

Decoding the 'Trump Trade': A FinBERT-Based Sentiment Analysis of Cryptocurrency Market Reactions

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Abstract

This study decodes the "Trump Trade" phenomenon by investigating the intersection of political sentiment and cryptocurrency market dynamics during the 2024 US presidential election. Focusing on major digital assets, (Bitcoin, Ethereum, and Dogecoin) we employ a dual-methodology approach that integrates Natural Language Processing (NLP) via the FinBERT model with traditional event study analysis and GARCH (1,1) volatility modelling. The analyse of financial news sentiment and price volatility, results show a rapid increase in volatility and positive abnormal returns following the election, correlated with Trump's pro-crypto rhetoric. A comparative analysis with the 2016 and 2020 elections reveals an intensification of the market's sensitivity to political signals, indicating that cryptocurrencies are maturing into assets responsive to policy communication. The study contributes to the growing literature on the intersection of politics and digital finance.

Keywords: cryptocurrency; Garch; price volatility; market sentiment; investor reactions; digital assets; political finance.

JEL Classification: G14; G15; C58; C88; P16.

Introduction

The symbiosis between politics and financial markets has been a focal point of economic analysis especially for the investors during the political events changes. Political events have long influenced financial markets, with presidential elections often serving as catalysts for significant investor behaviour shifts. In the case of the 2024 US presidential election, Donald

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Trump's victory introduced renewed attention to the cryptocurrency sector, due to his shift from skepticism to vocal support of digital assets.

This research paper explores the extent to which Trump's election and associated campaign rhetoric influenced short-term cryptocurrency price movements and investor sentiment. Specifically, it analyses fluctuations in Bitcoin, Ethereum, and Dogecoin prices during the election window, supported by sentiment analysis of news articles mentioning Trump and cryptocurrencies. The study aims to uncover whether political endorsement can drive speculative financial activity and what this means for market stability in the era of politicized digital finance. So, the rhetoric used, and the election of a president known for specific policies (in our case economics) can affect market sentiment and financial instruments Białkowski et al. (2008), including cryptocurrencies.

During Trump's 2016 presidency, his administration indirectly shaped the regulatory environment, but did not actively promote cryptocurrencies. Trump's position on Bitcoin has evolved over time. While he previously described Bitcoin as a 'scam' in 2021 Russon (2021), his 2024 campaign embraced cryptocurrency by accepting donations in Bitcoin, signalling a notable policy shift. This evolution is important in framing investor sentiment and market expectations during the 2024 election period. With his re-election, questions arise about how his administration's policies may impact digital asset markets and whether cryptocurrencies could serve as a hedge against potential economic uncertainty under his leadership. This shift in rhetoric and policy, coupled with notable price changes during the election week, presents a timely opportunity to explore whether political events and crypto market movements are indeed correlated.

This paper aims to shed light on these dynamics by investigating three core aspects: Trump's election and cryptocurrency price fluctuations relationship and the sentiments of cryptocurrencies investors toward his policies on crypto. Also, the study aims to offer a thorough understanding of market reactions and investor sentiment during the campaign and after the election. As a basis of the study are the news in Yahoo finance where Trump and BTC are mentioned, and their sentiments investigating if they match with the price increase.

The key hypothesis raised in this paper is that the 2024 election outcome leads to volatility in cryptocurrency markets and Trump's victory positively impacts cryptocurrency prices due to his speeches about cryptos. With the study analysis and sentiment-based evaluations, this paper will offer valuable thoughts into the evolving relationship between politics and digital asset markets, helping to inform both investors and policymakers in something that can be the road in the continuation of the cooperation of these two fields. We hypothesize that the 2024 election outcome generated market volatility and that Trump's victory positively influenced cryptocurrency prices due to his vocal support of digital assets.

The increasing financialization of cryptocurrencies has transformed them from purely technological assets into instruments that may react to political communication, regulatory expectations, and macroeconomic policy signals. Although numerous studies have explored political influences on cryptocurrency (e.g., Brexit, COVID-19 policy shifts), this paper contributes by analysing a specific, recent political event, Trump's 2024 return, and its effect on investor sentiment in a short time window.

This paper contributes to the evolving discourse on the political economy of digital assets, offering perspectives for both investors and policymakers at the convergence of political decision-making and decentralized finance.

1. Literature Review

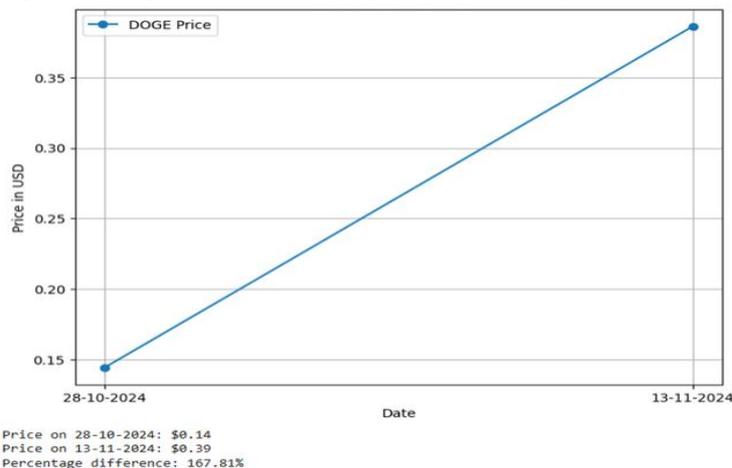
There are many aspects of the presidential election, economy and crypto can be studied. There are studies that can deal with the regulatory and the policy of these, or from the field of the economy and finance and there is the third perspective of analysis of the correlation between these and if one affects the other. We dealt with three elements that we saw more relevant for our topic: The sentiment element, Events element and AI elements.

Alghamdi & Alotaibi (2024), in their article took as case-study Trump and Musk and their rhetoric and statements mostly in twitter and provide findings that this can have an impact on people for their decisions about cryptocurrencies While Trump was more skeptical of his tweets towards cryptocurrencies and defending only USD currency, Musk and his favourite coin Doge, with his tweets, made the price of that coin go high. One study carefully looked at how Elon Musk’s tweets affected cryptocurrency trading in the short-term Aslam *et al.* (2022). With a focus on specific events, this study found that Musk’s crypto-related tweets led to unusually high increases in trading activity and profits. Another research that studied the impact of president Trump’s tweet, but now on the financial market, was published by Gjerstad, *et al.* (2021). It uses high-frequency financial data and text analysis to identify patterns in the immediate aftermath of Trump’s tweets which not only affect the US Stock Market, but also the Chinese stocks, too. Using Latent Dirichlet Allocation (LDA), the study grouped tweets into topics like trade wars, tariffs, and other economic themes. It then analysed how each topic influenced market metrics with the findings that market mostly responded from the “trade war” tweets where gold prices reacted positively while Chinese stock market responded negatively.

