The impact of a short squeeze through technical and fundamental analysis

Finance and Corporate Governance

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Description

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Abstract

The GameStop short squeeze in January 2021, which was largely driven by retail traders on social media platforms, caused a significant increase in the stock prices of GameStop and AMC Entertainment. This event drew significant attention from investors, traders, and academics alike.

The current study investigated the impact of the short squeeze on the technical and fundamental values of the companies GameStop and AMC Entertainment. A comprehensive analysis of stock prices, trading volumes, and financial statements of both companies was conducted to explore how the short squeeze affected the perceived values and market performance of GME and AMC.

The results revealed significant changes to technical values, however the fundamental indicators were not impacted as much. Specifically, it was found that the short squeeze had a significant positive impact on the stock prices and trading volumes of both companies. Additionally, the results provided more certainty that the stocks were heavily impacted by social media hype and online momentum.

Overall, this study contributes to the ongoing discourse surrounding the impact of social media and individual trading on the financial markets and provides valuable insights into factors that drive stock prices and market efficiency the digital age.

Keywords/tags

Shorting, Short Squeeze, GameStop, AMC, Reddit, WallStreetBets,

.

Description

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Lyhyen puristuksen vaikutus teknisen ja fundamentaalisen analyysin avulla

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Tiivistelmä

Tammikuussa 2021 tapahtunut GameStopin shorttipuristus, joka johtui suurelta osin sosiaalisen median alustoilla toimivista vähittäiskauppiaista, aiheutti merkittävän nousun GameStopin ja AMC Entertainmentin osakekursseissa. Tapahtuma herätti merkittävää huomiota niin sijoittajien, kauppiaiden kuin akateemikkojenkin keskuudessa.

Tässä tutkimuksessa tutkittiin short squeeze -tapahtuman vaikutusta GameStop- ja AMC Entertainment -yhtiöiden teknisiin ja fundamentaalisiin arvoihin. Molempien yhtiöiden osakekursseja, kaupankäyntimääriä ja tilinpäätöstietoja analysoitiin kattavasti sen selvittämiseksi, miten shorttipuristus vaikutti GME:n ja AMC:n koettuihin arvoihin ja markkinakehitykseen.

Tulokset osoittivat, että tekniset arvot muuttuivat merkittävästi, mutta perusindikaattorit eivät vaikuttaneet yhtä paljon. Erityisesti todettiin, että shorttipuristuksella oli merkittävä myönteinen vaikutus molempien yritysten osakekursseihin ja kaupankäyntivolyymiin. Lisäksi tulokset antoivat lisää varmuutta siitä, että sosiaalisen median hype ja verkkomomentum vaikuttivat osakkeisiin voimakkaasti.

Kaiken kaikkiaan tämä tutkimus edistää meneillään olevaa keskustelua sosiaalisen median ja yksilöllisen kaupankäynnin vaikutuksesta rahoitusmarkkinoihin ja tarjoaa arvokasta tietoa tekijöistä, jotka ohjaavat osakkeiden hintoja ja markkinoiden tehokkuutta digitaaliaikana.

Avainsanat (asiasanat)

Lyhyeksi myynti, Shortti puristus, GameStop, AMC, Reddit, WallStreetBets,

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1 Introduction

The GameStop short squeeze of January 2021 was a landmark event in financial markets, drawing attention to the power of retail investors to disrupt traditional market dynamics. A group of individual investors from the subreddit WallStreetBets coordinated to purchase large amounts of shares in the video game retailer GameStop, driving up the stock price and causing significant losses for hedge funds that had bet against the company's success. This event, and a subsequent short squeeze of the movie theater chain AMC, had significant implications for the companies involved and for the broader market. This study explores the impact of the GameStop and AMC short squeezes on the companies themselves and on the broader market, examining the motivations and actions of individual investors, the response of hedge funds and other market actors, and the implications of these events. This introduction chapter outlines the research motives and questions that drive this study.

1.1 Research motivation

The GameStop short squeeze captured the attention of financial markets worldwide, highlighting the changing dynamics of the modern financial market and the increasing power of retail investors to influence market outcomes. This event has sparked intense debate among academics, policymakers, and market participants about the potential risks and benefits of individual investor activism, the role of social media in shaping market dynamics, and the broader implications of these events for the stability and efficiency of financial markets. By examining the impact of the GameStop and AMC short squeezes on the companies involved and on the broader market, this study aims to contribute to this debate and to deepen our understanding of the changing dynamics of the modern financial market.

1.2 Research objectives and questions

The primary object of this research is to analyse the effects that the short squeeze had on the companies involved GameStop (GME) and AMC Entertainment Holdings Inc (AMC). Comparing the periods before the event and after. Discovering the similarities and differences between GME and

AMC by looking into the effects seen on both the technical and fundamental side of the companies' financials.

One of the objectives for the research is to study the developments that lead up to the event. Researching the different roles that were influencing the outcome of the event, like social media and underlying company performance.

Q1: What were the underlying causes of the GameStop short squeeze, and how did they contribute to the phenomenon?

Q2: How did social media platforms such as Reddit play a role in the GameStop short squeeze, and what impact did they have on the stock's value?

Q3: What were the economic and financial implications of the GameStop short squeeze, and how did they affect the companies involved.

1.3 Thesis structure

In the first section the research motives that led to this study are presented and outlines the research objectives, which will guide the study towards. Chapter 2 of the thesis is dedicated to the literature review. It is divided into several sections, which focuses on technical aspects related to investment performance and discusses fundamental financial analysis and key indicators. Part of the literature review investigates short selling and short squeezes bubbles. The second chapter presents the literature related to short squeeze events, with a focus on the GME and Volkswagen short squeezes, and finally the literature review lays out the research hypotheses.

The third chapter explains the research methodology, which includes data collection methods, variable descriptions, and data analysis techniques. Afterward the chapter 4 presents the results of the study, including the empirical findings and statistical analyses. Subsequently the fifth chapter concludes the research by providing a comprehensive discussion of the results and implications of the study.

2 Literature review

In this chapter, the research studies up to date published literature, relevant news articles and social media movements that relate to the study. The aim of this chapter is to share methodologies about technical and fundamental analysis through published literature. Further, the purpose of the literature review is to produce insight into short squeezes and investigate the buildup that caused them. The final purpose of this chapter is to set forth the hypotheses.

2.1 Technical Analysis

This chapter studies relevant technical financial metrics through published literature, financial ratios like CAPM, Rate of return and Abnormal returns.

2.1.1 Rate of return

According to (Gale, 1972) the rate of return is a metric which calculates the returns or losses of a stock or a portfolio. Annualized return is a rate of return that is converted from a shorter period to an annualized rate. It is used to compare returns from investments with different holding periods by assuming that the returns are compounded annually. It is calculated by taking the rate of return over a specific period of time, such as a quarter or a month, and multiplying it by the number of periods in a year.

