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GameStop: Power to the Players?

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ABSTRACT

Having a look at the GameStop share very recently raises the question of how such a phenomenon of enormous price explosion can arise. Technological and financial innovations such as the internet and commission-free trading platforms entail the emergence of new phenomena that were previously unknown and unimaginable. Since dueling narratives surrounded the stock's future opportunities which are reflected in investor expectations, one community in particular stands out as the traditionally uncoordinated and retail investor-driven side. In this context the subreddit wallstreetbets became very prominent recently, as it is clear that many investors have coordinated their activities there. This short paper argues in a case-based research manner that a novel configuration of driving influence factors has led to this novel phenomenon which reveals that private investors can now participate in trading activities which were previously reserved for professional investors.

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I. Introduction

The price of GameStop shares exploded in the wake of a short squeeze from USD 18.84 at the end of 2020 to a maximum of USD 483 on January 28, 2021. To approach the phenomenon of the so-called GameStop short squeeze, the terminology must first be clarified, which will be done using an example from the recent past. One prominent concerted "squeeze" of short sellers was the so-called "Volkswagen short squeeze" in October 2008 (Allen et al. 2017). Back then it was rational for Hedge funds to hold massive short positions of the Volkswagen share, meaning that they expected falling prices per share. In a short sale, securities are borrowed and sold, only to be bought again at a lower price and returned to the lender when the price has fallen, and the expectation has materialized. At the same time, Porsche announced the takeover of Volkswagen and consequently, when Volkswagen's share price rose after Porsche's announcement, many short sellers had trouble buying Volkswagen shares to cover their short positions. Expiring short options then cause a positive feedback loop, as short sellers have to buy the scarce shares at already increased prices, so that the price rises enormously and eventually spikes. Volkswagen was thus briefly the most valuable company in the world in terms of market capitalization as the price spiked at EUR 1,005 (market capitalization of EUR 296 billion or USD 370 billion). An event like this is known as a "short squeeze". When looking for more examples of short squeezes, one comes across names like Tilray in 2018, Phunware in 2019, as well as others. These examples will not be discussed in detail. Though looking at Volkswagen's share price in October 2008 might give a similar impression to the development of the GameStop stock in January 2021, the present case of the 2021 GameStop "short squeeze" is fundamentally different from the Volkswagen case and needs to be clearly distinguished by the parties involved.

Neither the concerned company, GameStop Inc., nor any of its related companies or other professional investors are involved in the short squeeze as main drivers. Instead, a new phenomenon is emerging: an economically troubled games retailer is sold short by hedge funds and opposing, decentrally organized users of an online forum who represent the traditionally uncoordinated and retail investor-driven side "fight" against it. This phenomenon is accompanied by both financial and technological innovation.

Since there are research approaches that are particularly suited to making new phenomena tangible, a case study research approach according to Eisenhardt (1989) seems appropriate here. She describes the process of inducting theory using case studies and points out, that this approach is particularly suitable for areas that are relatively new. In addition, this approach focuses on understanding distinctive dynamics in individual situations. It allows to combine various data collection methods as well as different types of data (quantitative or qualitative). In this case, the application is based on a main observation in which individual driving factors are considered separately and become tangible based on qualitative as well as quantitative information. The idea behind the approach's claim to be able to form theory stems from the fact that researchers continuously match theory with data, so that in an iterative process they ultimately arrive at a result in which theory and data closely match. In this paper, only one data point is considered, the GameStop short squeeze. Even if other shares of other companies such as Blackberry, Nokia, AMC Entertainment as well as others were subject to similar activities at the same time, the price increases of these shares resulted from the same configuration of driving factors so that an analysis of these sub-cases can be dispensed with as only a minimal incremental contribution to the formation of the theory can be expected from them. Following this view, a kind of theoretical saturation is then reached, which means that incremental learning is very low, since phenomena are considered that have already been analyzed before (Glaser and Strauss 1967). As argued here, this new phenomenon can be made more comprehensible using this framework so that this paper ultimately aims to frame the phenomenon as an observation embedded in a novel configuration of driving aspects. From the case comes the realization that private investors are now empowered to engage in trading activities previously reserved for professional investors, conditioned by the development of some key drivers. In this context, the diminishing relevance of transaction costs on trading platforms, which is considered as the financial innovation, should be highlighted. In addition, Internet platforms exist together with the Internet as the technological innovation, which on the one hand promotes information diffusion and on the other hand also enables decentrally organized coordination. Combined with the social phenomenon of herd behavior, this results in an interaction of three main aspects, which shows that new "players" in the capital market must be perceived as existing or at least considered as possible influencing or even risk factors. The interaction of the main influencing factors is summarized in figure 1.