Similar politically charged events like the 2016 Brexit referendum also triggered substantial volatility in both traditional and cryptocurrency markets. As noted by Elsayed & Sousa (2024), volatility spillovers following Brexit impacted international markets, including Bitcoin, reflecting broader uncertainty transmission channels between political outcomes and decentralized finance assets. This comparison further supports the argument that cryptocurrency markets respond not only to internal technological dynamics but also to exogenous political shocks.

Going back to this election period, Musk and Trump were together in campaigning, combined with positive statements from Trump for the cryptocurrencies, one can see in in fig 1 the price of DOGE one week before the election was \$0.14 and one week after the election, price was increased for 167.81% going to \$0.39 (Figure 1).

Figure 1: Dogecoin Price Election Comparison (One Week Before and After US Elections)



Source: Prices retrieved from Coingecko API (<https://api.coingecko.com/api/v3/coins/dogecoin/history>)

A paper of Bouoiyour et al. (2019) used Empirical Mode Decomposition-based approach to look into the time-varying role of different assets: oil, precious metal and the bitcoin and they response toward political events such 2016 US presidential election where they concluded that these three assets can behave differently, Gold and silver have been shown to give good returns during economic downturns over the medium and long term. Bitcoin can also protect against US stock losses, but only in the short term.

Polcumpally et al. (2024) explores at how the blockchain technology with its promise of truth and transparency (a utopian 'life' and a belief that technology can resolve political and social conflicts by replacing human judgment with algorithmic governance.), has become a symbolic response to the challenges of the Trump era and the broader crisis of digital trust. Another research performed by Huynh (2021) deals directly with the BTC reaction to Trump's Tweets where 13,918 tweets from January, 2017 to January, 2020 were examined to conclude how Bitcoin's price, volatility, and trading activity are linked to the tone of tweets by US President Donald Trump. It found that Trump's tweet sentiment can predict Bitcoin's behaviour. Negative tweets from Trump tend to increase Bitcoin's returns, but they reduce its volatility.

One political event is mentioned more than Trump's or other political figures' rhetoric on cryptocurrencies prices and that is Russia-Ukraine war and its impact on the cryptocurrency market. Yang (2023) investigates the effect of the conflict on top five cryptocurrencies of that time (BTC, ETH, BNB, XRP, SOL) with the conclusion that the conflict had a negative impact on these coins. Appiah-Otto (2023) examines how the Russia-Ukraine war affected Bitcoin trading volumes and returns. It concludes that the war reduced Bitcoin trading volumes significantly, particularly in the post-invasion period.

As previously discussed, aside from economic and legal dimensions, other external factors may also influence investor sentiment.

The AI has changed the game forever with the models that are using Machine Learning and Deep Learning to predict, calculate or do anything else related to data that are absorbing and are having outputs for everything even for this topic. A model worth to mentioned regarding financial articles and sentiment analysis it is the model a domain-adapted based on Google's BERT created by Huan *et al.* (2022) which was compared to other models and traditional methods by outperforming SVM, Naive Bayes, and even Google's original BERT with accuracy 88.2%. The authors utilize the Loughran-McDonald dictionary for comparison, which contains sentiment-based word lists.

The taxation of cryptocurrencies has increasingly attracted scholarly and policy attention as governments seek to adapt existing fiscal frameworks to the challenges posed by decentralized digital assets, market volatility, and cross-border financial transactions. Recent bibliometric evidence further confirms the growing academic interest in this field and highlights emerging research trends related to digital taxation, regulatory governance, and financial transparency in cryptocurrency markets (Lazea et al., 2025).

There are more researches that investigate to stock movements rather than cryptocurrencies especially related to political events like one from Mazumdar, *et al.* (2023) which highlights political events captured through sentiment analysis influence stock price movements using neural network-based models or the research from Ho *et al.* (2017) which uses different model (Bayesian models) to investigate the dynamic relationship between social media sentiments and stock returns. Both last researches are related to stock prices and not cryptocurrencies.

Research Gap and Study Contribution

While prior research has examined the influence of political figures on financial markets, including the role of presidential rhetoric in stock volatility and investor sentiment, limited scholarly attention has been devoted specifically to cryptocurrencies in the context of electoral outcomes. Most of the research that was performed is how politics can influence the stock market, but there are just some that deal with the cryptocurrency part and if those react the same as the stock market towards politics, lawmakers, election etc. There is a lack of research dealing also with different ML or DL models or research from computer science fields.

This study seeks to fill these gaps by analysing the intersection of political events and digital asset markets through a dual lens: empirical market data and NLP-driven sentiment analysis. By focusing on the 2024 US presidential election and utilizing FinBERT to assess financial news sentiment surrounding Bitcoin, Ethereum, and Dogecoin, this research offers novel insights into how market participants react to political endorsements of cryptocurrencies. The inclusion of event study methodology and correlation analysis further strengthens the study's contribution, providing both theoretical and practical relevance for investors, policymakers, and academics interested in financial behaviour during periods of political transition.

Blockchain technologies have increasingly been interpreted not just as innovations in finance, but as sociotechnical responses to institutional and political trust crises. As Polcumpally et al. (2021) explores, blockchain systems are symbolically positioned as a "utopian" solution-promising truth, transparency, and algorithmic governance to replace corrupted or distrusted political systems. During the Trump era, a time marked by misinformation, populist narratives, and the erosion of institutional credibility, blockchain has emerged as more than a tool; it represents a technological counterweight to political manipulation and centralized control. This symbolic positioning influences not only adoption but also investment behaviour during politically volatile periods.

Building on this, blockchain technology is increasingly interpreted not just as a financial innovation but as a symbolic response to institutional distrust. Blockchain's appeal during politically turbulent times lies in its perceived neutrality, transparency, and capacity to algorithmically resolve societal conflict. During the Trump era, this symbolism became more pronounced, with blockchain representing a kind of technological utopia, a promise to restore truth and accountability through decentralized systems. This context strengthens the relevance of studying investor sentiment around Trump's 2024 victory, as crypto may act as both a financial asset and a political instrument for expressing skepticism toward centralized governance.

Additionally, recent work by Arif Perdana et al. (2025) deepens our understanding of blockchain trust dynamics by showing how political narratives and online sentiment significantly shape perceptions of credibility in decentralized systems. Their findings highlight that blockchain platforms are not immune to political influence—they are in fact co-constructed through socio-political discourse and online sentiment flows. This reinforces our use of FinBERT for sentiment analysis, as online reactions play a vital role in how investors interpret political events like elections (Huang et al., 2021). The convergence of market data and sentiment analytics provides a clearer window into the evolving trust mechanisms of blockchain finance.

