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MUSK'S TWEET EFFECT ON BITCOIN AND TESLA PRICES

Abstract: *Social media significantly impacts the dynamics and movement of stock and cryptocurrency markets. The perfect market hypothesis assumes that all available information is already embedded in stock prices, meaning that only some announcements will affect the market price of a company's stock. The efficient market hypothesis and anomalies that cause certain deviations apply to both stock and cryptocurrency markets. Social networks like Twitter, Facebook, and Reddit are significant tools for promoting cryptocurrencies. This paper aims to explore the influence of social media on market price movements, using Tesla stock and Bitcoin as examples. The conclusion is that Musk's Tweet Effect demonstrates an anomaly of market overreaction and impacts the price movements of Bitcoin and Tesla stocks.*

Keywords: *Bitcoin; Musk Tweet Effect; Tesla stock; social media*

JEL Codes: *G11, G14*

1. Introduction

The investment market includes various investment classes, among which stocks are the most well-known, and, more recently, cryptocurrencies, especially Bitcoin. The capital market is legally regulated in every country, and competent institutions constantly monitor it. Governments or regulatory agencies do not regulate cryptocurrency markets, but the European Union does the first step. The Markets in Crypto Assets Regulation (MiCA) entered force in June 2023. This regulation covers issuing and trading crypto-assets not currently regulated by existing financial services legislation. Although MiCA has made initial steps toward regulation, it remains to be seen whether this market can be compared to regulated capital markets or whether the same assumptions, such as the efficient market hypothesis, can apply to both. The efficient market hypothesis, proposed by the French mathematician Bachelier, suggests that all relevant information is incorporated into stock prices when it becomes available (Barbić, 2010). Anomalies observed in the capital market challenge the efficient market hypothesis. Value effect, size effect, small company effect, January effect, overreaction, excessive volatility, and mean reversion are among the most frequently researched anomalies. According to the perfect market hypothesis, all available information is already embedded in stock prices, so any positive announcement about a company generally will not increase its stock price (Mishkin & Eakins, 2003). Stock prices are random and unpredictable, suggesting they follow a random walk. The concept of a random walk (Mishkin & Eakins, 2003, p. 280) describes a variable movement where future changes cannot be predicted because they are unsystematic. Standard economic theories cannot explain Bitcoin price formation (Kristoufek, 2014). Although many view the decentralized and unregulated nature of the cryptocurrency market as an advantage, it can also be a primary cause of high volatility. Internal factors influencing price include Bitcoin supply and demand (Poyser, 2017), while external factors range from the attractiveness of the crypto market (appeal, trends, and speculation) to macro-financial aspects (exchange rate, interest rate, and gold price).

In the era of digital communication, social media has become a crucial platform for interaction between influential figures, such as executives, journalists, financial analysts, and the broader public. Such individuals use these platforms to build their identity and reputation and shape the perception of associated companies and investments. Tweets, Facebook posts, YouTube videos, and discussions on platforms like Reddit can immediately impact the cryptocurrency market (Ante, 2023). This paper aims to examine social media's impact on financial markets and investor

decisions, explicitly investigating how communications from influential figures like Elon Musk can affect the market values of Tesla stocks and Bitcoin.

The paper is divided into five sections, including the introduction and conclusion. The second section provides a theoretical framework for market anomalies, specifically the overreaction anomaly and the impact of social media on market trends. The third section describes the stock prices of Bitcoin and Tesla. The fourth section uses Elon Musk's tweets about Bitcoin as an example to demonstrate the influence of social media on Bitcoin's and Tesla's stock price movement. The fifth section offers conclusions on the growing connection between social media and the crypto market and the role of Twitter and other social networks through which influential individuals or influencers shape market trends.

2. Theoretical Framework

Today, the investment market includes capital and crypto markets. The capital market includes various investment classes, such as stocks, bonds, indices, commodities, funds, and currencies. Among these stocks are the most well-known and, more recently, cryptocurrencies, especially Bitcoin. The crypto market lists Bitcoin and thousands of digital Altcoins like Ethereum, Solana, BNB, etc. Crypto exchanges are the stock exchanges of the digital world._Historically, the term "cryptocurrency" became widely recognized with the emergence of Bitcoin in 2008.

