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GameStop: A Short squeeze?

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1. Introduction

On January 20, 2021, the closing price of the GameStop (GME) stock – a brick-and-mortar retailer, specializing in video games – on the New York Stock Exchange (NYSE) was at \$39.12. One week later, on January 27, it was at \$347.51, representing a weekly upside of 788%; a nearly unprecedented feat in the history of stock markets. The goal of this master thesis is to explain what happened during this week and the following months. More especially, it is centered around one financial concept: the “short squeeze”. A short squeeze is characterized by a lack of supply coupled with an excess of demand for a stock caused by the obligation for short sellers to cover their positions: as short-sellers must buy back the stock at whatever the price, this imbalance will mechanically make the price of the stock go up very quickly.

However, was a short squeeze indeed responsible for the large increase in GameStop’s price? For instance, if different linguistic versions of Wikipedia stay generic when treating the subject, with simples “Affaire GameStop” in French or “Caso GameStop” in Spanish (both meaning “Gamestop Case”), or sometimes more specific such as “Anstieg der GameStop-Aktie 2021” in German (GameStop share price increase in 2021), the English – and most consulted – version is very definitive with its title: “GameStop short squeeze”. It is in line with what most specialized English media published at the time: the Financial Times, the Wall Street Journal, and the New York Times all headlined with “short squeeze” when reporting the GameStop frenzy. This translated to the general public, with for instance the amount of Google searches for “short squeeze” – as indicated by the Google Trends tools – soaring in tandem with the GameStop stock as the media started to report

about the subject; this is visible in Figures 1 and 2. The overall situation is instead here named the “GameStop Case”.

This work consists of an in-depth presentation of the concept of a short squeeze, completed with examples of previous short squeezes on the stock market worldwide. It is followed by a full description of the chronology of the GameStop stock price starting at the end of the year 2020 and until mid-2022. Then is presented a study of the available analyses, research papers, and reports published about the GameStop Case. A special focus is made on the U.S. Securities and Exchange Commission report (published in October 2021) and a response from a Committee from Columbia University (published in January 2022). In the following discussion, I address two questions: was the well noticed soaring of the stock price of GameStop in part due to a short squeeze? If yes, what magnitude in the price variation can be directly attributed to this phenomenon?

If results are not definitive because of a lack of publicly available data, they do suggest that a short squeeze did happen. However, its magnitude was small relative to the overall trade volume. Therefore, most of the price movement was generated by positive sentiment from retail investors expecting to achieve a short squeeze, rather than by the automatic buy-to-cover of short sellers (i.e. the short squeeze himself), as a form of self-fulfilling prophecy.

I also address other “meme stocks” for which price risings have been observed at the same period, without them being the main focus. This term describes stocks similar to GME that receive cult-like attention from social media, especially from retail traders, and see their prices go up as result. Examples include AMC Entertainment, Blackberry, and Bed Bath & Beyond.



Figure 1: Google queries worldwide for "short squeeze" from January 1st till March 1st, using Google Trends. The peak is at the highest of the GameStop frenzy, on January 28.

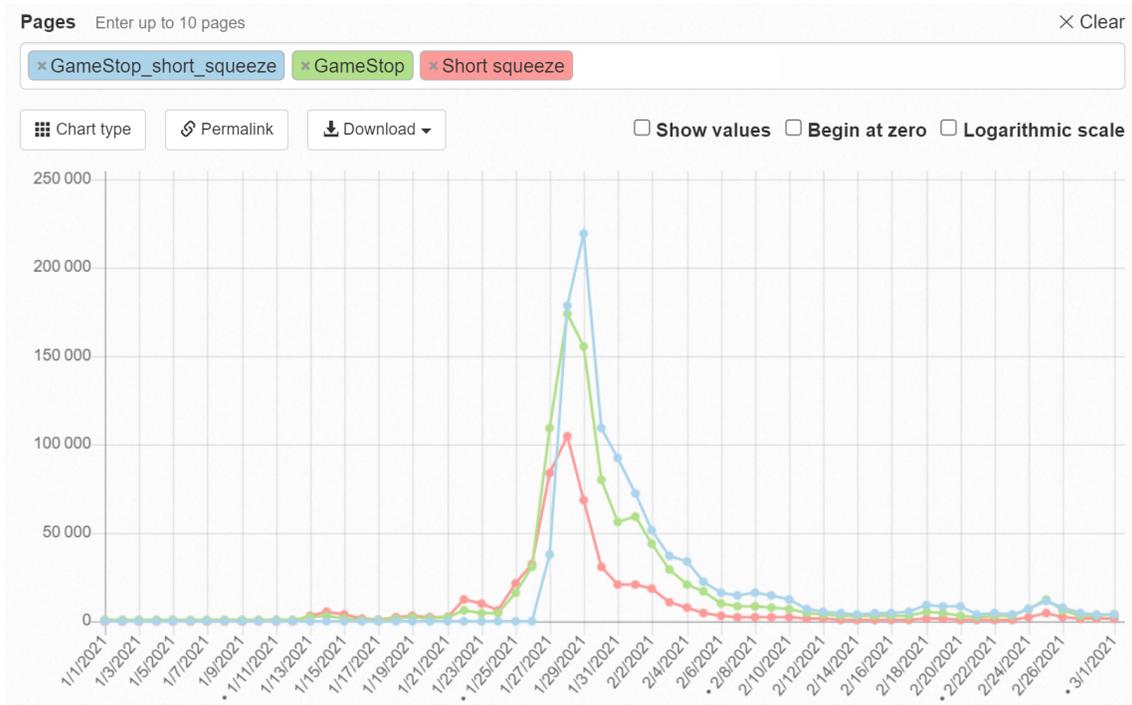


Figure 2: Number of unique viewers for three articles on the English version of Wikipedia ranging from January to March 2021: "GameStop short squeeze" (blue), "GameStop" (green), and "Short squeeze" (red). All the maximums are also on January 28 or 29.

2. Short squeeze

Before going into the GameStop Case, in particular, it is necessary to properly expose the theory regarding the short squeeze. This also requires a definition of what is short selling. However, if some of the basics of financial markets will be explained going forward, it will not be exhaustive. Therefore, it is for instance expected that the reader already has an introductory comprehension of basic derivatives, such as call and put options.

2.1. Short selling

In finance, if you decide to buy an asset, you are essentially betting that its price will go up to profit if you sell it back later: this is called being long. Being short corresponds to the opposite move, meaning that it will enable an investor to profit if the value of the asset falls. The most common method to achieve it – called short selling – is to first borrow the asset and then instantly sell it on the market. Later, the investor must purchase the same asset to return it to the lender. Therefore, if the price of the asset has fallen between these two points in time, the investor pockets the difference. Sometimes, some additional costs must be taken into account before computing a possible profit: the fee to borrow the asset, similar to an interest payment over time, and the reimbursement of possible cash returns – often dividends – that may have happened during the period.

However, this contraption includes another potential issue in comparison to simply being long. When buying securities, you have a limited downside – in the worst scenario your security ends up valued at zero – but an unlimited upside as the price can go up without any bound. It is the inverse when

going short: the upside is limited but the downside can be unlimited, for the same reason that the price has no high limit. Therefore, a short seller will incur a liability to the lender if the price rises and thus must add collateral before initiating the trade. Additional collateral may be required through a “margin call” if the price of the asset has risen enough for the initial margin not to cover it. Failure to respond to this call will be met by the broker closing the position.

An example of a short trade is given in Figure 3 as an illustration: if someone thinks that the Tesla stock is overpriced on April 1st, they can initiate a short sell. They can, for instance, borrow 10 issues of the stock from a broker and instantly sell it for around \$1,080 per unit. One can notice a small spike in price after this date: for the position not to be closed, the investor would need to have a margin account with enough depth. On May 18, they decide to close the trade: they buy back 10 issues of the Tesla stock for its current price, which is now \$700, and give them back to the lender. This would result in a profit of around $380 \times 10 = \$3,800$ for the investor if we neglect the fees that are due to the broker. Please note that this example is not innocent as Tesla has been for years a very shorted stock, mainly because investors see it as overvalued with its Price over Earning ratio that even surpassed 1,000 (Krauskopf, 2021); at that point, someone would need 1,000 years with the money that Tesla is currently giving back yearly to its investors to reimburse the share they are buying, strongly suggesting that it is overvalued. However, it is not an easy target as there has been for years a strong growth and momentum sentiment over the company, so short sellers have routinely reported losses (Steer *et al.*, 2021).



Figure 3: Example of a successful short trade on Tesla. Chart provided by Yahoo! Finance.

Making a profit over an instrument that seems overvalued is among the objectives of a short sale, but it can also be used to hedge certain risks that exist in a long position. Moreover, research indicates that banning short selling has negative effects on markets because of their ability to counter a long position, uncover negative information, or reduce irrational exuberance (Stambaug *et al.*, 2012; Fang *et al.*, 2016; Xu *et al.*, 2016). The practice still regularly suffers from criticism as it is often associated with risky leverages and losses or can be condemned by CEOs of companies that are currently targeted by a large number of short sellers.

Short selling is a very common practice in reasonably liquid markets, as it is required to be confident in the ability to buy back the security before giving it back to the broker. A lack of liquidity will therefore be detrimental to the short seller and will be an ingredient, as we see just after, in a short squeeze.

2.2. Short squeeze

As stated before, a short squeeze can be defined by a lack of supply coupled with an excess of demand for a stock. Typically, in the context of one security with many short sellers, it implies that they are having trouble buying the stock to give it back to their brokers.

