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BSAMC

Bocconi Students Asset Management Club

THE SOCIAL MEDIA INDUSTRY

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INTRODUCTION

Social media & financial sphere

In the last 15 years, the role played by social media in the economic-financial sphere and beyond has become increasingly important. The analysis begins by introducing this topic in a historical overview, that is, how over time the various social networks have influenced an increasing number of companies and how they have moved to embrace the technological evolution underway to improve and develop their reputation and image.

This is followed by the analysis of the sentiment indicator and the techniques related to it, specifically machine learning; implications from an asset management perspective, along with potentially profitable investment strategies, are assessed.

Then, a recent real case was presented that explains how social media can, thanks to giving a voice also to the "little ones", in some way revolutionize the classic market vision we have had to date: has the increased access to the market by retailers made the market more equal?

Finally, with the aim of completing the report, the relevant issues in recent months were briefly presented: the possible split-up of Facebook, the alleged market manipulation by Elon Musk through Twitter (DogeCoin) and a financial comparison between the previous two competitors.

Sentiment indicator in asset management

In the last decade, technological evolution has led to the adoption of techniques that keep up with the times: the huge amount of data that can now be found simply by connecting to the Internet has led man to find shortcuts that could help him in the analysis of big data.

We speak specifically of machine learning. These are techniques that are now used for stock picking, option pricing, but in general in all fields of finance.

It is interesting to consider machine learning applied to the analysis of textual information (searches on the Internet, Twitter, Instagram): it basically involves teaching an automated and advanced software to deal with big data in our place through emulation. The creator of the algorithm applied to the software categorizes a series of actions defining them as "positive" or "negative", and making a sufficiently large number of data available, the machine analyzes backwards the man's moves and does the work for him.

To date, this technique works so well that the errors a man could make in reading information are the same as those made by the machine.



HESTON AND SINHA 2017

Heston and Sinha (2017) explore temporal patterns of predictability in individual stock returns using a sophisticated neural network methodology. They apply these techniques to 900,754 news articles tagged with company identifiers from the Thomson Reuters NewsScope system in the years 2003-2010, not only to newspapers but also to newswire services. Their data includes a measure of the "tone" or sentiment of each story.

Neural networks are an important subcategory of machine learning which consists in making multiple linear regressions in order to adapt the model to the empirical data considered: this has the advantage of creating a very precise model with an R^2 very close to 1, but at the same time there is a risk of overfitting. "Neural network algorithms are used to synthetically read news in 3 steps.

1. Pre-processing.
2. Lexical and sentimental pattern identification.
3. Classification.

The first two stages of the sentiment engine identify parts of speech and morphologically derive words by matching each word to its root word.

The engine performs the analysis by identifying the subject of the sentence and identifies words as adjectives, adverbs, intensifiers, nouns and verbs; lexical identification also recognizes negation and intensification. The weights of the connections within the neural network are chosen to optimize the accuracy of the prediction with respect to the human classification of the articles."

The goal is not to take the returns of the stocks considered but to understand if a certain article, tweet or post has a positive, negative or neutral impact on the stock.

The data was found by Thomson Reuters which categorizes them, classifies them, purifies them of irrelevant factors and associates them with a particular stock.

Through personal analysis of 3,000 news articles covering the 14 months from December 2004 to January 2006 Heston and Sinha then managed to develop a machine learning software that would conclude the work for them with the remaining articles "teaching a computer" how to classify certain news whether positively, negatively or in a neutral way.

A small group of companies monopolize all the data they have at their disposal (about 800,000 articles of the approximately 900,000 analyzed refer to a few companies).

The conclusion of this work leads to the affirmation that positive (negative) news at time 0 has a positive (negative) impact on a stock whose return in the following 1/2 days will be positive and statistically significant.

Using a long-short strategy, a portfolio was therefore built with a long position for those companies that at the time 0 recorded positive news and a short position on those with negative news. In the following 1/2 days, as might be expected, the returns were positive and systematically significant at 5%.