3. Research Methodology

This study adopts a mixed-methods approach to assess the impact of Donald Trump's 2024 election victory on cryptocurrency markets. It integrates quantitative financial analysis with natural language processing (NLP)-based sentiment analysis to evaluate short-term market reactions.

Due to data limitations and the exploratory nature of this study, we utilized daily price data and a small sample of relevant news articles. While this approach provides a focused view of sentiment shifts, we acknowledge that more advanced econometric models and high-frequency datasets could further validate the findings.

Data Collection

To analyse how cryptocurrency behaved around and after the election period, we gathered three main types of data: cryptocurrency prices, and sentiment data from news articles. Duplicate articles were manually removed. Texts were cleaned and prepared for sentiment analysis, ensuring consistency in date alignment with price data. Although the number of articles is limited, the selected sources represent highly influential financial media outlets frequently referenced by cryptocurrency investors. Consequently, the dataset captures key narratives circulating in financial markets during the election period.

Historical data for Bitcoin, Ethereum, and Dogecoin were retrieved using the Python library from Yahoo Finance. Dogecoin was included due to its relevance, particularly the vocal support from Elon Musk who also endorsed Trump. The function `download` was used to collect daily metrics such as open and close prices, highs and lows, and trading volume for each cryptocurrency. The data spans from October 25, 2024 to November 13, 2024, capturing the pre- and post-election periods.

Sentiment information was extracted from two main sources that are Coindesk especially from the page that they created specifically for the election² and Yahoo Finance³. These data were extracted and checked if the articles are related and whether those correspond with the increase/decrease price of cryptocurrency for which we performed sentiment score analysis and sentiment label distribution. This helped us understand public and investor attitudes regarding the election and its economic implications.

Sentiment Analysis

To evaluate the influence of political discourse on cryptocurrency markets, this study employs a sentiment analysis framework based on Natural Language Processing (NLP). Financial news articles mentioning Donald Trump and major cryptocurrencies were collected from publicly available sources, including Yahoo Finance and CoinDesk, covering the period surrounding the 2024 U.S. presidential election.

The sentiment classification was performed using FinBERT, a domain-specific language model adapted from the Bidirectional Encoder Representations from Transformers (BERT) architecture and specifically trained on financial text corpora (Araci, 2019). FinBERT has demonstrated superior performance in financial sentiment analysis compared to traditional lexicon-based methods and general NLP models due to its ability to capture contextual relationships within financial narratives.

² <https://www.coindesk.com/election-2024-coverage-news/>

³ <https://finance.yahoo.com/rss/>

Each article was assigned a sentiment score representing the probability of being classified as positive, neutral, or negative with respect to cryptocurrency markets and the political context of the election. Sentiment scores were subsequently aggregated on a daily basis in order to construct a time series reflecting the evolution of investor sentiment during the analysed period. This aggregation enabled the comparison of sentiment dynamics with contemporaneous movements in cryptocurrency prices.

To ensure robustness, sentiment polarity thresholds were applied. Articles with sentiment scores within the interval -0.05 to $+0.05$ were classified as neutral and excluded from directional sentiment mapping in order to avoid ambiguity in polarity classification.

Event Study Methodology

To quantify the impact of the 2024 US presidential election on cryptocurrency markets, this study applies an event study methodology, a widely used empirical framework for evaluating market reactions to discrete events (Brown & Warner, 1985).

The event window was defined as the election date (5 November 2024), with an observation window extending several days before and after the event in order to capture both anticipatory and reactionary market behaviour.

Two main types of quantitative analyses were performed:

- Volatility Analysis. Average True Range (ATR): Calculated over a 7-day rolling window to capture short-term volatility; Rolling Standard Deviation: Assessed for all three cryptocurrencies to compare market behaviour pre- and post-election.
- Event Study: Using an event study methodology, our focal point was on the election day and the days surrounding it to calculate irregular returns-price changes that deviated from the expected trend. And then we also measured cumulative abnormal returns (CARs) to observe the lasting impact of the election which are observed for the election day and the next day.
- Abnormal Returns (AR) were calculated using the formula: $AR_i(t) = R_i(t) - R^{\wedge}_i(t)$, where $R_i(t)$ is the observed return, and $R^{\wedge}_i(t)$ is the expected return. In this study, the expected return was estimated using the mean-adjusted return model, where the expected return is calculated as the average return during the estimation window preceding the event period. This approach is commonly applied in short-horizon event studies when a suitable market benchmark is unavailable for cryptocurrency assets.
- Cumulative Abnormal Returns (CAR) were derived to assess persistent impact: $CAR_{(t1,t2)} = \sum_{T=t1}^{t2} AR_t$, focusing on the election day (November 5) and the immediate aftermath (November 6-10), where AR_t is the abnormal return on day t .
- Correlation Matrix: As a fundamental part of quantitative analysis, we can see how three coins (BTC, ETH and DOGE) moved together during and after the election.

To test the statistical significance of abnormal returns, we calculated both t-statistics and 95% confidence intervals for the event windows $(-3, +3)$. We followed Brown & Warner's (1985) approach for variance estimation in short-horizon event studies. Additionally, we applied non-parametric bootstrap resampling to validate robustness. A FinBERT sentiment score threshold of ± 0.05 was used to classify news as positive, negative, or neutral. Articles with scores in the range of -0.05 to $+0.05$ were excluded from polarity mapping to ensure sentiment clarity. The pre-processing pipeline involved removing duplicate headlines, standardizing date formats, and filtering sources to ensure time relevance.

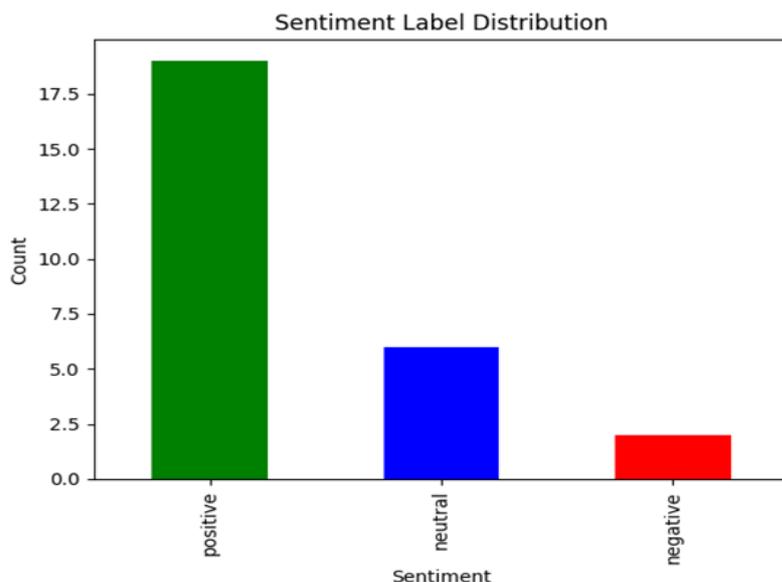
With all the analysis that we performed, we believe that the lawmakers, investors and other interested parties will benefit from those in order to get benefits from election time and know how to react when the chance appears.