Let's take the example of unexpected news that can cause a jump in a stock's share price. Short sellers would find themselves at a loss because they now need to return a stock at a higher price than they already sold it. Moreover, if their margin did not cover the bump, they might already have seen their position closed by the broker: if we decomposed this action, it implies that the broker used all the money on the margin account to buy back their shares and the short sellers end up with nothing. For instance, this buying happens automatically if the investor had placed stop-loss orders in agreement with their brokers to resolve the closing of their account, which is often the case.

Also, they can elect to buy back the shares to try to cut their losses, in case the share price might go up even more; as stated before, the losses are not bounded when short selling. In both scenarios, someone is buying the stock: this alone is already making the price go even higher than before by increasing the ask price (the lowest price at which a seller will sell the stock). However, this is not a short squeeze yet.

The main ingredient for a short squeeze is the lack of liquidity. This would happen if a large number of short sellers need to cover their positions at the same time: they need to purchase an also large number of issues of the stock to cover their positions. If a great part of the available shares for sale are

bought to cover losing short positions, the increased demand will inevitably largely increase the price of the security because of an insufficient supply. As the price increases even more, new short sellers need to cover their positions by buying, and so on. This dynamic may result in a cascade of purchases and a quick spike in the price.

Some factors increase the probability of a short squeeze happening:

- (i) The proportion of total shares outstanding currently sold short, also called short interest. This can even be higher than 100 percent of the total as shorted shares are put back on the market: this means that the same share can then be borrowed again by another investor and sold short once more. This could also, in theory, be the result of naked short selling – short selling without first effectively borrowing the stock from a broker – but this practice is officially banned by the Securities and Exchange Commission, so we will not consider it going forward. Here, the risk posed by the lack of liquidity becomes apparent: there are simply not enough shares on the market if every short seller wants to close its position at the same time. This will have an importance on the GameStop Case, because the stock was at some point in January 2021 shorted for more than 100 percent of its free float. A derived metric is the short interest ratio, which is the total number of shares sold short divided by the stock's average daily trading volume; it is also called days-to-cover because it indicates the number of days for short sellers to cover their entire position keeping the average daily volume. Stocks with a high short interest are very susceptible to suffer from a short squeeze.

- (ii) The total number of available shares. This is, of course, correlated with the previous point but some stocks can have relatively few traded shares without them being short, just because their proportion of float or their market capitalization is small. This is especially the case due to objectives of control, for instance in a family-held company where a large fraction of the existing shares belongs to people from said family and they do not plan to trade them on the market. A similar situation arises when a commensurable fraction of the floating is held by people that do not want to sell, as it was also somewhat true in the GameStop Case.
- (iii) The borrow rates of the securities. As broker lend their stock to an investor, they ask in return for a fee that is similar to an interest payment. In consequence, short squeezes tend to happen in stocks that have expensive borrow rates because these will increase the pressure on short sellers to cover their positions, thus facilitating a possible cascade of closings. An ongoing short squeeze will also increase the borrow rates of the securities.
- (iv) The availability of options. If there are a lot of cheap call options available for the underlying asset, it makes it easier for people to squeeze the short sellers by taking highly leveraged long positions. The most commonly used options are out of the money with a short time to expiration because they enable to maximize the leverage. Therefore, factors that generally make options cheaper are also helping a short squeeze, such as low implied volatility.

- (v) The intrinsic quality of the company. If it is near a state of bankruptcy, there can be a demand from short sellers that outweighs the supply of shares to borrow, which results in the impossibility for brokers to respond to borrow requests and, counter-intuitively, produce a short squeeze because too many people want to short the same company.

The financial services and information provider IHS Markit (2015) gives a precise definition on how to determine the presence of a short squeeze event. The conditions they require to declare a squeeze happened is to include a sudden spike in price, defined by at least a three standard deviation move versus prior sixty trading days over a period varying between one and three days. It must then be followed by a decrease in shares on loan over five consecutive days. Rather than shares on loan, it is also possible to use the short interest ratio. If this ratio were to peak and then diminish, this could also indicate that a short squeeze just occurred (Beneish *et al.*, 2014).

2.3. Gamma squeeze

Other kinds of squeezes are possible, especially through derivative markets.

One that we will now focus on is the gamma squeeze. First, we need to be explicit about what the Greeks mean: they are variable in derivatives trading that gives information on how an option's price will move regarding its underlying assets. For instance, delta shows how the rate of changes of an options price corresponds to the change in the underlying stock's price; it is the derivative of the option price over the stock price. Gamma is then related to delta, as it measures how delta changes as the stock's price moves;

it is the derivative of the delta over the stock price. Gamma is at its highest when the derivative is very close to the actual share price.

When someone buys an option, a market maker needs to be able to provide the asset at the required price when the option expires. Therefore, they also need to take a position in the market to hedge their risks, as they just sold it to someone. If a lot of traders flood the markets by buying volumes of the same asset, market makers need to cover all these positions, which increases, even more, the volume of trading in the market as they buy more and more of the underlying asset. This, similarly to a short squeeze, also causes the price of the underlying asset to surge. However, one key aspect of the gamma squeeze is that it is forced through levered derivatives, options being much cheaper than shares. It means that many more retail investors can participate, or coordinate their actions (Calhoun, 2021).

It is possible for a short squeeze and a gamma squeeze to occur simultaneously, which would compound the two effects.

2.4. Historical examples of short squeezes

The following is a quick description of various famous short squeezes across time.

One of the first accounts of a short squeeze happened in May 1901 (Haeg, 2013). Two parties, with on one side James. J. Hill and on the other E. H. Harriman, tried to have full control over the Northern Pacific Railway. At one point, they both controlled over 94 percent of the outstanding shares, which means there were very few left for the rest of the market. As they both tried to buy shares at nearly whatever the cost, third parties tried to short the stock as it appeared overvalued. However, it appeared at some point

that the number of shares left was insufficient to cover the existing short positions and, of course, Hill and Harriman were not willing to sell even at a high price. Short sellers needed money to buy back shares and meet the obligations made with their lenders, but the price was now too high for them to repay it with available cash. Thus, it then propagated to the rest of the market because they had to sell various of their holdings to raise cash, which culminated in a stock market crash known as the “Panic of 1901”.

Another famous example is the Volkswagen short squeeze, which happened in October 2008 (Godfrey, 2015; Allen *et al.*, 2019). Porsche was secretly attempting to make a takeover of their competitor, and thus was increasing their stake without disclosing it. In the meantime, hedge funds were seeing the Volkswagen shares as overpriced and decided to short them in high volumes, some even expecting a future bankruptcy. When Porsche finally disclosed that they had more than a 74 percent stake in Volkswagen and because the German government owns around 20 percent of the company, it appeared that the free float left was around 6 percent. This was lower than the around 12.8 percent of stock then sold short and hedge funds realized they actually borrowed shares from Porsche. This was directly confirmed by Porsche, which issued a statement on a Sunday explicitly addressing the overabundance of shares sold short with respect to the free float available. This created a frenzy when the market reopened the next day, forcing all the hedge funds to close their position in panic and making the stock price go from around €200 to over €1,000 in less than two days, which made Volkswagen the most valuable company worldwide for a short period. The effect can still be seen with closing prices averages over the week, like in Figure 4.

Notice there the quick spike in price in October 2008 and that the prices went back close to what they were before in the following months. Porsche made more than €10 billion by profiting from the speculation of short sellers and its CEO, Wendelin Wiedeking, was even suspected of market manipulation because of its controversial statement but finally let go of his charges. The overall situation was summarized by an iconic phrasing from BBC: “Porsche, a hedge fund with a carmaker attached”.



Figure 4: Prices for Volkswagen ranging from January 2008 to mid 2009. Chart provided by Yahoo! Finance.

It is even possible for only one person to orchestrate a short squeeze. In 2012, Philip Falcone bought the near integrality of bonds issued by MAAX Holdings after hearing that a firm was shorting them (SEC, 2012). He then also lent these bonds to short sellers before buying them back. Because of this strategy, his exposure even surpassed the totality of the bonds’ value.

He then stopped lending the bonds in order to totally stop the liquidity, which prevented the short sellers to be able to liquidate their positions. This made the price of bonds mechanically rise dramatically as the supply was rendered null while the demand was increasing exponentially. Philip Falcon was then charged by the Securities and Exchange Commission with market manipulation.

There are other examples of short squeezes that can be found, of different magnitudes, but these remain relatively uncommon. For instance, Vryghem (2017) lists only eleven of them between 2006 and 2016 using IHS Markit’s metric. He also notes that they come from a multitude of sectors, implying that a short squeeze can indeed happen to any company. He then computes that over time and “over the whole universe of observed securities, 0.94 percent on average showed signs of a short squeeze”.

As we can see in all these examples, the main driver of a short squeeze is always a lack of liquidity – often on purpose by adverse players – that creates panic among short sellers. This causal effect between lack of liquidity then a quick rise in the price of the stock is what we ideally want to check in GameStop Case. The Volkswagen short squeeze was also greatly studied, so results from Godfrey (2015) or Allen *et al.* (2019), among others, will be seen in tandem with the bibliography regarding GameStop.

3. GameStop stock history

3.1. Before 2021

GameStop is an American retailer, that specializes in electronics and video games. It is in existence since the 1980s, but its performances have de-

clined starting from the mid-2010s because of an increase in online shopping and a trend toward digitalization in the video games industry (more and more people buying a downloadable version of their games, without a cartridge). This worsened even more in 2020 due to the pandemic of COVID-19 and various quarantine measures worldwide that impacted all brick-and-mortar retailers.

