Cryptocurrency in North America: Sentiment Analysis of Regulatory Influences and Price Prediction

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Abstract

The dynamic and relatively nascent field of cryptocurrency is increasingly impacted by regulatory measures in North America, particularly by the Commodity Futures Trading Commission (CFTC), the Securities and Exchange Commission (SEC), the Financial Industry Regulatory Authority (FINRA) and the Canadian Securities Administrators (CSA). This project will attempt to address the need to understand the sentiment and widespread adoption of cryptocurrency in light of these regulatory frameworks. The primary research question focuses on how current and proposed regulations by these bodies influence public sentiment towards cryptocurrencies. The study will also seek to investigate whether these regulatory announcements of proposed rules and implementation dates could predict cryptocurrency price fluctuations, especially in the context of "sell the news" events, where prices might drop following major announcements or regulatory updates. One such recent example being the SEC's approval of listing and trading of the spot bitcoin ETF.

The data for this study will be sourced from publicly available documents, including current and proposed rules, regulations, and official statements from the websites of the CFTC, SEC, FINRA and CSA. These will provide a comprehensive view of the regulatory landscape in North America. Additionally, cryptocurrency price data corresponding to the timeline of these regulatory announcements will be incorporated to examine potential correlations between regulatory actions and market reactions (bullish/bearish). The price data will be sourced from one of the many crypto exchanges that track historical crypto prices.

To analyze this broad and unstructured dataset, I've chosen to employ the theme of text mining and sentiment analysis techniques. Text mining will be used to extract relevant information and key themes from the regulatory documents. Sentiment analysis will then be applied to gauge the tone and sentiment of these documents, categorizing them as positive, negative, or neutral in the context of cryptocurrency. This sentiment analysis will be correlated with cryptocurrency adoption trends and market data to identify any significant relationships.

For the prediction aspect, the study will use time-series analysis to explore the impact of regulatory announcements on cryptocurrency prices. The project will use machine learning algorithms to analyze the relationship between the timing of these announcements and subsequent price movements, thereby assessing the feasibility of predicting price changes based on regulatory news.

The primary tools for these analyses will include Python programming language, utilizing libraries such as NLTK for natural language processing, Pandas for data manipulation, and scikit-learn for machine learning models. Additionally, visualization tools like Matplotlib and Seaborn can be used to present the findings in an easy to understand manner.

In summary, this project aims to provide a nuanced understanding of the impact of North American regulatory measures on cryptocurrency sentiment and market behavior. The findings are expected to offer valuable insights for investors, regulatory bodies, and academics and person's like myself interested in the intersection of finance, technology, and regulation.

Data Sources

https://www.dukascopy.com/trading-tools/widgets/quotes/historical_data_feed for crypto

historical pricing extracts

For sentiment analysis:

https://www.cftc.gov/LawRegulation/FederalRegister/index.htm

https://www.sec.gov/about/laws/secrulesregs

https://www.securities-administrators.ca/investor-tools/crypto-assets/