2.1.2 Expected return

In 1964 William Sharpe published an article in which Sharpe had created a model (Capital Asset Pricing Model) for measuring the expected return of a portfolio. Since the creation of (CAPM) the model has seen a lot of controversy and debate whether it is reliable. In an article published by (Rossi, 2016), He had researched many literatures in support and against the original model for the expected return. In conclusion to Rossi's research, it is known that the model has empirical problems to its consistency of calculating an expected return. The model still provides an estimate which can be used to benefit when known that the model has its flaws and inaccuracies.

2.1.3 Systematic Risk

As stated in the study (Tsai et al., 2013) systematic risk also known as Beta in the CAPM, is a measurement of the volatility for a portfolio or a certain stock in correlation to its comprehensive market. A beta of 1 implies that the portfolio is as volatile as the market. A beta less than 1 implies that the portfolio is less volatile than its market.

2.1.4 Jensen Alpha

Jensen Alpha is a measurement which is used to calculate the Risk adjusted return of an asset compared to the expected return (CAPM) of the asset. Jensen alpha reveals how the asset performed correlated to what it was expected to perform, therefore the higher the Jensen alpha the better. (Phuoc, 2018)

2.1.5 Abnormal Returns

As (Liu and Manzoni, 2019) states in their research, abnormal return also known as Cumulative Abnormal Return (CAR), An evaluation of the performance of a portfolio in relation to a benchmark index. Abnormal return is used to assess the performance of a stock or portfolio over a specific period. A positive abnormal return indicates that the stock or portfolio has managed to outperform the benchmark index, while negative result indicates the opposite.

2.1.6 Trading intensity

Trading intensity is a measurement which calculates how much traffic is on a specific stock or market. It measures the volume of shares bought to the shares outstanding. Trading intensity can be a great indicator to follow the movement leading up to short squeezes. According to a research article (Paramati et al., 2015) High trading intensity most of the time affects a stock positively as high amount of traffic can increase the value of the shares.

2.2 Fundamentals Analysis

In this chapter, the purpose is to provide relevant fundamental financial metrics through published literature.

2.2.1 Debt to equity

According to (Papaioannou, 2017) Debt-to-equity ratio is a financial metric that compares company's total debt to its total equity, representing the level of financial leverage used by the company to finance its operations. This metric is frequently used by investors when evaluating a company's financial health and its ability to meet its financial obligations.

2.2.2 Quick ratio

As stated in (Kieso et al., 2016) The quick ratio is a financial ratio used to measure a company's liquidity and capability to meet short-term commitments. The ratio is measured by dividing the sum of a company's cash, cash equivalents, and short-term investments by its current liabilities. The quick ratio provides a more traditional estimate of a company's liquidity compared to the current ratio, which only takes into account current assets. The quick ratio is an important metric evaluating a company's financial health.

2.2.3 Earnings per share

As stated in (Khan et al., 2014) Earnings per share, serves as a metric that indicates how much profit is made by each outstanding share of the company's stock. It is measured by dividing the net income of a company by the total amount of outstanding shares. EPS is often used as a key fundamental metric to figure out whether investing a specific stock is profitable.

2.2.4 Financial leverage

The degree of financial leverage is a metric that gives an estimate to how volatile the company's earnings are. It is measured by diving the change in EPS to the change in earnings before taxes. Which reflects to how much risk is as associated with the company's use of debt to finance its operations. It is considered that the lower the degree of financial leverage the greater the state of the company as it means the company has low amount of debt in relation to its equity according to (Stelk et al., 2018).

2.2.5 Price to earnings

In reference to (Ghaeli, 2017) The price-to-earnings (P/E) ratio is a commonly used financial tool in determining the valuation of a price of a stock relative to its earnings. High P/E ratio illustrates that there is a demand for paying a higher price for each dollar of the company's earnings, which may indicate that there is an expectation of future earnings in growth of the company, therefore a low P/E ratio may indicate that there is lack of positive expectations for the future of the company.

2.2.6 Return on equity

(Arditti, 1967) States that return on equity (ROE) is a financial metric used to measure a company's profitability by taking into account the shareholders' equity. A high ROE reveals that the company is efficient in using its assets to accomplish profits, However, a low ROE implies that company is lacking in making profits. An average ROE may vary a lot depending on the industry the company is in.

2.3 Concept of shorting

According to (Duffie et al., 2002) Shorting is a financial strategy that is betting against a stock hoping that it will decrease in value. Shorting takes place when an investor borrows shares of a stock and immediately sells them in the market and after a certain period the investor will buy back the shares that were borrowed in the current price. The investor will make profit if the value of the shares is lower than they were when the transaction initially took place.

This strategy is used to speculate on the decline of a stock's price rather than the traditional approach of buying shares with the expectation of a price increase. Shorting is riskier investing than traditional trading, when you look at it from a perspective of the maximum loss that you can take from the investment, since there is not a maximum limit for the potential loss in short trading as stated in (NPR.org, 2021).

2.4 Short squeeze bubbles

Referring to (Blomster, 2021) A short squeeze ensues when investors who have shorted a stock are forced to buy back the borrowed shares at a higher price than they sold them for. This can happen when the stock's price unexpectedly rises, which causes significant losses for the sellers. As these investors scramble to acquire back the shares they lend, they drive the stock's price even higher, further exacerbating their losses.

Short squeezes can be caused by a variety of factors, such as positive news or announcements about the company, increased buying pressure from other investors, rumours, speculation or even market manipulation.

As explained by (Tobey, 2021) Market manipulation is the illegal practice of artificially inflating or deflating the price of a security for personal gain and short squeezes have been linked to market manipulation in several ways. One of the most common methods is through the use of false or misleading information to drive up the stock's price, causing short sellers to lose money. Additionally, some investors may engage in coordinated short selling and buying to create a short squeeze and artificially inflate the stock's price.

In the research (Guimares, Pannella, 2021), they argue that short selling gives an incentive for rational bubbles that would not prevail otherwise. Their main argument point is that short selling pledges a commitment to buying a share in the future, which increases the future demand of the shares. When vast portion of a stock's shares have been shorted. It is certain that there is going to be future demand of the shares. According to (Guimares, Pannella, 2021, p.1) "By raising the stock's future demand, short selling might allow for a path of ever-increasing prices"

In their study they have done research of the GME short bubble of January 2021, and they found that the free float during the short squeeze period was estimated to be 140%, which means that the shares were borrowed and sold 1.4 times per share. With that high number of a free float, their model argue that the stock is in a bubble state where the sellers are making profit when the prices revert, and the buyers are hoping for the bubble state to continue. "In the bubble state, it is optimal for sellers to cover a substantial part of their positions at that moment. That pushes prices further up, implying even larger losses to short sellers." (Guimares, Pannella, 2021, p.16).