Because of this bad financial shape, there has been a growing interest for short sellers and especially hedge funds to bet against GameStop. As some were hoping for its bankruptcy, GME's stock price went from around \$45 at the end of 2015 to prices ranging from \$3-5 in mid-2020. These all-time lows attracted so many short sellers that in January 2021, GME was the most shorted stock on Wall Street with approximately 140 percent of the public float of GME being sold short. As mentioned before, it implies that some shorted shares had been re-lent to be sold short a second time. Short interests of over one hundred percent remain very unusual, this situation happening only fifteen times in the 2010's decade (Ponciano, 2021).

In March 2020, Alex Planes for Nasdaq (Planes, 2020) already published a piece reporting how GME is the most shorted stock in the market, largely above Tesla in short interest percentage. As it was already above 100 percent, he made this ominous prediction:

"If GameStop can shock the market with good news in the near future (like a strong earnings report), it could set up the greatest short squeeze of all time. That seems unlikely, but it would certainly be fun to watch ... unless you're part of the group of investors banking on GameStop's eventual demise".

In April 2020, some attention to GameStop was already present on Reddit, some users noting the already very high short interest of 84 percent (Kochkodin, 2021).

Before the events of January 2021, some investors were indeed still hopeful for the prospects of GameStop. Among them are activist investors Michael Burry and Ryan Cohen, who are publicly long since 2019 and 2020, respectively. But the most famous activist in favor of GameStop remains the amateur Keith Gill, mostly known online by his usernames “Roaring Kitty” or “DeepFuckingValue” (Popper *et al.*, 2021). Since 2019, he was purchasing call options for GME and regularly uploading information on why he thought the stock was undervalued and about his investment. For instance, he stated that the financial results of GameStop were not as bad as what the stock showed, and mentioned that future sales results would be positive thanks to the arrival of a new generation of game consoles and their new focus on e-commerce.

3.2. The "GameStop Case"

These conflicting views escalated in January, especially after new reports from activist short sellers such as Melvin Capital or Citron Research. There they strongly stated that GME was already overvalued at its current price of around \$10. The now-deleted written reports and YouTube videos from Citron Research were also directly antagonizing the users of the Reddit forum (or subreddit) /r/WallStreetBets; Andrew Left (CEO of Citron Research) for instance said on Twitter that the retail buyers of GME were “the suckers at this poker game” and that “[Citron Research] understand short interest better than you and will explain” (Li, 2021; Thorbeke, 2021). This subred-

dit, devoted to risky investments, is where people started to follow Keith Gill's example and buy GME. Positive momentum was also underway when the nomination of the previously mentioned Ryan Cohen at the board of GameStop on January 11 was seen as a piece of very good news by the market (Thorbeke, 2021).

Chohan (2021) argues that the overall movement against the hedge funds and for GME on this subreddit is a form of reprisal for the 2008 subprime mortgage crisis from small-scale investors. The "big players" of finance are indeed seen as responsible for the bad state of the economy or their past setbacks. Chohan also believes that this involvement of the public could have a signal effect on showing the flaws of the financial system. If Keith Gill's arguments were based on the fundamental value of the company, most retail investors were rather trying to make money by cornering the market and actively looking to do a short squeeze on big hedge funds.

This is well represented by Figure 5, a post named "Let's dumb this down for you apes" that was viral in January 2021 on investing forums (Quine, 2021). Retail investors are represented as apes that must stay strong together (a reference to a line from the movie *Rise of the Planet of the Apes*) against the hedge funds, represented as "stupid snakes". The cohesion between retail investors is shown as crucial for the plan to work, meaning that they should not sell their shares. In simple terms, it is here clearly described a cornering of GME, where all the retail investors buy GME shares and keep them only for short sellers not to be able to return the shares they borrowed and the price to mechanically increase more. We find again the main driver of a short squeeze: the lack of liquidity.

Let's dumb this down for you apes:

- Let's say 5 banana's currently cost \$10

- One ape on the market has 5 banana's

- Snake asks to borrow 5 banana's for a bit and instead sells the 5 banana's thinking price will go down soon (shorting). he thinks he can buy them later for less and give them back to ape, so he make's profit on the difference.

- Group of apes notice what stupid snakes are doing and decide to buy all banana's on the market until snakes have no other choice than to buy from the group of apes in order to return what they borrowed

- If group of apes stay strong then price will go UP

Figure 5: Explanation of the concept of a short squeeze by an anonymous Reddit user, through a coordinated cornering of the market.

From January 12 (just after the nomination of Ryan Cohen) to 25, the closing price rose from \$20 to \$77 (representing a 250 percent upside). At this point, reports that a short squeeze was happening were already published in the newspapers. Moreover, the very high volatility of the security forced the trading to be suspended several times (Li, 2021). Still, on the 25, the volume of GME was above 175 million shares, which is more than the then monthly average volume of around 30 million shares given by Dow Jones' data (Wallace, 2021). On the 26, after the stock closed with nearly a daily 100 percent increase in price, the billionaire and CEO of Tesla Elon Musk tweeted "Gamestonk!!!" with a link to the /r/WallStreetBets subreddit (Thorbeke, 2021). The tweet is shown in Figure 6. This is a pun with GameStop and "Stonks", a popular meme in financial investing. Already known for how his tweets can disrupt financial markets, similarly to Donald Trump, Elon Musk directly gave more momentum to GME and advertised it to new retail investors (Morrow, 2021). On the 27, the closing price was \$348 and, on the 28, the stock briefly hit above \$500 in premarket hours.

In the meantime, other companies also targeted by short hedge funds saw their price rapidly going up thanks to this new attention from retail investors; this contributed to them being named "meme stocks" (Barnerji, 2021). These were struggling companies for reasons similar to GameStop, such as AMC Theaters (ticker AMC), Blackberry Ltd. (BB), Bed Bath & Beyond (BBBY), or even the bankrupt Blockbuster renamed BB Liquidating Inc. that had the certainty that its value would go to zero (Owram, 2021). For instance, when markets opened on January 27, AMC was up by more than 250 percent and BBBY by 63 percent (Warren, 2021). The stock market was not the only



Figure 6: Screenshot of Elon Musk’s tweet that catalyzed the GameStop frenzy. The number of retweets is as of January 2022.

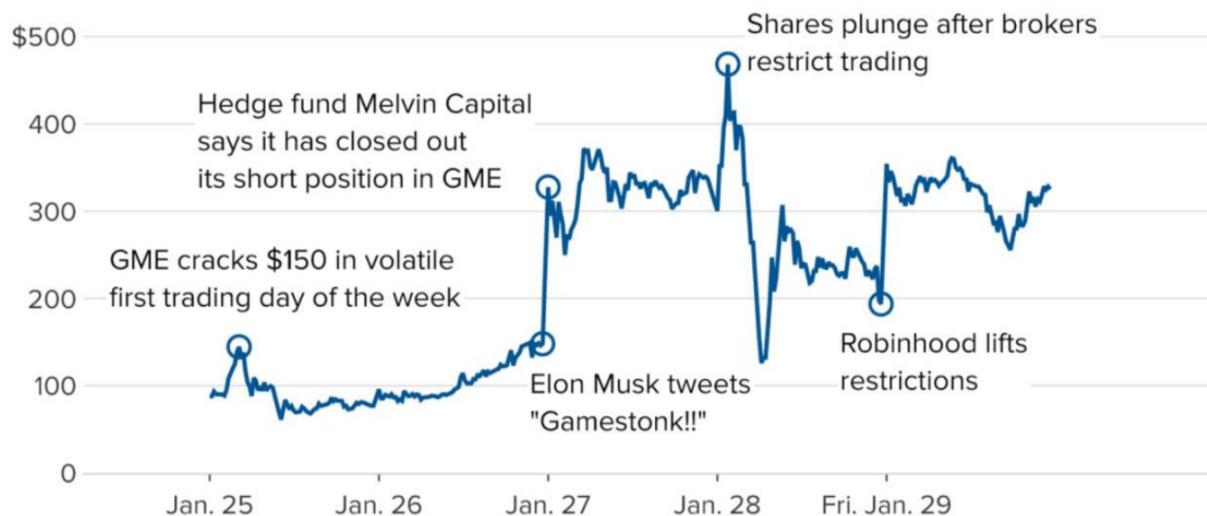
target, as the total capitalization of cryptocurrencies also substantially rose. It was especially the case of a “meme” cryptocurrency, Dogecoin, whose value increased dramatically (Bambrough, 2021). Elon Musk had once again an impact, publicly endorsing Bitcoin and Dogecoin on Twitter, which catalyzed this parallel run on cryptocurrencies (Browne, 2021).

As attempts at short squeeze were seen all over the market, some brokers decided to halt the trading. The most famous one for retail investors because it has zero fees and a low barrier to entry, Robinhood, began to enact restrictions on January 28. They halted the purchase of GME, AMC, or Blackberry, among others. This move was directly followed by other brokers such as Investment Brokers or Charles Schwab (Jones, 2021). However the restriction was in only one way: owners of restricted stocks were still allowed to sell without the possibility to buy, which mechanically caused a decrease in price for GME. Their decision was massively criticized and called a form

of market manipulation by retail traders, who opened different class-action lawsuits. Critics also accused them of wanting to drive the price down in order to please the hedge funds, which are some of their biggest clients or partners. Politicians, such as U.S. representative Alexandria Ocasio-Cortez, were very vocal about this subject and sided with the retail traders (Jones, 2021; Thorbeke, 2021).

