changes in the commodity markets due to the lower P-values and higher F-tests returned by the vector autoregression. It was also observed that the analysis results of various commodities varied to a large extent even for the same analysis techniques for example Natural Gas was heavily influenced by weather analysis while gasoline showed very little response to this analysis. The sentiment analysis produced statistically significant results for WTI Crude Oil but was not as effective for the other commodities.

As a conclusion to the project I develop an algorithmic trading program which makes trades based on trends in the weather and sentiment analysis which shows how the research that was conducted has useful applications in industry. I also look at some visualization options which show how the research results can be best illustrated.