Borgatti et al. (2009) define social networks as a set of actors (nodes, individuals, or entities) connected by social relationships such as friendship, collaboration, or information exchange. With the advent of the digital age, the concept of social networks has expanded to virtual spaces. Boyd and Ellison (2007) defined social networking sites as web-based services that allow individuals to create a public or semi-public profile, articulate a list of other users they connect with, and view their connections within the system. This definition emphasizes the transformative power of technology in reshaping the understanding of social networks. Social media (Ante, 2023) is one of the most prominent factors influencing the perception and prices of cryptocurrencies. Social media platforms have become channels where information spreads faster than ever. Ante (2023) stresses that the profound influence of social media on the dynamics of the cryptocurrency market was particularly evident in 2022, as platforms like Twitter became crucial channels for disseminating information, ideas, and sentiments (Shane et al., 2019). Historically, Twitter's power (Shane et al., 2019) to shape the cryptocurrency landscape can be traced to its inherent features that encourage immediate communication. With its concise 280-character format, Twitter allows for rapid engagement, enabling swift reactions from a vast user base. This immediacy is paramount in the volatile realm of cryptocurrencies, where market sentiment can shift within moments, and being equipped with the latest information can mean the difference between profit and loss. Furthermore, (Ante, 2023; Shane et al., 2019) Twitter's global reach amplifies its impact; due to cryptocurrencies' inherently decentralized and borderless nature, they attract a diverse audience worldwide, from hobbyists to institutional investors. With its vast and varied user base, Twitter reflects this diversity, making it a melting pot of global opinions. Each tweet, retweet, or reply can cascade, influencing decision chains across time zones and cultural contexts.

When a particular cryptocurrency or project is mentioned positively by an influential individual or community, there may be a surge of interest and, consequently, an increase in its price. Research by El Haddaoui et al. (2023) provides deeper insight into this dynamic. By analyzing data from various social media platforms and comparing it with cryptocurrency price trends, the researchers found a strong correlation between the number of mentions of a specific cryptocurrency on social media and its price. This finding suggests that social networks are not merely passive observers of the cryptocurrency market but active participants that can promote or suppress market trends. Analyzing cryptocurrency social media presence, Park and Lee (2019) concluded that (1) measuring the presence of cryptocurrencies on social media can allow for a more accurate evaluation, (2) existing dominant cryptocurrencies attempt to strengthen their network to reduce market uncertainty, while new entrants strive to establish new networks or continuously expand them to reduce uncertainty, (3) there is reasonable similarity in patterns between optimistic sentiments on tweets and bull market trends, and (4) it is too early to conclude whether positive or negative sentiments are reliable predictors of cryptocurrency price trends. Kim et al. (2016) discovered that cryptocurrency prices showed prediction gaps of approximately 8%, with the highest prediction accuracy observed for Bitcoin. They analyzed online data (e.g., posts, replies, views, and sentiments) from the cryptocurrency community.

The volume of tweets and Google Trends data is correlated with Bitcoin prices (Matta, Lunesu, and Marchesi, 2015). Bitcoin's price (Polasik et al., 2014) is primarily influenced by its popularity, the sentiment expressed in cryptocurrency news reports, and the overall number of transactions. Similarly, Jenssen (2014) noted that Bitcoin's price results from limited supply and increased demand. Kavvadias (2017) found that Google Trends have positive, short-term weekly effects and long-term negative impacts on Bitcoin prices. Beyond opinions, a technical aspect of social media can affect cryptocurrency prices. Social media algorithms often promote content with higher engagement. Thus, if specific information or discussion about a cryptocurrency goes viral, it is more likely to reach a broader audience, which can amplify its impact on the market.

It is important to note that while social media plays a significant role in shaping perceptions about cryptocurrencies, it can often be a source of unregulated and unverified information. Speculation, unconfirmed news, and manipulations can quickly spread, leading to market instability. Therefore, approaching social media information with caution is crucial. Investors should always verify sources and rely on credible information when making decisions. Ultimately, while social media provides a wealth of information and discussions, it is just one of many factors influencing the cryptocurrency market.

3. Bitcoin and Tesla Stock Market Price

This section presents the Bitcoin cryptocurrency and Tesla stock market prices.

3.1 Bitcoin

Bitcoin is a protocol that enables a network of people connected through a digital communication infrastructure, securing the entire process through cryptography. Although the original proposal did not use the term "cryptocurrency," Nakamoto introduced the project as a peer-to-peer "currency" on a cryptography network and email list (Nakamoto, 2009). Soon after, the term "cryptocurrency" gained popularity in online discussions.