2.5 Short squeeze events

This chapter of the literature review aims to study the two recent and significant short squeezes that have happened in the 21st century, GameStop and Volkswagen. The purpose of the chapter is to go more in depth about the build up of GameStop short squeeze and the impacts of Volkswagen squeeze.

2.5.1 GameStop

Reddit is the eighth most visited site in the United States according to (Widman, 2021). Although it is one of the largest social media sites in the world it is still quite unknown to a sizeable portion of the population. It differs from the traditional social media sites like Facebook, Twitter, or Instagram. Where the usual activity is surrounded by the users own profile and the individuals he or she follows. On Reddit most of the users use an anonymous name and the activity on reddit is more focused on the communities rather than the person. Reddit is divided to millions of the different forums and communities called subreddits. There are subreddits for millions of different subjects, and they range from various hobbies and interests to entertainment. Individuals can find a community for themselves where the users share the same interests. If a user wants to post something, they need to post it into a subreddit and the amount of visibility a post gets is relied upon on the amount of people that upvote and downvote it. Most of the posts on Reddit go unnoticed but if a post can gather a lot of upvotes it can end on homepage of reddit where the most upvoted posts of the day will be seen. (Widman, 2021)

In 2012 39-year-old Jaime Rogozinski created a new subreddit called WallStreetBets. Rogozinski revealed to TMZ his early intentions for making the subreddit "When I created the sub, I was looking for a community, a place for people to talk about high-risk trades in an unapologetic way for people to make some short-term money with disposable income" (Staff, 2021, p. 1). For a years after the creation of the community it managed to stay as a serious place for small number of high-risk traders. However, in 2015 Robinhood launched their own app, which allowed regular people to have easy access to commission-free investing. It sparked a massive wave of new investors that could spend their live savings on a stock with a click of a button. With the newly found access to trading, great deal of the new investors had close to zero knowledge on trading or the stock, which is why many of them ended up on the subreddit WallStreetBets. Which at the time seemed to be the perfect place for new impatient investors that wanted to make large amount of profit in a short period of time. (Popper, de la Merced, & McCabe, 2021)

As stated in (WallStreetBets, 2022) By 2020 the subreddit had reached over a million users and the community had changed entirely compared to the early days due to the new Robinhood investors. The once serious place to discuss high risk trading had turned out to a place that was filled with memes and entertainment.

According to Malamud, (2021) 34-year-old Keith Gill a WallStreetBets user going by the nickname "Deepfuckingvalue" posted a picture on the subreddit of an investment he had made acquiring GameStop shares with approximately 53 000 USD, in June 2019 when the price of a GME share was around 4 USD. Keith Gill at the time thought that the stock was heavily undervalued, and that GameStop was going to shift from retail to online sales, which would increase the value of the company. Most of the comments on the post were sceptical of Keith Gills investment, recommending him to sell his shares before losing all the money he had invested. Even though the negative and sceptical comments on the post, Keith Gill believed on his research and continued to post an update on his investment every month after the initial post. (Malamud, 2021)

In reference to WallStreetBets, (2021) Keith Gills posts didn't catch any considerable attraction until August 2019, when the famous investor Michael Bury made headlines after acquiring 2,4 % of all the GameStop shares. The sudden investment of Bury sparked the price of the shares to increase, which lead WallStreetBets users going back to Keith Gills initial posts as he was currently in profit on the investment that many users thought was going to fail. Despite of the chances to sell his shares and make profit on his investment, Keith Gill didn't, as he still believed there is more potential on the stock. (Mohamed, 2022).

Half a year later January 15th, 2020, GameStop released their annual statements which at the time was an inadequate look on the stock as GameStop´s annual revenues were down 30% along with their overall performance looking poor according to (GameStop 2020 Annual report, 2021). The news made the value of GME shares plummet down almost 40%. In early 2020 with the pandemic causing a crash in the market in addition with the GameStop`s annual statements, the GME stock was on a steady downhill in value.

The subreddit finally took notice in late 2020 on the GME stock, since famous 36-year-old Ryan Cohen had acquired approximately 10% of all available GameStop shares. With the news of the actions of Cohen, the value of the stock had increased to nearly 15 USD, nearly doubling in value. The subreddit was filled with news on the GameStop stock, especially Keith Gills posts as he once again had turned-out in profit on the investment, he had made in 2019. (WallStreetBets, 2022)

Because of the poor performance in early 2020, the short interest of GameStop shares was high and most of the positions were owned by hedge funds. As stated in (*GameStop Corp. (GME) Valuation Measures & Financial Statistics*, 2023) during late 2020 GameStop had roughly 65 million shares outstanding and with 80% short interest. Theories started to circle around the subreddit involving a short squeeze. According to users in WallStreetBets, they would need to able to buy around 1 million shares and hold their positions and it would cause the short holders to either double down on their positions or buy out their original short positions. Either way would cause the value of the stock to skyrocket. (WallStreetBets, 2022).

With the theories in place for the users in the subreddit, only thing needed was to gather around enough hype and motive for the users to start acquiring the shares of GME. During that period Keith Gill, was one of the main reasons for the hype around the GME shares with his monthly updates on his original investment made in 2019. His posts gathered tens of thousands of upvotes each time he posted.

One of the motives for the users in the subreddit, was an opportunity to get back at the large hedge funds and banks, as majority of the community blamed them for the stock market crash in 2008, which had led to many average income people losing their jobs and savings. Along with the motivation of making money through a short squeeze, these motives sparked the hype around the short squeeze through the community.

As Dailey, (2021) argues that the actions of the subreddit started to have impact on the stock as it began to steadily increase in value and before the New Year's Eve, when the value of the stock was around 20 USD and the GME stock was nearing a bubble state.

The events of January 2021 were covered by every mainstream media as the community of small-time investors went up against large and impactful hedge funds. At first the biggest short position holders like Melvin Capital decided to hold their positions but many other short position holders started to opt out of their positions by buying themselves out. This caused the value of the stock to increase to over 60 USD by the 22nd of January. The mainstream coverage of the events led millions of common people outside of reddit to join the movement and acquiring GME shares. With the help of the common people and short holders opting out of their investment it led to the biggest short holders like Melvin Capital to surrender and buy out a significant portion of their positions in 27th of January leading the value of a GME share to 347 USD, a 2300% increase of what the value was a month earlier. (Dailey, 2021)

With the hype around GME. Some of the users started to do research on companies that were heavily shorted. And they found that along with GME other companies such as AMC and Nokia in addition with a few other companies were heavily shorted by the large hedge funds. AMC and Nokia started to gather a lot of hype in the subreddit, and the community started buying their shares aswell. Both companies saw rapid increase in the value of shares, but AMC was the only other stock together with GME that was greatly affected by the short squeeze.