The brokerage firms responded to these critics by explaining their reasoning behind their stocks' restrictions: they had insufficient collateral to issue the trades. Since there is a mandatory period of a few days (two for stocks, called "T+2") between the moment when an investor decides to buy a security and the official moment when cash and shares are exchanged, brokerage firms must have some collateral to ensure that their clients' orders will be settled and prevent a potential chain relation of failures (Rudegear, 2021). Therefore, they stated that the halt in trading was due to their incapacity to raise sufficient capital in time. However, they lifted these restrictions on January 29, after having raised money from investors, and GME's price soared again. This can be seen in Figure 7, where the events are annotated on the curve of GME stock price by the Congressional Research Service of the United States (Su, 2021). Two distinct peaks can be seen before and after the brokers' restrictions.

However, at the beginning of February, GME's stock price plummeted, closing on the 2nd below \$100 for the first time in a week. Part of this decline was caused by the limitations still imposed by brokers, which were putting a cap on the number of shares one client could buy at once. However, it was also argued that it was because the short squeeze was over and, as



Source: FactSet and CNBC.

Figure 7: Evolution of GameStop's stock price between January 25 and 29, annotated by the Congressional Research Service of the United States (Su, 2021).

short interest had decreased dramatically, it was logical that the price would go down after its peaks (Monica, 2021). Despite this, some retail investors were always active on forums, trying to convince others to keep their stakes because their value would increase and because it was sending a political message (McCabe, 2021).

The immediate aftermath following the brutal decline in value left many investors either with large profits or large losses, depending on their timing. The overall losses are estimated at around 12\$ billion (Darbyshire *et al.*, 2021). Among the short hedge funds, Melvin Capital lost more than half of its total investments and closed in 2022 as a direct consequence of this episode (Goldstein *et al.*, 2022). Citron Research, after its huge loss, decided to no

longer be a short seller activist after two decades in the business (Fitzgerald, 2021). If the total losses amounted to billions, several hedge funds were on the other hand able to cover their short positions at a minor cost, sometimes thanks to the restrictions on buying imposed by the brokers (Aliaj, 2021). Moreover, corporate executives at target companies such as GameStop and BlackBerry also profited, being able to sell millions of their own stock at bloated prices (Gandel, 2021).

While the short squeeze was initially credited as an initiative from retail investors, it was suggested later that other hedge funds were responsible for a large portion of GameStop's upside. Indeed, after seeing the frenzy and the momentum, they profited from the short squeeze by going long. Among them are, for instance, Senvest Management and Mudrick Capital Management, which made a profit of hundreds of million dollars thanks to their GME and AMC holdings (Chung, 2021). Retail investors, mostly from /r/WallStreetBets, who decided to hold on to their GME stock as an act of political protest however often suffered from the sharp decline in value (Darbyshire *et al.*, 2021).

3.3. Since February 2021

To sum up, the intraday share price of GameStop was approximately multiplied by 27 from its intraday low on January 8 to its intraday high on January 28. It was then followed by a brutal decrease of nearly 90 percent from the intraday high on January 28 to the closing price of February 5.

During the month of February, the value of GameStop steadily declined until reaching below \$50. This was in line with the previous examples on short squeezes seen above and the theory: once the short squeeze is “over”

and after all short sellers are liquidated, the price should converge back to what it was just before; so, in the GameStop case, around a few dozen dollars.

However, as can be observed in Figure 8, it is not what happened. A resurgence happened starting from February 23 at \$45, with prices suddenly going back to over \$100 in just two days. It was nonetheless impossible for reports to identify a specific cause, even if it could be linked to the resignation of the Chief Financial Officer Jim Bell and a cryptic tweet from Ryan Cohen (Lipschutz, 2021). The stock continued to rise again over the following weeks, before finding itself on March 10 at around \$350 (nearly the highs of January) before coming back down due to very high volatility (Pound, 2021).

By March 24, the short interest was only at 15 percent, a huge decline compared to the 140 percent found in January, and the GME stock price began to stabilize in the range of around \$150-200 (Reuters Staff, 2021). By July 2021, six months after the start of the frenzy and while the news coverage had nearly totally stopped, GameStop was still trading at more than ten times its price at the beginning of the year (Capital Staff, 2021). Retail investors were still holding to the title and vocal about their beliefs regarding the prospects of the company.

In the last period from January to July 2022, GME remains constant in the range of \$100-150, still way above the price of 2020. The summary over the two last years of the stock is provided in Figure 8. Whereas other previous examples of short squeezes have shown a spike in value followed by a quick and definitive fall toward previous prices, we can observe that this is not the case with GameStop.

Institutional analysts still argue that this valuation is “untethered from

reality”, especially because GameStop’s business is too risky and does not provide enough profits to justify the premium seen on the stock market. They often estimate that the correct worth of the stock should be in the range of \$20-25 (Kerr, 2022). Moreover, the GameStop’s attempts at diversification, for instance in the field of non-fungible tokens (also known as NFT), are seen as irrelevant because they don’t really change the fundamentals of their core business: being a retailer for video games (Katje, 2022).



Figure 8: Evolution of GameStop’s stock price between November 2020 and June 2022. Chart provided by Yahoo! Finance.

4. Review of the various existing analysis

Many pieces have been written regarding the GameStop Case, especially in newspapers. The goal of this review is to gather arguments to answer the two following questions: was the constated soaring of the stock price of

GameStop in part due to a short squeeze? If yes, what magnitude in the price variation can be directly attributed to this phenomenon?

First, I analyze the official report from the U.S. Securities and Exchange Commission (often shortened as “SEC”), published on October 14, 2021, and named “Staff Report on Equity and Options Market Structure Conditions in Early 2021” (SEC, 2021). This report has in turn gathered reactions, which are also discussed. I chose to treat the SEC report first because it was made by a reference authority that benefited from nearly a year of hindsight when publishing. Moreover, the SEC conducted many interviews with actors of the GameStop frenzy, such as brokers, retail investors, or hedge funds.

Secondly, I focus on the research papers that have been published for one year and a half.

4.1. SEC staff report

The Securities and Exchange Commission (2021) lists five factors to explain the fact that GameStop experienced in January 2021 a large interest from retail investors: “(1) large price moves, (2) large volume changes (both far exceeding the overall market), (3) large short interest, (4) frequent Reddit mentions, and (5) significant coverage in the mainstream media”. They mentioned that price and volume were correlated with the attention of social media. The discussions on forums also featured fundamental analysis, such as the prospects of the company, or coordination for a short squeeze to benefit from the high short interest. GameStop was also an ideal target because it is consumer-focused and a very familiar name for the target demographic of Reddit.

This is in line, but overall less precise, with what the Congressional Research Service stated in February 2021, regarding the causes of the GameStop frenzy (Shorter, 2021). To them, they are: “(1) a belief that GameStop was genuinely undervalued; (2) “getting back” at Wall Street for losses suffered during the 2008 stock market crash; (3) a nostalgic attachment to the company whose products they had bought; and (4) the most widely discussed rationale, attempting to force losses on hedge funds who were short selling the stock”.

They notice, thanks to their access to the CAT Reporting Technical Specifications for Industry Members, a sharp increase in the number of individual accounts trading GME, which went from less than 10,000 at the beginning of the month to close to a million. The number of unique accounts trading for each given day of January 2021 is shown in Figure 9. Note the large majority of retail traders (i.e. individual), while the number of institutional traders increased substantially in the week starting January 25. This significant participation by institutional investors, including several hedge funds purchasing GME, were either long positions opened to profit from the frenzy, or used to cover preexisting short positions. If this second phenomenon uncontrollably increases share prices, the situation becomes a short squeeze, as discussed before.

The SEC estimates that if funds had closed their positions at a huge loss at the end of January, some were long and realized significant gains. They explicitly state that “[the SEC’s Staff] believes that hedge funds broadly were not significantly affected by investments in GME and other meme stocks”, because of the two effects canceling each other. Moreover, they underline

that single-day price changes of GME, even if they were impressive, were not the biggest on the market. In January 2021, more than 100 stocks had for instance at least a one-day price increase greater than GME’s largest one-day price increase at some point.

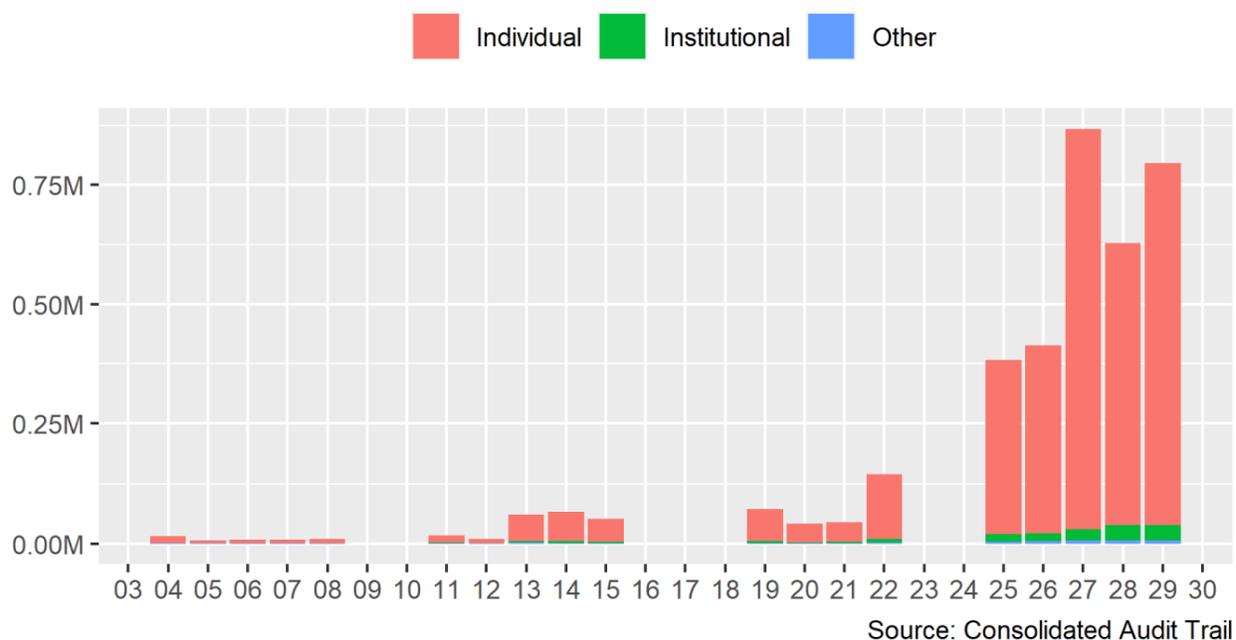


Figure 9: Number of unique accounts trading GME in January 2021, as reported by the SEC (2021).