By 2015, the global trading population had grown to 160.000 traders. During 2016, global Bitcoin-related transactions began to accelerate. By September 2016, there were 771 ATMs worldwide accepting Bitcoins. At the end of 2017, Bitcoin's price reached unprecedented highs, fueling massive speculative activity and media frenzy. The historical price movements of Bitcoin are shown in Graph 1. On December 17, 2017, Bitcoin's price surpassed $19.000, as new investors and optimism about further legalization and standardization boosted interest in this asset. The bubble-like euphoria was palpable on Twitter and other social media platforms, heralding a new financial era where Bitcoin would replace all existing monetary structures. However, by December 22, 2017, the price dropped by 45%, as shown in Graph 1. After conflicting signals and market noise spread across all channels, many investors were confused, and the initial euphoria subsided. Many proponents argued that it was merely a minor correction and that the case for Bitcoin remained strong.

On the other hand, critics saw the decline as evidence of a massive scam, indicating that cryptocurrencies' "house of cards" was beginning to collapse. In between were those who had only recently started to take an interest in cryptocurrencies but, lacking an understanding of the new field's complexities, were left feeling uncertain and betrayed by the sudden drops. Bitcoin was volatile because it had yet to reach the critical mass required for deep liquidity. Many investors were unable to withstand the volatility of this relatively new asset. On January 12, 2018, rumours began to circulate that South Korea, previously considered a cryptocurrency-friendly jurisdiction, was planning to ban cryptocurrency trading (Ganne, 2018). The dramatic fall in Bitcoin's price following its rapid ascent left what some considered an indelible mark on the cryptocurrency world, diminishing its legitimacy and portraying Bitcoin as a volatile instrument with little long-term utility. By the end of March 2018, major internet companies such as Facebook, Twitter, and Google decided to ban ICO advertisements, citing massive speculation and false marketing associated with tokens. This led Bitcoin into a prolonged quiet period. By November 2018, its price had dropped to $5.500 (Graph 1), with its market capitalization falling below $100 billion for the first time since its initial rise in 2017. Following the downturn in 2018 and with significant polarization among vocal proponents, sceptics, and opponents, a critical turning point in 2020 propelled Bitcoin to unprecedented levels of public interest and investment success: the COVID-19 pandemic. In many ways, the pandemic catalyzed cryptocurrencies (Vidal-Thomas, 2021). During the pandemic, governments implemented unprecedented stimulus measures to sustain economies, increasing disposable income for investment in various assets, including Bitcoin (Lahmiri & Bekiros, 2020). Bitcoin's market capi-

