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**Digital crowds and the future of finance - Could
the GameStop-Reddit saga happen in Italy?**

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Introduction

The unexpected and sharp increase in the price of GameStop stock (GME) in January 2021 was an unusual event for the global financial world. This was caused by a decentralised group of retail traders who were coordinated through internet forums such as Reddit, rather than by institutional investors. Fundamental tenets of conventional financial theory were called into question by this incident, especially those pertaining to market efficiency, investor rationality, and the impact of online communities on asset values. I have examined the GameStop phenomenon in this thesis as a watershed in the connection between market structure, digital communication, and behavioural finance. My analysis starts by focusing on the development of investor psychology from the perspective of behavioural finance, with an emphasis on cognitive biases including overconfidence, herd mentality, and the impact of online narratives. I have described the dynamics of the GameStop incident in the second chapter, in which I also discuss its technological, social, and psychological foundations. The significance of Reddit's r/WallStreetBets group is highlighted in particular, as their combined efforts revealed the limitations of governmental control in the era of social media and the increasing influence of individual investors.

In the final chapter I investigate the case's wider ramifications, especially how community identification, market virality, and herding have changed the retail investment landscape. I also examine the legal and institutional reactions to the GameStop uproar, including congressional hearings and the escalating worries about payment for order flow, gamified trading platforms, and market fairness.

I conclude my thesis with a behavioural and contextual examination of the Italian financial market, raising the main query: is it possible for Italy to host an event similar to GameStop? The analysis takes into account significant variations in financial culture, retail investor behaviour, regulatory frameworks, and technology accessibility, based on comparisons between the Italian and U.S. markets. I have analysed the Tiscali case study, and I have given particular emphasis to comparable speculative dynamics during the dot-com bubble despite operating in a very different technology and cultural environment.

The aim of my study is to comprehend not only the potential for a similar incident to occur in Italy but also the wider ramifications for investor protection and financial

stability in the digital age by combining ideas from behavioural finance, market regulation, and digital sociology.

CHAPTER 1: WHAT IS REDDIT

1.1 Introduction

What distinguishes humans from animals? Some would say reason, some the ability to speak. For centuries, philosophers have questioned the why and the how humans are the way they are. In his *Politics*, the Ancient Greek philosopher and polymath Aristotle said, “Man is by nature a social animal; any individual who is unsocial naturally and not accidentally is either beneath our notice or more than human. Society is something that precedes the individual”.

Human communication is key in understanding why medias and platforms exist. How people behave can actually be quite predictable regarding some particular areas, especially when specific segments, in which demographics has been divided, have been designated.

Nevertheless, human nature is not ever so logic, thus making it unpredictable. The increasing availability of digital traces of human interactions though, has allowed to collect, at a large scale, data of the phenomena. For instance, Facebook helped people to shorten the distances and make communications easier. Twitter, now called X, is one of the first ever popular online forums, in which communication is not just one-to-one, but is collective. Such a platform has made it possible to study collective discussions.

Do people follow herds? This is an interesting social study question that well fits with our topic as well. These collective discussions have not been invented by modern media. As such, they have been and remain the major channel of exchange among different opinions, and they produce collective decisions.

The *Forum Romanum*, for instance, was a gathering place of great social significance, and often the scene of diverse activities, including political discussions and debates as well. People gathering and chatting, exchanging opinions, sharing ideas, mutually listening to one another is the epicentre of human societies and civilisation.

Online forums provide a virtual venue where users can post questions or comments, which may, or may not, trigger a discussion from other members of the community.

“Understanding how people behave in such popular online forums as Reddit has important theoretical implications to improve our understanding of collective thinking, but also practical applications, to improve user experience overall”¹. (Medvedev, A. N., Lambiotte, R., & Delvenne).

These observations motivate my investigation of the effects of chat activity on Reddit on real life and subsequently, consequences. I selected this thesis topic because grasping how individuals act in well-known online platforms such as Reddit holds both theoretical and practical importance as fore mentioned.

From a theoretical standpoint, online discussions shape communal thought, impacting viewpoints, trends, and decision-making processes. Examining Reddit’s chat activity enables us to investigate how financial data is communicated, understood, and responded to, providing important insights into the dynamics of online conversations.

A notable illustration of this occurrence is the Reddit-GameStop incident, in which retail investors, organised via the r/WallStreetBets subreddit, greatly influenced the stock market, confronting conventional financial institutions and showcasing the influence of online communities in financial choices.

From a practical perspective, these findings can be utilised to improve user experience on digital platforms and boost our capability to predict market responses. Within the framework of the Italian stock market, where the influence of social media on financial sentiment remains a developing field of research, my study seeks to illuminate the connection between online conversations and market movements.

¹ The Anatomy of Reddit: An Overview of Academic Research.

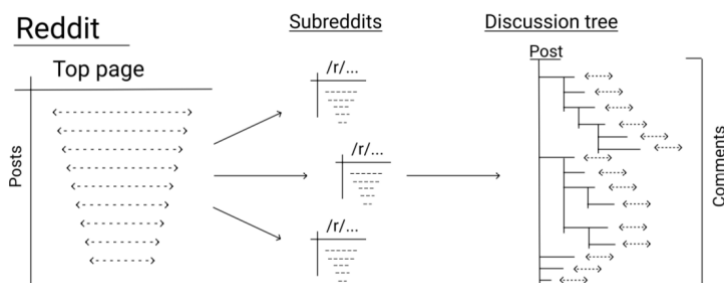
Through examining these effects, I aim to further our comprehension of how digital discussions influence financial behaviour and decision-making, thus narrowing the divide between online dialogue and actual economic results.

1.2 What is Reddit?

Internet is a vast place with multiple virtual realities coexisting. Among these, there exists Reddit, often referred to as “The front page of the Internet”. Reddit is not just a website, it’s a community.

“Born in 2005, Reddit was created by two college roommates, Steve Huffman and Alexis Ohanian. As many successful inventions, the idea behind Reddit was simple yet revolutionary: to create an online platform where people could submit links, discuss them, and vote on their popularity ”². (Medvedev, A. N., Lambiotte, R., & Delvenne).

Figure 1: The schematic structure of the Reddit platform



The Anatomy of Reddit: An Overview of Academic Research

Registered users submit posts that contain a title, an external link or a self-written content which appear in the Top page, becoming available to the whole audience of Reddit for voting and commenting. What determines the ranking position of a post in the Top page is time and voting score.

² The Anatomy of Reddit: An Overview of Academic Research.

As it regards time, newer information replaces the older ones. About voting, each post can be upvoted (receive a positive +1 vote) or downvoted (receive a negative -1 vote), and the difference between upvotes and downvotes is also called *karma*.

“Users can comment posts forming a *discussion tree*, which can be described as a rooted tree, where the root is a designated node representing the post itself and each other node represents a comment. There exists a link between two nodes when there is a “reply-to” relation between them”³. (Medvedev, A. N., Lambiotte, R., & Delvenne).

The posting space is divided into subreddits which are communities of users that like a specific topic.

Moreover, Reddit can be defined as a digital ecosystem in which a wide variety of content is shared. The platform has gained a central place in scientific literature thanks to the richness of data available that has made possible the performance of longitudinal studies of the whole system and to ensure the reproducibility of the results.

“Gaffney and Matias have highlighted notable inconsistencies within the Reddit dataset. Their analysis hinges on the understanding that post and comment IDs are essentially integer numbers represented in base-36 format. Ideally, this structure implies that all numbers within a continuous range should be present in the dataset”⁴. (Medvedev, A. N., Lambiotte, R., & Delvenne).

Contrary to this expectation, significant portions of data, especially from periods before 2008, are either missing or corrupted. Specifically, approximately 80% of posts from this era are absent. Furthermore, around 90% of post-related information from certain months between 2009 and 2010 is also missing.

These gaps can lead to distortions in analyses, affecting metrics like posting and commenting rates, disrupting user activity timelines, and hindering the reconstruction of

³ Ibid., pp. 188–190.

⁴ Ibid., pp. 190–191.

discussion threads. Therefore, researchers are advised to exercise caution when utilising data from these periods.

However, it's worth noting that data from January 2008 onward appears to be more reliable. Given Reddit's exponential growth over the years, the volume of data from its early years is relatively small compared to more recent times. In large-scale studies, these early inconsistencies might be considered negligible due to their minimal impact on the overall dataset.

Another layer of complexity arises from posts and comments made by users who later deleted their accounts. In such instances, the author's name is replaced with "[deleted]". According to certain appendices, these anonymised contributions constitute approximately 25% of the dataset. This significant proportion poses challenges for studies focusing on user participation and the dynamics of discussion networks, as tracking individual user behaviour becomes problematic.

Additionally, content removed due to user deletions or moderation actions adds to the dataset's intricacies. In the current version of Reddit's API, such posts and comments are labeled as "deleted" or "removed." However, the handling of these cases in earlier years remains unclear, introducing potential inconsistencies in longitudinal studies.

1.3 From the perspective of posts

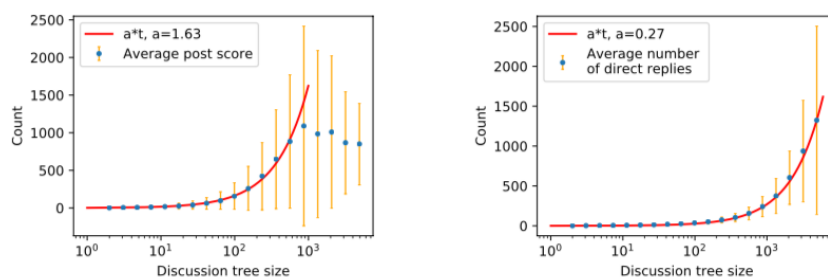
Posts are at the heart of the Reddit platform. Once posted, they may obtain lots of attention and receive feedback in the form of votes and comments, thereby increasing their ranking position in the Top Page.

Popularity prediction in online platforms is not so easy. Researchers mostly use predictive models. "Predictive models are usually made up of quantitative features that tend to be correlated with the popularity of posts.

Such features can be structural, dynamical, textual, and even associated to the author of the post itself. Simple statistical models, such as Poisson or Cox processes, were used at the beginning of the research, whereas, later on thanks to the developments of machine

learning, more elaborate methods based on neural networks have taken over”⁵. (Medvedev, A. N., Lambiotte, R., & Delvenne).