They mention that “short sellers covering their positions likely contributed to increases in GME’s price” when GME saw its price soar. During the week starting from January 22, the price increased while short interest was decreasing, as Figure 10 shows. Here, the short interest is an estimation thanks to the Compustat North America Supplemental Short Interest File. Note the steady increase in 2019 and 2010 toward more than 100% of shares outstanding, followed the very sharp decline at the beginning of 2021.

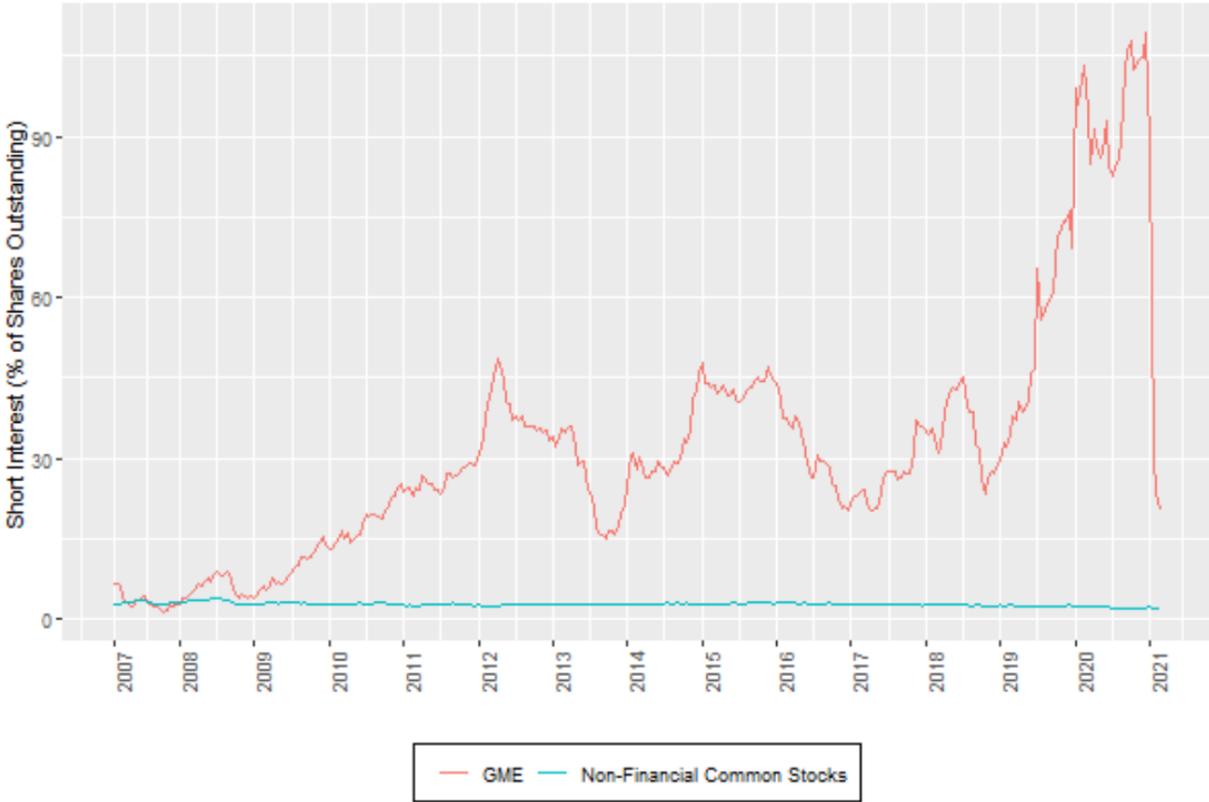


Figure 10: Evolution of GameStop’s short interest from 2007 to mid-2021, as reported by the SEC (2021).

Figure 11 shows how accounts known to have large short positions had a significant buy volume starting from January 22, and how it remained high for the week. Traders with large short positions are identified thanks to their Firm Designated IDs associated with significant negative inventories (which is protected information). It is possible to conclude that these accounts were indeed trying to cover their short positions, which brought up the price.

However, notice that the buy volume of short seller (in orange), despite being visible, remains only a small fraction of the overall buy volume (in

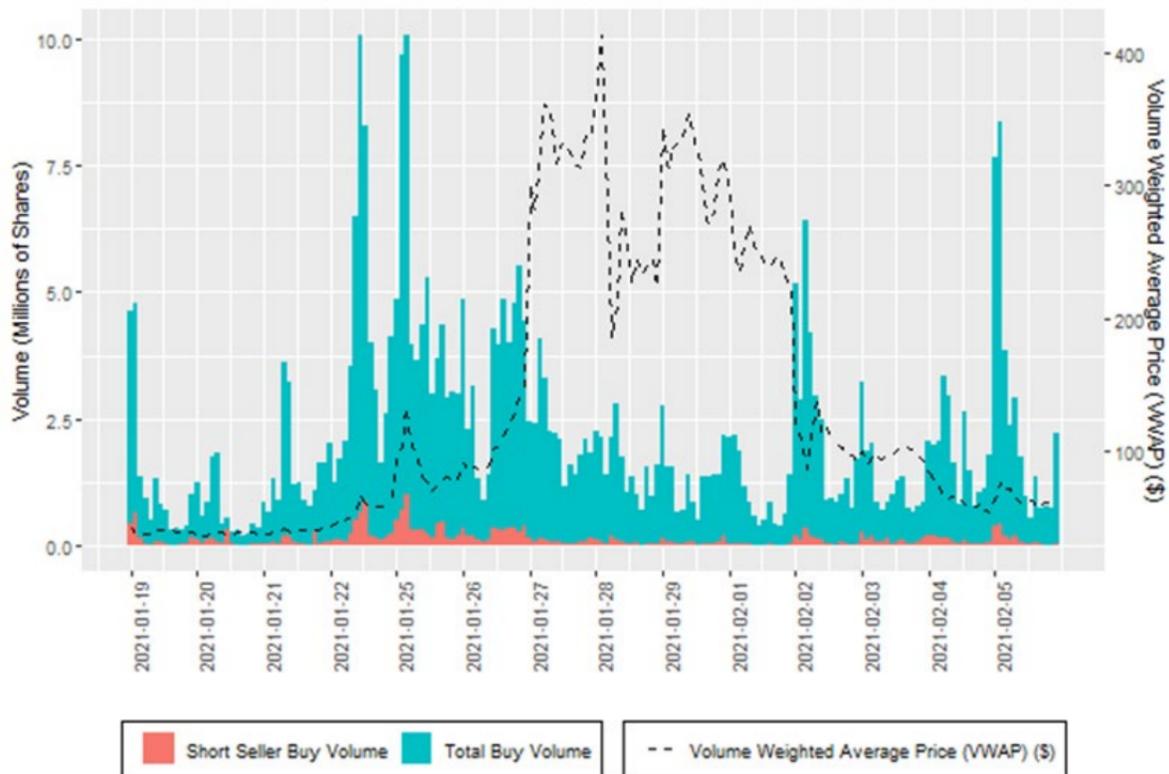


Figure 11: Buying activity of traders with large short positions on GME from January 19 to February, 2021, as computed by the SEC (2021).

blue). The curve of the Volume Weighted Average Price also shows that the price did not increase when the short seller buy volume was at its highest, but after. Therefore, the buying power of short sellers covering their losses remained small and the price was still driven upward when the short seller buy volume was declining. The fact that prices remained higher than before the frenzy for months (and now years) also contributes to SEC’s case: “GME share prices continued to be high after the direct effects of covering short positions would have waned”. Thus, the SEC staff concludes: “it was the

positive sentiment, not the buying-to-cover, that sustained the weeks-long price appreciation of GameStop stock”.

Moreover, they argue that the cost to borrow shares of GME increased sharply in January, creating constraints on short selling by making it more costly and risky to short GME. This is in link with results from academia showing that reluctance for short selling can help the creation of bubbles (Stambaug *et al.*, 2012; Fang *et al.*, 2016; Xu *et al.*, 2016). They also state that they found no evidence that hedge funds were practicing naked short selling, despite the many accusations of them doing so.

The possibility of a gamma squeeze is also tackled, and SEC concludes that it was nonexistent. The principal driver of these kinds of squeezes is the number (or volume) of call options purchased, in order to force market makers to hedge by buying the underlying asset. Figure 12 shows the daily volume of options contracted for GME in January 2021. If the options trading volume did increase at least tenfold in the month, the majority comes from an increase in put options rather than calls. However, the sharp increase in the dollar value did make the implied volatility soar.

