Correlating Trump's Social Media Activity with the Bitcoin Price

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Abstract

This project investigates the impact of Donald Trump's Truth Social activity on Bitcoin market movements, specifically focusing on the period following the 2024 election. By aligning Bitcoin price data with the social media timestamps, this project uses an event study approach to measure price returns across time windows ranging from 30 minutes to 4 hours. The analysis indicates strong divergence in market reactions, while posts containing crypto related terms like "btc" and "cryptocurrency" trigger positive returns, general economic keywords often resulted in negative performance. However, due to the limited number of posts containing the keywords, exact conclusions cannot be drawn. Furthermore, sentiment analysis using VADER found no significant correlation between posts and comments against the Bitcoin price returns.

1 Introduction

This project investigates the relationship between Trump's social media activity on his own Truth Social platform and the market movement of the cryptocurrency Bitcoin.

The intersection of social media activity and financial markets has become a hot topic in the latest years. Profiles such as Elon Musk, the owner of social media platform X, formerly known as Twitter. Who have shown had a strong price effects on the cryptocurrency Dogecoin (Ante, 2023). The current US President Donald Trump, is also an owner of a social media platform called Truth Social. He regularly posts about cryptocurrency, this have had a strong impact in the past. When Trump was a president between the years 2017-2020, his post sentiment on Twitter would influence the crypto market (Huynh, 2021). Another problem is the conflicts of interest, during 2025 the Trump family's integrated cryptocurrency ecosystem reached peak valuations exceeding eleven billion dollars, displaying how political finance is capitalizable in the digital era (Badawi, 2025).

By investigating this relationship, we can learn about the market's sensitivity to political narrative on social media. We also gain technical knowledge into handling and processing large amounts of unstructured text data and aligning it with high-frequency financial data.

2 Theory

This section presents the relevant theoretical background that is used in this project.

2.1 Sentiment Analysis

To analyze the sentiment of the posts and comments, this project uses VADER (Valence Aware Dictionary and sEntiment Reasoner). VADER is a rule-based model and made for social media contexts, to handle such things as emojis, slang and acronyms. To quantify the sentiment, it uses a compound scoring, where -1 is extreme negative and +1 is extreme positive. To standardize the threshold as either positive, neutral, or negative typical threshold values in research are used in the list below.

- **positive sentiment** score >= 0.05
- **neutral sentiment** (score > -0.05) and (score < 0.05)
- **negative sentiment** score <= -0.05

(Hutto and Gilbert, 2014)

2.2 Snowflake ID System

Truth social, is a fork of Mastodon Social, an open-source social network (Brown and Baggili, 2024). In result, both systems use the same Snowflake IDs to label posts and comments. This ID system uses 64-bit integers, where the millisecond timestamp is encoded in the first 48-bits, and where it uses UNIX as the epoch (mastodon, 2025).

2.3 Event Study

Event study is an approach of assessing the impact of an event, such as in finance or economics. For example, in finance an event study could be to measure the impact of an event against the value of the company (MacKinlay, 1997).

3 Data

The project uses two primary datasets fetched via the Hugging Face Hub.

3.1 Truth Social Dataset

This is a newly published dataset from October 2025, it contains more than 18000 posts and over 31.8 million comments scraped from Donald Trump's profile on Truth Social. The datasets have posts dating from the start of Truth Social February 2022 until the last date of scraping October 2025 (notmooodoo9, 2025).

3.2 Bitcoin Price Dataset

This dataset contains the 1-minute price action of Bitcoin, sourced from the cryptocurrency exchange Binance (FamilyLinks, 2025).

4 Method

In this section the different methods are explained, ranging from loading and preprocessing the datasets to having the sentiment analysis done.

4.1 Loading Datasets

The Bitcoin and Trump post data were loaded into data frames directly using pandas and Hugging Face Hub. Due to hardware constraints (limited RAM), the comments were processed in chunks, the sentiment score was calculated using VADER from the text of the comment and saved together with user ID and reply ID.

4.2 Normalize Timestamps

A crucial point for event studying is to have the same time zone for each dataset. The Bitcoin dataset already had Coordinated Universal Time (UTC) zone, so no conversion was needed there. The Trump's post and comments were converted into UTC by shifting each Snowflake ID right by 16 bits and then converting the milliseconds into UTC.

4.3 Linking Nested Comments to Original Post

In the comment's dataset, the original "root" post ID does not exist. So to find the "root" ID for each comment, it is needed to iteratively look up the parent of each comment reply ID until it reaches the top-level Trump post, where no further parent exists in the comment dataset.

4.4 BTC Price Action Following Posts

The program calculates the Bitcoin percentage return for multiple time windows (30 min, 1 hour, 2 hours, 4 hours) following each event when Trump posted. This is done by finding the Bitcoin opening price in the exact moment of the post and comparing it to the opening price at the end of each time window.

4.5 Sentiment Analysis Following Posts

The program calculates the sentiment score for each event Trump posted using VADER and then calculate the average sentiment of the comments responding to it. It computes these sentiment averages for multiple time windows (30 min, 1 hour, 2 hours, 4 hours) for each Trump post.

4.6 Keywords Analysis

Filtering was applied to posts and comments to only have dates after the 2024 election (November 5th 2024). This was when Trump was confirmed the winner of the election and will be more relevant for having more political finance influence. A baseline was then calculated for all Bitcoin returns after that date, and a baseline for the sentiment was also done for all posts and comments. For the keyword analysis, a selection of Bitcoin related and general finance keywords were chosen to match the whole word in the posts.

5 Results

In Table 1 the baseline of the Bitcoin time frame returns, post sentiment, and comment sentiment during the presidency can be seen.