2.5.2 Volkswagen

Porsche and Volkswagen have a large history of being competitors, business partners and both being one the largest car retail companies based in Germany. For three years prior to 2008, Porsche had been slowly acquiring shares of Volkswagen, during that period the value of the shares went from 32 USD in May 2005 to 191 USD in October 2007 (Yahoo Finance, 2013). Many hedge funds recognized that the Volkswagen shares were heavily overvalued and by October 2008 the stock was shorted 12% above the outstanding shares. (Curry, 2021).

“In the October 26th, 2008, Porsche announcement, Porsche released a statement that they owned 43% of Volkswagens shares outright and had derivative contracts on nearly 32%, which meant that they had tied up almost all the freely available shares.” (Baur, 2015, p, 6). With the announcement Porsche declared that they were going to pursue a domination agreement, which lead the stock to skyrocket to new heights. The hedge funds that had short positions were forced to buy the shares back at any price possible, which led Volkswagen to be the most valuable company in the world for a brief period according to (Baur, 2015). After the short squeeze about a month later the value of the stock had come back down over a 100% (Yahoo Finance, 2013). The estimated losses that the hedge funds made are rumoured to be up in the thirty billion dollars, while Porsche made over ten billion dollars in profit. (MOX Reports, 2018).

In the study (Allen et al., 2020), they have studied the impacts of the press release by Porsche that informed the public they had been acquiring the shares of Volkswagen, which indicated the public that Porsche was trying to overtake Volkswagen. “The evidence based on each of the metrics indicates that VW’s common stock was subject to a short squeeze. For example, the cumulative abnormal returns (CARs) for VW’s common shares peaked at the day of the press release publication by more than 100% in absolute values (from -52% on Friday, October 24, to 71% on Monday, October 27) and increased slightly further through October 28 and 29.” (Allen et al., 2020, p. 32). Their studies done of the prices, volume measures and in addition their research of the securities heavily suggests that the Wolkswagen common shares saw a short squeeze and the breaking point for it was the press release made by Porsche.

According to (Allen et al., 2020) the study reveals the trading intensity and volatility prior, during and after the Volkswagen short squeeze, “Volatility was on average 0.0028 before the squeeze period. During the short squeeze period, volatility increased by 0.0054, which is an increase of 193%. After the squeeze period, volatility decreased by 0.0002 compared to the period before the short squeeze” (Allen et al., 2020, p. 39). Their research shows that the short squeeze clearly had an impact on the volatility of the shares since it nearly doubled during the squeeze period. The trading volume had a similar pattern to the volatility, since before the short squeeze the average volume of shares per minute were 4 500, which increased by 2 320 shares per minute during the short squeeze a 51% increase. After the squeeze it decreased back by 2 860 shares per minute.

Three weeks prior to the event the main dynamics of a short squeeze were clearly visible as stated in (Allen et al., 2020), since the percent of shorted shares outstanding was increasing, and the shares had seen a massive drop from 353 EUR to 210 EUR prior to the press release in October 26.

The day after the press release on 27th of October the number of shares shorted had gone down from 18% to 9%. As the price of the shares had gone up the amount of short sellers that opted out increased which led to a record high value of the share 919.50 EUR on October 28.

The pursuit of domination agreement by Porsche began to look less reliable, since it got figured out that they had made changes to their strategy multiple times the past two years prior to the press release. After that number of shorted shares went up again and the value of the started see a downhill spiral, which was the end of the short squeeze.

Market manipulation by a short squeeze has been illegal in the USA since 1934, but both Porsche and Volkswagen are based in Germany which during 2008 did not yet have any specific laws against short squeeze market manipulation. Which allowed Porsche to set in motion their strategy.

2.6 Research Hypotheses

Hypothesis 1: The Reddit forum WallStreetBets played a crucial role in the short squeeze of GME and AMC stocks.

Hypothesis 2: The fundamental value of GME and AMC stocks did not justify the extreme market prices seen during the short squeeze.

Hypothesis 3: The short squeeze of GME and AMC stocks was largely fueled by social media hype and online momentum rather than underlying company performance.

Hypothesis 4: The short squeeze of GME and AMC primarily only had a significant effect on the company's technical values and not the fundamentals.

3 Research methodology

The purpose of this chapter is to provide the methods that the data was collected and analyzed in the study, additionally present the description of variables used in the research.

3.1 Data Collection

The research framework for this thesis involved the use of both online research and data analysis. The research papers and news articles provided an understanding of the current theories, concepts, and industry trends related to the topic of the thesis.

The online research was conducted using various search engines such as Google Scholar and JSTOR, as well as industry-specific databases. The search terms used were specifically related to the topic of the study, and the articles and papers that were obtained were carefully selected to ensure that they were relevant and up to date. The research papers and news articles were then analyzed and synthesized to provide a comprehensive understanding of the current state of knowledge on the topic.

The data collection and analysis component of the research framework involved the use of software tools to analyze and interpret the data. The data was collected from various sources, including financial databases Yahoo Finance, Investing.com and the annual reports from GameStop (GME) and AMC Entertainment Holdings Inc (AMC). The data was then cleaned, organized, and analyzed using several financial ratios.

3.2 Description of variables

For the study the two companies that were involved in the short squeeze were chosen for the analysis, STOCK 1, GAMESTOP (GME) and STOCK 2, AMC ENTERTAINMENT HOLD-INGS INC (AMC). Both are listed on the New York Stock Exchange (NYSE).

Table 1 Companies

LABEL	***DEFINITON***
STOCK 1, GAMESTOP (GME)	Largest video game retail company in the world.
STOCK 2, AMC ENTERTAINMENT HOLDINGS INC (AMC)	Television channel company based in the United States

The data pool represents the collection of data from two different periods, first period defined as "pre squeeze" covers the stretch from 1.1.2020 to 31.12.2020 and the second period described as "post squeeze" which makes up the time span from 1.1.2021 to 31.12.2021. The variables chosen to be analyzed from the technical values as presented in table *2* are Returns, Systematic risk, Capital Asset Pricing Model, Jensen Alpha, Cumulative Abnormal Return and Trading Intensity. The variables chosen for the purpose of fundamental values as presented in *table 3* are the debt to Equity, Quick Ratio, Earnings per share, Financial Leverage, Price to Earning and Return on equity.