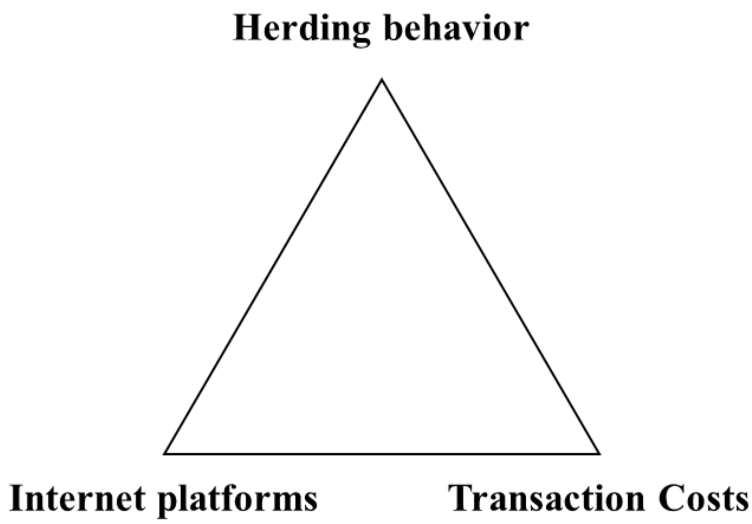

Figure 1: Novel Configuration of Driving Aspects

The remainder of the paper is structured as follows. First, the performance of GameStop stock is examined, and the company's performance is put into context with its large short positions. Then, implications of commission-free trading are discussed. Before further perspectives are given, an explanation of herd behavior as a mechanism triggering price anomalies and the role of the social media platform Reddit follows.

II. The Development of the GameStop Stock during the last years

GameStop Corp. (NYSE: GME) is a US based company that operates as an omni-channel digital retailer offering games and entertainment products in its more than 5,000 stores and extensive e-commerce offerings in 10 countries. As the industry generally shifts to non-physical gaming business which intensifies competition through online environments operated by Sony (PlayStation Network), Microsoft (Xbox Live), Nintendo (Nintendo Switch Online), Valve (Steam), as well as other online retailers and other major consumer electronics retailers such as Amazon, Media Markt, Saturn etc., GameStop is struggling with decreasing sales and an overall decreased profitability. GameStop is facing the challenge, as they acknowledged in their 2019 financial statement, to "de-densify their global store base" while competing with companies that are better aligned with the trend of games being distributed more online and digitally (GameStop Corp. 2019). Not only general trends and intensifying competition challenge the company, but also the ongoing global pandemic due to which many of the stores have to remain closed. The perceived decline is also echoed in the share price, which reflects the company's battered performance and points to the diminishing success of the underlying business model. In the past the stock was valued at USD 62.50 on 24/12/2007, this high point was followed by a valley and on 11/11/2013 the stock reached again a local maximum at USD 56.53. Since then, the market capitalization has increasingly declined since to its minimum at USD 2.80 per share on 30/03/2020, indicating that GameStop is an expiring business model. But in 2020, the largest individual investor in GameStop Corp. (12.9 %), Ryan Cohen, who has experience in building internet platforms, is pushing management to implement a strategic realignment. According to him, the number of physical stores should be reduced to improve ecommerce instead, as well as to discover more tech-driven business opportunities, for example in esports, mobile gaming and streaming. Also, a strategic partnership with Microsoft continues to fuel the vision of creating the "ultimate gaming destination" for gamers while being the premier omni-channel customer access point for video game products (GameStop Corp. 2020). Furthermore, optimism sparked after the latest generation of video game consoles were launched in November and the demand for entertainment, in particular games, has increased due to the ongoing pandemic. GameStop's stock price was USD 18.84 at the end of 2020. Since there are obviously competing narratives regarding GameStop's future, there are many investors who have bet on falling share prices, so-called short sellers institutionalized in hedge funds, among others. As reported by Bloomberg, short interest as a percentage of the public float was exceeding 100 %, so that the short interest was even higher than the shares outstanding. This is possible when the same shares are lent out again and again for short selling. At this point, the subreddit wallstreetbets becomes important, as many players were able to coordinate and collectively "agree" in an internet forum without much effort to buy GameStop shares as well as options on them in order to put the hedge funds in distress due to their short positions. One investment fund that heavily shorted GameStop - Melvin Capital - allegedly lost over 50 % of its value by the end of January 2021 and had to be supported by other funds with emergency aid (Wall Street Journal 2021). If the short sellers are forced to cover their short positions because their losses would otherwise become too high, they have to buy the shares on the market at already high prices, which in turn leads to even further increasing prices. This is called a short squeeze and has been invoked by the reddit crowd. So, after some hedge funds realized big losses as the stock price went as high as USD 483 during January 28, it crashed to about USD 45 in mid-February. As of February 25, 2021, the short interest as a percentage of free float was approximately 52 % and 20.36 % of the shares outstanding according to Yahoo Finance.

Then, on March 10, the price of the share again reached a local maximum at USD 348.50 and closed at USD 209.81 on March 17, 2021.