Table 1: Baseline Statistics

Metric	30m %	1h %	2h %	4h %	Post Sent.	Com. Sent.
Baseline	0.0019	0.0126	0.0359	0.0992	0.3197	0.0211

In Table 2 the different keywords analysed from Trumps posts can be seen. Furthermore, the average comments on those posts, return Bitcoin win-

dows, average post sentiment, and the average comment sentiment on those posts.

Table 2: Keyword Analysis

Keyword	Posts	Avg Coms	1h %	4h %	Post Sent.	Com. Sent. (1h)
btc	1	2448.0	2.1660	2.7601	0.8221	0.1241
cryptocurrency	1	1840.0	1.4771	0.7112	0.9432	0.1388
currency	5	5381.8	1.3393	1.9839	-0.0129	0.0691
crypto	9	1525.1	0.7717	1.4611	0.7303	0.0622
token	2	1113.0	0.6330	1.2009	0.9458	0.0910
Bitcoin	4	1377.8	0.3194	0.5385	0.2828	0.0863
exchange	5	2176.8	0.1523	0.5811	0.4548	0.0559
china	76	3348.7	0.1201	0.1470	0.3399	0.0370
trade	111	2679.2	0.0964	0.2031	0.5600	0.1014
economy	143	1903.5	0.0391	0.1695	0.7408	0.0494
dollar	25	3153.7	0.0337	-0.0997	0.2611	0.0614
tariff	66	3252.0	0.0262	0.2255	0.3841	0.0750
invest	6	2604.5	0.0163	0.4306	0.9370	0.1307
inflation	42	3141.3	0.0107	0.2072	0.0473	-0.0039
coin	2	968.5	-0.0036	0.0560	0.2294	0.1841
tariffs	136	3501.2	-0.0132	0.1811	0.3776	0.0624
wealth	9	2795.8	-0.0224	0.3412	0.2757	0.0635
stock	12	3812.4	-0.0249	0.2231	0.3048	0.0051
market	34	2428.6	-0.0356	0.2155	0.4173	0.0645
usa	84	3445.8	-0.0575	-0.0120	0.3845	0.0546
financial	36	2599.4	-0.0676	0.2401	0.6522	0.0680
fed	33	2971.5	-0.1152	0.0057	-0.0087	-0.0386
bear	1	1185.0	-0.1600	-0.0242	0.7707	-0.0058
payment	4	4868.0	-0.3105	-0.8019	0.0548	0.0251

In Table 3, the post made with the highest return after one hour can be seen.

Table 3: Best Performing Post for Keyword "btc" (Highest 1-hour Return)

Date	Post Text	1h Return	Post Sent.	Com. Sent. (1h)
2025-03-02	RT: obviously, BTC and ETH, as other valuable Cryptocurrencies, will be the heart of the Reserve. I also love Bitcoin and Ethereum!	2.17%	0.8221	0.1241

As shown in Table 4, the post with the overall lowest 1 hour return can be seen.

Table 4: Worst Performing Post for Keyword "Payment" (Lowest 1-hour Return)

Date	Post Text	1h Return	Post Sent.	Com. Sent. (1h)
2025-02-12	DOGE has found massive amounts of FRAUD, WASTE, INCOMPETENCE, AND ABUSE, but even knowing this, a highly political, activist Judge wants us to immediately make payment, anyway. In other words pay, even though you know the payment was fraudulently requested to be made. DOGE caught them - The Judge just doesn't care. It doesn't make sense!!!	-0.94%	-0.7712	-0.1209

6 Discussion

6.1 Keywords Analysis

The results in Table 2 shows a divergence between general economic keywords and specific cryptocurrency terminology. While the baseline 1-hour return for Bitcoin during the presidential period was approximately 0.0126%, the post containing "btc" and "cryptocurrency" had an average 1-hour return of 2.17% and 1.48%. This suggests that the crypto market reacts to social media influence from Trump.

In contrast, general economic keywords such as "financial", "stock", or "wealth" resulted in negative returns, even though the posts and comments had an average positive sentiment. This supports the hypothesis that the crypto market reacts to specific signals rather than the general economic sentiment.

6.2 Sentiment vs. Crypto Market

In the relationship between VADER sentiment scores and market returns, there does not seem to be any correlation. Keywords with positive post sentiment, "financial" or "usa" still have negative returns, the same applies for the comment sentiment.

6.3 Limitations

There are several limitations to this study:

Sample size imbalance, some of the keywords like "btc", "bear", or "cryptocurrency" only have a very small sample size (1 post). Which makes the ROI less reliable for those keywords.

VADER might not be suitable for this project, and it might be better to use a machine learning algorithm instead to analyse the sentiment score. The problem with VADER is that it is rule-based, which mean that it might not handle specific "crypto-slang", such terms as "HODL", "Moon" or "FUD", potentially skewing the sentiment for the comments.

6.4 Comparison to Related Work

These findings align with previous observations by (Ante, 2023) regarding Elon Musk's influence on the cryptocurrency Dogecoin, where direct mentions on Twitter caused immediate price spikes. However, unlike (Huynh, 2021) observations of Trump's Twitter sentiment between presidential period 2017-2020, there were no clear correlations between sentiment and price returns in this project.

7 Conclusion

This project investigated the relationship between Trump's social media activity on his own platform and Bitcoin market movement, specifically analysing if specific financial keywords affects the price action.

The analysis suggest a potential correlation between Trump's social media activity and Bitcoin price. However, due to the limited number of posts containing the keywords, exact conclusions cannot be drawn. Results from this project indicates that

the market reacts positively to specific crypto related keywords, which appears to outperform the baseline returns of Bitcoin. Furthermore, the sentiment analysis of the posts and comments did not show any significant correlation with Bitcoin returns in this project.

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