Table 2 Technical values and formulas

Variable	***Label***	***Definition***	***Formula***
Return	Annualized return	Annual return on a stock	$((1 + R1)1/n - 1)$

Systematic risk	Beta	The volatility of a stock in correlation to its market	$(\beta) = \frac{Cov[(Rit - Rft)x\ (RMt - Rft)]}{Var[min(Rmt - Rft, o)]}$
Capital Asset Pricing Model	CAPM	The expected return of a portfolio	$ER = Rf + (\ \beta\ x\ (Rm - Rf)$
Jensen Alpha	Jensen Alpha	the Risk adjusted return of a security compared to the expected return	$\alpha = Ri - [R_f + \beta\ x(R_m - R_f)]$
Cumulative Abnormal Return	CAR	The performance of a stock or portfolio in relation to a benchmark index.	$(R_f + \beta\ x\ (ER - \ R_{F)}$
Trading Intensity	Trading Intensity	The amount of traffic that is on a specific stock or market.	$Ti = \frac{S_v}{S_o}$

Table 3 Fundamental values and formulas

Varia-ble	***Label***	***Definition***	***Formula***
Debt to Equity	D/E	Company's total debt to its total equity	$\frac{Book\ value\ of\ total\ assets - Book\ value\ o}{Market\ value\ of\ common\ eq}$
Quick Ratio	Quick Ratio	Company's liquidity and capability to meet short-term commit-ments.	$(company's\ cash +\ cash\ equivalents$ $+\ short\ term\ investments)$ $\div\ current\ liabilities$

Earnings per share	EPS	Amount of profit made by each outstanding share of the company's stock.	$\frac{Net\ Income}{Outstanding\ shares\ of\ common\ stock}.$
Financial Leverage	DFL	The level of financial risk associated with the company's use of debt to finance its operations	$\frac{\%change\ in\ EBIT}{\%change\ in\ EPS}.$
Price to Earning	P/E	The value of the stock relative to its earnings per share	$\frac{Market\ value\ per\ share}{EPS}.$
Return on equity	ROE	Company's profitability by taking into account the amount of shareholders' equity	$\frac{Net\ income}{Book\ value\ of\ equity}$

3.3 Data Analysis

To analyse the data collected for this study, we utilized two main software tools: Microsoft Excel and IBM SPSS. The data analysis was separated into two phases: pre-short squeeze and post-short squeeze. Each phase involved analysing the technical and fundamental financials of the companies GME and AMC.

In the pre-short squeeze phase, we first conducted technical analysis using Excel to calculate financial ratios such as the Capital Asset Pricing Model, Jensen Alpha and Trading Intensity to identify trends and patterns in the stock prices. Next, we conducted analysis using SPSS to analyse the abnormal returns. After technical analysis we focused on the fundamental analysis where we used Excel to calculate various ratios such as Debt-to-equity ratio, Earnings per share and price to earnings ratio to assess the financial health of the companies.

In the post-short squeeze phase, we repeated the same analyses on the same companies but after the short squeeze event occurred. We again analysed the technical and fundamental financials of the companies using the same methods and software tools.

Overall, by analysing the technical and fundamental financials of the companies in our sample, both pre- and post-short squeeze, we were able to gain valuable insights into their financial performance and the impact of the short squeeze event on their stock prices. The use of Excel and SPSS allowed us to efficiently manage and analyse the large amount of financial data collected for this study.

4 Results

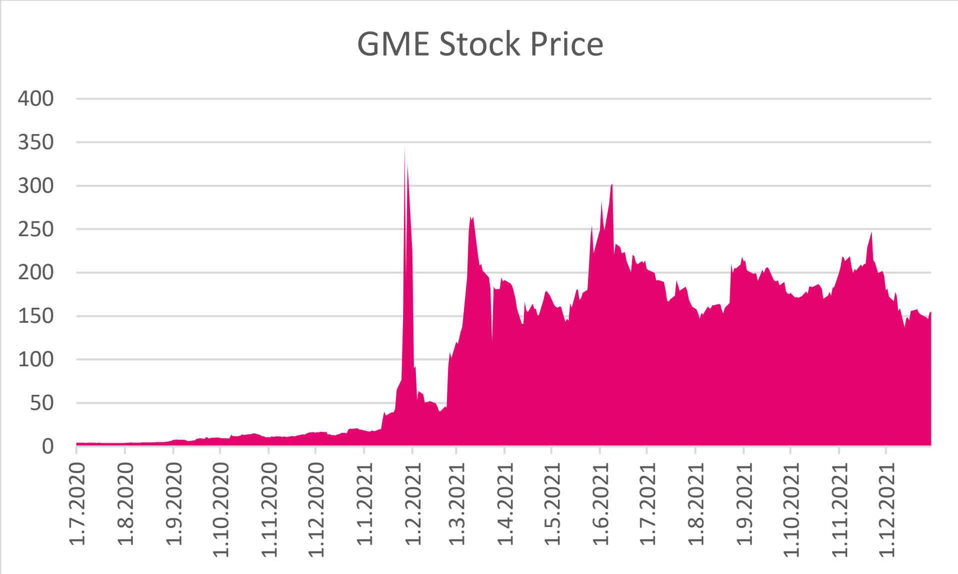

Figure 1 GME Stock Price

The dataset analysed in this study includes the daily closing prices of GameStop stock from July 2020 to December 2021. The data shows significant variability in the stock price over this time period, with the stock price ranging from a low of $4 in July, 2020 to a high of $347 on January 27, 2021.

In general, the data shows that GameStop's stock price has been volatile and subject to sudden changes in value over the time period studied. For example, the stock price increased by more than 1600% in just a few weeks in January 2021, before falling back down to more moderate levels in the following months.

In terms of longer-term trends, the data suggests that GameStop's stock price has generally been increasing since the beginning of 2021, though there have been several notable dips in value along the way. As of the end of the observation period, on 31. December 2021, the stock price was $155.33, up from the opening price of $4.44 on June 1, 2020.

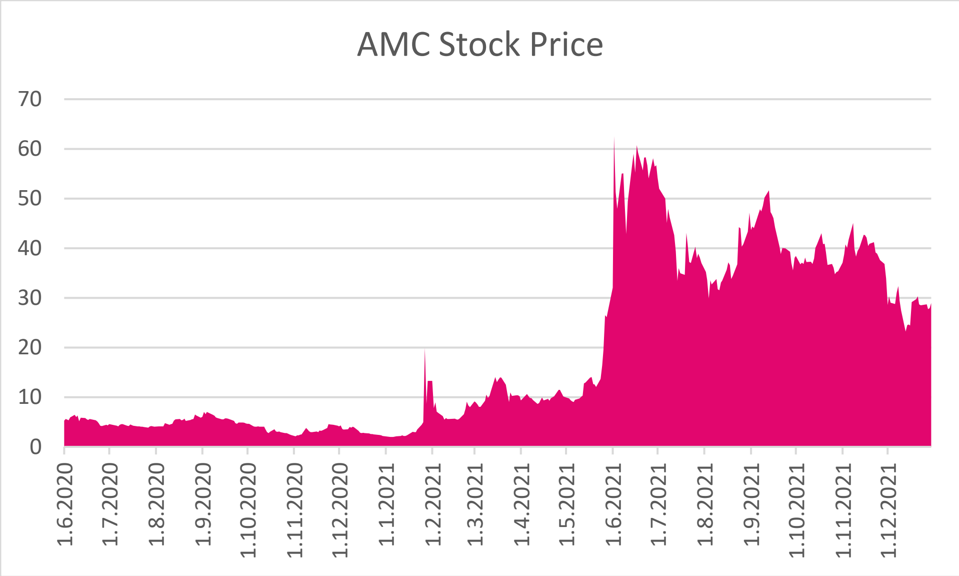

Figure 2 AMC stock price

The stock price of AMC Entertainment Holdings Inc. exhibited significant volatility from June 2020 to December 2021. Starting from a low of $4.42 per share on June 3, 2020, the stock price rose gradually in the following months, reaching a high of $19.90 per share on January 27, 2021. However, the stock price fell sharply in the following weeks, dropping to $5.50 per share on May 13, 2021. This decline was followed by another surge in price, with the stock reaching a peak of $72.62 per share on June 2, 2021.