In order not to evaluate and rebalance the portfolio on a daily basis and given that the weekly returns are very little correlated, it is possible to accumulate the results on a weekly basis. The analysis shows how the results have an even stronger significant value, i.e., higher positive returns (which is completely normal since they are considered weekly and no longer daily) and more significant (i.e., higher t-stat than before).

From this analysis it would therefore appear that sentiment (incorporated by news) somehow predicts short term's future returns on stocks.

Finally, it is interesting to compare the returns obtained from sentiment with those deriving from the two main strategies applied by hedge funds: Momentum and Earnings Share.



The first strategy is simply to create a portfolio with a long position on stocks that have had positive returns in the last 6/12 months and short on stocks with negative returns over the same time frame. The second strategy consists in a long position on stocks that at time 0 have positive announcements on profits/dividends and short on stocks with negative announcements.

From the comparison it can be seen that in the short term, this last strategy turns out to be the best: it has positive and increasing cumulative returns for the first 4/5 weeks and then tends to decrease to zero in the long term.



Between the first and sixth week, the cumulative returns of the Sentiment and Momentum strategies can be seen in a very similar trend, but from that moment on, the second seems to prevail over the other. However, numerous analyzes have shown that this growth is the victim of a reversal effect after about 20 weeks. Therefore, in the long term the Sentiment is therefore the most effective strategy and with the best results but with a very low slope.

So positive (negative) news have a positive (negative) impact on daily stock returns. The analysis conducted leads to the conclusion that investor sentiment (considering news only) has an impact on returns depending on the type of news (negative news affect returns for a longer time than positive news). By aggregating social media to news, we could expect this sentiment to be further strengthened given the weight that social media has accumulated in recent years.



BECKERS (2019)

Do news and social media therefore provide complementary or overlapping data? The latter, unlike the former, are characterized by the presence of high opinions (often also unfounded or approximate dictated by behavioral biases as defined in Tversky and Kahneman's Prospect Theory) and not actual news. Furthermore, there is no structure in the data that can be found: better explained means that a newspaper article has a structure based on data and news based on research and in-depth analysis on the subject. If you were to consider a Tweet what are the relevant factors to consider? Likes and dislikes? Comments? The Re-Tweets? It is therefore very complicated to choose and manage this amount of data in a useful way.

Beckers' analysis is the most in-depth on the topic of Social Media as it considers all the data available from 1998 to 2019 and takes advantage of any information available, from social media to newspapers.

He creates three global sentiment indices based on the TRMI by calculating a weighted average of the monthly capitalization of the indices relating to the states from March 1998 to December 2017 and try to create portfolio strategies based on the world indices. These indices refer to three categories: emotion, equity fundamentals and the political risk.

From the analysis of Becker (2019), who tries to find a relationship between social media and returns, it can be seen that the result of the news worsens including social media.

Becker demonstrates how there is a positive and large correlation between the indices analyzed in the same month, on the other hand how only in some cases one sentiment index can predict another (mostly negative correlation between the current month and the previous month).

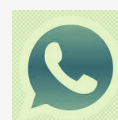
Furthermore, based on the decade in which the weight of Social Media is most relevant (2008-2017), he checked whether in some way the sentiment indices he has created are able to predict the world stock market index MSCI World Index, but obtaining opposite results to what one might expect: the correlations between the indices he composed and the world stock index in the last decade show very small values and in one case a negative. This means that when the sentiment indicator is low, the analysis predicts world returns for the following month in highs.

1effectiveness of social media, perhaps also due to an 0approximate work by Becker himself who must be recognized for having treated the data from 1998 to 2019 but at the same time the criticism of not having distinguished in a qualitative way (positive or negative) the data deriving from social media.