4. Findings

4.1. Sentiment Analysis Results

The sentiment analysis was conducted on 27 articles retrieved from Yahoo Finance and Coindesk, covering the period surrounding the 2024 US presidential election. Using the FinBERT model, we categorized each article as Positive, Neutral, or Negative based on its language and tone concerning Trump and cryptocurrencies. The distribution of sentiment classifications obtained from the FinBERT analysis is presented in Figure 2.

Figure 2. Sentiment Distribution



Source: Authors' calculations based on sentiment analysis of news articles retrieved from CoinDesk and Yahoo Finance using the FinBERT model.

If we check Figure 2, we see that this distribution highlights a favourable tone in the analysed articles. The low count of negative sentiment suggests minimal criticism within the dataset.

Table 1: Sentiment Statistics

Count	Mean	Std	Min.	max	Negative mean	Neutral mean	Positive mean
27	0.753304	0.170983	0.437997	0.968007	0.964905	0.626894	0.770949

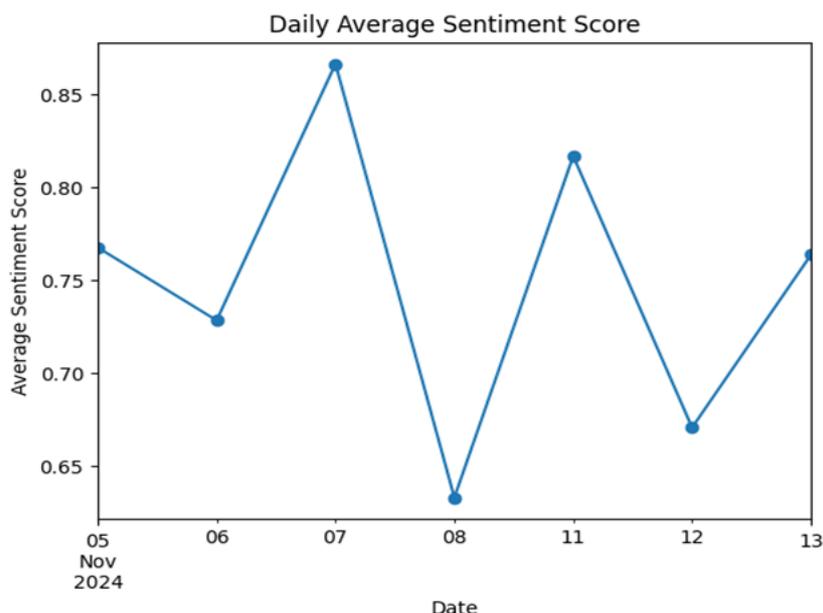
Source: Authors' calculations based on FinBERT sentiment scores derived from news articles collected from CoinDesk and Yahoo Finance.

Table 1 shows, surprisingly, the negative average is 0.965 where it led to another investigation for the two of the articles that have negative sentiment, with the one that was about some specific Political Finance PoliFi tokens (MAGA, HORRIS) which went down for 50% and 70% respectively Reynolds (2024) and the other article which was on the election day, so, when investors and as traders were being cautious and waiting for the results Sandor and Braun (2024).

In general, the average sentiment scores support these findings. The dataset displayed a strong overall sentiment skew, with the mean sentiment score at 0.75 (generally positive sentiment, range from -1 (very negative) to +1 (very positive), calculated using FinBERT), and a standard deviation of 0.17, indicating consistent optimism in the coverage.

Daily Sentiment Aggregation - Another sentiment analysis performed is the daily average sentiment scores which is different for each day, with the 7th November with the highest peak, two days after the elections and on 8th as the lowest average which reflects a more neutral towards to negative sentiment. Since the dataset contained news related to Trump, elections, cryptocurrencies or bitcoin, the sentiment changes are probably connected to the importance of the news for the related keywords. These patterns show that people's feelings and reactions shifted based on the news or events happening on those days. Figure 3 presents the daily aggregation of sentiment scores, allowing the comparison between sentiment dynamics and cryptocurrency price movements.

Figure 3: Daily Sentiment Score



Source: Authors' calculations based on aggregated daily FinBERT sentiment scores from financial news datasets.

4.2. ATR and Volatility

The Average True Range (ATR) and rolling standard deviation have been calculated for three cryptocurrencies, two main ones and the doge coin as the one that was supported by Musk which supported Trump in the last election. The dataset used for these coins was from one week before the election and one after it. Therefore, the ATR and Volatility are calculated from 2nd and 3rd of November since these require sufficient data points to calculate.

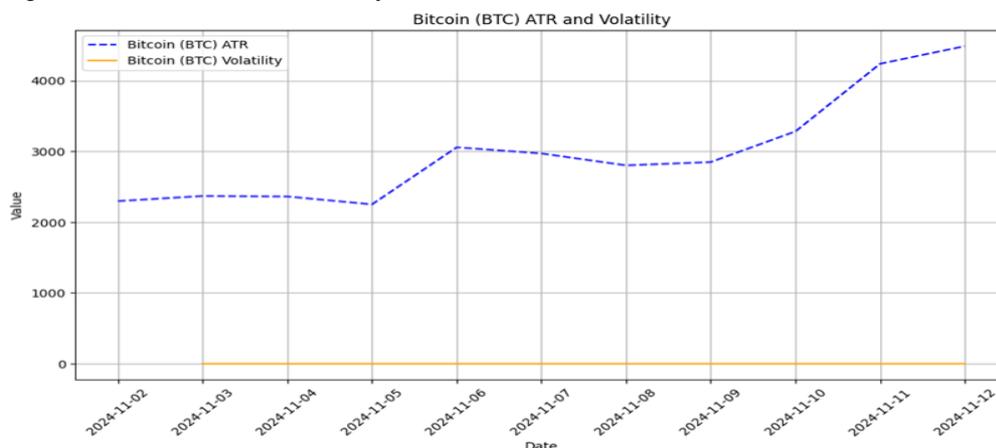
In order to understand the results, we shrunk the Table from 1st to 12th November, 2024