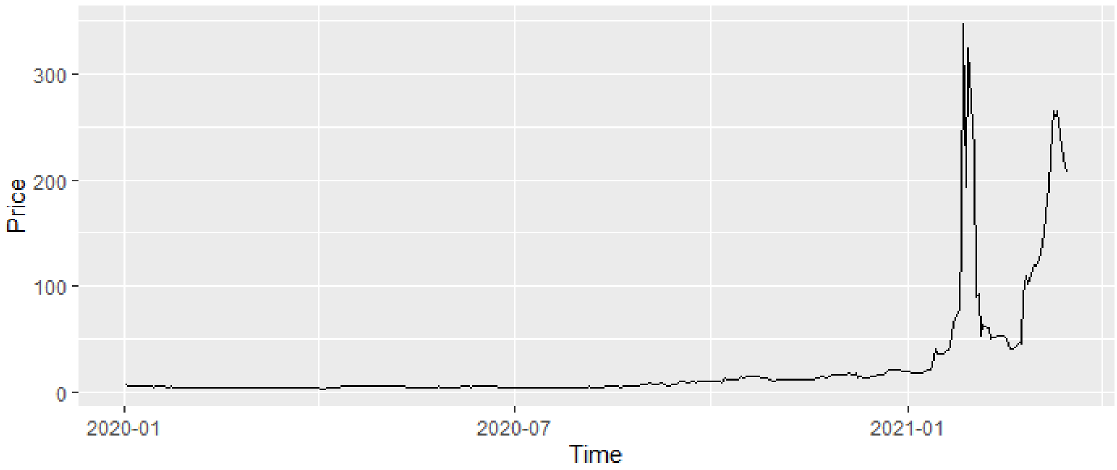

Figure 2: GameStop's share price (USD)

III. The Novel Configuration Driving Aspects

1. The Rise of Low-Cost Trading Platforms (and Implications for Users)

Although commissions for stock trading have declined over time, the advent of commission-free brokerage has greatly facilitated market access, especially for retail investors. The fact that there are no commission fees for stock trading naturally raises the question of how else brokers generate revenue. The online trading platform "Robinhood Markets, Inc." was the first provider of commission-free trading and generates revenues with a premium service, lending margins to counterparties, investing uninvested cash in interest-bearing bank accounts, and debit cards offered in conjunction with a brokerage account (Robinhood Markets 2021). Robinhood also receives payments for directing orders to different parties for trade execution. This practice is known as payment for order flow (PFOF). As Angel (2021) describes common trading venues or exchanges like the NYSE bring together trading partners and do not take a position in trading themselves. To maintain the elaborate computing infrastructure, they charge money from brokers for the market orders they forward. In contrast, market makers step in as counterparties to customer orders and have a willingness to pay brokers to get the opportunity from them. So, market makers offer to buy from counterparties at their bid price and sell to them at their ask price which is a little higher, therefore, they gain from the spread between the ask and bid price, the so-called "bid-ask spread". Obviously intense competition between market markers reduces this spread. Market makers prefer being the counterparty in small retail investor transactions because they are typically less well informed than, for example, institutional investors such as hedge funds. Better-informed counterparties such as institutions pose a risk to market makers, as potentially bad information regarding a stock could occur after institutions sell large positions to market makers. Therefore, competition among market makers for retail investors' order flow is even more intense, resulting in a high willingness to pay for order flow and the offering of "price improvements" (prices that are better than the national best bid and offer (NBBO) prices). This ultimately subsidizes commission-free trading which Robinhood formulates as "Rebates from Market Makers and Trading Venues" (Robinhood Markets 2021). Even if this practice is legal, the question of a conflict of interest arises on the part of the brokers. Best execution means that brokers must choose the execution venue that is most advantageous for the customer and not for the broker itself (FINRA 2021). So, are brokers fulfilling their obligation to execute customer orders in accordance with best execution principles or are they selling the orders to the market maker who pays the most for them, regardless of the quality of order execution. The SEC as a supervisory authority monitors the best execution practices and fines them if they are violated. Additionally, brokers are obliged to disclose where the orders are sent and how much a broker is paid (according to SEC Rule 606). However, it would be interesting and necessary to have information that would allow the evaluation of the best execution quality of an order for the purpose of monitoring. As Macey and O'Hara (1997) point out, best execution practices should consider parameters such as market timing, order size, speed of execution, the commission charged, and the trading strategy employed. The authors also conclude that individual monitoring on the part of investors would be too costly. It is therefore necessary for supervisory authorities to monitor these processes. Ultimately, competition between trading venues leads to the costs associated with execution - as a central assessment measure for the quality of execution - being kept as low as possible. Nevertheless, as Angel (2021) adds, best execution quality statistics published by brokers could help investors choose the broker that is right for them a priori. This requirement should be discussed in further research, addressing efforts to further develop regulations in the US but also in Europe with MiFID. Since best execution principles have been known to be flouted at Robinhood before, and the SEC has imposed penalties for doing so (U.S. Securities and Exchange Commission 2020), it is particularly interesting in the context of the GameStop story to see whether the principles were followed, or whether a lot of order flow was sold to Citadel without authorization. Citadel is a market maker that participated in shoring up hedge fund Melvin Capital, which faltered as a result of large uncovered short positions on GameStop, to the tune of USD 2.75 billion. Furthermore, it is of course interesting to see what impact trading platforms like Robinhood, or Trade Republic in Germany, have on the market in general, assuming that these platforms are used by private retail investors in particular. Beck and Jaunin (2021) develop a structural model to quantify this impact and find that Robinhood traders contribute to over 7 % of the cross-sectional variation in stock returns in the second quarter of 2020. A similar approach would be interesting to answer the question to what extent the price development around the GameStop share was driven by retail investors or whether professional investors were significantly involved. Also important are further efforts regarding whether private retail investors, using commission-free trading platforms, have a quality enhancing or diminishing effect on the market. In contrast to other evidence, Eaton et al. (2021) suggest that private retail investors using commission-free trading platforms aggregately act as noise traders and tend to have a degrading effect on the quality of the market and its efficiency. So, if these investors tend to be noise traders, then they might tend to be sentiment oriented and participate in herd behavior.