Figure 2: Average post score versus Average number of direct replies



The Anatomy of Reddit: An Overview of Academic Research

Figure 2 illustrates the relationship between the average score of Reddit posts and the size of the resulting discussion (left), as well as the number of direct replies relative to discussion size (right). The data reveals a tendency toward a linear trend up to a specific threshold. In the graphs, dots indicate average values, while bars represent standard deviation. Although the data is derived from the year 2009, similar patterns have been observed in subsequent years⁶.

Everyone nowadays seems to be familiar with the concept of “likes” and “dislikes”, a binary system of expressing attitude towards a piece of content posted online on a social network.

The so-called “page-views” have long been the dominant measure of the success of a content, for instance in the marketing field experts talk about “frequency”, i.e. the number of times consumers have been exposed to an ad.

More and more platforms have moved to voting systems where the number of positive votes is the measure of popularity.

Discussion platforms use systems of upvotes and downvotes for different purposes, ranging from the automatic discovery of appreciated items and its delivery to a wider

⁵ Ibid. pp. 193–195.

⁶ Ibid., p. 195.

audience, to the moderation of discussions to protect from spam or malicious content. Good and reliable models of popularity predictions are useful both to content creators and to platform curators.

In general, the problem of popularity prediction has been considered in various online social systems.

Early studies, for instance, in Youtube and Digg, found a direct relation between contents' initial popularity (in terms of views and upvotes) and its future counts. More sophisticated and advanced models have been proposed since then, for example Lee et al. have modelled the discussion on MySpace with the Cox proportional hazard regression model. They selected a number of "risk" factors which were further used as a predictor of threads hitting a threshold number of comments.

Some authors propose a model that predicts the commenting popularity prior to article publication in two cases: first, if there is a potential to receive comments and second, if the article receives a "low" or "high" comment volume.

The Reddit dataset shows a proportional relation between the score of a post and the size of its discussion tree *on average*, as shown in Figure 2. Even if this may highlight how posts' popularity works, however a more detailed estimation of submissions' score is relevant as well.

A great number of works has been dedicated to the prediction of scores on Reddit. Some authors proposed a machine learning model for predicting comments' score and showed the differences in users' preferences in subreddits.

These authors realised that the timing, relevancy and novelty of the comment taken into consideration all have a positive impact, but that stale memes or high user ranking, i.e. overall number of positive comments in a user's history, does not affect nor pushes down the average comment score.

It was also observed that moderation does not always have an impact on proper behaviour in the community and that it may even shorten the life of a discussion thread. “Recurrent neural networks (RNN) have also been used to measure community endorsement. For instance, there is an RNN model trained to predict comment scores.

This model learns latent modes of submission context and examines how the context relates to different levels of community endorsement, instead of controlling the submission context”⁷. (Medvedev, A. N., Lambiotte, R., & Delvenne).

If used on a dataset of three popular subreddits, the model achieves a good result and demonstrates that high score comments are usually harder to predict than lower ones.

High scoring comments tend to be submitted early in the discussion and the number of direct replies is not smaller than the height of its hanging discussion subtree.

Low and medium score comments, on the other hand, have a number of direct replies less than the height of a discussion subtree, indicating the presence of a further discussion overall, but also later in terms of the group of responses to a parent comment.

All these models therefore mentioned are based on structural features analysis which has been showed to be useful in predicting the popularity of posts or comments, some researchers though have decided to base their models on linguistic features in order to gain predictive power.

Following this direction, there have been some studies that have reported general improvement of machine learning classifiers in the ranking comments issue. The problem is that some comments appear to be in a fixed time window in a discussion thread, and the gain was marginal.

Later, another group of researchers constructed a specific RNN called LSTM (long short-term memory) for the same purpose of predicting comment scores. The proposed model uses structural and temporal comment features, as well as textual linguistic features of the

⁷ Ibid., pp. 196–198.

comments. The authors achieved a slightly better performance (increase in average F1 score from 50 to 54) on a dataset of three subreddits studied earlier in.

The study revealed that controversial comments (that further generate a wide discussion in terms of a discussion tree) tend to be over-predicted, i.e. with lower score than predicted, and jokes and funny comments, on the opposite, were mostly unpredicted, meaning with a higher score than predicted.

Linguistic context was found to be helpful in prediction tasks, and words of under-predicted comments were aligned with a positive score, but words associated with over-predicted comments did not show any significant correlation.

Another study proved that any pairs of posts that are submitted within a very short time interval into the same communities (to exclude timing bias) can be predicted in terms of popularity as well. Between 2008 and 2013, another study conducted by Lakkaraju, McAuley and Leskovec led to the inevitable conclusion that a high-quality content ‘speaks for itself’ and determines its score.

The choice of the subreddit counts as well, since it determines the audience to which the post will be most likely shown.

Another factor is whether the post was highly rated in another subreddit, meaning that it had a high number of visitors or subscribers. This effect gradually dissolves over time, leading to the conclusion that the audience is forgetful.

The title, in this case, gains more than ever importance. A ‘good’ title is a captivating one, one that makes people curious to click on it and find more about it. A ‘bad’ title does not necessarily mean a bad post, but it will not catch the attention like a good one.

1.4 From the perspective of users

So far, I have reported analysis based on posts at the centre of the attention. We may now shift our focus towards the person that shares a post, likes it or dislikes it, comments it etc.

Reddit's evolving policies and community guidelines have also influenced the dataset's composition. Over the years, Reddit has faced various controversies and challenges, leading to changes in its moderation practices and content policies. For instance, the platform has dealt with issues related to misinformation, the spread of non-consensual explicit content, and the presence of controversial communities.

These events have prompted Reddit to implement stricter rules and, in some cases, remove entire subreddits. Such actions can result in sudden gaps or shifts in the dataset, which researchers need to account for when analysing trends over time.

Observing the activity of a group of users on any website and finding out specific repeated actions is called activity patterns observation.

“A study has shown that most users on Reddit prefer passive browsing rather than active interaction with the platform. Looking at numbers, out of 309 users observed on the Reddit platform, only 16% of users produce more than 50% of interactions.

It has been showed that users prefer to vote on a post only after browsing the title, although a small part prefers to follow the link of the post on the top of the page of Reddit, as well as on subreddits”⁸. (Singer, P., Ferrara, E., Kooti, F., Strohmaier, M., & Lerman).

Time is an important variable, not really taken into account until now. Some authors, in fact, decide to focus their analysis on activity sessions. These sessions are periods of user activity starting from an interaction up until one hour without consecutive interactions.

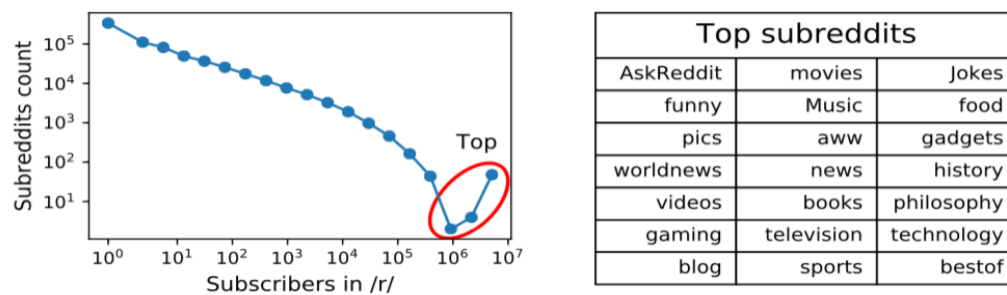
The authors found out that the shorter the sessions, the more popular interactions were made. By the end of a mean session, which lasts approximately one hour, the popularity of shares or comments or any other kind of interactions declines inevitably.

User loyalty to specific communities plays a crucial role on Reddit, a platform fundamentally organised around subreddits. Among these, certain high-profile subreddits are automatically recommended to new users upon registration. However, research indicates that users are more likely to share content within smaller, less populated

⁸ Evidence of Online Performance Deterioration in User Sessions on Reddit.

subreddits, which are perceived as more authentic and conducive to meaningful interactions compared to larger communities⁹.

Figure 3: The distribution of the number of subscribers of subreddits



The Anatomy of Reddit: An Overview of Academic Research

The largest subreddits in the rising tail of distribution are shown along in the table.

Even here, there is a pattern. On average, users adapt their vocabulary according to the subreddit they are posting in and the community specific rules, jokes, and key words.

Hamilton and other authors defined the so called “loyal communities” as subreddits made up of less subscribers than average, but with a denser user activity interaction.

This translates into denser nodes too, i.e. more clustered user reply-to-comment interactions. Hessel and other authors focused on communities sharing name affixes, for example “ask” (science, askscience), “true” (atheism, trueatheism), etc. An interesting finding of this research is that when a new highly specific community is created, users tend to engage in the newer community and to be more active.

⁹ The Anatomy of Reddit, cit., pp. 198–200.

Some reasons to explain this type of behaviour may be the absence of user moderation in the new community, making the subreddit more engaging.

“Trolling and hate speech also has meaningful consequences regarding the popularity of posts. A study has shown that users who are banned from a subreddit due to hate speech, do not go to other subreddits spreading other hate words and trolling, as one could expect”¹⁰. (Medvedev, A. N., Lambiotte, R., & Delvenne, J.-C.).

Actually, most of those users therefore mentioned simply leave the website.

On the other hand, there may be some among those banned users that try to spread hate speech in other servers, but they are fast identified by Reddit moderators and are promptly neutralised by them.

Another study focused on community norms and their violations. The method used was based on continuous scraping of comments and checking their presence in the system 24 hours later, which finally gave more than four million comments deleted by moderators within a 10-month period.

On average, hate speech, racism and homophobia were established to be the common norms across all the servers available on Reddit, whereas mocking religion, nationality, and social customs were only particular norms found in some subreddits.

1.5 Considerations

Reddit is one of the few platforms that is rich in terms of quantity as well as quality of data. Entire Reddit dataset can be harvested, while other platforms, e.g. Facebook might offer data as well, but exhaustive only when a small sample of volunteers is selected.

The richness of Reddit arises from the diversity of data too. There are a lot of inherent social networks among users, text constitutive of posts and comments, social appreciation (score), tree structure of posts and comments, and above all timely collected data.

¹⁰ Ibid., p. 200.

Even if organised by the same discussion tree principle, different platforms may show dissimilar properties.

A form of root bias has been identified on Reddit, similar to what has been observed in other discussion platforms. However, unlike those systems—typically modelled as trees with relatively uniform branching—Reddit displays a structure characterised by preferential attachment, resulting in a distinctive depth-to-width ratio within its discussion threads.