Source: https://www.tradingview.com/symbols/BTCUSD/ Accessed October 11, 2024

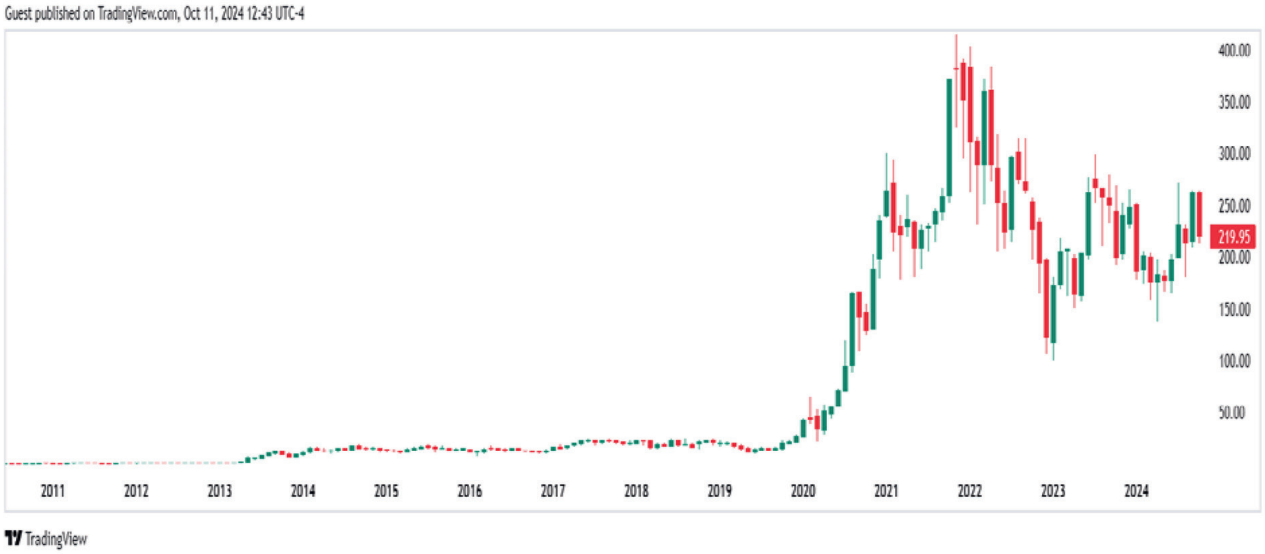
Graph 1. Market Price of Bitcoin

talization rose significantly by the end of 2021. Although El Salvador recognized Bitcoin as a legal tender, the country faced a fiscal crisis and accessibility issues.

Meanwhile, regulators worldwide began recognizing Bitcoin's potential as an alternative currency and asset class, closely examining Bitcoin's boom-and-bust cycles. While Bitcoin's value was rising, there was minimal public demand for regulatory oversight and accountability; however, following the bubble burst, widespread outrage emerged over the losses incurred. In collaboration with other institutions, the U.S. Department of Justice also led a significant effort to counteract money laundering (AML) and combat terrorist financing (CFT) through Bitcoin. AML/CFT concerns began gaining importance during this period as "bad actors" were discovered using Bitcoin and other currencies for illegal or malicious purposes (Ganne, 2018). On the other hand, China adopted a hostile stance toward cryptocurrencies, focusing on its Central Bank Digital Currency (CBDC), known as the Digital Yuan. Bitcoin's anonymity was questioned when U.S. authorities successfully tracked and recovered Bitcoin paid as ransom. The Financial Action Task Force (FATF) issued guidelines for practices during the pandemic. New technologies such as Web 3.0, NFTs, and DeFi, leveraging blockchain evolution, gained popularity (Vidal-Thomas, 2021). Ultimately, while Bitcoin achieved significant success on the global financial stage, numerous innovations across sectors stemmed from Bitcoin's underlying technology. Although varied, these innovations share a common origin with Bitcoin, reflecting the broad impact of its core technology.

3.2. Tesla Stock

Tesla, Inc., an American automotive company based in Palo Alto, California, manufactures electric vehicles. The company was founded on July 1, 2003, and is named after scientist Nikola Tesla. The most prominent investors in the company include Elon Musk, Sergey Brin, Larry Page, and Jeff Skoll. Mr. Elon R. Musk is the Co-Founder, Technoking of Tesla, CEO, and Director. Tesla designs, develops, manufactures, sells, and leases high-performance fully electric vehicles and energy generation and storage systems, offering services related to its products. The company emphasizes performance, attractive styling, and the safety of users and employees in the design and manufacture of its products and is continually developing full self-driving technology for enhanced safety. Tesla aims to reduce ownership costs through ongoing efforts to lower manufacturing costs and offers financial and other services tailored to its products. Tesla's mission is to accelerate the global transition to sustainable energy, operating through two reportable segments: (i) automotive and (ii) energy generation and storage. The 2023 annual report highlights the company's heavy reliance on the services of Elon Musk, the Technoking of Tesla. Tesla has 3.191 billion shares outstanding, of which 12,98% are held by insiders and



Source: https://www.tradingview.com/symbols/NASDAQ-TSLA/ Accessed October 11, 2024

Graph 2. Tesla Market Price

47,04% by institutions, with a total of 3,831 institutions holding shares. Tesla's stock is traded on the NASDAQ market under the ticker TSLA.

Graph 2 depicts the market value of Tesla stock. Since its IPO in June 2010, Tesla's stock price has risen over 2.000% by 2019. Despite substantial price volatility from 2020 to the time of writing in 2024, Tesla's stock price increased by around 1.000% (Graph 2). On August 25, 2022, a 3:1 stock split was enacted.

The trading price of Tesla stock has been highly volatile and may continue to experience wide fluctuations due to various factors, as indicated by Tesla's notably high beta coefficient of 2.30. Third-quarter solid results in 2024 led to a nearly 22% increase in Tesla's market price—the highest in the last decade—boosting the company's market capitalization by over 140 billion euros in a single day. Tesla's sales growth plan for 2025 is projected at 20–30%.

4. The Impact of Musk's Statements and Tweets on the Cryptocurrency Market for Bitcoin and Tesla Stock

This part presents the impact of Musk's Tweets on the market price of Bitcoin and Tesla Stock. At the end of this part, the discussion is presented.