The months of June and July 2021 were particularly volatile for AMC's stock, with significant price fluctuations occurring within short periods of time. For instance, on June 2, 2021, the stock price reached its all-time high of $72.62 per share, but by June 8, 2021, it had fallen to $47.91 per share, a decrease of over 34%. In the weeks that followed, the stock price continued to fluctuate, eventually reaching a low of $28.91 per share on July 19, 2021.

Despite these fluctuations, the stock price of AMC has generally trended upward since mid-2020. The stock price increased by 286% from June 3, 2020, to January 27, 2021, and then by a staggering 1,220% from May 13, 2021, to June 2, 2021. Overall, the stock price of AMC exhibited significant volatility during the period under review, with both sharp rises and falls occurring within short periods of time.

Table 4 Results technicals

	GME Post Squeeze	GME Pre Squeeze	AMC Post Squeeze	AMC Pre Squeeze
Daily return	0,0204	0,0012	0,0236	-0,001
Annualized return	156,94	0,3662	340,78	-0,2432
Expected return (CAPM)	0,06	0,0280	0,09	-0,012012265
Jensen Alpha	156,88	0,3382	340,69	-0,23

The data shows that both GME and AMC stocks had significantly positive daily and annualized returns post-squeeze compared to pre-squeeze. The daily returns for GME were 0.0204 and 0.0012 post- and pre-squeeze, respectively, while the annualized returns were 156.94 and 0.3662. Similarly, the daily returns for AMC were 0.0236 and -0.001 post- and pre-squeeze, respectively, while the annualized returns were 340.78 and -0.2432. These results suggest that the short squeeze had a significant impact on the stock prices.

The data shows that the expected returns based on CAPM for both GME and AMC were significantly higher post-squeeze compared to pre-squeeze. The expected return based on CAPM for GME post-squeeze was 0.06, while it was 0.0280 pre-squeeze. For AMC, the expected return based on CAPM was 0.09 post-squeeze, while it was -0.012012265 pre-squeeze. These results suggest that the short squeeze increased the perceived risk of the stocks, leading to higher expected returns based on CAPM.

The data shows that both GME and AMC had positive Jensen Alpha values post-squeeze, indicating that they outperformed the expected returns based on their betas. The Jensen Alpha value for GME post-squeeze was 156.88, while it was 0.3382 pre-squeeze. For AMC, the Jensen Alpha value post-squeeze was 340.69, while it was -0.23 pre-squeeze.

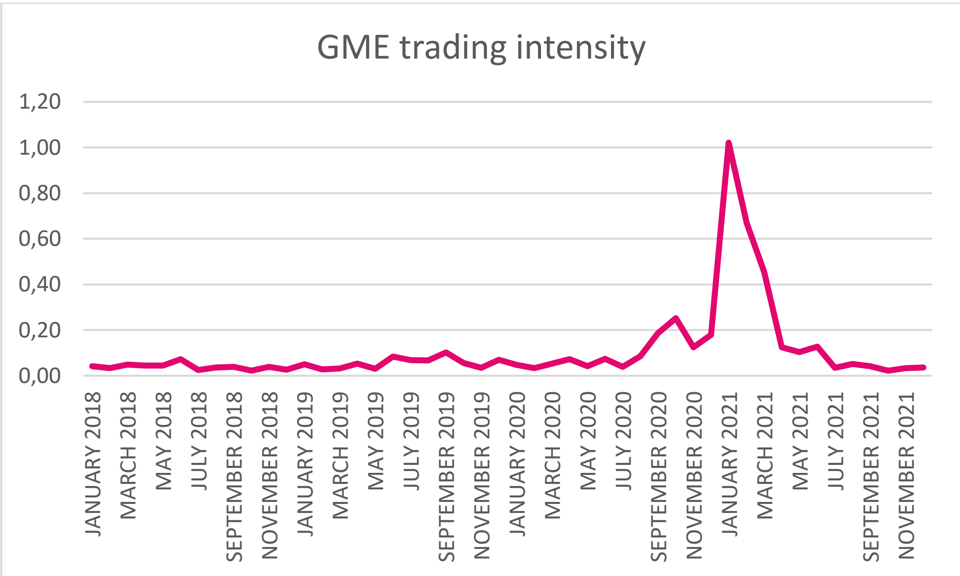

Figure 3 GME trading intensity

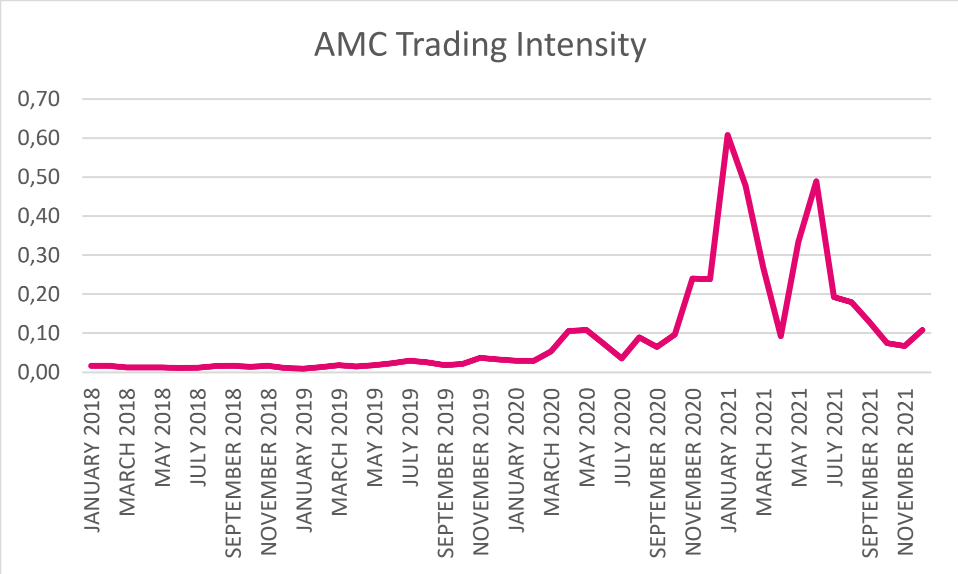

Figure 4 AMC trading intensity

The analysis of trading intensity data for GameStop and AMC during the period of January 2018 to December 2021 provides valuable insights into the behavior of retail investors in the stock market. The data shows that both GameStop and AMC experienced a surge in trading activity in early 2021.