The vast amount of accessible data on Reddit opens up numerous avenues for research. From a theoretical standpoint, it enables the observation and analysis of diverse user interactions—ranging from agreement to disagreement—as well as the formation and organisation of communities within subreddits¹¹. (Medvedev, A. N., Lambiotte, R., & Delvenne, J.-C.).

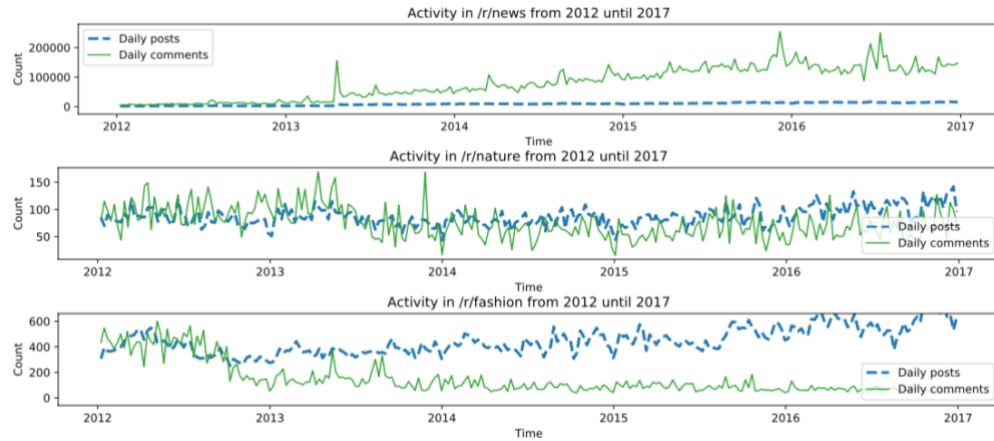
This wide variety of data also allows to investigate a range of Internet-specific questions, such as polarisation, trolling, hate speech, social manipulation, social herding etc.

A thorough data analysis would lead to shaping solutions for applied questions too. From a platform designer viewpoint, it would improve the overall user experience on the platform, at the same time it would also be useful to codify more efficient and specific algorithms for the identification of high-quality posts.

The structure of the commenting system is also expected to affect the dynamics and design of conversations. Regarding this matter, important issues include the detection and automatic removal of trolling or attacks, as well as finding methods to increase and stimulate user activity in terms of interactivity in a forum.

¹¹ The Anatomy of Reddit: An Overview of Academic Research.

Figure 4: Daily counts of submissions of posts and comments in three selected subreddits



The Anatomy of Reddit: An Overview of Academic Research

Three possible scenarios of participation dynamics are shown in Figure 4: 1) increase in comment rate exceeds posting rate (top figure); 2) rates are similar (middle figure); 3) comments eventually disappear, while number of posts increases (bottom figure).

All this wide variety of data calls for a range of scientifically computational methods, which may be explicit statistical models or black-box machine learning tools, in order to classify or predict the behaviours of users, posts and subreddits.

Understanding the base structure of a discussion tree and identifying its main nodes seems to be quite an easy analysis. However, mixing the dynamics and structure of discussion trees with textual and linguistic features is an important issue that has only been analysed by means of black-box machine learning, e.g. neural networks techniques, showing a good result in predicting community appreciation.

One big challenge when using techniques such as neural networks is that there may be many heavy tails, which may introduce sampling issues as, for example, a random sampling may fail to observe extreme points while carrying a wide influence in the structure and dynamics of the system.

Given all these complexities, researchers are advised to critically assess data quality. Before conducting any analysis, researchers should carefully examine the dataset for missing entries, inconsistencies, and anomalies of any kind that could skew results.

“Researchers should also understand more deeply platform dynamics by familiarising themselves with Reddit’s history, policy changes, and major events that might have influenced user behaviour and data composition”¹². (Singer et al.).

Studies should be made for anonymised data too. Researchers should develop methodologies to handle anonymised contributions, especially when studying user interaction and network structures.

When possible, cross reference sources should be taken into account. Taking data from other platforms or sources and comparing it with the data available from Reddit would help to validate results.

1.6 Conclusion

So far, the analysis I have proposed is based on very simplistic data and basic concepts of how the Reddit platform works. This chapter has laid the groundwork for understanding the basis of Reddit and its mechanics, as well as its potential influence on financial markets.

Through an analysis of how content is created, posted, liked – or disliked –, and eventually having a huge impact on online communities, it has become evident that Reddit is not just a space in which servers connect globally, but also a place of collective decision-making, sometimes turning into herding behaviour as we will see.

Reddit’s decentralised structure, combined with its voting mechanisms and the distinct cultures of individual subreddits, facilitates the swift diffusion of investment strategies, speculative behaviours, and financial narratives that can produce measurable effects on real-world markets¹³. (Medvedev, A. N., Lambiotte, R., & Delvenne, J.-C.)

Although the analysis so far has been primarily grounded in theoretical frameworks, these insights, while essential, do not yet fully encompass the extent to which online platforms can shape financial market dynamics¹⁴. (Singer et al.).

¹² Evidence of Online Performance Deterioration.

¹³ The Anatomy of Reddit: An Overview of Academic Research.

¹⁴ Evidence of Online Performance Deterioration.

In the next chapter, the focus will be on the infamous Game Stop – Reddit case and its consequences on the American financial market. This striking phenomenon took place in early 2021, a year that redefined the perception of retail investors and showed the disruptive potential of social media in financial markets.

In this case, the protagonists are a loosely organised group of retail traders from the subreddit r/WallStreetBets that challenged institutional investors and hedge funds, leading to unprecedented market volatility, congressional hearings, and widespread debate over the democratisation of finance.

In the next chapter I will further discuss this extraordinary event, analysing how Reddit made mass coordination of individual traders so easy, as well as the mechanisms that led to the dramatic surge in GameStop's stock price, and the wider consequences for the financial system.

The discussion will move beyond theoretical considerations, and into the real-world financial disruption, providing a focus on how platforms like Reddit are reshaping market behaviour and regulatory responses.

CHAPTER 2: DYNAMICS OF ONLINE SPECULATION: THE GAMESTOP CASE

2.1 Introduction

After having outlined Reddit's structure and community dynamics in the previous chapter, we can now shift our focus towards how this platform had a pivotal role in the creation of financial bubbles during the pandemic. The GameStop case especially stands out as an uncommon example of the power online communities can gather and how they can have an unexpected influence on market behaviour.

Around mid-January 2021, shares of GameStop (GME), an American video game, consumer electronics, and gaming merchandise retailer that most analysts expected to be

a wrecking ship (similarly to what had happened to Blockbuster), began surging, powered by a multitude of day traders from the WallStreetBets forum on Reddit. GME shares were doubling, tripling, their positions by the day, and the main incitement one could find on the forum was “GME to the Moon”, a manifesto of the community doing. The term “meme stock” drifted into the mainstream¹⁵.

These day traders, defined as “amateur” traders by the big finance guys, referred to themselves as “Apes”.

An image of a single \$53,000 investment in the video game store GameStop was shared on an online forum by a Reddit user going by the handle "Roaring Kitty." He started posting regular tweets about GameStop and creating YouTube videos in which he eloquently and simply outlined the benefits of purchasing GME stock. Additionally, this person began live-streaming his financial thoughts, and an increasing number of people started to imitate him and act as though he was an expert in finance¹⁶.

Who is Roaring Kitty? Keith Gill, a former financial educator for an insurance in Massachusetts, inspired a small community of investors who gathered around him, that later became a hoard of young online traders that engaged in speculative behaviour, to go against sophisticated hedge funds and overthrow Wall Street’s norms in the process.

In one of his first YouTube videos, he wondered aloud, “Maybe there’s going to be no one tuning in, so this is silly.” But then, Ryan Cohen, the founder of the pet food site Chewy.com, publicly announced that he had taken a big stake in GameStop. This caused the company’s stock to rise, enriching Mr Gill and those who had followed his financial advice¹⁷.

One may ask how these investors actually bought shares of GME so easily. The answer lies in the rise of the Robinhood platform. All competing brokerage firms were hit by the online brokerage platform, which made investing accessible to the general public and allowed commission-free share purchases. By that time, the idea that finance, and

¹⁵ GameStop Corp. Form 10-K 2025”. www.sec.gov. U.S. Securities and Exchange Commission.

¹⁶ <https://www.nytimes.com/2021/01/29/technology/roaring-kitty-reddit-gamestop-markets.html>

¹⁷ Matei, V. (2022). GameStop and the Social-Media Trader: An Agent-Based Model of the Short Squeeze, University of Edinburgh, p. 5.

investing in particular, were only serious when one was dressed in a suit and standing in front of the large buildings that dominated the market had long since vanished. The days when only the wealthy men on Wall Street could engage in complex trading activities like option trading and leverage are long gone¹⁸. “Vlad Tenev, co-CEO and co-founder of Robinhood, commented that a “cultural shift” was taking place”¹⁹.

This caused a lot of confusion, especially to those who know that finance usually follows patterns, and this was completely unexpected.

One of them is Andrew Left, founder of Citron Research - an online stock commentary website – who became an unexpected central figure in the GameStop stock market frenzy. For years, Left had been a prominent voice among short sellers, known for publishing reports that exposed weaknesses in publicly traded companies. In January 2021, he described GameStop as “a dying mall retailer” and publicly announced a short position against the company²⁰. However, his statement drew immediate attention from the Reddit community r/WallStreetBets, which perceived it as a challenge from the financial elite. In response, thousands of retail investors rallied around GameStop, turning the stock into a symbol of resistance against institutional Wall Street practices. Citron was forced to close its short position in GameStop at a loss in 2021.

The event overall was driven by a lot of sentiment: the mainstream media used titles such as “David versus Goliath”, meaning that the institutions which traditionally dominated the market through virtue of their deep pockets and advanced technology, were witnessing the rise of a new market power, the small retail trader, driven by a desire to make a point, rather than financial gains²¹.

¹⁸ Matei, V. (2022). GameStop and the Social-Media Trader: An Agent-Based Model of the Short Squeeze, University of Edinburgh, p. 6.

¹⁹ <https://edition.cnn.com/2021/12/19/investing/stocks-week-ahead-reddit-wallstreetbets-gamestop/index.html>

²⁰ <https://www.reuters.com/technology/citron-researchs-left-shorts-gamestop-more-than-3-years-after-getting-squeezed-2024-06-04/>

²¹ Matei, V. (2022). GameStop and the Social-Media Trader: An Agent-Based Model of the Short Squeeze, University of Edinburgh, p. 6.