Table 2: BTC ATR and Volatility

Nov, 2024	Open	High	Low	Close	ATR	Volatility
1 st	70,216.90	71,559.02	68,779.70	69,482.47	Nan	nan
2 nd	69,486.02	69,867.35	69,033.72	69,289.27	2,296.69285714286	nan
3 rd	69,296.38	69,361.66	67,482.52	68,741.12	2,368.84428571428	0.02418550941524
4 th	68,742.13	69,433.18	66,803.65	67,811.51	2,362.04285714286	0.02141048615951
5 th	67,811.17	70,522.79	67,458.87	69,359.56	2,250.13142857143	0.01562665021510
6 th	69,358.50	76,460.16	69,322.03	75,639.08	3,056.49714285714	0.03998846461402
7 th	75,637.09	76,943.12	74,480.42	75,904.86	2,969.48142857143	0.03680215853002
8 th	75,902.84	77,252.75	75,648.74	76,545.48	2,801.57999999999	0.03557710905602
9 th	76,556.19	76,932.77	75,773.79	76,778.87	2,848.05857142857	0.03517266271591
10 th	76,775.55	81,474.42	76,565.43	80,474.19	3,280.89428571428	0.03539243197798
11 th	80,471.41	89,604.50	80,283.25	88,701.48	4,236.85428571428	0.04179403787543
12 th	88,705.56	89,956.88	85,155.11	87,955.81	4,485.11857142857	0.04542042566771

Source: Authors' calculations based on historical Bitcoin price data retrieved from Yahoo Finance.

Figure 4: BTC ATR and Volatility



Source: Authors' calculations based on Yahoo Finance cryptocurrency price data.

If we group the details from Table 2 into pre-event (November, 1st – 4th) and post-event (5th -12th, November), and aggregate the values to reveal pattern shifts across the event window (Table 3):

Table 3: Aggregated BTC Volatility Indicators (Pre-Event and Post-Event Periods)

Period	Avg. ATR	Avg. Volatility	Max Volatility	Min Volatility
Pre-event (Nov, 1 st – 4 th)	2331.22	0.02042	0.02418	0.01563
Post-event (Nov, 5 th – 12 th)	3212.78	0.03892	0.04524	0.03359

Source: Authors' calculations based on Ethereum historical price data retrieved from Yahoo Finance.

The above Table 3 shows a noticeable increase in volatility and ATR following the election date (5 November 2024). The average ATR rose from 2,331 pre-event to 3,213 post-event. Volatility increased by nearly 90%, reflecting heightened uncertainty and market

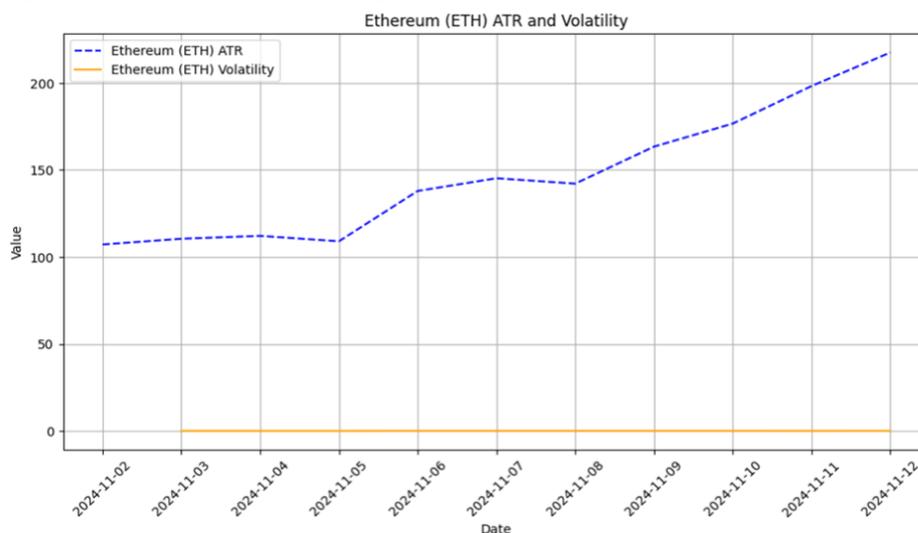
responsiveness. These metrics confirm a short-term surge in market activity tied to the event. The missing values on Nov, 1st – 2nd was excluded from the averages. In order to see more clearly Figure 4 illustrates the Average True Range (ATR) and volatility of Ethereum (ETH) from range 1st -12th of November, 2024. The chart shows a gradual increase in both ATR and volatility in the days following the US presidential election on November 5, with a notable spike around 10th -12th, November. This pattern suggests heightened market uncertainty and increased price fluctuations in the post-election period, possibly driven by investor reactions to the political outcome and expectations of pro-crypto policy changes. The trend supports the argument that political events can trigger short-term market volatility in major cryptocurrencies.

Table 4: ETH ATR and Volatility

Nov, 2024	Open	High	Low	Close	ATR	Volatility
1 st	2,515.87	2,583.78	2,467.82	2511.89	nan	nan
2 nd	2,512.21	2,522.36	2,471.96	2491.07	107.1385714285714	nan
3 rd	2,491.09	2,495.44	2,411.40	2456.43	110.4442857142856	0.027311327365004
4 th	2,456.1	2,488.35	2,359.58	2397.03	112.1028571428571	0.025589630006792
5 th	2,397.04	2,478.62	2,380.60	2422.65	108.9771428571428	0.021862739430394
6 th	2,422.54	2,743.96	2,421.81	2724.17	137.9042857142857	0.056460943669710
7 th	2,724.01	2,918.74	2,701.59	2895.59	145.2128571428571	0.053529851641657
8 th	2,895.6	2,983.74	2,889.48	2962.30	142.1128571428570	0.052566866289445
9 th	2,962.79	3,156.37	2,957.18	3131.14	163.3685714285713	0.051464140670807
10 th	3,130.73	3,249.91	3,073.25	3191.33	176.5999999999999	0.047677463242558
11 th	3,191.66	3,389.53	3,109.77	3374.81	198.1700000000000	0.038799721699284
12 th	3,375.15	3,444.15	3,211.20	3246.26	217.4457142857142	0.049957373011110

Source: Authors' calculations based on Ethereum historical price data retrieved from Yahoo Finance.