FACEBOOK'S SPLIT UP

The FTC aims to obtain a permanent injunction against Facebook from the federal court, for the company to sell the assets of Instagram and WhatsApp, stop imposing anticompetitive conditions on software developers and notify for approval of future mergers and acquisitions. The result of such practices would have limited the users' possibilities in being able to choose a social network, deprived advertisers of the advantages of competition in the advertising market and ultimately damaged the competition.



Social Network	Acquisition Date	Cost incurred	Active Users (2021)
WhatsApp	February 19th 2014	19,3 <u>billions</u> \$	2 billion (monthly)
Instagram	April 9th 2012	1 billion\$	1 billion (monthly)

The commissioners retraced the history of the social network giant, which in 2020 reached 2.6 billion active users per month. The acquisition of Instagram, one billion dollars in 2012, would have been carried out because Mark Zuckerberg had recognized "an existential threat" to the monopoly power of Facebook ", at a time when users migrated from PC to smartphone and discovered the sharing photos. The 19 billion acquisition of WhatsApp in 2014 would have "neutralized an emerging danger", making it more difficult for future competitors to climb in instant messaging. The result of the acquisitions, according to the FTC, is clear: Facebook would have in fact created a gigantic social network that is impossible to counter, preventing the most promising companies from growing to the point of representing a real competitor of the size equivalent to Facebook. This is because, as it did with WhatsApp and Instagram, Facebook bought them before this could happen, consolidating its position and altering the market balance. The FTC's request is to force Facebook to sell WhatsApp and Instagram to "restore competition".

Facebook's position is equally clear: in the past the FTC and also the European Commission approved the acquisitions of Instagram, in 2012, and of WhatsApp, in 2014. "The regulators - wrote Newstead (serves as the General Counsel at Facebook) - they correctly allowed these agreements to continue because they did not threaten competition. Now, many years later, with no regard for the laws in force or the consequences on innovation and investment, the agency is claiming that it was wrong and wants to remedy ". In the meantime, however, the opposite is happening: the plan would be to combine the 4 social platforms (including Messenger) to create a single all- encompassing App. The path is still long and treacherous given the numerous injunctions and complaints that are presented to Facebook on a daily basis. Despite this, it is assumed that by 2021 the first integration step can be done by combining WhatsApp and Messenger: on a voluntary basis, it is said, the user who holds chats in both applications will be able to merge them into one for greater convenience. How will it end? Is the Facebook empire too strong to end or will the FTC denunciation triumph?



EXPERT'S OPINION

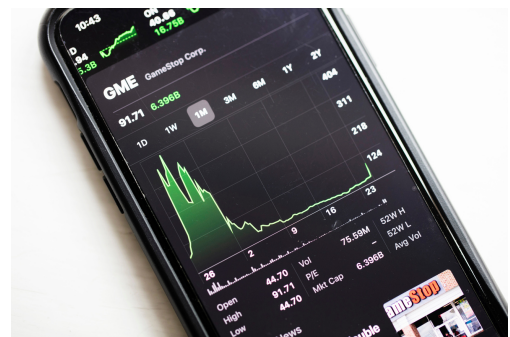
Another antitrust expert, R. Mark McCareins, the co-director of the JD/MBA program at the J.L. Kellogg Graduate School of Management at Northwestern University, said, "We're a long way off from talking about what a breakup would look like."

The creation of a monopoly, McCareins clarified, is not illegal. Rather, it's using monopoly power in an exclusionary way to hurt whatever competition is left. According to law, he said, "If you succeed through superior skill or business acumen, and your entity becomes bigger and better and stronger because you have built the better mousetrap, that is not illegal."

He said when monopolies work to hurt competition, they will often use killer acquisitions, in which they over-pay to acquire a competing business and then kill the product. Facebook, he said, has not done that with Instagram and WhatsApp, but rather spent money to improve and integrate the products into its business.

GAMESTOP FRENZY, WHEN SOCIAL MEDIA FUEL A STOCK MARKET GROWTH

When we talk about the GameStop story, there is usually a feeling that we are talking about something necessarily good. Is it really just like this?