2.2 Understanding short selling

In January 2021, the largest short-squeeze of the 21st century took place on the New York Stock Exchange. “Shorting a stock means borrowing and selling it immediately, expecting the price to fall, then buying it later at a reduced price and returning the stock, thus locking in profit. This approach presents large risks, because the maximum possible gain is 100% of the investment, provided a stock loses all its value, however, loss potential is unlimited, as the stock can theoretically grow to infinity. A short squeeze, on the other hand, occurs when many people attempt to short trade at the same time. Many investors borrow shares of a given stock with the promise to return them, with the unspoken expectation that the stock price will fall. However, in the case of a short squeeze, the price of the borrowed stock rises instead of falling”²². (Matei).

GME had been struggling for years due to an outdated business model, in which real physical stores were prevalent in a time when clearly it was more profitable already to sell online, especially in the sector of video games, as customers preferred to directly download video games rather than go buying the physical copies.

Hedge funds are at the centre of this whole financial mess. “A hedge fund is an actively managed private investment fund whose money is pooled and managed by professional fund managers. These managers use a wide range of strategies, including leverage and the trading of nontraditional assets, to earn above-average investment returns”²³.

In early 2021, several hedge funds identified GameStop, a traditional brick-and-mortar video game retailer, as a company in decline. With the gaming industry shifting towards digital distribution and GameStop’s financial struggles, these institutional investors believed the company’s stock was overvalued and poised for a downturn.

²² Matei, V. (2022). GameStop and the Social-Media Trader: An Agent-Based Model of the Short Squeeze, University of Edinburgh, p. 5.

²³ <https://www.investopedia.com/terms/h/hedgefund.asp>

²³ <https://edition.cnn.com/2021/12/19/investing/stocks-week-ahead-reddit-wallstreetbets-gamestop/index.html>

Among the most influential of these hedge funds was Melvin Capital, founded by Gabriel Plotkin ²⁴. Melvin Capital fuelled significant short positions against GameStop, anticipating that the stock price would fall, allowing them to profit from the decline.

However, this strategy backfired dramatically. Retail investors, particularly from the Reddit community r/WallStreetBets, noticed the high short interest in GameStop—reportedly exceeding 100% of available shares—and began buying the stock en masse. This hoarding action skyrocketed the price of the stock, triggering a short squeeze. As the price soared, short sellers like Melvin Capital were forced to buy back shares at much higher prices to cover their positions, incurring substantial losses.

2.3 The role of the Pandemic

During the Coronavirus pandemic countries were forced to lockdown, to close stores and encourage online shopping at the same time. These measures further increased the issues of the already struggling GameStop. Many popular financial markets websites deemed as completely negative GameStop's situation and argued that the company was on its way to liquidation, due to the negative earnings reports²⁵.

Large institutional investors decided to short the stock, expecting GameStop to fail. As previously explained in Chapter 1, Reddit has several subreddits where people can gather online and discuss about a topic of interest. One of these in particular, Wall Street Bets is a community where users share investment ideas and financial strategies and offer/receive feedback on their trades. This subreddit gained a lot of attention from the media, as its members often acted in pursuit of risky trades, fuelled by memes or statements as YOLO (You Only Live Once).

Roaring Kitty, a user, said that GME could reinvent itself and that the company was being undervalued. He anticipated the company's enormous potential and placed a significant

²⁴ <https://edition.cnn.com/2021/12/19/investing/stocks-week-ahead-reddit-wallstreetbets-gamestop/index.html>

²⁵ Matei, V. (2022). *GameStop and the Social-Media Trader: An Agent-Based Model of the Short Squeeze*, University of Edinburgh, p. 5.

investment in the stock. The premise is that GameStop could easily discover new methods to earn money, particularly by utilising its community of 60 devoted customers, and that the digitisation of the game industry would not occur at such a rapid pace²⁶.

In early 2021, the company appointed three new directors, one of which had previously conducted a successful e-commerce business that resulted in a stock price increase. In the meantime, In the aftermath of the event, facts were analysed from a social dynamics point of view, focusing on the interaction network and user behaviour observed during the event. From a financial theory point of view, the participants acted as naïve, fanatical, or rational short/long term investors. From a social point of view, the sentiment behind this entire operation – encouraged by a sentimental narrative by the mainstream media – had a direct impact on the daily returns of GME. Reddit users were observing that hedge funds continued to have large short positions (more than 140% of the shares available). This sparked the well-known David versus Goliath narrative²⁷.

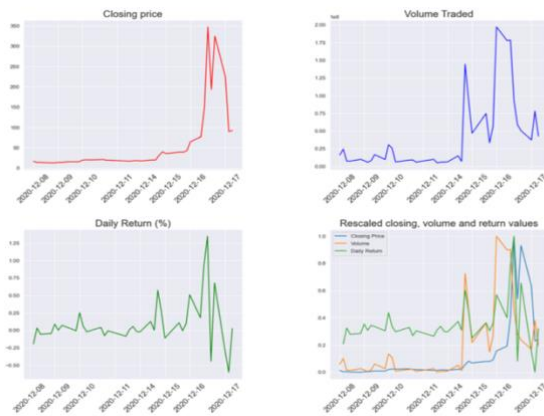
Retail investors started coordinating the forum in order to drive the price up, either through simply buying shares of GME or through the purchase of call options. As GameStop's price increased, institutional investors were compelled to reduce their holdings in an attempt to limit their losses, but this just served to raise the price even more. Because of the erratic high volume, the brokerage platform Robinhood was forced to limit trading in the stock²⁸.

Figure 5: GameStop closing, volume, and return over analysed period.

²⁶ <https://www.nytimes.com/2021/01/29/technology/roaring-kitty-reddit-gamestop-markets.html>

²⁷ Matei, V. (2022). *GameStop and the Social-Media Trader: An Agent-Based Model of the Short Squeeze*, University of Edinburgh, pp. 5-6.

²⁸ Ibid., p. 6.



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Figure 5 displays the closing price, trading volume, and return plots. Notably, the bottom right panel shows that the spike in volume preceded the sharp rise in price. The elevated volatility observed in the later period aligns with the moment Robinhood restricted users from opening new long positions on the stock. This trading halt represents a critical turning point in the GME episode and is accounted for in the model—not by developing a specific Robinhood or brokerage agent, but by incorporating it as a function of the broader market environment. This modelling choice reduces complexity while still capturing the emergent dynamics triggered by the event²⁹.

2.4 Empirical Foundations and Hypothesis Testing

As it regards data, an empirical analysis is necessary. The purpose is to build agents – in this case, Reddit users and institutional investors – that realistically simulate the market dynamics observed during the GameStop short squeeze.

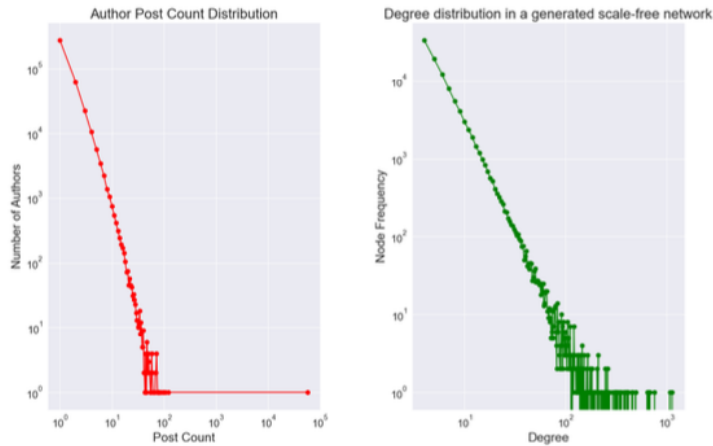
As part of data gathering, two sets were collected: stock data and Reddit data. Stock data were extracted from the YFinance API, including GME’s price and volume over December- February period, whereas Reddit data was mainly extracted from Kaggle, which includes all posts and comments from the r/WSB during the short squeeze³⁰.

²⁹ Matei, V. (2022). GameStop and the Social-Media Trader: An Agent-Based Model of the Short Squeeze, University of Edinburgh, p. 7.

³⁰ Ibid., p. 12.

According to the first hypothesis, H1, Reddit users form a scale-free network. “A *scale-free network* is one in which some users are much more connected than others, meaning that only a handful of users are responsible for large numbers of posts, whereas most users present a post count between 1-10. Furthermore, there can be identified a group of users as being *Influential*, i.e. users that start the conversation and lead to the growth of the collective identity of the forum”³¹.

Figure 6: r/WSB author-post count distribution (LEFT) vs generated scale-free network degree distribution



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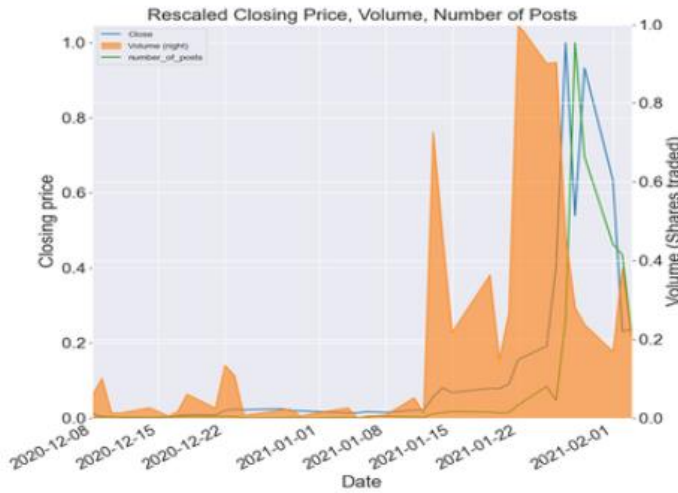
Figure 6 presents the log-scale plot of author post count distribution observed on Reddit, against the degree distribution of an artificial scale-free network generated through the NetworkX package (<https://networkx.org/>).

“According to the second hypothesis, H2, evolution of community sentiment drives the short-squeeze”³². (Matei).

³¹ Matei, V. (2022). GameStop and the Social-Media Trader: An Agent-Based Model of the Short Squeeze, University of Edinburgh, pp. 12-13.

³² Ibid., p.14.

Figure 7: Rescaled GME Price, Volume and r/WSB post numbers



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Figure 7 shows the evolution pattern of GME closing price, market volume and daily posts count on Reddit, in a rescaled plot. There is a noticeable increase in trading volume before the price spike, meaning that users began acting before the market moved. Furthermore, Reddit post volume lags behind price increases but drops faster than price after trading was halted. This could be explained by considering that most of those retail investors involved in the frenzy were reactive rather than predictive. In fact, the crash better reflects how commitment sentiment influenced price changes. Finally, the re-scaling of the plot loses important information, and may hide some data as well.