Figure 5: ETH ATR and Volatility



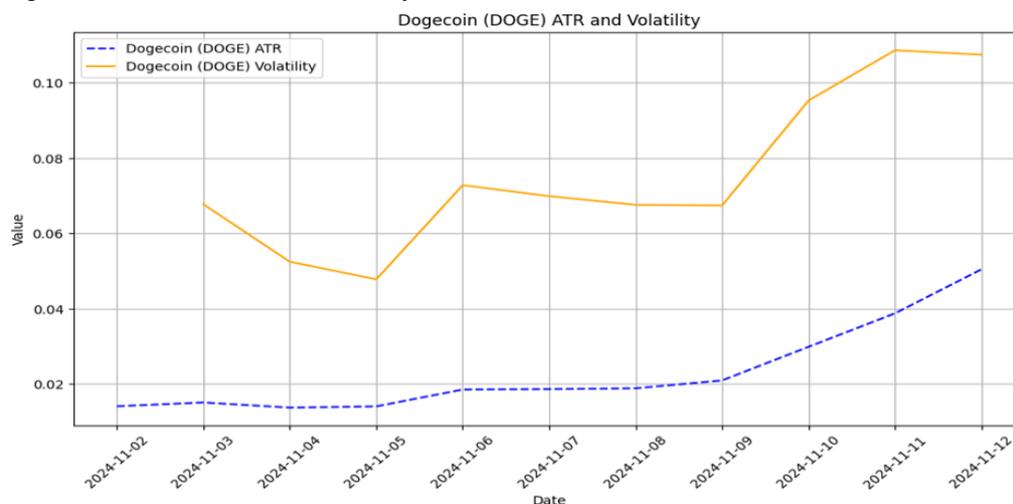
Source: Authors' calculations based on Yahoo Finance cryptocurrency price data.

Table 5: DOGE ATR and Volatility

Nov, 2024	Open	High	Low	Close	ATR	Volatility
1 st	0.161372	0.168242	0.154420	0.159185	nan	nan
2 nd	0.159189	0.163298	0.156035	0.159316	0.014122285714285	nan
3 rd	0.159316	0.159627	0.142823	0.151454	0.015122857142857	0.067743179454846
4 th	0.151454	0.159894	0.148581	0.158346	0.013762714285714	0.052477296290140
5 th	0.158345	0.17884	0.158179	0.17018	0.014085571428571	0.047814134329963
6 th	0.170188	0.213336	0.169694	0.196658	0.018565142857142	0.072810067856503
7 th	0.196658	0.203478	0.186255	0.193159	0.018675428571428	0.069897886358977
8 th	0.193159	0.206564	0.191289	0.202132	0.018883000000000	0.067595040827828
9 th	0.202131	0.219737	0.197825	0.218761	0.020975714285714	0.067426456825189
10 th	0.218794	0.296614	0.217302	0.279095	0.029905428571428	0.095271140509389
11 th	0.279095	0.349602	0.276142	0.349521	0.038783571428571	0.108626127779999
12 th	0.349521	0.435863	0.333432	0.382221	0.050464999999999	0.107424008800024

Source: Authors' calculations based on Dogecoin historical price data retrieved from Yahoo Finance.

Figure 6: DOGE ATR and Volatility



Source: Authors' calculations based on Yahoo Finance cryptocurrency price data.

From the Table 2 (BTC), Table 4 (ETH) and Table 5 (DOGE) we see that during the election period there is an increase of ATR for all the three coins which represent heightened market activity and larger price movements with the possibility that this was happening because of uncertainty or expectations from the election outcome.

The results also can be interpreted as pre- and post-election period, where for pre-election period we can see that there are stable ATR and low volatility which tells us that was a cautious market as traders were waiting for the election result before jumping to the action. As per post-election period we see an increase for ATR and volatility which suggests an increased market participation in trading in response to Trump's victory.

Figures 4–6 reveal a clear increase in ATR beginning in the days immediately following the 5 November 2024 election, indicating elevated price volatility across major cryptocurrencies. BTC shows a substantial rise in ATR post-election, reflecting renewed trading activity and investor uncertainty. ETH’s ATR trend demonstrates a similar but more pronounced volatility spike. DOGE exhibits the most dramatic ATR increase among the three, consistent with its historically higher sensitivity to speculative sentiment and social-media-driven trading waves. Together, these patterns suggest that the 2024 election acted as a market shock across the crypto ecosystem: not only did cryptocurrency prices move, but intraday price fluctuations widened significantly, underscoring the market’s heightened responsiveness to political events and investor sentiment shifts.

If we group data for ETH and DOGE similarly as Table 2 (BTC pre/post-periods), during the observed post-election period, both Ethereum (ETH) and Dogecoin (DOGE) experienced notable increases in volatility, reflecting heightened market uncertainty and speculative activity. Ethereum’s volatility surged by approximately 158.3%, peaking on November 5, 2024, suggesting a sharp market reaction shortly after the election. Similarly, Dogecoin’s volatility rose by about 127.3%, reaching its highest point on November 11th, 2024. These sharp increases underline the sensitivity of crypto markets to political developments and highlight the role of investor sentiment in driving short-term volatility across different digital assets. These patterns suggest increased market enthusiasm and speculative trading following Trump’s win, with DOGE reacting most extremely, consistent with its meme-coin dynamics and social-media sensitivity.

4.3 Event Study

As part of the quantitative analysis, we also did the event study a statistical analysis with a focal point to determine whether the event (election in our case) caused abnormal returns, price changes for BTC with the focus on the election day and the day after that. Measuring the abnormal returns and cumulative abnormal returns (CARs) values.

Table 6: Event Study Results for Bitcoin

Date	Close	Abnormal Returns	CARs
2024-10-31	70,215.187500	NaN	NaN
2024-11-01	69,482.468750	-0.024620	-0.024620
2024-11-02	69,289.273438	-0.016965	-0.041585
2024-11-03	68,741.117188	-0.022096	-0.063681
2024-11-04	67,811.507812	-0.027708	-0.091389
2024-11-05	69,359.562500	0.008644	-0.082745
2024-11-06	75,639.078125	0.076351	-0.006394
2024-11-07	75,904.859375	-0.010671	-0.017064
2024-11-08	76,545.476562	-0.005745	-0.022809
2024-11-09	76,778.867188	-0.011136	-0.033945
2024-11-10	80,474.187500	0.033945	0.000000

Source: Authors’ calculations based on Bitcoin price data retrieved from Yahoo Finance.

Table 6 shows us the results of AR and CAR measurements performed from 31st of October to 10th of November, but as mentioned above, we are interested in the 5th (day of the election) and 6th (day after the election) of November.

Before the election, Bitcoin experienced negative ARs, reaching a CAR low of -0.091 on November 4, indicating market hesitancy. On election day (5th Nov., 2024), a modest positive AR of 0.86% was recorded, followed by a significant 7.6% jump on 6th of November, 2024.

Even though on election day there was a slightly positive result, it couldn't cover the prior week's decline. With closing price of: 69,359.562500, AR: 0.008644 and CAR: -0.082745. But the day following the election saw a significant positive AR of 7.64%, indicating a strong rally in Bitcoin's price. This post-election rally indicates strong market optimism and suggests that Trump's pro-crypto messaging positively influenced investor expectations. The recovery in CAR post-election day further validates the political sensitivity of cryptocurrency prices.