2. Herding Phenomena and Pricing Anomalies

Herding is a widely acknowledged phenomenon in finance and especially behavioral finance literature and describes the effect that individuals imitate actions of other individuals or align their decisions with those of others (Spyrou 2013). Consequently, investors trade in the same direction (Nofsinger and Sias 1999) and disregard private information to follow the current trend instead (Avery and Zemsky 1998). This behavior occurs, for example, when fund managers fear for their reputation due to poorer performance compared to competitors and consequently reallocate their assets to more successful funds or funds that follow industry and stock sentiment. In such a situation, fund managers are exposed to incentives to perpetuate bubbles, since feared reputational damage is greater if all other managers make correct investment decisions while one is wrong than if all make wrong decisions (Scherbina and Schlusche 2014) This phenomenon is also referred to as the "dumb money" phenomenon because the (predicted) long-term returns on investments in securities with high sentiment are lower (Frazzini and Lamont 2008). In a stylized model in which two diverse managers compete, in equilibrium the decisions of the "first mover" are adapted, regardless of their own private information. Although the incentive to anticipate herd behavior diminishes when managers are interested in their own performance and not only in maximizing their reputation, the model provides insight into mechanisms that threaten to reinforce bubbles (Scharfstein and Stein 1990).

As Chiang and Zheng (2010) put it, herding describes the correlation in trades resulting from interactions between investors. These correlated trades can affect whole populations (Bikhchandani, Hirshleifer, and Welch 1992) leading to severe asset pricing anomalies like asset price bubbles (Chiang and Zheng 2010). The notion of a speculative bubble is the subject of a long-standing controversy and, on the one hand, is rejected outright by proponents of the market efficiency hypothesis, while other economists certainly acknowledge its existence (O'Hara 2008). The most commonly used and operationally useful definition of a speculative bubble is a persistent and significant deviation of the price of an asset from its fundamental value, defined as the risk-adjusted present value of all expected future cash flows (Brooks and Katsaris 2005; Tirole 1985; Scherbina and Schlusche 2014). Research regarding the identification of speculative bubbles offers a set of various methods, but the possibility of using unit roots or "mildly explosive" processes to test for bubbles has become very feasible through the "sup ADF" test and the generalized version, the "GSADF" test, which were introduced by Phillips, Y.Wu, and Yu (2011) and Phillips, Shi, and Yu (2015) respectively. Thereby sequences of recursive augmented Dickey-Fuller (ADF) unit root tests with variable window sizes are implemented. The generalized version (GSADF) extends the sample coverage by using the double-sup criteria of recursion over a range of flexible windows (Phillips, Y. Wu, and Yu 2011; Phillips, Shi, and Yu 2015). Applying the GSADF test to the inflation-adjusted price-dividend ratio of the GameStop stock reveals a massive bubble even at 1 % significance level as can be seen in figure 3. According to Datastream GameStop payed an (annualized) dividend of USD 1.52 per share until end of May 2019. Since GameStop has not paid a dividend since, the last dividend of May 2019 is extrapolated over the entire time series which is a very conservative approach in view of the global pandemic and the resulting sharp drop in sales, but which is primarily due to the feasibility of the method. The data for this test are all from Datastream. So, since GameStop's stock price was obviously subject to massive overvaluation and herd behavior is a mechanism that can explain such a development, the following provides an attempt to understand the herding phenomenon around GameStop stock even better.

Even if herding is widely recognized as irrational behavior decreasing market efficiency, there exist situations in which herding is at least similar to rational decision making. However intentional herding can be promoted by (irrational) incentives even if such a decision is not supported by fundamentals at all (Bekiros et al. 2017). Additionally, there is the related phenomenon of herd mentality or group-thinking, where certain views or perceptions regarding information and risk can be moderated by social, psychological, and institutional channels. The amplification of risk takes place in the information transmission stage e.g., via media, where each message possesses not only factual content but also symbolic content. This information transmission also depends upon the structure of the underlying information network and as Olsen (2011) points out, if this network is a "small world" with many "weak" ties, information travels fast while being subject to considerable amplification. Investors who are part of networks are well connected through the internet and share homogeneous expectations and beliefs about risks (Bekiros et al. 2017).