2.5 Reddit Trading Agent

Reddit agents were distinguished into *Influential* and *Regular*. The two types of market views that influence regular agents' market behavior are long-term and short-term. A temporal, scale-free network is used to simulate direct interactions between agents. In this network, ordinary agents with low initial commitment engage with influential agents as well as with each other, as they set the tone for the conversation and control the network commitment spread³³.

³³ Matei, V. (2022). GameStop and the Social-Media Trader: An Agent-Based Model of the Short Squeeze, University of Edinburgh, pp. 14-15.

The Influential agent depicts a portion of agents who were fully devoted to the GameStop saga from the start, being the key players in influencing the Reddit community.

A scale-free network is created at the start of the conversation, and the five nodes (users) with the highest degree are referred to be influential agents. Throughout the conversation and the evolving events, these agents' dedication remains constant. Influential agents may be considered fundamentalists because they maintain a perceived intrinsic worth for the asset that is several orders of magnitude greater than the initial GME price, despite the fact that they do not consider price trends when assessing demand for the stock. Keith Gill's testimony and actual data support this view³⁴.

The Regular agent, on the other hand, is representative of the general users that populate r/WallStreetBets and whose decisions were based on the updates of the influential agents and by the commitment of the community to the social cause of the Reddit group. These agents may be seen as either chartists or fundamentalists during the first period in which there is the price surge. Prior to being fully devoted to the cause, they calculate an expected price based on their preferred market approach. As their dedication to the cause grows, their decisions are no longer based on financial analysis, rather they are based on their beliefs regarding GME.

When Robinhood blocked the “buy” button for buying stock of GameStop, this clearly halted the community’s momentum, and it defined itself as the main reason why the stock declined.

According to market data, the assumption is that investors with a long-term view, act basing their performance on their perceived fundamental value of the asset until the commitment rebuilds, even when the momentum is killed. This perception is more in line with the general media sentiment.

Similarly, short-term investors continue acting as chartists and they base their decisions on market price trends. This leads to a market in which investors drive the price towards its fundamental value, and indications of any future spikes in the price of the stock are based on commitment spread.

³⁴ Matei, V. (2022). GameStop and the Social-Media Trader: An Agent-Based Model of the Short Squeeze, University of Edinburgh, pp. 15-16.

Table 1: Parameters of the Influential Reddit Trader

Parameter	Description	Value	Source
Investor Type	Influences the market behaviour	Influential	[37]
Demand	Demand in the traded asset	1	Imposed
δ	Commitment to the social cause of the GME squeeze	1	Imposed
Neighbour.ids	This agent's neighbours in the network	Defined during simulation	[16]
β	Scaling factor in terms of expected GME price	Sampled from uniform distribution [500, 1000]	[39], [29]

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Table 2: Parameters of the Regular Reddit Trader

Parameter	Description	Value	Source
Investor Type	Influences the agent's market behaviour	Short/Long-term] with $p = 0.5$	[37]
Demand	An investor's demand in the traded asset	0	Imposed
δ	An agent's commitment to the social cause of the GME squeeze	Sampled from uniform distribution [0.3, 0.5]	Imposed
Neighbour.ids	The neighbouring nodes this agent comes in contact with throughout the simulation	Defined at simulation start	[16]
P_f	Fundamental price of long-term investor	Sampled from [1, 16]	[23], [22]
β	Scaling parameter all regular investors use in calculating their expected price through a chartist/fundamentalist formula	Sampled from uniform distribution [-1, 1]	[73]
γ	Threshold parameter of difference in opinion which triggers update	Sampled uniform distribution [0.3, 0.5]	[56]

GameStop and the Social-Media Trader: An Agent-Based Model of the Short Squeeze

2.6 Interactions with other agents

Agents can interact directly with each other on the platform, and indirectly with institutional investors. “In modelling commitments spread, a bounded and continuous opinion diffusion model has been implemented”³⁵.

The commitment variable takes on values between 0 and 1, and an agent decides to update his own commitment basing their decision on the threshold parameter γ , as shown in Table 2.

In the model extremists are introduced, represented by Influential Traders whose initial commitment is 1. since the aim of the model is to depict interactions among agents replicating the social media context reality in which such interactions actually happen, the average opinion of neighbours is used in the update function, rather than that of a single agent.

Additionally, unlike earlier works, instead of updating both agents' opinions and coming to an agreement, only the agent with a lower commitment value changes his beliefs towards the higher value³⁶.

This is presented in Equation 1:

$$\delta_i = \delta_{neighbours} + \mu \times |\delta_{neighbours} - \delta_i|$$

$\delta_{neighbours}$ is the average of all neighbouring opinions, simulating the growth of community identity, and δ_i is the commitment of agent i .

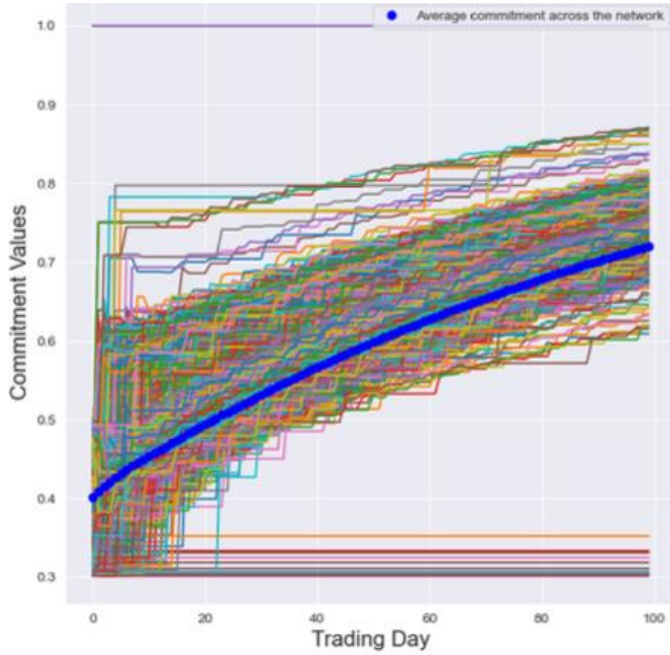
In this model, the opinion profile of the population gets updated $\tau = \frac{N_{agents}}{2} \cdot t$ times, where N_{agents} is the total number of agents, and t is the number of trading days simulated. The logic for this decision is that social media users get multiple updates daily, and a large part of the population will be continuously adjusting their beliefs accordingly.

Represents the scaling factor which determines the rate of convergence towards the average opinion of neighbours. This is a calibrated parameter, defined as 0.17 in the final model.

³⁵ Matei, V. (2022). GameStop and the Social-Media Trader: An Agent-Based Model of the Short Squeeze, University of Edinburgh, p. 19.

³⁶ Ibid., p. 20.

Figure 8: Evolution of all agent commitments



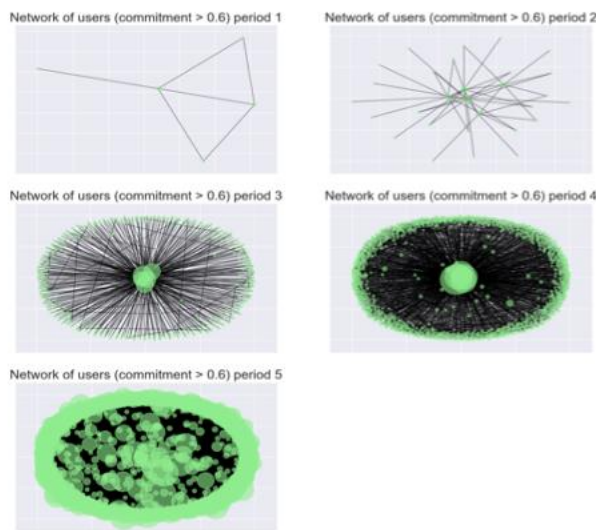
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Figure 8 illustrates the results of the previously introduced opinion diffusion model over a 100-day trading period, accompanied by a continuous average trend line (blue). Interactions among agents progressively shift the network's overall opinion towards that of the Influential users. While the general trajectory shows a consistent upward trend in opinion values, heterogeneity remains evident, as individual agent opinions vary. Notably, two extremist clusters emerge: a small subset of agents maintains low commitment levels and gradually becomes isolated as the network's average commitment rises. To investigate the diffusion dynamics in greater detail, the trading period was divided into five equal intervals.

Figure 9 visualizes the network's temporal evolution, displaying only those agents whose commitment exceeds 0.6, with node sizes reflecting their number of connections. Initially, only the five Influential users exhibit full commitment. The subsequent two intervals

reveal modest growth in the number of committed agents, with Influentials retaining a central role. The final two periods show a sharp increase in commitment levels, culminating in a densely connected network where the distinction of Influential users diminishes, as high commitment becomes widespread. The threshold of 0.6 was selected as it represents the activation point for option trading within the model.

Figure 9: Temporal evolution of the agent network (agents with commitment greater than 0.6)



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2.7 Institutional Investors

“This agent class is modeled to depict the behaviour of institutional investors during the event”³⁷. (Matei).

Each agent starts with negative demand, showing that these investors had short positions.

When confronted with unprecedented uncertainty triggered by the mobilization of social media users, institutional investors were unable to act in a fully rational manner. Each fund, guided by its own risk tolerance, chose different moments to alter its strategy and close positions—accepting losses despite holding firm beliefs about GameStop’s intrinsic

³⁷ Matei, V. (2022). GameStop and the Social-Media Trader: An Agent-Based Model of the Short Squeeze, University of Edinburgh, p. 21-22.

value. The foundational framework for the model is inspired by earlier pioneering studies, and subsequent research supports the underlying assumption that a hedge fund's investment strategy is closely tied to its risk aversion. A valuable lens for interpreting managerial decision-making under risk is provided by the value function derived from prospect theory. With risk behavior derived from a probability distribution skewed toward risk-seeking individuals, the parameter configuration assumptions utilized in Table 3 are consistent with the speculative nature of hedge funds. Furthermore, the probability distribution is biased in favor of possible gains when evaluating possible outcomes, which strengthens the tendency to maximize profits³⁸.