Comparing the trading intensity data for GameStop and AMC, it is observed that GameStop had a much higher level of trading activity during the peak stock craze in January and February 2021. GameStop's trading intensity reached an all-time high of 1.02 in January 2021, which was more than six times higher than its highest level in the previous three years. In contrast, AMC's trading intensity peaked at 0.61 in January 2021, which was only slightly higher than its previous peak in November 2020.

While GameStop's trading intensity dropped significantly in the following months after the peak, AMC's trading intensity remained relatively high, indicating sustained interest from retail investors. In fact, AMC's trading intensity in June 2021 was higher than GameStop's peak trading intensity in any month before January 2021.

Overall, the comparison of trading intensity data for GameStop and AMC suggests that while both stocks experienced a surge in trading activity during the short squeeze, GameStop's hype and subsequent crash were more short-lived than AMC's.

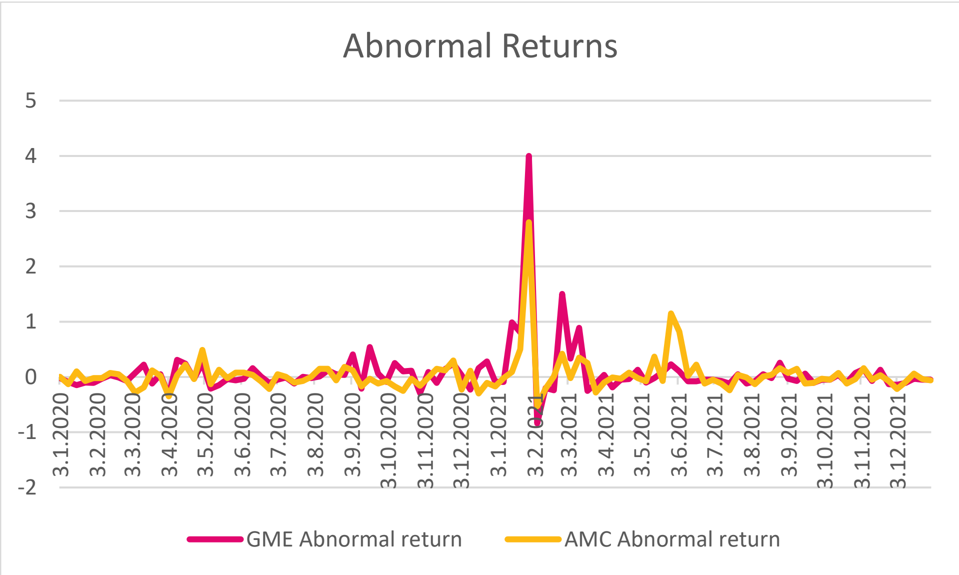

Figure 5 Abnormal returns

The results show that the abnormal returns of both companies varied significantly over time. For GME, the abnormal returns ranged from a high of 4% during the week ending January 29, 2021, to a low of -0.84% during the week ending February 5, 2021. For AMC, the abnormal returns ranged from a high of 2.8% during the week ending January 29, 2021, to a low of -0.35% during the week ending April 3, 2020.

In general, both companies experienced more volatile abnormal returns during the early months of the data period (January to March 2020) and during the period of intense retail trading activity

(January to February 2021). However, there were also some weeks with relatively stable abnormal returns.

The correlation between the abnormal returns of GME and AMC was mixed. There were some weeks when the abnormal returns of the two companies moved in the same direction, such as during the week ending January 15, 2021, when GME had an abnormal return of 0.99% and AMC had an abnormal return of 0.09%. However, there were also weeks when the abnormal returns moved in opposite directions, such as during the week ending May 14, 2021, when GME had an abnormal return of -0.02% and AMC had an abnormal return of 0.37%.

Overall, the data suggests that both GME and AMC experienced significant fluctuations in abnormal returns over the period, and that the abnormal returns of the two companies did not always move in the same direction.

Table 5 Results fundamentals

	GME Post Squeeze	***GME Pre Squeeze***	***AMC Post Squeeze***	***AMC Pre Squeeze***
Debt to Equity	0,03	0,65	3,16	3,89
Quick Ratio	1,16	0,50	1,04778	0,331
Degree of financial leverage (DFL)	5,66	4,61	1,55716	1,33432

Price to Earnings	-2,03	-2,02	-6,7	-0,1
Return on Equity	-12,43	-63,55	1,01	3,88
Earnings per Share	-0,50	-1,21	-0,44	-5,7

The metrics suggest that both companies had relatively high levels of debt compared to equity pre-squeeze, with GME having a significantly lower debt-to-equity ratio than AMC. However, post-squeeze, AMC's debt-to-equity ratio increased significantly to more than three times its pre-squeeze value, while GME's remained relatively low.

The quick ratio, which measures a company's ability to meet short-term obligations, also showed a similar trend, with AMC's ratio increasing post-squeeze to over three times its pre-squeeze value, while GME's ratio remained relatively stable.

Finally, the return on equity (ROE) for both companies was negative pre-squeeze, with GME having a significantly worse ROE than AMC. However, post-squeeze, AMC's ROE increased significantly, while GME's remained negative. These findings suggest that the short squeeze had a more significant impact on AMC's financial health compared to GME.

5 Discussion, Conclusions and Limitations

This chapter presents the current results of the research, discusses the hypotheses, and completes the thesis with the limitations and conclusions.

5.1 Discussion

This thesis aimed to provide insight into the buildup to the short squeeze and the impacts that it had on the companies. Therefore, the hypothesis that the Reddit forum WallStreetBets played a crucial role in the short squeeze of GME and AMC stocks is highly plausible. The actions of the members of this forum, including the sharing of information, coordinated buying, and public discussions, contributed to the significant surge in the price of these stocks. As stated in the research earlier the decisive moment in the phenomena can be seen in the data, As the actions of Ryan Cohen lead to the breaking point of buildup surrounding the subreddit in the latter end of 2020, which lead to the consequential rise in the volume of trading intensity and abnormal returns. As previously established in the research (Paramati et al., 2015) high trading intensity most of the time affects a stock positively, and similar patterns can be seen in the trading intensity, and the stock prices of both GameStop and AMC. A high surge in the companies' trading intensity resulted a positive change in their stock prices.