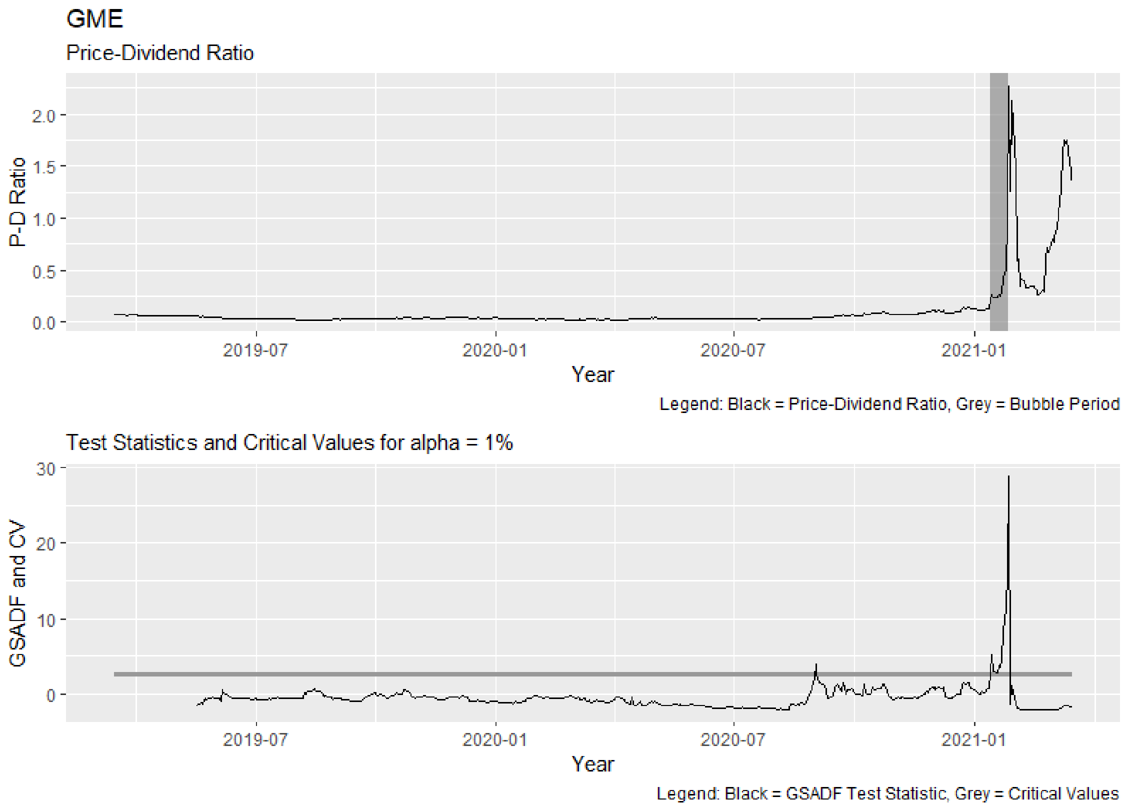

Figure 3: Bubble Period in Price-Dividend Ratio, GSADF and 1 % Critical Value

3. An Internet Community on the Rise

Reddit is a community-driven platform for submitting, commenting, and rating links and text posts. Its impact has grown exponentially since its founding in 2005 and evolved to a large platform covering many distinct sub-communities with specialized interests and topics (so called subreddits). Since the reddit community reinforces its own user-generated content it has changed from being an open gateway to the web to being an increasingly self-referential community (Singer et al. 2014). The platform combines characteristics of social media platforms where content can be shared in networked groups (Boyd 2010) with those of internet message boards where users act anonymously, subjects are specified, and volunteer moderators (Baym 2000) enforce something like the integrity of a subreddit. Reddit incorporates a "karma" system which enables users to vote on content so that a "net" score, the "upvotes" minus the "downvotes", influences the visibility to others. The individual user's karma from submissions and comments is embedded in their profiles. Many subreddits are subscribed by millions of users. The moderators are among the users, but they can be recognized by their name highlighted in green. (Volunteer) moderators fulfill a direct role of governance as they can "flag" a post, block users, delete comments or reject submissions and therefore constitute an effective feudal governance structure (Squirrell 2019). Moderators face the problem that on the one hand subreddits with an increasing number of users also gain a higher rate of spam, repetitive or low-quality posts. On the other hand, if the governance exercised by moderators is too strict, they risk losing many users since users can participate in several subreddits with a single account (Massanari 2015) and easily switch to different subreddits. This creates a sensible user-moderator-relationship (Squirrell 2019). Squirrell (2019) additionally emphasizes the role of FAQs as a consensus- and trust-building institution as they codify norms and behavior rules. These rules are written or maintained by moderators and therefore reflect their vision of the subreddit while offering a stabilizing set of information and facts which can guide discussion. In an anonymous space on the internet, it is impossible to identify those who are trustworthy ex ante and therefore users are in "epistemic quandaries where they must decide who to believe when others make competing claims." FAQs can be used to mediate these issues as an attempt of shaping "an ongoing dialectic between subreddit threads and core users' attempts to establish a special kind of community" (Squirrell 2019).