Table 3: Parameters of the Institutional Investor Agent

Parameter	Description	Value	Source
Risk_loving	An agent's risk-attitude	Sampled from [False, True] with $P = [0.33, 0.67]$	Imposed
Demand	The agent's demand in the asset	-100	Imposed
p_f	The fund's perceived fundamental price of the stock	1	[31], [26]
α	Used in the agent's value function calculation - lower value assigned to risk-averse funds	[0.5, 2]	[79], [80]
β	Used in the agent's value function calculation	1	[80]
p_{gain}	Weight assigned to perceived gain value function	0.8	Imposed
p_{loss}	Weight assigned to perceived loss value function	0.2	Imposed
g_1	Weight of the fundamentalist component in the price expectation for	[1, 2]	[18]
g_2	Weight of the chartist component in the price expectation formula	[2.55, 0.9]	[18]

GameStop and the Social-Media Trader: An Agent-Based Model of the Short Squeeze

Institutional investors do not interact directly with each other. Price movements are the only exogenous parameters considered due to the influence they exert over the agent's perceived loss calculations.

³⁸ Ibid., pp. 22-23.

Each agent interacts indirectly with other institutional investors, as well as Reddit traders, through their market actions.

Agents' demand updates influence market movements, and thus, indirectly affect other agents' behaviour.

2.8 Conclusion

The analysis carried out in this chapter highlights how difficult it is to believe to the “purist” market view according to which market prices of assets reflect and reveal all the available information about future value and cash flows at all times³⁹.

The GameStop phenomenon sheds a light on the disruptive power of online communities, in particular on the uncommon plan of Reddit's r/WallStreetBets, in reshaping traditional market dynamics.

Financial markets are complicated and reflect the imperfect, friction-ridden real world⁴⁰. With the GameStop short squeeze, we discussed how the convergence of retail investor sentiment, social coordination, and frictionless trading platforms such as Robinhood enabled a record challenge to institutional finance.

GameStop's extraordinary volatility of return has been attributed to market frictions, position-taking limits set by regulation, risk management or investor preferences, very deep disagreement among investors, and social contagion. The episode may be a manifestation of all of these. It's also mourned—and justified—as a case of market manipulation. Market frictions consist of an array of impediments to instant, frictionless arbitrage. Market functioning in general was not significantly undermined during the episode, but evidence of unfinished arbitrage was seen between underlying stocks and exchange traded funds⁴¹.

The agent-based simulation model developed in this chapter enabled us to mimic the inner processes of such a social-media driven financial event. By separating between Influential and Regular Reddit agents and through modeling institutional investors based on bounded

³⁹ <https://www.cato.org/cato-journal/fall-2021/gamestop-episode-what-happened-what-does-it-mean>

⁴⁰ <https://www.cato.org/cato-journal/fall-2021/gamestop-episode-what-happened-what-does-it-mean>

⁴¹ <https://www.cato.org/cato-journal/fall-2021/gamestop-episode-what-happened-what-does-it-mean>

rationality and risk-aversion profiles, we were in a position to simulate commitment diffusion, volatility spikes, and the non-linear effect of a trading halt. The findings corroborate real-world behaviour seen during January 2021 and indicate that social media sites have the ability to move not only opinion, but also price under certain circumstances.

At the forefront of this movement was the influence of a single user, Roaring Kitty, whose postings mobilized a movement founded not only on profit motive, but on identity, resistance, and community⁴². Moreover, the case demonstrates how collective sentiment can override traditional fundamentals, forging a novel form of digital speculation—one not merely reflexive, but frame-structured and value-oriented. The symbolic battle between small retail traders and large hedge funds took the shape of a digital "David vs. Goliath" spectacle, reasserting the affective and ideological aspects of market participation.

This discussion thus sets the stage for the next chapter in which the focus will shift towards herding behaviour in financial markets, a psychological phenomenon in which people copy the actions of a larger crowd, even disregarding their own information or reason. The GameStop incident offers an empirical basis to understand such dynamics in the age of the internet, especially under the conditions of high uncertainty and publicity. The next chapter will also explore the regulatory responses to this phenomenon—such as SEC inquiries within the U.S. and discussions around trading restrictions on platforms like Robinhood. Furthermore, it will delve into the psychology of retail traders, covering behavioural biases like overconfidence, loss aversion, and social identity in trading.

CHAPTER 3: HERDING, REGULATION, AND THE HUMAN FACTOR IN FINANCE

⁴² <https://www.nytimes.com/2021/01/29/technology/roaring-kitty-reddit-gamestop-markets.html>

“The most striking peculiarity presented by a psychological crowd is the following: Whoever be the individuals that compose it, however like or unlike be their mode of life, their occupations, their character, or their intelligence, the fact that they have been transformed into a crowd puts them in possession of a sort of collective mind which makes them feel, think, and act in a manner quite different from that in which each individual of them would feel, think, and act were he in a state of isolation”.

— Gustave Le Bon, *The Crowd: A Study of the Popular Mind* (1895)

3.1 Introduction

Behavioural finance studies the behaviour of individuals making financial choices according to psychological factors or biases — hence deviating from the rationality paradigm otherwise prevalent in economics and finance.

Stock market returns represent a facet of finance where psychological behaviours are frequently thought to affect market outcomes and returns, yet numerous perspectives for analysis exist. The aim of categorizing behavioural finance is to clarify why individuals make specific financial decisions and how those decisions can influence markets.

In behavioural finance, it is believed that financial actors are not entirely rational and self-disciplined, but instead are influenced psychologically with tendencies that are somewhat typical and self-regulating. Investment choices frequently depend on the psychological and physical well-being of the investor. As an investor's general well-being enhances or declines, their mindset frequently shifts.

These psychological tendencies—frequently automatic, unconscious, and influenced by emotions—may result in irregularities in pricing, volatility, and investor behaviour. One example of this is herding behaviour, where individuals, instead of trusting their own judgment, often imitate the behaviours of a bigger group.

During uncertain times or when under significant public scrutiny, like the GameStop incident, this shared perspective can lead to drastic market fluctuations and speculative bubbles.

Grasping the cognitive and emotional origins of these phenomena is crucial not just for interpreting historical events but also for predicting the dynamics of upcoming financial crises.

3.2 Cognitive Biases

Imagine you are at a casino: losing €100 hurts a lot more than winning €100 feels good. That simple insight sits at the heart of Prospect Theory, the 1979 idea from Amos Tversky and Daniel Kahneman that flipped classical finance on its head⁴³. Instead of cool, calculator-like decisions, most of us judge outcomes relative to a personal “starting point,” and we will bend over backward to avoid losses even when the math says we should not.

Why does the brain work this way? Herbert Simon called it bounded rationality—we have limited time, information, and brainpower, so we lean on mental shortcuts⁴⁴. Psychologists call those shortcuts heuristics. They are useful, but they also open the door to repeatable thinking errors—cognitive biases.

During the GameStop frenzy, you could watch these biases in real time. As the share price rocketed, thousands of Reddit users piled in because everyone else was doing it—a classic bandwagon effect powered by FOMO⁴⁵. Add overconfidence (the feeling that my stock-picking skills beat the crowd’s) and you get traders buying risky call options at lightning speed. Barber and Odean’s research shows that people who churn their accounts this way usually trail the market—yet in January 2021 many were sure they would be the exception⁴⁶.

Biases tend to gang up. Confirmation bias kept investors glued to bullish memes while shrugging off warnings, and regret aversion pushed newcomers to buy “just in case” so

⁴³ Kahneman, D., & Tversky, A. (1979). Prospect Theory: An Analysis of Decision under Risk. *Econometrica*, 47(2), 263–291.

⁴⁴ Korteling, J. E. M., & Toet, A. (2022). Cognitive biases: When illogical thinking is perfectly logical. *Human Factors*, 64(2), 373–400.

⁴⁵ Baig, M. W. (2024). The Influence of r/WallStreetBets on GameStop Stock Price: A Behavioural Finance Perspective, University of Barcelona, pp. 6–7.

⁴⁶ Ibid pp. 20–21.

they would not regret it later. Social media amplified every emotion, turning normal market jitters into a full-blown stampede.

Recognising these very human quirks doesn't just explain past bubbles; it's a reminder that markets are stories about people first, numbers second.

3.3 Herd Behaviour

Herd behaviour is among the most widespread and disruptive phenomena in financial markets. It outlines a scenario where people, instead of relying on their own personal information or individual assessment, opt to mimic the choices of others. In doing so, they frequently overlook their own knowledge or beliefs, yielding instead to the group's influence. Bikhchandani and Sharma (2001) note in their seminal study that herding isn't necessarily irrational—in reality, it can be a rational reaction to uncertainty. When data is lacking or unevenly distributed, investors might believe that others' behaviours indicate knowledge or information they lack, causing them to conform to the majority instead of risking solitary error⁴⁷.

Bikhchandani and Sharma differentiate informational cascades from herd behavior by noting that cascades are delicate and dependent on prior steps: when a few investors start buying (or selling) due to signals, others may follow their lead without confirming the fundamental reasoning. In these situations, price changes create a feedback loop, where initial decisions influence later rounds of choices. Even when the basics do not back the trend, the high level of imitation can drive up prices, leading to speculative bubbles or swift corrections. Thus, herding serves as a strong enhancer of market fluctuations and wrong pricing.

The GameStop trading occurrence in 2021 serves as a clear example of these ideas in practice. As excitement grew on Reddit's r/WallStreetBets and media attention heightened, more retail traders entered the fray—not necessarily due to a belief in the company's fundamentals, but because the group behaviour indicated a winning path. The mental ease of moving with the group, along with emotional factors like fear of missing

⁴⁷ Bikhchandani, S., & Sharma, S. (2001). Herd Behavior in Financial Markets. *IMF Staff Papers*, 47(3), 279–310.

out (FOMO) and the need for social approval, fostered an ideal environment for herd behaviour. Investors were not merely imitating trades—they were engaging in a collective storyline. This emphasizes the significance of viewing herd behavior not merely as an irrational anomaly, but as a structural and psychological fact of contemporary markets, particularly influenced by digital platforms and community-generated sentiment.

3.4 Reactions and Repercussions

The GameStop situation ought not to be regarded as a peculiar market incident or a singular speculative occurrence. Instead, it revealed systemic weaknesses in contemporary financial systems—especially the ways in which market infrastructure, regulatory structures, and communication technologies interact⁴⁸. The incident acted as an alarm: conventional monitoring systems were found inadequate to address rapid, retail-driven trading spikes intensified by online communities⁴⁹. It further obscured the distinction between speculation and activism, with investors increasingly presenting their trades not merely as financial choices, but as expressions of identity, resistance, or digital unity. In this context, herd behaviour is not merely a consequence of uncertainty—it has become an inherent characteristic of markets influenced by virality, emotional transmission, and technological disintermediation. To tackle these challenges, regulators need to reevaluate their views on rationality, access, and agency in financial involvement, especially as platforms develop into trading venues and social environments.