As most know, the GameStop saga is about a shocking soaring in GameStop shares prices, due to massive belief by retail investors in the stock ("We like the stock" some of the most common sentences on Reddit in January).

Nevertheless, less people know about how the story has initially started and then carried out by some specific reddit users. Like the user "Roaring Kitty" whose real name is Keith Gill, who has initially started to post on social medias about his 53.000 \$ investment in GME and posting videos on YouTube on the company and how this trade could have been essentially a good investment.

Results? In January after prices hit 325, the initial investment of 53.000 \$ of Roaring Kitty reached the value.

The reason behind this impressive growth is the use of options, that allowed a big leverage on his investments. But the question is: why someone should be so confident in investing so much on a typically highly risky product such as options?

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Day's Gain \$	Total Gain \$	Total Gain %	Value \$ =
163,000.00	16,465,138.84	614.40%	19,145,000.00
8,750.00*	8,938,491.80	87,135.09%	8,948,750.00
			\$11,882,979.98
\$171,750.00	\$25,403,630.64	944.33%	\$39,976,729.98



The reason behind this impressive growth is the use of options, that allowed a big leverage on his investments. But the question is: why someone should be so confident in investing so much on a typically highly risky product such as options?

There are multiple possible answers to the question and to explain the reason behind the entire GameStop saga but I think there are some quite important to underline.

First, Roaring Kitty as a lot of other Reddit users are NOT un-expert users, but inside the 8 million followers of WallStreetBets there are various experts, maybe with experience at investment banks. Roaring Kitty had enough money to risk about 10.000 \$ on options, which means it has enough money to spend on risky investments .The risks of investing following social media trends is to be caught by unexpected changes in market movements that could both benefit or damage the investors.

On the other hand, GameStop is the clear demonstration of how group thinking is a massive power and how it can overcome fundamentals.

The same group thinking was also fueled by the research of an enemy, which happened later after the discovery of short selling positions by some hedge fund such as Melvin Capital and Point72.

There isn't a stronger additive to an exponential growth such as the research of an enemy, which is what happens in a social experiment. In fact we can say that what has happened wasn't so much different than a social experiment.

This is also an aspect I would like to focus more: the fact that this whole story has been sold to the public as the David versus Goliath of the century is simply a lie in our opinion.

Wall Street is not about the poor versus the rich tale, but it's all about money.

The retailers that have started to buy options of GME weren't doing it because of Melvin short position but to make money. That tale has become necessary only later, to fuel the impressive growth and it has been also used by democratic politicians and famous people as a form of campaign. The truth is that hedge funds are not evil as many would like to make it look.

So the question is, has the increased access to the market by retailers made the market more equal?

The answer is yes, platforms like Robinhood have made the stock market accessible to everyone with ease.

And we can also say that now retailers can actually move the market with shock such as in the case of GME or Hertz previously. And Reddit has also helped in this kind of market moves.

But the point is (and what many professionals try to point out to) that this kind of market moves are not following precise motivations and there are not indicators that can explain this impressive market movements.

Which it could lead towards a progressive estrangement of markets from real financial valuations of companies. Which is in fact what happens during a stock market bubble.

What potentially could seem like an increased opportunity for everyone could soon reveal itself as a market destabilization.

That is the biggest risk of an increased diffusion of social media investing in our opinion.

SOCIAL MEDIA INFLUENCE ON ASSET MANAGEMENT

The disruptive development of social media has effected all the industries and has changed the traditional way of operating. Asset managers are using social media as instruments to enhance brand and reputation, as well as to provide information and support to a diversified array of interlocutors such as end-investors, distributors and financial advisors. The use of social media has increased significantly even within the hedge fund industry in recent years, and now 90% of hedge funds is using social media, particularly LinkedIn and Twitter, to enhance marketing campaigns and prospect new investor.