One subreddit that gained great popularity very recently is concerned with financial markets and is called r/wallstreetbets, or WallStreetBets (WSB). Boylston et al. (2021) analyze the humorous thread which is primarily dedicated to "irreverent memes and high-risk options trading" by applying community design principles together with social psychological theory. Even though trading options is not very exceptional, WSB users are characterized by their very high-risk affinity, as they usually buy cheap options that are far out of the money, thus amplifying their risk positions. It seems as if the users are playing a game in which the stakes are very high profits, but also enormous losses, so that in a way they are reminiscent of the behavior of gamblers, disregarding central principles from finance theory, such as diversification. Except from highlighting the closeness between WSB trading and lottery, Boylston et al. (2021) additionally point out that the second central characteristic of WSB's users is their tendency to behave inappropriately which means that the community is sometimes very offensive. As this explication argues that WSB qualifies as one of the before mentioned media channels for enabling group thinks etc., further supportive information must be detailed. First, the user structure is very heterogeneous in terms of the level of trading experience, so new users can join at any time, which ultimately also contributed to the forum's rapid growth. Due to the self-referential nature of the forum, the regulars have a special role to play as they preserve the special jokes, niche humor and vocabulary over time. The special jargon, i. e. derogatory language, and humor expressed in memes and in a memorable linguistic style play an essential role in reinforcing group affiliation. The language acts as a signal according to which everyone belongs to one group. It is virtually a specific culture that has developed in WSB. Moreover, the in-group cohesion is further strengthened by not letting room for pretenders, meaning that any kind of advice, idea or trading suggestion which is given by users must be credibly substantiated by demonstrating that the users actually invested in it. Then other users might consider taking this advice or idea seriously, otherwise they would probably mock the person. The moderators also are an essential part of the thread, as they enforce rules on the one hand, and engage in the special sense of humor on the other and even plan events like trading contests. The decentralized control of different moderators should be re-emphasized, as this allows sufficient space for new content from the community. In the same way, the FAQs function as a "content guide", as an institution shaping the discussion, providing basic information on financial terms on the one hand, but also explaining the specific rules of conduct of the forum on the other. According to Oldenburg (1999) making a community "feel like home" requires social warmth which arises from friendship, support, and mutual care for each other and additionally talking about intimate topics like money reinforces the feeling of community. So, Boylston et al. (2021) summarize that "it appears that many users actually consider WSB as a second home and feel a deep sense of belonging." Therefore, WSB can be described as the kind of social hub which enables group thinking, resulting in herding phenomena. Figure 4 gives an impression of the interconnectedness between the closing price of the GameStop stock and the activity on WSB, proxied by posts and comments. The huge short-term increase in activity on WSB is not due to a general influx on Reddit, as an analysis of the

10 largest subreddits has shown. The data used to create the post and comment graphs is obtained from Subredditstats[1], the data for the closing prices is taken from Datastream.

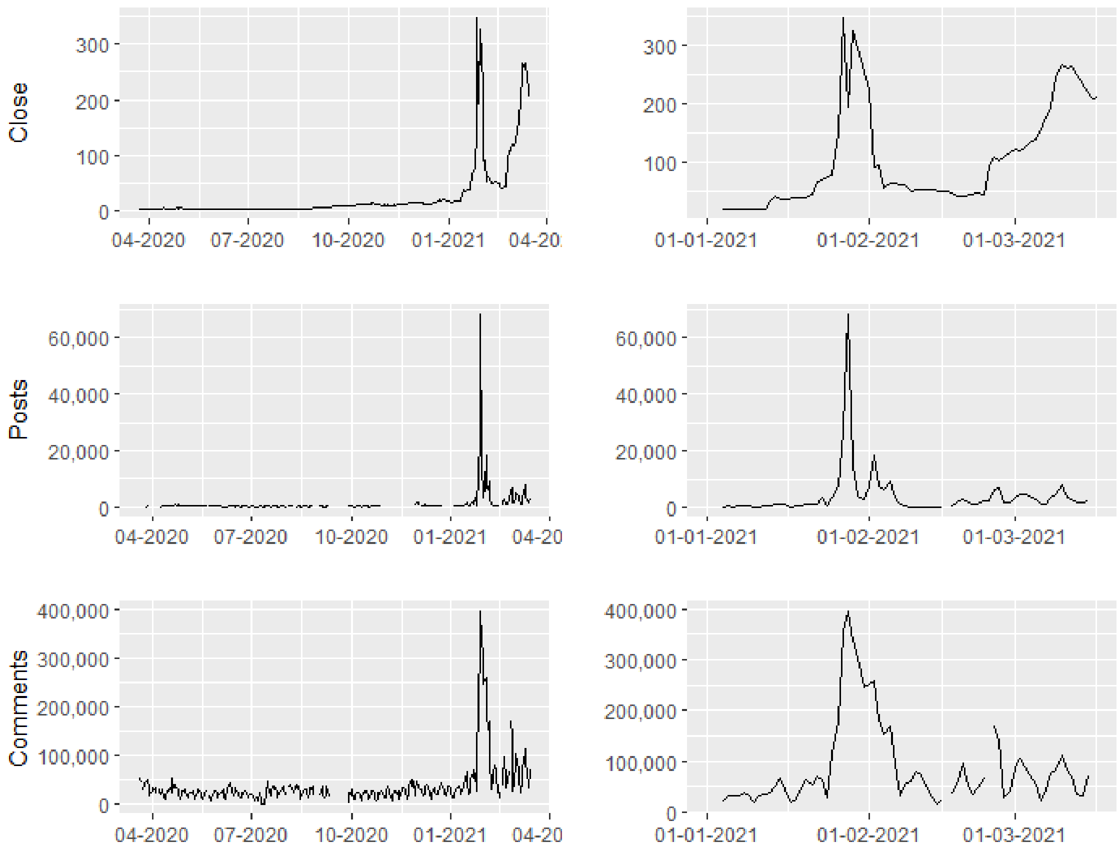

Figure 4: Closing Price of the GameStop stock, Posts and Comments on WSB

As an empirical examination of the event to argue that herding happened may be not purposeful, the events may nevertheless help to make improvements to existing methods. However, another aspect is very interesting. Since the event was accompanied by numerous, partly competing narratives, it is worthwhile to also consider these in the context of triggering herd behavior.