This disruption reverberated far beyond trading platforms, drawing swift political and institutional attention. In the wake of the market turmoil, U.S. lawmakers from across the political spectrum called for congressional hearings to examine whether the existing market infrastructure unjustly disadvantaged retail investors. The U.S. House Committee on Financial Services convened its first hearing in February 2021, featuring testimonies from Robinhood CEO Vlad Tenev, Reddit user Keith Gill (known online as “Roaring Kitty”), and several hedge fund executives. Central to the discussion was the principle of

⁴⁸ U.S. Securities and Exchange Commission (SEC). (2021). Staff Report on Equity and Options Market Structure Conditions in Early 2021.

⁴⁹ Baig, M. W. (2024). The Influence of r/WallStreetBets on GameStop Stock Price: A Behavioural Finance Perspective. University of Barcelona, pp. 6–7.

market fairness—whether all participants truly operate on equal footing, or whether systemic advantages remain skewed in favour of institutional actors⁵⁰.

Later that year, the U.S. Securities and Exchange Commission (SEC) published a comprehensive report assessing the unusual fluctuations linked to GameStop and other so-called “meme stocks.” The report acknowledged that herd mentality and social media influences played key roles in the price increase but did not establish conclusive proof of market manipulation. Nonetheless, it underscored increasing worries regarding payment for order flow (PFOF)—a method where platforms such as Robinhood send trades to particular market makers for a fee. While permitted by current regulations, critics contend that PFOF might negatively impact execution quality and reduce transparency, prompting ethical concerns regarding brokerage motivations and the safeguarding of investors.

These occurrences led regulators to reevaluate the regulations surrounding digital finance. Focus shifted to aspects like immediate visibility in trade execution, the dissemination of financial advice through social media, and the psychological architecture of gamified trading applications that could promote risky behaviour. Although concrete reforms are still being debated, the GameStop event signified a pivotal moment in the regulatory story: an acknowledgment that today's financial markets are not merely economic exchange systems, but also social ecosystems where identity, community, and technology transform the investor experience.

3.5 Financial Regulations

The GameStop incident enlightened how unprepared current financial regulation is when it comes to the communication dynamics of social media. In the European Union, there are rules about market manipulation, i.e. the intentional interference with the price or perceived value of a financial asset through deceptive practices that affect the pricing and trading of securities, stocks in particular, and mislead investors. The set of rules that regulates market manipulation in the EU goes under the Market Abuse Regulation

⁵⁰ U.S. House Committee on Financial Services. (2021). Game Stopped? Who Wins and Loses When Short Sellers, Social Media, and Retail Investors Collide. Hearing, February 18, 2021.

(MAR), which prohibits practices such as scalping, pump-and-dump schemes, and cornering the market.

Scalp trading refers to a high-frequency and short-term scheme in which investors buy and sell securities quickly to profit from small price fluctuations. *Pump-and-dump* refers to a specific strategy in which a person buys shares in a company and starts an organised scheme to increase (pump) the share price. They later sell (dump) their shares to make profits, leading other shareholders to suffer financial losses as the share price falls⁵¹. Finally, *cornering* the market occurs when some investors gain enough control over a specific asset or shares of a particular security type to manipulate its price.

As pointed out by Professor Maume, however, these rules were not formulated to address the reality of anonymous, decentralised, and emotionally charged activity on platforms like Reddit⁵².

Additionally, the legal standard within the EU commonly depends on the concept of a "reasonable investor"—a logical, well-informed participant who makes choices based on public information and essential data. However, what occurs when thousands of retail investors base their choices on memes, social movements, or collective online personas instead of financial fundamentals? The GameStop incident revealed that numerous participants were driven by a sense of social connection or a wish to challenge the system—not by the financial statement of the company. This type of behaviour does not align well with the assumptions that form the basis of existing regulation.

A further issue exists within the enforcement framework: EU regulations are implemented at the national level, implying that smaller or less equipped nations might struggle to oversee or examine market misconduct originating from online communities. Given the rapid dissemination of information on platforms such as Reddit, along with the swift price changes that viral posts can initiate, this results in an imbalance that compromises equitable regulation. Maume suggests that the future of financial regulation will

⁵¹ <https://moneysmart.gov.au/glossary/pump-and-dump-scam>

⁵² Maume, P. (2023). The GameStop case and capital markets law: The limits of EU market abuse regulation in the age of social media, in C. Godwin (Ed.), *Technology and Global Finance* (Chapter 7).

necessitate not just legal changes but also cooperation across disciplines—especially involving specialists in behavioural finance, psychology, and digital communication. Markets have transformed into digital, engaging, and emotional environments, and regulations created for a pre-digital age might no longer be adequate to guarantee integrity and fairness⁵³.

3.6 Psychology and emotional logic of retail investors

Retail investors are frequently characterised as naive, rash, or excessively emotional—but these adjectives overlook the intricate nature of their motivations. Following GameStop, what appeared was not just a crowd of people placing speculative wagers, but a loosely organised group working with common purpose. What motivated these people was not solely the anticipation of gain, but also a profound psychological bond with the community, a desire for acknowledgment, and a conviction in united efforts as a way to attain power⁵⁴. Purchasing and retaining a stock turned, in numerous instances, into a symbolic gesture, somehow a means to engage in a narrative beyond one's individual experience.

This dynamic can be better understood if looked from the social identity theory point of view. According to the social identity theory, individuals form their identities based on their group memberships, because people thrive through gaining positive social identity and by being accepted by the others.

On platforms like Reddit, the group becomes the most important source of validation, moral justification, and emotional support. Retail investors, the protagonists of the phenomenon, were not only trading, but they were also trying to be part of a project, a common end to pursue in order to feel a sense of collectivism. Each of those investors was performing a role within the digital community: the leader, the follower, the believer. Taking a risk, even the financial loss risk, was reinterpreted as an act of loyalty or even

⁵³ Ibid., pp. 130–133.

⁵⁴ Hoffmann, A. O. I., & Shefrin, H. (2014). Investor behavior and the psychology of financial decision making. *Journal of Economic Behavior & Organization*, 107, 451–465.

courage, and expressions such as “diamond hands” or “we like the stock” were used as manifesto representing the purpose of the battle.

Moreover, a lot of retail investors experienced the so called “narrative immersion”, a psychological effect that happens when the feeling of being completely absorbed and engaged in a story leads individuals to perceive strong emotions, shift perceptions and eventually change beliefs. The “David vs. Goliath” narrative reinforced such a concept constructing a sentimental plot line. These mechanisms help understanding why rational financial warnings were ignored, and why holding the line – even at a loss – was seen as virtuous rather than foolish.

Grasping the mindset of these investors involves recognising that markets consist not only of figures and algorithms but also of narratives, identities, and emotional requirements. As trading evolves to be more social and participatory, the lines between financial activity and collective expression increasingly fade—transforming the definition of being an investor in the digital era.

3.7 Conclusion

In this chapter I have analysed how the GameStop incident questioned conventional economic beliefs by focusing on human psychology, group identity, and social media interactions as they are pivotal to market shifts. Seen through the lenses of behavioural finance, cognitive bias theory, and herding behaviour, it's evident that retail investors frequently don't operate solely from profit-driven rationality; rather, they often participate in the market influenced by emotional and social narratives.

The episode also emphasised considerable regulatory deficiencies, particularly regarding the capacity of current frameworks to address decentralised, internet-based collective action. As platforms such as Reddit merge financial analysis with social narratives, the notions of market manipulation and investor rationality became increasingly difficult to apply to observed investor behaviour.

From a European regulatory standpoint, especially under the MAR framework, the current tools seem inadequate to address the structural changes in financial participation in the digital era. The concept of a “reasonable investor” is currently under scrutiny, as

communal feelings, allegiance to groups, and online identity increasingly influence financial choices. As mentioned, these modifications not only pose ethical and legal dilemmas but also prompt a more profound consideration of how market fairness, transparency, and investor protection ought to be redefined.

In the following chapter, I will transition from theory to analysis by exploring if a phenomenon akin to GameStop-Reddit might take place in the Italian financial market. This investigation will examine the influence of regulatory culture, investor actions, technological accessibility, and market framework in Italy—providing insights into the circumstances that could lead to or avert such retail-driven market disruptions.

Chapter 4: COULD GAMESTOP HAPPEN IN ITALY? A CONTEXTUAL AND BEHAVIOURAL ANALYSIS

4.1 Introduction

The GameStop incident, as examined in the earlier chapters, represented a crucial point in financial history, questioning enduring beliefs about investor reasoning, regulatory preparedness, and the increasing influence of online groups. It showed that market fluctuations can be directed not only by economic fundamentals but also by shared identity, emotional factors, and digital synchronisation.

A natural question arising from this analysis is whether this kind of event was a singular incident based on the unique aspects of the U.S. financial landscape, or if it could be reproduced in other markets—like Italy. In this chapter I plan to investigate if a comparable retail-driven market upheaval might occur in the Italian financial system, and to research critically specific cultural, behavioural, and structural conditions that influence financial participation in Italy. My discussion will take into account various elements, such as the organisation of Borsa Italiana, the actions and makeup of retail investors, the legal environment at both national and European levels, the influence of social media and online platforms, and the existence (or lack) of financial groups able to

act together. By doing so, I seek to understand what makes certain markets more susceptible to retail-driven disruptions, and if Italy has the social and institutional framework that could support, or prevent, the rise of a collective financial uprising like the one of GameStop.

4.2 The development of markets in Italy

Italy's financial markets trace back to the early 19th century. The country has a developed financial sector being the eighth largest country in the world by nominal GDP and, after Brexit, the third largest in the European Union. In addition to its manufacturing and industrial sectors, Milan's significance as the centre of Italian financial markets is one of the main factors contributing to its GDP - the fourth largest GDP among Western European cities. Alongside the equity and derivative markets in Milan, Italy boasts one of the largest government bond markets globally, with the nation holding the second highest level of EU government debt outstanding. Moreover, being a member of the eurozone, Italian banks and various financial entities are completely embedded in the broader European monetary and forex markets⁵⁵.

The Milan Stock Exchange, also known as the Borsa Italiana, is one of Europe's largest stock exchanges having listed companies with a total market capitalisation of around 700 billion euros. The Italian stock market is primarily composed of two key segments. The Mercato Telematico Azionario (MTA) serves as the main regulated market for mid- and large-cap companies, and includes most of the well-established Italian firms.