4.1. The Musk's Bitcoin Tweets

Elon Musk is one of the world's most recognized entrepreneurs today. For many years, he has consistently maintained a presence on social media platforms, often using his accounts to express whatever is on his mind, whether it pertains to politics, the economy, business initiatives, or random thoughts—and he tends to stir controversy. Musk's preferred social media platform is Twitter. Musk has garnered a substantial fan base through his tweets, influenced asset prices, ignited political unrest, spurred legal actions, and initiated regulatory investigations, ultimately becoming Twitter's seventh most-followed user. Users are analyzing Musk's tweets more than ever to predict future directions for one of the internet's most popular platforms. Elon Musk, whose reputation is built on innovations in electric vehicles, space exploration, and renewable energy, has unexpectedly become a central figure in cryptocurrency. Given his leadership roles in companies like Tesla and SpaceX, his words carry significant weight, and when his statements reach platforms like Twitter, their impact is felt across financial markets. Musk's fascination with cryptocurrencies runs more profound than mere interest. For example, Tesla invested substantial funds in Bitcoin. His endorsement or criticism of a particular cryptocurrency can trigger waves of buying or selling, underscoring how highly the market values his opinions. Cryptocurrency market volatility is already a known feature of this financial sector. However, the results can be explosive when combined with the influence of individuals like Musk. A single tweet can spark a trend that lasts days or even weeks. While Musk's statements and tweets are only one of many factors influencing the cryptocurrency market, his ability

Source: https://www.tradingview.com Accessed October 20, 2024

Graph 3. Musk's Tweet on March 24, 2021

to provoke immediate reactions makes him a significant figure within the crypto community. His influence also raises questions about the crypto market's stability and maturity and the need for a broader understanding and analysis of market trends that are not solely tied to statements from specific individuals.

Musk tweeted on March 24, 2021, "You can now buy a Tesla with Bitcoin". The market reaction to this tweet was immediate and pronounced. The effect of this statement is visible in Graph 3, where the price rose by 10,52% in a single day and continued its upward trend. This demonstrates Musk's influence on the market and highlights

Source: https://www.tradingview.com Accessed October 20, 2024

Figure 4. Musk's Tweet on May 12, 2021

Table 1. Tesla and Bitcoin Market Prices

Date	Price	Open	High	Low	Vol.	Change %
BITCOIN						
March 24, 2021	52.325,4	54.309,1	57.169,4	51.725,4	137,91K	**+10,52%**
TESLA						
Mar 24, 2021	210,09	222,64	222,67	210,04	101,39M	**+6,01%**
BITCOIN						
May 12, 2021	49.384,2	56.694,5	57.938,5	49.187,0	160,74K	**-15,10%**
TESLA						
May 12, 2021	196,63	200,83	206,80	195,59	101,47M	**+5,42%**

Source: Authors according https://www.investing.com/equities/tesla-motors-historical-data, Accessed October 25, 2024

the crypto market's sensitivity to statements by public figures, especially when they come from someone as influential as Musk. However, while this tweet and its market impact provide exciting insight into crypto market dynamics, viewing it within the broader context of other financial market information and movements is essential.

On May 12, 2021, a different "Elon effect" type occurred when the CEO announced that Tesla would no longer accept BTC as payment. Although the market had fallen significantly from its previous highs in the preceding months, this tweet sealed the trend, sending Bitcoin's price from $56.800 to $49.500.

Graph 4 shows Elon Musk's tweet illustrating the decline in Bitcoin value. Musk emphasized Tesla's concern about increasing fossil fuel use, particularly coal, in Bitcoin mining and transactions. While acknowledging the advantages and promising future of cryptocurrencies, Musk clearly stated that these benefits should not come at the expense of the environment.

This statement is significant because Tesla primarily promotes sustainability through its electric vehicles and other innovative technologies. The market reacted to this announcement swiftly, with Bitcoin's price dropping by 15,10% in a single day. When a company like Tesla, recognized as a leader in sustainable technology, voices concerns about Bitcoin's environmental footprint, it can spark broader apprehensions among investors and traders. However, it is essential to note that Musk also stated in his tweet that Tesla would not sell its Bitcoin and plans to use it for transactions once mining becomes more sustainable. He also mentioned an interest in other more environmentally efficient cryptocurrencies than Bitcoin. Despite Musk's earlier statement that Tesla would not sell its Bitcoin, the company's second-quarter earnings report revealed that approximately 75% of its purchases were converted into fiat currency. According to the report, the fair market value of Tesla's Bitcoin holdings reached $2.48 billion in the first quarter of 2021 and ended the year at approximately $2 billion. Although the company did not disclose the price at which it sold its Bitcoin or the extent of its losses, it is known that Bitcoin started the second quarter close to $46.000 and ended below $19.000.