On the one hand, almost classically, there are the opposing narratives of the parties believing in either the rise or decline of a company. As explained above, the hedge funds' high short positions are based on the narrative that GameStop's business model is no longer sustainable, which is also reflected in pandemic-hit fundamental numbers. In contrast, the belief in the future of a revitalizing company, which is interwoven in the opposing narrative, has led many investors or users of the subreddit WSB to build long positions

[1] https://subredditstats.com/r/wallstreetbets

in GameStop (in shares or options). This second narrative certainly needs to be differentiated many times over again. While some investors, the "carriers" of this narrative, post due diligence analyses and "promote" GameStop as a real buying option, or at least advocate for it, others again join the buying as they have intrinsic motives to damage the hedge fund as a representative of the so-called financial elite. Anecdotally, individual examples of this can be found from the forum, mostly referencing the financial crisis of 2007-2009 as an event through which many Wall Street professionals made a lot of money and were not really punished for their excessive risk taking and alleged greed, even though the rest of the population suffered greatly from the consequences of the financial crisis. Subsequently, frustration has built up that seems to have been discharged in the effort to put pressure on hedge funds. This post by the user space-peanut on WSB on January 29, 2021, is just one example.

This is for you, Dad

I remember when the housing collapse sent a torpedo through my family. My father's concrete company collapsed almost overnight. My father lost his home. My uncle lost his home. I remember my brother helping my father count pocket change on our kitchen table. That was all the money he had left in the world. While this was happening in my home, I saw hedge funders literally drinking champagne as they looked down on the Occupy Wall Street protestors. I will never forget that.

My Father never recovered from that blow. He fell deeper and deeper into alcoholism and exists now as a shell of his former self, waiting for death.

This is all the money I have and I'd rather lose it all than give them what they need to destroy me. Taking money from me won't hurt me, because i don't value it at all. I'll burn it all down just to spite them.

This for you, Dad.

This intrinsic motive could be used to describe the action directed against hedge funds as an example of predatory trading, where investors take advantage of other investors' urge to liquidate some positions. In a stylized model Brunnermeier and Pedersen (2005) show that if a trader needs to sell, other traders also sell and subsequently buy back the asset, which ultimately leads to price overshooting and lower liquidation proceeds for the traders under pressure. Additionally, forced liquidation on the part of larger traders is especially feared when other traders know of the need to sell. This framework is well transferable to the users of the forum who know about the high short positions of the hedge funds on GameStop. They exploit the fact that a rising price of GameStop stock increasingly leads to the hedge funds having to liquidate positions.

To be sure, many are also driven by far less impactful emotions or motives, such as redditors investing in GameStop because it is a "meme stock". As stated before, the forum thrives on a lot of humor, which of course in this case has also provided for many memes and furthermore stylized investing in GameStop as a solidary act of the WSB community, true to the principle that only if everyone invests, the short squeeze can happen. Investors acting according to these motives are joined by those who simply want to profit from the enormous price increase and the high volatility by means of speculation. At this point, it would be interesting to estimate how large the share of retail investors and professional investors was who "rode" the price development or the bubble. Institutional investors, who can have a greater influence on prices, could have monitored and followed the formation of opinion to invest early (DeMarzo, Vayanos, and Zwiebel 2003). Besides, this interpretation is a good example for the so-called "Greater Fool Theory", where the players buy overvalued shares and are convinced that they can sell the share to an even greater "fool" (Kindleberger and Aliber 2005).

Another scenario could be that of a "pump-and-dump" scheme. A pump-and-dump scheme is a case of fraud or market manipulation that can be differentiated in three main phases. In the first phase, manipulators typically accumulate an asset over a longer period, i. e. incrementally, so that the price does not rise abruptly before the pump phase. In the pump phase, the price of the asset is artificially inflated by spreading misinformation so that in the final phase, the dump phase, the assets are resold at the higher price to unsuspecting buyers. Usually, the price then falls again because it was previously artificially inflated. The buyers who bought the assets based on the false information suffer losses (Kamps and Kleinberg 2018). Benabou and Laroque (1992) offer a model which shows that if someone has privileged information regarding an asset and the person or his information is considered credible, then the person can profit from the manipulation by making misleading statements. According to a Bloomberg article, one of the most influential users who endorsed GameStop has become the subject of a class action lawsuit. Keith Gill, who goes by the nickname DeepFuckingValue on Reddit and has an account on YouTube under the moniker "Roaring Kitty," is accused of falsely posing as an amateur investor while manipulating the market for his own profits (Bloomberg 2021). As political interest in the case increases, a testimony was given by various witnesses on February 18, 2021, before the House Financial Services Committee, including Keith Gill. There he testified that he "did not solicit anyone to buy or sell the stock for [his] own profit" (U.S. House Committee on Financial Services 2021). Although it might be difficult to determine the intention in a legally correct way to make a judgment, this narrative seems straightforward. Articles reporting of hints of significant bot activity in the forum support this. So, repeating similar messages in the forum may have ultimately led to amplification of messages endorsing GameStop as an lucrative investment opportunity. Indications like that strengthen the narrative, although it should be emphasized that this is not verified knowledge. However, this is again supported by the fact that authorities have issued warnings. The SEC stated that it was "monitoring the extreme price volatility of certain stocks' trading prices" and that they "will act to protect retail investors when the facts demonstrate abusive or manipulative trading activity that is prohibited by the federal securities laws" (U.S. Securities and Exchange Commission 2021b). The education page of the SEC additionally warns that due to anonymity in internet spaces and the fact that "users can hide their identity behind multiple aliases", you can never know whether someone is credible. "One person can easily create the illusion of widespread interest in a small, thinly traded stock by posting numerous messages under various aliases" (U.S. Securities and Exchange Commission 2021a). The number of users of the forum has increased to 9.5 million users in a very short time, as figure 5 shows.