The hypothesis "the fundamental value of GameStop (GME) and AMC Entertainment (AMC) stocks did not justify the extreme market prices seen during the short squeeze" is supported by the financial data presented. The data shows that both companies had weak financial performance and ratios prior to the short squeeze, indicating that their intrinsic value may have been overvalued during the squeeze. For instance, GME had a low Debt to Equity ratio prior to the squeeze, which could suggest that investors were concerned about the company's long-term profitability. Additionally, GME's negative Price to Earnings ratio before the squeeze is an indication that the company was not generating significant profits. Furthermore, GME had negative Return to Equity and Earnings per Share, implying that its financial performance was poor.

Similarly, AMC had a relatively high Debt to Equity ratio and low Quick Ratio before the short squeeze, indicating that it had weak financial health. Moreover, its negative Price to Earnings ratio before the squeeze was another indication that investors were skeptical about the company's long-term profitability. However, it had a positive Return to Equity and Earnings per Share, which suggest that the company was generating profits, albeit not at significant levels. Taken together, the data suggests that the extreme market prices of GME and AMC stocks during the short squeeze have been driven more by speculative and emotional factors than by the companies' intrinsic value. The conclusions given to the earlier hypotheses can be used as evidence to support the hypothesis that the short squeeze of GME and AMC stocks was largely fuelled by social media hype and online momentum, rather than underlying company performance. The involvement of online communities such as WallStreetBets is one key piece of evidence that supports this hypothesis. These communities played a significant role in driving up the stock prices of these companies through coordinated buying activity and information sharing.

Additionally, the financial data presented earlier suggests that the fundamental value of GME and AMC stocks did not justify the extreme market prices seen during the short squeeze. Both companies had weak financial performance and ratios prior to the short squeeze. Therefore, based on the evidence presented, it is reasonable to conclude that the short squeeze of GME and AMC stocks was largely driven by social media hype and online momentum, rather than the underlying company performance.

Based on the results, it can be concluded that the short squeeze of GameStop (GME) and AMC Entertainment (AMC) had a significant impact on the companies' technical values, particularly their daily and annualized returns. The post-squeeze returns for both GME and AMC were substantially higher compared to their pre-squeeze returns, indicating that the short squeeze had a positive effect on their stock prices in the short term.

However, the impact of the short squeeze on the companies' fundamentals is less clear. While some fundamental indicators, such as debt-to-equity ratios and quick ratios, improved post-squeeze, other indicators, such as the degree of financial leverage, price to earnings ratio, return on equity, and earnings per share, did not show significant improvements post-squeeze. This suggests that the short squeeze may not have had a significant impact on the long-term fundamentals of these companies.

Therefore, it can be concluded that the short squeeze primarily affected the technical values of GME and AMC.

5.2 Limitations

This study is not without limitations, since reliance on secondary sources is a limitation of this study, given the limited availability of primary data on the GameStop short squeeze. As this event was new and fresh at the time of this study, there may have been limited scholarly research or analysis available to draw upon. As a result, this study may have had to rely heavily on secondary sources, such as media reports and online forums, in order to gain insights into the motivations and actions of individual investors and other players in the stock market. While these sources may provide valuable insights into the short squeeze, they are also subject to bias, errors, and limitations that may impact the accuracy and reliability of the findings. Furthermore, relying on secondary sources may limit the depth and breadth of the analysis, as these sources may not provide the level of detail and nuance that primary data sources would. As such, it is important to acknowledge the potential limitations of relying on secondary sources and to use them judiciously in order to provide a comprehensive and accurate analysis of the GameStop short squeeze.

The limited duration of the GameStop short squeeze is another limitation of this study, as it may not fully capture the long-term implications and outcomes of the event on the stock market and the broader economy. As a relatively short-term phenomenon, lasting just a few weeks in early 2021, the GameStop short squeeze may not have had the same lasting effects as longer-term market events. This may limit the scope and generalizability of the findings, particularly if the short squeeze is seen as an outlier event. Furthermore, the impact of the short squeeze on individual investors, hedge funds, and the broader market may continue to evolve over time, making it difficult to draw definitive conclusions based on the limited time frame of this study. While this study provides valuable insights into the dynamics of the GameStop short squeeze and its immediate effects, future research may be necessary to fully capture the longer-term implications and outcomes of this event on the stock market and the broader economy.

Measuring the impact of the GameStop short squeeze on individual investors, hedge funds, and the stock market as a whole is a limitation of this study. The effects of the short squeeze are multifaceted and complex, with a variety of factors and actors at play. Consequently, it may be challenging to measure or quantify the full extent of the short squeeze's impact using the available data and methodologies.

5.3 Conclusions

The research produced valuable insight into the GameStop short squeeze, specifically the impacts and the build-up of the event. For instance, there were a lot of significant moments and roles in the build up to the GameStop short squeeze, like the key figure in the reddit saga Keith Gill, whose impact on the market cannot be overstated. His posts on WallStreetBets, detailing his bullish view on GameStop, were some of the most popular and influential on the subreddit. His position was eventually worth over $30 million, and his posts inspired many others to invest in GameStop as well. However, one of the key turning points for the hype was the mainstream media's coverage of the short squeeze. It helped to create a sense of urgency and excitement around the stock, which led to more people investing in it. News outlets like CNN, CNBC, and Bloomberg covered the story extensively, providing daily updates on the price of GameStop's stock and the actions of the hedge funds that were betting against it. The media's coverage also had an impact on the financial markets, as it helped to increase volatility in GameStop's stock. News reports of the short squeeze and the massive losses being suffered by the hedge funds betting against the stock created a sense of fear and uncertainty among investors, which further fuelled the buying frenzy.

In conclusion, when comparing the GameStop short squeeze to the Volkswagen short squeeze, GameStop had a longer build-up compared to the Volkswagen short squeeze in 2008. As previous research had established the Volkswagen short squeeze was sparked by a sudden announcement from Porsche, as a result of this the span of the short squeeze did not last as long as the GameStop short squeeze, which consequently carried on the hype of the event for months even after the apex point of the phenomenon.

Further, the results investigated the major impacts of the short squeeze. The stocks AMC and GME were heavily impacted as the technical ratios grew by incomprehensible amounts, however the fundamentals only saw minor changes. Additionally, the impacts of the short squeeze were shorter lived in GME than AMC, since AMC saw spikes in the abnormal returns and trading intensity even after the pinnacle of the event.

The GameStop short squeeze has brought attention to the potential risks of speculative investing, particularly when driven by social media hype and groupthink. While the short squeeze was a unique event in the history of the stock market, it serves as a reminder of the importance of informed decision-making and the need for increased financial education and literacy. As we continue to navigate the complex and evolving landscape of the financial markets, it is essential that we remain vigilant and informed in our investment decisions.

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