Social media is becoming an important source of information for institutional investors. They are increasingly augmenting traditional financial news media with social media in order to make investment decisions. A recent global study by Greenwich Associates showed that nearly a third of institutional investors made an investment decision based on information gathered on social media platforms. Also, 44% of them affirmed that they sought educational content on these platforms to better inform themselves about investments, and 33% used social media to research asset managers and recommendations for investment products.

Furthermore, social media is among the favorite channels to discover opinions on products, services and companies, particularly among Millennials, which will soon represent the new wave of investors. So mining social channels, with the use of sophisticated analytics tools brought to life by technological advancements, could be a valuable option for asset managers. The adoption of “social listening” tools could help them streamline their product development practices according to customers' changing needs.

Although some level of uncertainty on the regulatory side still persists and social media presents various operational challenges and risks, one thing is clear: asset managers are increasingly betting on the social media space.



In 2013, the larger the firm, the more likely it was to use social media. At that time, only 46% of promoters managing less than €150bn had an active account dedicated to asset management compared to 77% for those managing more than €500bn. The situation has changed in 2016. Whatever the size of the asset managers, at least 80% are present on social media. In 2016, 81% of small firms managing less than €150bn are using social media, while those which manage more than €500bn jumped to 92%.

Managing social media communications remains time-consuming and requires cross-corporate teams that can respond quickly to followers' questions without breaching compliance rules. It also requires various profiles, such as PR and Communications, Product Marketing, Sales and Relationship Management, Compliance and IT, to successfully manage social media-based communication practices. In 2013, only the largest firms had in place the organizational capabilities to deal with these additional channels. But today, smaller firms are also allocating resources to manage these channels, as they are considered key components of a company's marketing mix. This trend is fueled by customers' changing needs which make speediness, convenience and simplicity drivers of their satisfaction. Research from the Financial Conduct Authority (FCA) in the UK showed that 61% of investors in the UK wants to connect with financial advisors on social media, and 87% of the investors surveyed has at least one social network account. Moreover, 46% of those without a social media account would be more likely to use these networks if they could communicate in real time with their advisors.

COVID-19 EFFECTS

Fabrizio Zumbo, associate director at European asset and wealth management research at Cerulli, said: "The importance of a strong online presence has been underlined by the Covid-19 lockdown measures". Around 12% of the asset managers Cerulli surveyed in Europe last year did not have a dedicated digital and social media marketing team, but this figure dropped to only 2% in the 2020 survey.

The firm's research shows that managers plan to bolster their digital presence in the coming 12 to 24 months. In addition, some 44% of the managers surveyed expect their social and digital media activities to consume a greater proportion of their marketing budgets over the next two years.

Despite the progress managers have made this year in terms of increasing their social media activities, fewer than half of the managers surveyed are satisfied with their level of activity. "Managers are likely to continue hosting virtual conferences, given that large-scale, real-life events are still not possible and that it is unclear whether they will return in 2021. High-quality videos can fill some of the gaps left by not being able to meet in person. Good social media content is no longer just a nice to have—it will play a major and credible role in investors' decision-making strategies," said Zumbo.



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ROBO-ADVISOR

Automation of asset allocation and wealth management will be one of asset managers' main priorities in the coming years. Coupled with this, a new breed of technology-driven players is disrupting the fund market with new business models that provide affluent retail investors with an alternative in the financial advisory domain—they are called “robo- advisors” or “automated advisors”. These firms are adopting fully delegated, assisted or self-service advisory models through sophisticated algorithms, in order to help consumers, build and manage investment portfolios based on their age, risk aversion, income requirements, investment timeframe, income, savings and assets. Like traditional asset managers, robo-advisors leverage social media channels to interact with their audience, but in a slightly different way. Whereas Facebook is the least used channel by asset managers, robo-advisors use it extensively. This is the case because the majority of robo-advisors' clients are, in many cases, under 35 and this demographic uses Facebook substantially. In addition, as most of traditional asset managers are targeting a variety of investors (retail and institutional) and partners (distributors and independent financial advisors), Facebook is not necessarily the most suitable channel to reach them. In the contrary, robo-advisors focus mainly on end- investors. The type of content that traditional asset managers and robo-advisors disseminate on Facebook also differs. Asset managers prefer posting pictures while robo-advisors use links extensively. The factors driving this situation can be ascribed to the fact that asset managers are used to roll advertisement campaigns on Facebook to target retail investors in the form of visual ads. On the other hand, robo-advisors are content-driven and they focus on driving traffic to their web- sites to provide the company's views on specific investment matters or topics.