The report also focuses on other aspects that are beyond the scope of this work. Among those are how the clearing agencies such as NSCC maintain their margins and resolve capital issues, which caused brokers such as Robinhood to enact trading restrictions. Thanks to their multiple hearings and seeing how brokers responded, they do not conclude that foul play was involved on their part (such as restricting trading to help the hedge funds escape from the short squeeze, as was suspected by retail investors). It is also shown how the liquidity declined rather because of widening bid-ask spreads

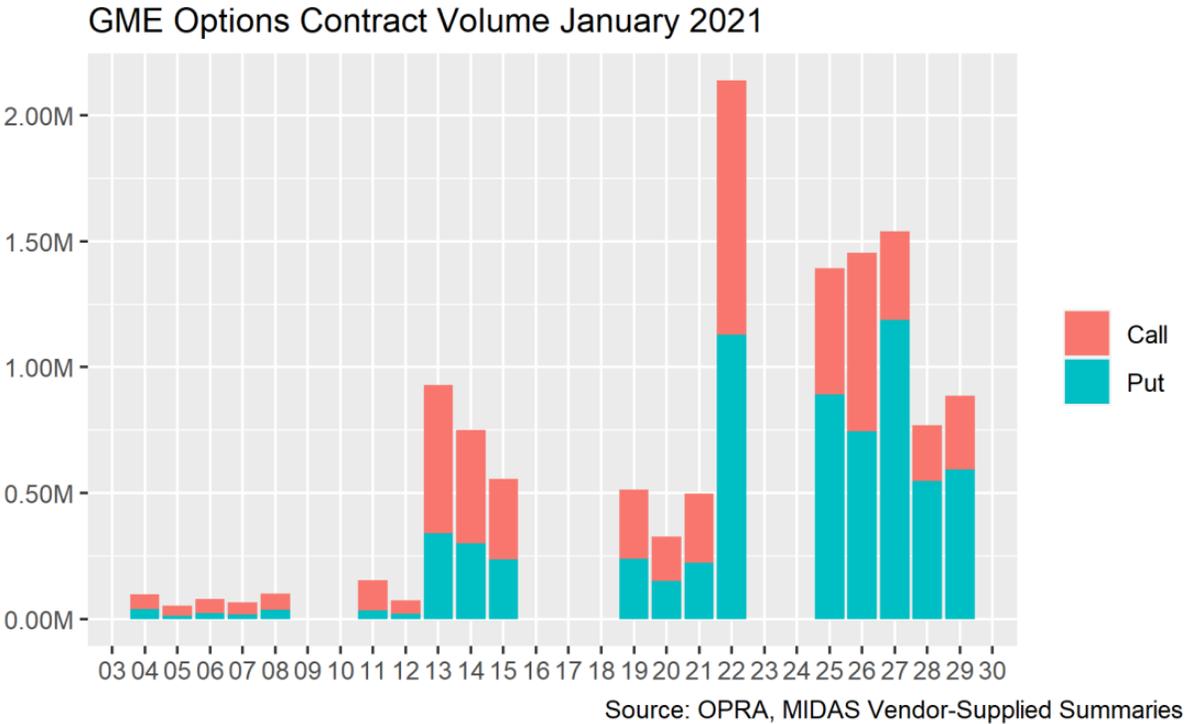


Figure 12: Option volume and their type (call or put) contracted on GME in January 2021, as reported by the SEC (2021).

(with the nominal quoted spreads reaching fifty times their 2020 daily average at some point) than as a consequence of a market corner. Their audit trail also enables them to conclude that three brokers for retail investors (Robinhood, TD Ameritrade, and E*Trade Securities) were responsible for more than two-thirds of the trading activity.

4.2. Criticism of the SEC staff report

This report came as a surprise for most actors and journalists. Indeed, as mentioned before and as can be seen in the bibliography, most of the coverage from the media and analysts during the ongoing frenzy was focusing on the

concept of a short squeeze. Another governmental source, the Congressional Research Service was also definitive in February 2020 regarding the fact that a short squeeze did happen: “The trading in GameStop appears to represent a classic short squeeze: Hedge fund short sellers reportedly incurred mark-to-market losses of around \$20 billion as of the end of January“ (Su, 2021). In another report from a different author later that month, they use an analysis from Goldman Sachs, stating that “hedge funds that shorted GameStop stock faced short squeezes of a magnitude that had not been seen in a quarter of a century in the United States” (Shorter, 2021; Stevens, 2021).

The main criticism from the media is that the SEC report does not provide any idea or proposition to fix the market problems seen through the extreme volatility of GameStop and the “meme stocks”. It is only vaguely suggesting improving the reporting of short sales and shortening the settlement cycle, without really explaining when or even if they will one day implement it (Orland, 2021; Johnson *et al.*, 2021). Insiders, however, told the *New York Times* (Phillips *et al.*, 2021) that it was not a surprise if nothing concrete is featured, as it is a document that must have gone through many negotiations and did not plan to “break new ground”.

The main detailed critique of the report was provided by a team of academics led by Joshua Mitts, a teacher at the Columbia Law School (Mitts *et. al.*, 2022). Under the name “*Ad Hoc* Academic Committee on Equity and Options Market Structure Conditions in Early 2021”, they published their written report on January 28, 2022. It is also defended in a panel discussion video named “What really happened to GameStop”, published on the Columbia Business School YouTube channel on April 11, 2022 (CBS, 2021).

Their main point is that with additional data non considered by the SEC, it should be possible to show that the GME shares may have been subject to both a short and a gamma squeeze in January 2021, even though they discarded this possibility in their report.

4.2.1. Short squeeze analysis from the Ad Hoc Academic Committee

First, they strongly question the way the SEC decided to identify traders with large short positions to obtain Figure 11 shown before. More precisely, the SEC decided to isolate the traders by their Firm Designated IDs (“FDIDs”), the fact that they have a negative inventory below the median and, because of limitations from their sample, the data for positions only begins on December 24, 2020.

All of these points are problematic according to the Academic Committee: the FDIDs are not a very good primary key, as one trader can have multiple FDIDs and one FDID can be used by multiple traders. There is even a better ID provided by the SEC’s consolidated audit trail, the customer designator CCID, that should have been used. Moreover, the limitation to the median is arbitrary and might cover a lot of relevant short sellers.

Finally, and most importantly, the absence of any data before December 24 when calculating inventory heavily distorts the conclusions. Indeed, it means that only the net trading flows for three weeks starting from December 24 are considered, while this methodology implies that there were zero short positions on December 23. This is false according to the data available, notably because the short interest of GME was already very high in 2020, which is backed by the analysis of short interest provided in Figure 10.

The Academic Committee then studies the amount of outstanding short

positions of GME thanks to the number of shares on loan, from August 1, 2020, to January 15, 2021, the date chosen by the SEC to consider the inventory accumulations. Their source of data is the securities lending data reported by FIS Global. Results are shown in Figure 13.



Figure 13: Share volume of open short positions from August 2020 to January 2021, as estimated by Mitts *et al.* (2021).

As nearly 20 million shares were opened short during the period from August to December 24, 2020 (featured as a dotted line on the graph), the SEC here excluded a large chunk of short positions that might have gone through a short squeeze.

All the above makes the Academic Committee states on the matter that if the magnitude of the positions using their flawed methodology enabled the SEC staff to conclude that the “share-price increase was not driven by a short squeeze, this conclusion is suspect”.

They then provide a new estimation of the covering activity of short sellers. As a proxy for the volume of shares purchased by short sellers, they use the publicly available securities lending data. Their conservative baseline, obtained by having the volume of shares returned to lenders divided by the total share volume, is featured in Figure 14, next to the volume-weighted average price. Using the lending data, their estimate is thus higher than what the SEC computed, even surpassing on January 28 and 29 the bar of 20 percent of the total volume. The Pearson correlation between the purchase volume attributable to short selling and the price of GME is 0.787. This does not prove any causation but does show that the purchase of short seller covering was probably more than only a small fraction of the overall volume bought, as indicated by the SEC.