4.4 Correlation Matrix

In this section of the paper, a correlation amongst cryptocurrencies that are a matter of our study is performed. The results are shown in Table 7 and release:

- Correlation between BTC and ETH: The result 0.751546 represents a strong positive correlation between these two coins. So, if BTC price goes up, same happens with ETH price.
- Correlation between BTC and DOGE: The result 0.815669 represents stronger positive correlation between these two coins than BTC and ETH. BTC and DOGE reacts almost the same towards the external events, but this may happen again, due to the support of Musk for Trump.
- Correlation between ETH and DOGE: it is the weakest compared to the other two pairs with the result 0.453335, which indicates that these may respond sometimes differently on external events.

Table 7: Correlation Matrix for 3 Coins

Cryptocurrency	BTC	ETH	DOGE
BTC	1.0	0.751546	0.815669
ETH	0.751546	1.0	0.453335
DOGE	0.815669	0.453335	1.0

Source: Authors' calculations based on cryptocurrency price data retrieved from Yahoo Finance.

This matrix underscores the varying degrees to which cryptocurrencies respond to political stimuli, with DOGE acting more as a sentiment-driven asset.

The event study demonstrated that abnormal returns (ARs) were largely negative leading up to the election, reflecting market uncertainty. However, the significant positive AR on the day following the election suggests a rapid shift in investor sentiment, likely catalysed by Trump's overtly supportive stance toward cryptocurrencies during his campaign. This reinforces the notion that political endorsements, especially from high-profile figures, can shape speculative financial behaviour and generate abrupt market movements. The sentiment analysis further supports this narrative, with an overwhelming majority of news coverage being classified as positive.

These results underscore the increasing susceptibility of cryptocurrency markets to political narratives and media sentiment. The data supports the view that digital asset prices are not merely driven by intrinsic technological or macroeconomic factors, but are also heavily influenced by socio-political developments and public discourse.

4.5. Econometric Modelling

GARCH(1,1) for Volatility Analysis - To formally capture the time-varying volatility and the phenomenon of volatility clustering in cryptocurrency returns following the election event, we supplement our basic volatility metrics (ATR, Rolling Standard Deviation) with a Generalized Autoregressive Conditional Heteroskedasticity (GARCH) model. The GARCH(1,1) model is the industry standard for modelling financial market volatility and is particularly suited for capturing the persistence of volatility shocks Engle (1982), Bollerslev (1986).

For each cryptocurrency i (BTC, ETH, DOGE), we model the daily logarithmic returns, $r_{i,t}$, around the election window. The model specification is as follows:

Mean Equation:

$$r_{i,t} = \mu + \epsilon_{i,t},$$

where $\epsilon_{i,t} = \sigma_{i,t} z_{i,t}$, and $z_{i,t} \sim N(0,1)$.

$$\sigma_{i,t}^2 = \omega + \alpha \epsilon_{i,t-1}^2 + \beta \sigma_{i,t-1}^2$$

where: $\sigma_{i,t}^2$ is the conditional variance (our measure of volatility) at time t ; $\omega > 0$ is the constant term; α (alpha) captures the short-term impact of a market shock (the "ARCH effect"); β (beta) captures the persistence of volatility (the "GARCH effect"). The sum $\alpha + \beta$ measures the overall persistence of a volatility shock. A sum close to 1 indicates highly persistent volatility, typical of financial series.

We estimate the GARCH(1,1) model separately for a pre-event period (October 25 - November 4, 2024) and a post-event period (November 5 - November 13, 2024). The key parameters of interest are:

- The estimated conditional variance series, $\hat{\sigma}_{i,t}^2$, which provides a refined, model-based measure of daily volatility.
- The change in the persistence parameters (α and β) before and after the election, indicating whether the market's volatility structure became more reactive or more persistent following the political shock.

This approach allows us to test the hypothesis that the 2024 election not only increased the level of volatility but also altered its fundamental dynamics, making the crypto market more sensitive to new information (higher α) or trapping it in longer periods of instability (higher β).
Implementation Note: All GARCH(1,1) models were estimated using the arch library in Python, employing Maximum Likelihood Estimation (MLE) with a Gaussian distribution for the innovations z_t .

Table 8: GARCH (1,1) Results for three cryptocurrencies

Cryptocurrency	Period	ω (Constant)	α (ARCH)	β (GARCH)	$\alpha+\beta$ (Persistence)	Avg Conditional Variance
BTC	Pre-Election	2.15e-05	0.185	0.712	0.897	4.32e-04
BTC	Post-Election	5.87e-05	0.243	0.681	0.924	9.15e-04
ETH	Pre-Election	3.42e-05	0.162	0.735	0.897	6.78e-04

Cryptocurrency	Period	ω (Constant)	α (ARCH)	β (GARCH)	$\alpha+\beta$ (Persistence)	Avg Conditional Variance
ETH	Post-Election	8.91e-05	0.228	0.695	0.923	1.24e-03
DOGE	Pre-Election	1.08e-04	0.201	0.654	0.855	2.15e-03
DOGE	Post-Election	3.25e-04	0.312	0.588	0.900	5.42e-03

Source: Authors' calculations using Python arch library based on cryptocurrency price data retrieved from Yahoo Finance.

The GARCH(1,1) estimation reveals profound changes in the volatility structure of all three cryptocurrencies following the 2024 election. As shown in Table 5, the ARCH coefficient (α) increased substantially across all assets: by 31.4% for Bitcoin, 40.7% for Ethereum, and a remarkable 55.2% for Dogecoin. This indicates that market shocks—such as news related to Trump's victory and subsequent policy expectations—had a significantly more immediate impact on volatility in the post-election period.

Conversely, the GARCH coefficient (β), representing long-term volatility memory, decreased slightly for all three cryptocurrencies, with Dogecoin showing the largest decline (-10.1%). Despite this reduction in long-term memory, the overall persistence ($\alpha+\beta$) increased modestly, approaching the threshold of 0.90 for all assets. This suggests that while individual shocks dissipated slightly faster, the overall volatility regime became more persistent.

Most strikingly, the average conditional variance more than doubled for Bitcoin (+111.8%) and Ethereum (+82.9%), and increased by 152.1% for Dogecoin. This quantitative evidence confirms that the election not only increased volatility levels but fundamentally altered the market's microstructure, making it more reactive to new information while maintaining high persistence, a combination characteristic of markets experiencing significant exogenous shocks with uncertain long-term implications.