1. “We are a CUSTOMER-CENTRIC organization and our primary goal on social networks is to be available, accessible and engaged with our customers, to make sure they are having a great experience”. Joe Ziemer, Head of Communications and Policy Betterment.
2. “Social media networks assume an important role in our digital strategy as we want to be available in all potential touch points chosen by the client prospect”. Tracy Knatt, Head of web and social media, AXA IM
3. “LinkedIn gathers a pool of professionals looking for reference and sharing insights on professional matters. As our target audience on social media is mainly B2B and professional investors, LinkedIn is a valuable option”. Johann Hillebrand, Head of Content Management Robeco





ELON MUSK

6 times the Tesla boss has moved markets

Move over Warren Buffet, a new market sage has the ear of investors. At least, investors interested in buying joke cryptocurrencies.

That's right: Elon Musk. A tweet to his 50 million Twitter followers sent "meme" cryptocurrency Dogecoin soaring.

The Tesla boss and SpaceX founder was a vocal supporter of the Reddit crowd during the GameStop saga, and one word of his can send investors piling into a company's stock.

Where does Musk's market-moving power come from? He is a deeply attractive figure to many amateur investors, who see him as a genius maverick whose electric-car company Tesla has defied Wall Street naysayers.

Why? Because Elon Musk posted a picture based on the movie Lion King which showed him holding up Doge, the meme Shiba Inu dog upon which Dogecoin is based.

The digital currency touched as high as \$0.0579 in February, although this was some way from the all-time high of \$0.0792 reached in January.

On the 8th of May he has proclaimed himself as "The DogeFather" making investors let the crypto spike again. DogeCoin jumped by 16.79% in a day.

Musk helped power the GameStop frenzy

One of Musk's most high-profile interventions in the markets came at the end of January, when he waded into the day-trading frenzy that sent GameStop shares soaring and battered hedge funds.

On January 26 after markets closed, and as interest in GameStop shares picked up among day traders on social network website Reddit, Musk simply tweeted "Gamestonk!!" with a link to the Reddit forum Wall Street Bets.

The next day, GameStop's shares rocketed as much as 157% and closed 135% higher, with Wall Street Bets members widely discussing Musk's tweet. GameStop tumbled a week later, however, to \$70.15.

The Wall Street Journal reported that one hedge fund who had bet on GameStop decided to get out after Musk's tweet. Senvest Management ended up making \$700 million.



BITCOIN SPIKE WITH A HASHTAG

Bitcoin is a big market, with a capitalization of more than \$600 billion. But Musk sent the price of each coin soaring more than 15% at the end of January by simply adding the word "#bitcoin" to his Twitter profile.

The Bitcoin price spiked to as high as \$38,406 on January 29, having spent most of the week in a range between \$31,000 and \$33,000. Edward Moya, senior market analyst at currency platform Oanda, said in a note: "Bitcoin got lost in the GameStop mania and Musk's tweet brought cryptos back into the limelight." Bitcoin was up around 3% on Friday morning to \$38,100.

Arts-and-craft retailer Etsy got caught up in the Musk effect

Etsy's shares jumped as much as 8% on January 26, although they closed lower. What was behind the spike? Why, Elon Musk saying he had bought a "hand knit wool Marvin the Martian" helmet for his dog, of course. His satisfaction with his purchase caused the Tesla chief to tweet "I kinda love Etsy" and for the company's share price to promptly rally in early trading.