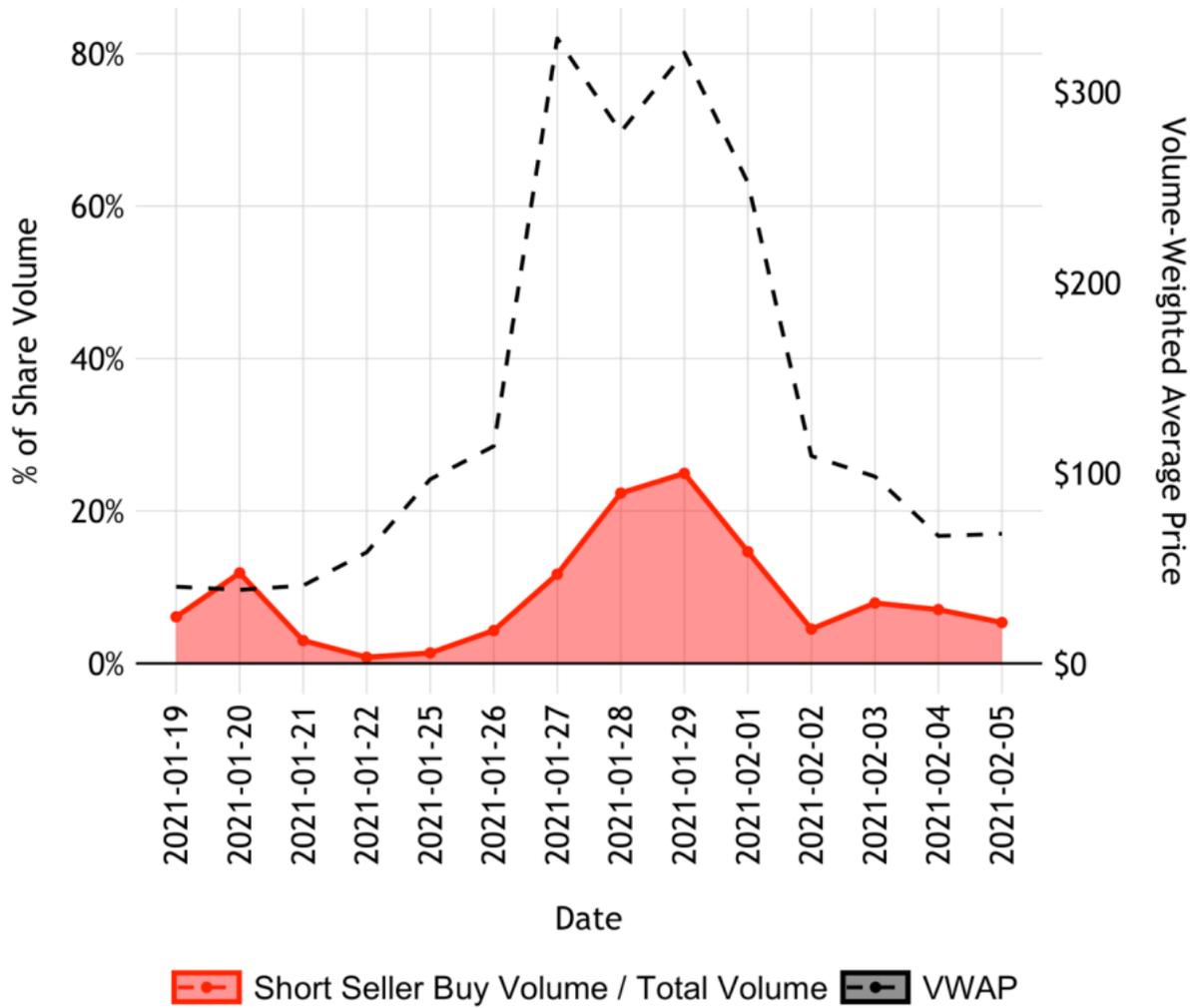


Figure 14: Share of the total volume attributed to short sellers buying GME to cover their positions from January 19 to February 5, as estimated by Mitts *et al.* (2021).

4.2.2. Gamma squeeze analysis from the Ad Hoc Academic Committee

Secondly, the Academic Committee focuses on the statement from the SEC stating that the “increase in options trading volume was mostly driven by an increase in the buying of put, rather than call, options”, which is not consistent with a gamma squeeze. They argue that simply studying the type of the option is not enough, and it is more logical to look at the direction of the hedging forced on the market maker by the initial transaction and the underlying share price movement onwards.

Through the put-call parity, which links the value of a put option with the value of a call option thanks to the strike price and the future price of the security, it follows that the hedging activity can induce the market makers to buy the underlying asset even with put options. It is notably the case if one purchases a put option from a market maker before an increase in the underlying asset’s price, which is a common scenario for a heavily shorted stock such as GME that has consequently seen brutal increases in price. However, this case would be nearly totally covered in the already existing analysis of a common short squeeze.

They look for the extent to which trading volume is linked to the market makers wanting to hedge their option makers. However, there is no deanonymized information on counterparty or on directional trade in public data, so they must produce an approximation. The main unknown is when the market maker will hedge: to reduce their costs, they do not hedge instantly after selling an option to a customer but will in practice rather do daily hedging for all the net flow that happened in the day (Hu, 2014). As such, considering that every option transaction is hedged by another instant

transaction will yield an overestimate of the reality: the market makers will already have some of their transactions of the day canceling each other before their daily hedge. Therefore, the Committee produces a sensitivity analysis, estimating the quantity of netting for the hedging of market makers. It ranges 25 percent to 75 percent of the purchase volume and, for instance, a 25 percent netting means that 25 of the option trading from the market maker did not required to be hedged.

Using the Chicago Board Options Exchange data, they estimate the total purchases used to hedge positions on each trading day from January 21 till the end of the month, which is represented through a sensitivity analysis in Figure 15. The results indeed vary greatly between the estimations (75 percent being the most conservative), but in each case, the amount of volume for GameStop consisting of option hedging is far from negligible. This also contradicts the statement from SEC claiming there is no evidence for a gamma squeeze in GME.

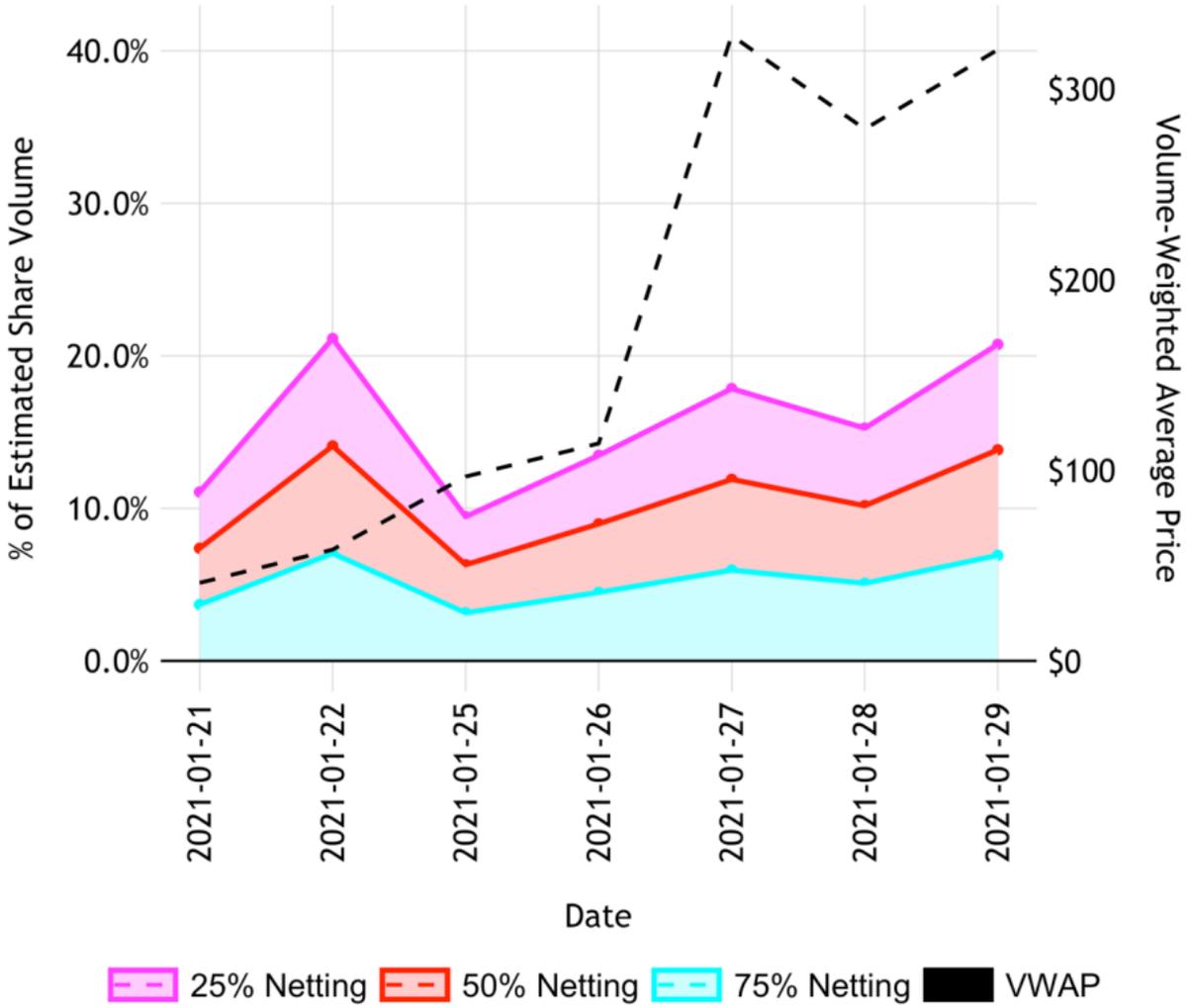
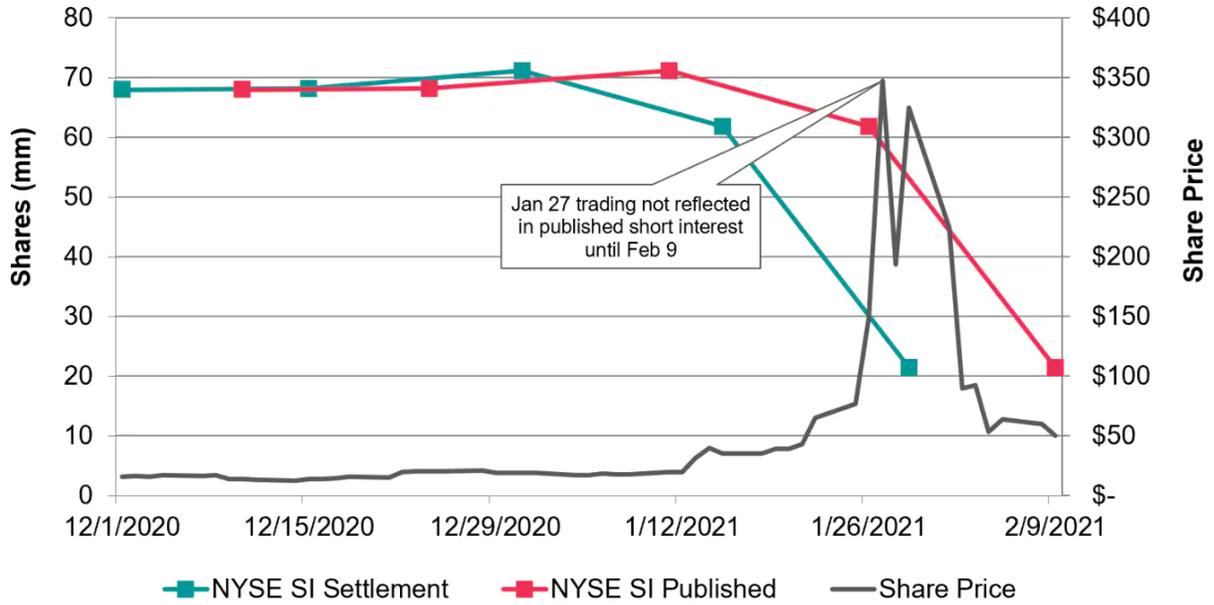


Figure 15: Share of GME volume attributed to market makers hedging their option trading for three scenarios of netting, as estimated by Mitts *et al.* (2021).