4.2. Discussion

The two most significant Musk Tweets were "You can now buy a Tesla with Bitcoin" and "Tesla has suspended vehicle purchases using Bitcoin." Both tweets had positive and negative impacts on the market price of Bitcoin and Tesla stock. Table 1 illustrates the price movements of Tesla stock and Bitcoin on the dates of Musk's tweets.

When Musk tweeted on March 24, 2021, "You can now buy a Tesla with Bitcoin", the acceptance of BTC by one of the world's largest companies helped drive the asset to new highs, reaching nearly $65.000 within a month of the tweet. However, Tesla's stock only rose 6,01% (Table 1). Throughout the spring, Musk was increasingly involved in Bitcoin discussions, and Tesla played a crucial role in the cryptocurrency's price movements. Announcements about Tesla's purchase of BTC, its acceptance as payment, the sale of part of its BTC holdings, and the eventual discontinuation of BTC as a payment method all had significant impacts, amplifying the already high volatility of crypto assets.

On May 12, Musk's tweet had a different "Elon effect" when he announced Tesla would no

longer accept BTC as a payment option. The market, which had fallen sharply from its previous highs, experienced a further decline, with Bitcoin dropping from $57.938 to $49.187, a decrease of 15.10% (Table 1). Tesla's stock, however, fluctuated between $196 and $207, increasing by 5,42%. Following Musk's environmental concerns about Bitcoin mining and Tesla's decision to stop accepting Bitcoin as payment, the price of Bitcoin experienced a sharp decline. Bitcoin's price fell by 40% within a month of the announcement. This sudden change reflects the cryptocurrency market's sensitivity to news and statements by influential figures, especially from someone as prominent as Musk. On the other hand, Tesla's stock price trended upward after the same announcement, increasing by 25% within a month.

Several factors could explain this positive stock market response to a statement negatively impacting Bitcoin. One reason may be that investors perceived Tesla's decision as financially responsible, reflecting its commitment to sustainability and environmental issues (Ante, 2023). Another explanation could be a favourable market environment or specific Tesla-related news that positively influenced the stock price. While the cryptocurrency market reacted negatively to Musk's announcement, the stock market viewed Tesla's decision as a positive step toward the future. Musk's tweets have increasingly become a topic of debate and analysis, particularly regarding their impact on small investors. Musk's tweets from one of the most recognizable figures in the tech and business community often cause immediate and dramatic market fluctuations (Ante, 2023). While institutional investors and significant players often have the tools, resources, and mechanisms to respond quickly to such changes, small investors often need help (El Haddaoui et al., 2023). Small investors typically need access to the same real-time trading tools as more prominent investors. Consequently, when Musk tweets something with the potential to move the market significantly, small investors may find themselves reacting later, often when the majority of the market shift has already occurred. This can result in losses or missed profit opportunities. There is also an ethical dimension to this issue. When highly influential individuals like Musk use their platforms to express opinions or information that can drastically affect market values, it raises questions of responsibility toward the broader investor community. Savvy investors compete to discover important information before the rest of the market becomes aware (Bodie, Kane & Marcus, 2008, p. 558). Small investors, who often rely on their investments to save or as part of their future retirement strategy, can be disproportionately affected by such market turbulence. In this context, serious questions arise regarding the ethics of such statements and whether stricter regulatory frameworks should ensure transparency and accountability for those with the power to influence markets in this way. About Musk's tweets about Bitcoin, Dogecoin, and other cryptocurrencies, it could be argued that there are "grey areas" in the regulatory framework. While his statements have undoubtedly impacted the cryptocurrency market, it is unclear whether they violate specific laws or regulations, as the crypto market is not regulated like the stock market. In conclusion, while there are clear laws regarding market manipulation and misinformation in traditional financial markets, applying these laws to the cryptocurrency world remains ambiguous. Musk's tweets, while influential, may exist within these regulatory grey areas, further complicating the question of his responsibility and role in market fluctuations.