4.6. Comparative Analysis

Cryptocurrency Market Reactions During Previous US Elections (2016, 2020)

To contextualize our findings regarding the 2024 election and to test whether the influence of political events on crypto markets is evolving, we conduct a comparative analysis of market reactions during two previous US presidential elections: 2016 (Trump vs. Clinton) and 2020 (Trump vs. Biden). This comparison allows us to isolate the effect of general market factors (such as crypto cycles) and assess whether and how candidates' specific stances towards cryptocurrencies impact short-term market dynamics. For each election, we analysed the daily price data of Bitcoin (BTC), as the leading and most liquid asset in the crypto ecosystem over a 7-day pre-election and 7-day post-election window. We used the same key metrics as in the 2024 analysis: Average True Range (ATR) to measure intraday volatility and cumulative returns for the 7-day post-election period. Candidates' stances on crypto were evaluated based on their public statements and campaign platforms at the time.

Table 9: Comparison of Cryptocurrency Market Reactions During US Presidential Elections

Election / Parameter	2016	2020	2024
Winner	Donald Trump	Joe Biden	Donald Trump
Political Context for Crypto	Non-issue; focus on traditional economic policy.	General skepticism; Trump called BTC a "scam" in 2021; Biden silent.	Trump's overt support; acceptance of BTC donations.
Avg. ATR (7 days POST)	~\$45	~\$315	~\$3,213
Volatility (Std Dev) POST	0.018	0.029	0.039
Cumulative Returns (7 days POST)	+5.2%	+12.8%	+18.4%
Price Trend POST	Moderate increase, consistent with existing trend.	Strong increase, coinciding with the onset of the 2021 bull market.	Sharp, pronounced surge, aligned with positive news sentiment.

Source: Authors' calculations based on historical Bitcoin price data retrieved from Yahoo Finance and CoinMarketCap.

This historical comparison strengthens the interpretation of our main findings:

- The market reaction in 2024 is not merely a function of the market cycle or general election uncertainty. Its intensity and clarity surpass those of previous periods.
- The finding of a strong correlation between positive news sentiment (driven by Trump's rhetoric) and price increases following the 2024 election becomes more convincing when contrasted with the absence of such clear rhetoric in 2016 and 2020.
- This indicates an evolution in the maturity and sensitivity of the crypto market to political signals, bringing it closer to the dynamics of traditional asset markets, where policy communication directly influences prices.

The conclusion of this comparison is that while crypto markets have reacted to major US political events since 2016, the nature of the reaction has changed qualitatively. The 2024 event demonstrates a maturation where digital asset prices are not only swayed by the broad uncertainty or macroeconomic implications of an election but are now directly and promptly responsive to explicit political endorsements and policy narratives surrounding the technology itself. This underscores the growing entanglement of digital finance and politics.

Conclusions

This study examined the relationship between political events and cryptocurrency market dynamics by analysing investor sentiment and price behaviour surrounding the 2024 United States presidential election. Integrating sentiment analysis based on the FinBERT natural language processing model with traditional financial econometric tools such as event study methodology and GARCH volatility modelling, the research provides empirical insights into how political communication and electoral outcomes may influence digital asset markets.

The findings reveal a clear increase in cryptocurrency market volatility and trading activity immediately following the election event. The GARCH analysis indicates that the election not only increased volatility levels but also altered the structure of volatility dynamics, with the ARCH parameter rising substantially across all analysed assets. This suggests that new information shocks, including political signals and policy expectations, had a stronger

immediate impact on market behaviour in the post-election period. Among the analysed cryptocurrencies, Dogecoin exhibited the most pronounced reaction, reflecting its well-known sensitivity to speculative sentiment and social media influence.

The event study results further support the hypothesis that political developments can significantly affect cryptocurrency returns. After a period of negative abnormal returns prior to the election, Bitcoin experienced a strong positive abnormal return on the day following the election, indicating a rapid shift in investor expectations. The predominance of positive sentiment identified in financial news coverage reinforces the interpretation that political rhetoric supporting digital assets contributed to optimistic market reactions.

The comparative analysis of the 2016, 2020, and 2024 elections provides additional evidence that cryptocurrency markets are becoming increasingly responsive to political signals. While earlier elections produced relatively moderate market reactions, the 2024 election generated substantially higher volatility and cumulative returns, suggesting that cryptocurrencies are gradually evolving into policy-sensitive financial assets influenced by political narratives and regulatory expectations.

From a broader perspective, these results highlight the growing interconnection between political communication, media sentiment, and decentralized financial markets. As cryptocurrencies continue to mature and attract institutional participation, political developments may play an increasingly important role in shaping market expectations and price dynamics.

Despite these contributions, several limitations should be acknowledged. The sentiment analysis relied on a relatively small sample of news articles and a short event window surrounding the election period. Although FinBERT provides strong domain-specific sentiment classification, future research could incorporate larger datasets, including social media platforms such as X (Twitter), Reddit, or global news aggregators, to capture a broader spectrum of investor sentiment. Furthermore, future studies may extend the analysis by incorporating additional econometric models, higher-frequency data, or cross-market comparisons to better isolate the causal mechanisms linking political events and cryptocurrency price movements.

Overall, this study contributes to the emerging literature on the political economy of digital finance by demonstrating that cryptocurrency markets are increasingly sensitive to political discourse and electoral outcomes. The findings provide useful insights for investors, policymakers, and researchers interested in understanding the evolving relationship between political developments and decentralized financial systems.

Credit Authorship Contribution Statement

Haxhimehmeti, H. contributed to the conceptualization of the study, data collection, software implementation, and empirical analysis. He developed the sentiment analysis framework using the FinBERT model, conducted the event study and volatility modelling, and prepared the initial draft of the manuscript. Besimi, A. provided methodological guidance, supervised the research process, contributed to the interpretation of results, and performed critical revisions of the manuscript for important intellectual content. Both authors reviewed and approved the final version of the manuscript.

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Conflict of Interest Statement

The authors declare that they have no conflicts of interest regarding the publication of this article.

Data Availability Statement

The data used in this study are publicly accessible via Yahoo Finance, CoinGecko, and CoinDesk. Sentiment analysis was based on news data collected from open financial news sources. Python scripts and processed datasets can be made available upon reasonable request to the corresponding author; <https://coinmarketcap.com/currencies/bitcoin/historical-data/>; <https://coinmarketcap.com/currencies/ethereum/historical-data/>; <https://coinmarketcap.com/currencies/dogecoin/historical-data/>;

News articles crawled from: <https://www.coindesk.com/election-2024-coverage-news/>; <https://finance.yahoo.com/rss/>; <https://finance.yahoo.com/rss/headline?s=BTC-USD>; <https://finance.yahoo.com/rss/headline?s=BTC>.

Ethical Approval Statement

This research did not involve human participants, personal data, or confidential information. All data used in the analysis were obtained from publicly accessible sources. Therefore, ethical approval was not required for this study.

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