4.3. Others academic papers regarding the GameStop Case

The definition of a short squeeze according to IHS Markit was mentioned before: to be considered as such, it must include a sudden spike in price, defined by at least a three standard deviation move versus prior sixty trading days over a period varying between one and three days. It must then be followed by a decrease in shares on loan over five consecutive days. Sam Pierson published two reports (Pierson, 2021a; Pierson, 2021b) in January and February 2021 for IHS Markit. There, he explained that the frenzy over meme stocks was probably the “most severe short squeeze on record” and described GameStop as “the poster child” of the situation, GameStop answering very well to their criterion.

A good chunk of the analysis revolves around how the data regarding the short interest of registered companies is published with a two-week delay and how that can impact the daily models that estimate short interest, which is beyond the scope of this work. In the case of GameStop, the report reflecting knowledge until January 15 was published on January 27, and the report reflecting knowledge until January 29 was published on February 9. They are illustrated in Figure 16. They state that the main chunk of short positions was still active as of January 15, but then the short interest for GME went from 40 million shares to 21.4 million in two weeks while the gap between shares on loan and short interest also declined. Pierson concludes that hedge funds recalled most of their shares over the last two weeks of January and thus that the majority of the short position was covered by January 27 (featured as January 29 in the report because of the “T+2” rule).



Note: Short interest collected for settlement date and published after close 7 days later
 Source: Short interest data from NYSE

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Figure 16: GameStop short interest settlement date versus the publication date, illustrated by IHS Markit.

Despite this and the fact that GME vastly validates IHS Markit’s definition, Pierson still states that the total short interest was a negligible fraction of all the traded volume. Therefore, even though short covering did have an impact at specific moments, “the buying of shares to cover shorts can only go so far in explaining the increased share price”.

This is consistent with the SEC report, which explains most of the price increase thanks to the positive sentiment of retail investors and not by a mechanical short squeeze. This behavior of GME as a pure short squeeze is also not consistent with how Godfrey (2015) and Allen *et al.* (2019) described the Volkswagen short squeeze, with the price quickly falling back to the

previous value of the company estimated by the market. Indeed, the short squeeze is supposed to create price pressure thanks to increasing demand from short sellers looking to buy-to-cover, the prices must eventually fall after the squeeze subsides.

Therefore, the continuously renewed interest that can last years for one “meme stock” like GME is coined as a “momentum” by Costola *et al.* (2021). It is also argued that this movement was not totally organic and analysis from the cyber security company PiiQ Media suggests that a large number of bots spammed on social media platforms to popularize GME (Price, 2021). This would foster self-fulfilling beliefs of retail investors according to Chaumont *et al.* (2021), with optimistic expectations coming from the possibility of a short squeeze as the root of a successful coalition, rather than the short squeeze itself. Zheng *et al.* (2021) investigate the collective behavior and dynamics inside /r/WallStreetBets through interaction networks, which fosters a global positive sentiment.

On the other hand, if some argue that the short squeeze was a coordinated effort between retail traders, the analysis from Hasso *et al.* (2021) rather suggests that the behavior of investors was not uniform. Firstly, it shows a significantly different mean behavior from usual retail investors, these being very bold and having a tendency to trade as a form of gambling; however, this is not a huge surprise from users of a forum named “WallStreetBets”. Secondly, all retail investors were not long and looking to effectively short squeeze the hedge funds, but some also took short positions themselves or sold very quickly when prices rose to secure profits.

Umar *et al.* (2021) use a wavelet coherence approach to analyze the

GameStop returns. Their results notably show a strong correlation between these and the put-call ratio of GME options, suggesting a co-movement. More precisely, the fact that the put-call ratio was growing because of an increase in the put options volume caused by retail investors is considered a main driver of the GameStop frenzy. Therefore, they conclude that the coordinated short squeeze did happen. It is a strange result because they find that an increase in short selling also increased the demand and the prices, whereas you should in theory be long to force a short squeeze.

Anand *et al.* (2021) find that the returns of GME are closely correlated with the tone of the discussion on [/r/WallStreetBets](#), meaning that positive returns of GME are correlated with the positive discourse on the forum. Moreover, they uncover a common feat of sociology: most of the tone (and therefore the correlation with the market) is the result of a minority of very active users who act as “influentials”, following a power law. Long *et al.* (2021) find similar results about the relationship between Reddit discussions and the price dynamics of GameStop at a nearly instant level with 1-minute returns. Using sentiment analysis, they find that the most dominant sentiment was fear, which is coherent with the high volatility displayed and the fact that a fear of missing out was helping the momentum. Lyócsa *et al.* (2021) conclude similarly with the next day’s price variation and the activity on [/r/WallStreetBets](#).

However, if both Anand *et al.* and Long *et al.* expect to prove causality, i.e. Reddit directly influences the intraday returns, it is disproven by Betzer *et al.* (2021). If they also find empirical proof of a relationship between Reddit activity and GME in January, they add it is not possible to conclude

the informativeness of social media for trading activity. According to them, the interdependence is probably non-linear, and it is thus illusory to try to uncover a one-direction causal effect.

If most of the previous papers consider GameStop as a precursor of the January 2021 “meme stock” frenzy, Aharon *et al.* (2021) rather conclude that GME is more of a recipient from the return and volatility of other heavily shorted companies from the stock market at the time. Therefore, it would be more of a symptom of the movement than the cause. This would logically also disprove the theory of a coordinated short squeeze emanating from Reddit.

5. Discussion

The main issue with the questions we are trying to answer is that it is very complex to infer direct causality with the stock market’s data, and most of the existing analysis focuses on correlation. As such, even if Anand *et al.* (2021), Long *et al.* (2021), and Lyócsa *et al.* (2021) all conclude on strong correlations between the sentiment or the activity on /r/WallStreetBets with the returns of GME, it is not possible to conclude of a causal effect: the positive sentiment and coordination of Reddit’s users to achieve a short squeeze might have an impact on the stock price, but their positive sentiment might also be a consequence of the positive returns displayed by GME in January. The reality most probably lies in anon-linear interdependence.

Moreover, if a lot of data is available about the stock market, academics lack access to deanonymized data that could confirm with more granularity who was buying GME in January 2021. As this info is only accessible to the SEC, and as they did not use it in their report, it remains impossible to have

a saying in the exact magnitude of the short squeeze (and gamma squeeze) that happened to GameStop.

Also, it is important to vocalize the potential biases of the different authors above. For instance, if the Securities and Exchange Commission (2021) was expected by the media to propose concrete measures to prevent such frenzy to happen again, analysts were not surprised as the report is a result of many negotiations. As such, even if they could prove the magnitude of the short squeeze, showing it would probably have forced them to integrally question their current regulation after having recognized the market failure. The current conclusion enables them to state that the system worked as intended and that no big change is required.

Similarly, the Columbia Committee (Mitts *et al.*, 2021) main talking point in their conclusion is to plead for more regulation regarding retail traders, often compared as market disruptors. As such, their goal to show the existence of a short and a gamma squeeze, for instance by taking optimistic estimations for their models, is understandable. This is also the case for Umar *et al.* (2021), who concluded in their paper that regulators “should continuously monitor the investing groups on social media platforms as they can create inefficiency in the market”.

After hours of reading /r/WallStreetBets more than one year after the frenzy, and as the short interest is relatively low for GameStop compared to before, I can still see that people are rooting for GME and showing behaviors of cohesion as expressed in Figure 5. This is coherent with the bulk of the results and especially with the SEC’s conclusion: if there was indeed an intention of achieving a short squeeze, and if short-sellers did have to cover

because of the price increase, the continued overvaluation of GME for more than two years (and even while GameStop issued many new shares) rather shows the overwhelming positive sentiment of retail investors is the major cause for the current price.

6. Conclusion

The sum of financial analysis and research were done on GameStop 2021's frenzy is far from being uniformly in one direction, to say the least. However, it appears that the soundest conclusion is that the GameStop Case is quite similar to a self-fulfilling prophecy: catalyzed with the retail investors' expectation of a possible massive gain for themselves and a massive loss for institution investors, it is more the excitation for the short squeeze than the short squeeze himself that was responsible for the price movement far from the estimated correct price in the range of \$20-25.

The GameStop frenzy and meme stocks, in general, came at a huge cost for hedge funds, with losses of at least a dozen billion dollars. Retail investors are now a risk factor that they need to account for when investing. A solution for some of them is to take smaller short positions on a greater number of companies that they see as overvalued, to diversify the potential losses, and to be less scrutinized for their purchases. They also consistently monitor forums such as [/r/WallStreetBets](#) to create a "short squeeze risk" score. Some, such as White Square Capital or Melvin Capital, even closed as a direct consequence of this episode. Broadly, the "GameStop Case" durably affected the way institutional investors practice short selling, even if it was mostly not a fully mechanical short squeeze.

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