The anomaly of market overreaction suggests that (Mishkin & Eakins, 2003, p. 283) "research shows that stock prices can overreact to news announcements, and price determination errors may only be corrected slowly. For example, if a corporation announces a major change in earnings, say a significant drop, stock prices may overreact, declining substantially at first, only to rise back to normal over weeks. This challenges the efficient market hypothesis, as an investor could, on average, earn huge returns by buying a stock after a poor earnings announcement and then selling it several weeks later when it returns to its normal level". The efficient market hypothesis (Mishkin & Eakins, 2003, p. 284) is "a good starting point. However, it may not tell the entire story and therefore cannot be generalized to all behaviours in the financial market." Using social media as a primary tool for communication with the broader public, representing current or future investors, can lead to communication ambiguities. For example, whether the need to clarify events reflects general sentiment or specific information about the company may be unclear.

Additionally, there is a risk of information overload, which can divert attention from essential issues. The fast-paced dynamics of social media also mean that adverse reactions can come quickly and have long-term consequences. Several studies have already focused on the relationship between the crypto market and social media activity, particularly on Twitter. For example, it has been found that an increase in the number of Bitcoin-related tweets can impact its short-

term liquidity (Choi, 2021), and the sentiment expressed on Twitter can even predict cryptocurrency price movements (Shen et al., 2019). Based on a sample of 47 cryptocurrency-related Twitter events, Ante (2023) identified significant positive abnormal returns and trading volume following such events.

Interestingly, social media users not previously actively involved with cryptocurrencies often have a more significant impact on the markets, possibly because their moves are a surprise. If, for instance, Elon Musk were to tweet regularly about cryptocurrencies, the market might become immune to his comments, considering them mere background noise. However, as of today, Elon Musk's tweets continue to influence the cryptocurrency market.

5. Conclusion

Social media has become an indispensable tool for communication and interaction in the modern world. In cryptocurrencies, these platforms are arenas where attitudes are shaped, opinions are formed, and the latest events are tracked. Social networks allow individuals to express their views, share information, and react to market changes almost in real time. When individuals or communities express optimism or support for a particular cryptocurrency on social media, positive sentiment can emerge, encouraging others to explore or invest in that cryptocurrency. Conversely, expressing doubt or concern can create a hostile atmosphere that may deter potential investors.

In cryptocurrency, few individuals hold as much influence as Elon Musk. As the founder and CEO of several tech giants, his words often resonate with millions. As the cryptocurrency market continues to grow and evolve, it is becoming increasingly important to understand how external factors, such as statements by influential individuals, can shape its dynamics. This paper has detailedly analyzed key moments when Musk's tweets or public statements significantly impacted the crypto market. The impact of social media on cryptocurrency market dynamics and trends has become a central topic of discussion and analysis within the financial and tech communities. In an era where digital communication extends beyond traditional media, the power of individual voices on platforms like Twitter can have dramatic and immediate consequences on global economic trends. One of the most prominent examples of this dynamic is the interaction between Elon Musk's statements and the reactions of the cryptocurrency market. As the founder and CEO of tech giants like Tesla and SpaceX, Elon Musk has many followers and fans who carefully follow his every word. His ability to move entire markets with just a few words or emojis must be addressed. However, while his communications may bring profit to some investors, they can also result in losses for others, especially those who lack the capacity for rapid response or real-time information access. Small investors may be particularly vulnerable to sharp market swings from Musk's tweets. This dynamic raises ethical questions about the responsibility of influential individuals to the broader investor community. While some see the market as merely a reflection of the collective decisions of all participants, others call for greater responsibility and thoughtfulness in the communications of those who wield significant influence.

The main limitation of this paper is that only Musk's tweets related to Bitcoin and Tesla were processed. For further research, it is necessary to investigate the impact of other influencers on the movement of market prices of different cryptocurrencies and other investment assets.

Beyond ethical dilemmas are regulatory questions concerning social media communications and their impact on markets. In many jurisdictions, market manipulation and spreading false information are illegal. However, defining precisely what constitutes "manipulation" or "false information" in the context of social media and cryptocurrencies can be challenging, creating legal grey areas. While the digital era offers incredible opportunities for innovation, communication, and global connectivity, it also brings new challenges regarding ethics, accountability, and regulation. The example of Elon Musk and his impact on cryptocurrency markets provides insight into the complexity of these challenges and the need to carefully balance freedom of expression with responsibility toward the wider community.

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