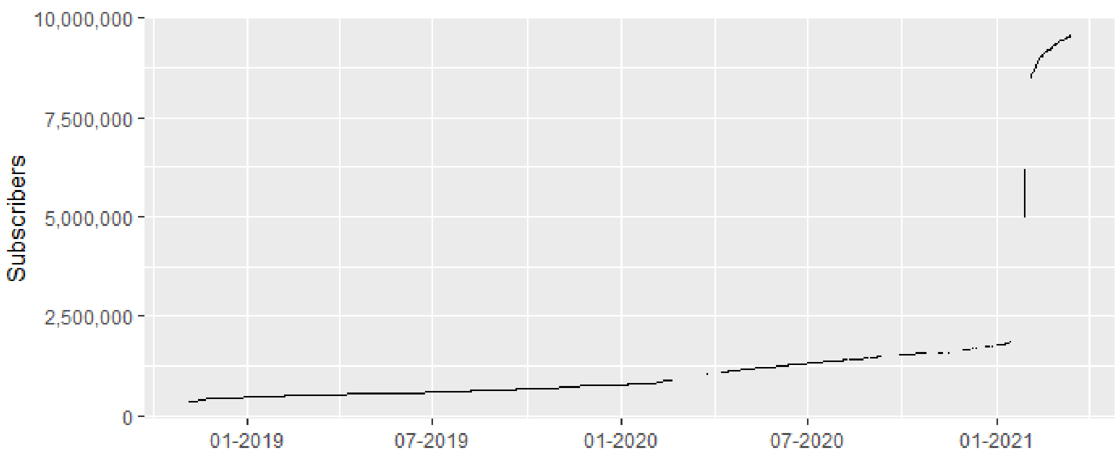

Figure 5: Number of Subscribers to the Forum r/wallstreetbets

On the one hand, this can be explained by the fact that the (media) attention for the GameStop issue was very high. On the other hand, the development also offers reason to believe that many bots were active in the forum. This question needs further investigation. Anyway, as argued above, the forum primarily deals with risky investments, which, if proposed by users, must also be supported with evidence for the purpose of authentication. Since an investment in GameStop can be classified as such a risky investment (high volatility) and DeepFuckingValue has provided the evidence implicitly required by the community (screenshot showing the purchase of the papers), it is understandable that even users with high incurred losses cover or endorse DeepFuckingValue. Since all the narratives presented here hold to some extent, even a deep analysis is unlikely to reveal that one or another narrative is the correct or true one. Since the degree of coordination in a forum can be high, as this case has revealed, but is nevertheless smaller than in the case of investment funds, for example, the coexistence of the various narratives is certainly an appropriate compromise. Ultimately, it will be the task of further research to shed some more light on further aspects that led to this, e.g., institutional bottlenecks, and above all to disclose legal aspects, if indeed fraud should have been involved. Although there is ambiguity about the narratives, the case is a good example of herd behavior triggered by (social) media.

IV. Perspectives

Technological and financial innovations such as the internet and commission-free trading platforms entail the emergence of new phenomena that were previously unknown and unimaginable. Internet forums ensure that many investors can organize themselves in a decentralized manner. Commission-free trading enables these private retail investors to participate in trading at very low cost. Together with herding behavior these aspects interact and demonstrate that private investors can now participate in trading activities that were previously reserved for professional investors. In a case-based research strategy these three aspects were identified as the main drivers and together, ultimately stand out as a novel configuration of influencing factors leading to a novel phenomenon. Since the price of GME rose again to USD 348.50 on March 10 without the primary reason being the induction of a short squeeze, it strengthens the argument that the configuration of the three aspects allows for temporary price increases. Even though it is difficult from a scientific theoretical point of view to develop a theoretical statement from a single empirically observed phenomenon (Popper 1989), in this specific case it seems as if the three interacting influencing factors have a high explanatory power to make the phenomenon around GameStop more understandable.

While events may tempt one to speak of a paradigm shift, it is important to note that this is more of an occasion to review risk management strategies in hedge funds. But certainly, as the in-depth analysis of each aspect reveals, there are still many questions or aspects that need to be answered or discussed, respectively. In this regard, the requirement to publish best execution quality statistics to evaluate ex ante best execution quality before opening a brokerage account should be discussed further. Furthermore, it would be interesting to know to what extent the price development around the GameStop share was driven by retail investors and whether professional investors were significantly involved. In this context the impact of commission-free trading platforms on markets should be examined. The event may even be helpful in improving the methods to identify herding behavior, e. g. through adding components that consider coordination and activities in online forums. From a supervisory perspective, the question of whether the event was accompanied by a pump-and-dump scheme should be addressed. This also includes the question of whether the high user numbers in the WSB forum were caused by real people or possibly by bots.

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