Musk's techno tweet boosts obscure gold miner

It's perhaps the strangest of Musk's market-moving moments. In his return to Twitter last week, he said "Sandstorm is a masterpiece", likely referring to the hit 2000 song by Darude. Day traders went searching for meaning in the stock market, sending shares in Sandstorm Gold - a \$1.3 billion Canadian gold miner - soaring as much as 55% in pre-market trading. The rally was short-lived, however, with the stock down 1% just before normal trading opened.



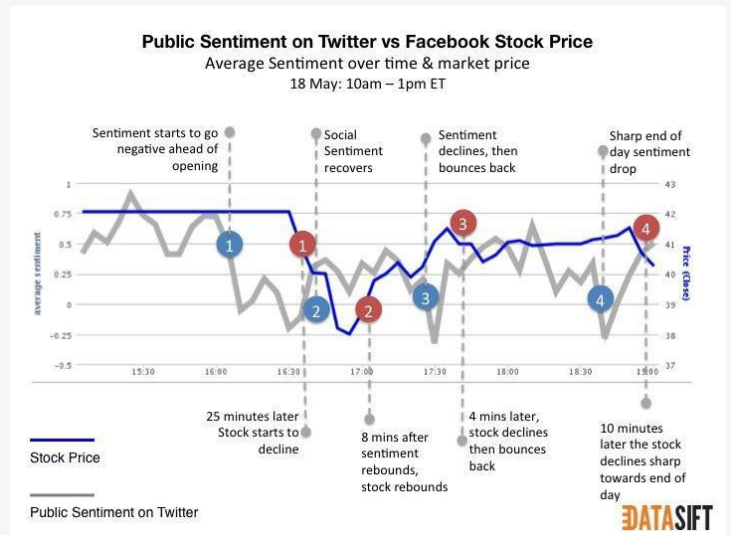
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MUSK ACCUSED OF MARKET MANIPULATION

The impact of social media on financial markets has reached new levels since Elon Musk's tweets and their effect on Tesla and Bitcoin prices.

In 2018, The Securities and Exchange Commission (SEC) had already charged Elon Musk, CEO and Chairman of Silicon Valley-based Tesla Inc., with securities fraud for a series of false and misleading tweets about a potential transaction to take Tesla private. On August 7, 2018, Musk tweeted to his 22 million Twitter followers that he could take Tesla private at \$420 per share, that funding for the transaction had been secured, and that the only remaining uncertainty was a shareholder vote. In truth, Musk had not discussed specific deal terms with any potential financing partners, and he allegedly knew that the potential transaction was uncertain and subject to numerous contingencies. According to the SEC's complaint, Musk's tweets caused Tesla's stock price to jump by over six percent on August 7 and led to significant market disruption. Musk and Tesla each had to pay the SEC a \$20 million fine to settle the suit, and Musk has since agreed to submit his public statements about Tesla's finances and other topics to vetting by its legal counsel.



In 2021, the CEO of Tesla is facing new risks as Bitcoin's value jumped more than 20% to \$38,566 after he changes his Twitter bio in "#Bitcoin", fueling speculation that he had bought more of the cryptocurrency. Furthermore, a few weeks later, Tesla announced it bought \$1,5 billion of Bitcoin and said it plan to accept the digital currency as a payment. After the announcement of Tesla, Musk out tweets that included memes glorying the digital currency: the move caused bitcoin's price to soar to all-time highs of over \$48,000 per coin. The influence of Musk's tweets on assets' prices was confirmed on two other occasions: first when he tweeted "gamestonk!!" and a link to the WallStreetBets Reddit thread, helping GameStop's valuation to skyrocket to more than \$10 billion; a few hours later, he tweeted "I kinda love Etsy" with the shares in the online craft marketplace subsequently soaring by +9%.

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