In contrast, the AIM Italia—now known as Euronext Growth Milan—was launched in 2009 to provide a more flexible listing environment for small and medium-sized enterprises (SMEs) with high growth potential. The latter features lighter governance and reporting requirements, making it more accessible for innovative or early-stage firms seeking capital without the burden of full regulatory compliance⁵⁶.

⁵⁵ <https://www.statista.com/topics/7535/financial-markets-in-italy/>

⁵⁶ Ibid.

4.3 The Italian Financial Market: Structure and Investor Profile

The Italian financial market revolves around the Borsa Italiana and has been integrated within Euronext since 2021⁵⁷. It differs significantly from the U.S. in relation to scale, investor composition, and liquidity. Italy's equity market is dominated by a large presence of small and mid-cap companies, low trading volumes, and a more conservative investor base, whereas the American market is characterised by large institutional investors and highly capitalised tech giants⁵⁸. In addition, the number of listed companies is considerably smaller in Italy, and retail participation can be defined as modest with respect to the US market.

According to data from CONSOB, retail investors in Italy are usually older, more risk-averse, and tend to rely mostly on intermediaries such as banks and financial advisors rather than having a direct market access or trading apps approach⁵⁹.

This contrasts with the U.S. financial market, where platforms like Robinhood have drastically lowered the entry barriers and created the possibility for self-directed, smartphone-based investors to take advantage of opportunities in the marketplace.

Italy, on the other hand, has witnessed the rise of platforms such as Fineco, Directa, and more recently eToro that cater to the younger retail traders, but still lags behind the U.S. both in terms of trading volume and number of users⁶⁰.

4.4 Regulations in the Italian Financial Market

The Italian financial market is regulated by two primary bodies: the Bank of Italy (Banca d'Italia) and the Commissione Nazionale per le Società e la Borsa (CONSOB).

⁵⁷ Euronext. (2021). Euronext completes acquisition of Borsa Italiana Group.

<https://www.euronext.com/en/about/media/euronext-press-releases/euronext-completes-acquisition-borsa-italiana-group>

⁵⁸ OECD. (2023). Equity Market Development in Europe: Trends and Statistics.

<https://www.oecd.org/finance/Equity-Markets-Europe-2023.pdf>

⁵⁹ CONSOB. (2023). Report on Retail Investors and Financial Markets.

<https://www.consob.it/documents/46180/46181/report-retail-investors-2023.pdf>

⁶⁰ Il Sole 24 Ore. (2022). Trading online, boom tra gli under 30: ma il numero resta lontano dai dati USA.

<https://www.ilsole24ore.com>

The BoI aims to ensure monetary and financial stability, both indispensable conditions for lasting economic growth. As a national central bank in the Eurosystem, the Bank carries out the duties assigned to it and participates in the decisions made on the single monetary policy of the Euro area. Foreign exchange operations may be conducted in compliance with the guidelines established by the Eurosystem. It oversees its own foreign exchange reserves as well as some of the ECB's on its behalf.

One of the most important duties the BoI is responsible for is the production of the quantity of euro banknotes established by the Eurosystem, thus supervising the currency in circulation and fighting counterfeit. In particular, Italy's Financial Intelligence Unit (FIU) was established at the Bank of Italy, and as an autonomous body, its aim is to combat money laundering and terrorist financing.

Being the national supervisory authority, the BoI has to ensure the safe and prudent management of intermediaries, as well as the overall stability and efficiency of the financial system according to the rules and regulations of those subject to supervision⁶¹.

CONSOB is the supervisory authority responsible for the Italian financial products market. Its main activity is to protect investors and promote efficiency in the market, as well as the transparency and development of the market.

In order to achieve these objectives, CONSOB regulates the provisions of investment services and activities by intermediaries, and the reporting obligations of the companies listed on regulated markets. It monitors and sanctions the entities that are not transparent nor have a good conduct in the market. It checks the information made available to the market by entities launching appeals for public investment, and ascertains any anomalous trends in the trading of listed securities, especially to verify violation of regulations on insider trading and market abuse⁶².

At the European level, on the other hand, there exist regulations such as MiFID II, Second Markets in Financial Instruments Directive, and the MAR, Market Abuse Regulation, that

⁶¹<https://www.bancaditalia.it/compiti/vigilanza/normativa/index.html?com.dotmarketing.htmlpage.language=1>

⁶² <https://www.consob.it/web/consob-and-its-activities/activities>

are directly applicable to prevent practices like insider market trading and market manipulation, while also giving a standard regulatory framework to member states⁶³.

Even though the current framework is somewhat stringent, there are significant obstacles when it comes to applying it to the behaviour of retail investors, particularly in the context of online forums. In contrast to the United States, where the GameStop incident revealed regulatory flaws, mass-coordinated market activity fuelled by social media has not yet put Italian regulation to the test. Even EU-level regulations, according to legal experts like Professor Maume, are ill-prepared to manage the dynamics of anonymous, decentralised trading⁶⁴. The challenge of demonstrating purpose or manipulation in viral, meme-driven operations that may more closely resemble activism or collective mood than fraud highlights this disparity.

Furthermore, the environment for rash retail speculation may be further restricted by Italy's conservative investment culture and the more stringent financial literacy standards placed on intermediaries. For example, MiFID II requires platforms to perform appropriateness assessments and issue risk warnings when customers trade complex instruments such as leverage products or derivatives—practices that were not consistently in place in the United States at the time of the GameStop saga⁶⁵.

Overall, the current regulatory environment, market culture, and platform design serve as a filter that reduces the likelihood of a GameStop-style event occurring spontaneously in the Italian context, even though the infrastructure to support retail investing is present and still expanding.

Some personalities have gained influence through educational content targeted at retail investors, even though Italy lacks a digital financial community that is equivalent to r/WallStreetBets in terms of scope and tone. One of the most well-known financial educators in the Italian digital scene is Davide Marciano, the creator of the Affari Miei platform. His podcast, YouTube channel, and blog all advocate for long-term investing

⁶³ CONSOB. (2023). La vigilanza sui mercati finanziari in Italia. <https://www.consob.it>

⁶⁴ Maume, P. (2023). The GameStop case and capital markets law: The limits of EU market abuse regulation in the age of social media, in C. Godwin (Ed.), *Technology and Global Finance*, Edward Elgar Publishing.

⁶⁵ European Securities and Markets Authority (ESMA). (2022). MiFID II and Investor Protection: The Role of Suitability and Appropriateness Requirements. <https://www.esma.europa.eu>

methods, financial independence, and the usage of inexpensive products like exchange-traded funds (ETFs)⁶⁶. But in contrast to Keith Gill, whose internet persona contributed to a high-risk, community-driven stock boom, Marciano takes a more cautious stance, opposing speculative trading and supporting wise financial choices.

Marciano's growing audience signifies a rising interest in personal finance among Italian retail investors, but it also highlights a significant cultural difference: Italy's online financial voices tend to prioritise education over activism, and discourage rapid, emotionally driven investment behaviour.

4.5 Case studies in the Italian Market

Even though there has been no event in Italy that has gained the same visibility and reached the same high scale of GameStop short squeeze, there have been a few market episodes that show comparable characteristics, in particular in relation to retail investor-driven volatility, hype-fuelled speculation, and low-cap stocks influenced by media narratives or online chatter.

CASE FOCUS: TISCALI

Tiscali S.p.A., founded in 1998 by Renato Soru, was among the first Italian companies to position itself at the forefront of innovation in internet technology, fixed-line telephony, and IT services. Riding the wave of liberalisation in the telecom sector, Tiscali challenged Telecom Italia's monopoly and rapidly became a symbol of the so-called "New Economy" in Europe.

During the Internet bubble of end of 1990s – beginning of 2000s a lot of attention was drawn to Internet companies' valuation, attracting both market participants and academics. In particular, during the peak that happened in March 2000, these IT firms were able to compete with older and more established companies, thanks to the extraordinary high levels of valuation they reached. The expansion of the new Internet industry at the time was primarily responsible for the sharp rise in stock market values. Numerous announcements of corporate name changes to Internet-related dotcom names

⁶⁶ Affari Mieì. (n.d.). Chi è Davide Marciano. Retrieved from <https://www.affarimiei.biz/chi-e-davide-marciano>

were met with significant positive stock market reactions. The total anomalous returns for the ten days preceding the announcement day were as high as 74% due to this "dotcom" effect⁶⁷.

Tiscali's IPO is the most characterising example of the impact of the "new economy" on in the Italian landscape. Regarding IPOs, the amount of information available to the management of the company and the investors is very asymmetric. Investors usually rely on heuristics, namely rules of thumb that help in decision making. This asymmetric information lead to the "bandwagon effect", meaning that investors will prefer to buy stocks of those companies that recently went public, thus have already attracted many other investors. This is a form of social proof in which the tendency of people to show interest in, or to purchase, popular items in order not to feel guilty in case of erroneous choice.

Tiscali went from being a tiny Italian telecom business to dominating the European internet market in just over a year. The company created a sophisticated business plan that combined the structure of contemporary Internet service providers (ISP) with that of telecom businesses. It was challenging to assess such a business, and analysts expressed concerns about the challenges in determining the worth of internet enterprises.

Additionally, Tiscali was a startup, and valuing new businesses is undoubtedly more challenging than determining the worth of established businesses, particularly in the high-tech industry. In these situations, it might be challenging to accurately determine how the business could advance its creative concepts to generate future market and growth opportunities, and ultimately cash flows. Tiscali's short-term financial results were poor because of the large expenditures on marketing and IT, as is frequently the case with high-tech businesses. However, the corporation spent a significant amount of money on merger and acquisition (M&A) deals, which is a crucial part of the entire narrative. Additionally, the corporation, like other online companies, frequently changed its organisational structure and economic model during those years, making the work of analysts much more difficult. Their difficulty in assessing Tiscali was therefore warranted.

⁶⁷ Cervellati, E. M. (2008). Analysts' distorted valuation of hi-tech stocks. Retrieved from <https://www.researchgate.net/publication/289016282>

Psychological factors also significantly influenced analysts' assessments as well as the decisions made by the company's top management.

Using conventional financial valuation techniques, analysts were not always able to articulate the true ramifications of Tiscali's acquisition and investment choices. In order to determine the worth of the so-called "New Economy" enterprises, analysts frequently favoured using "new valuation methods" that were in use at the time. Instead of cash flows, the new fundamentals for valuation were the quantity of subscribers and the possibility for growth. Naturally, as the market subsequently determined, these factors were not always connected to the company's worth. Finally, in relation to the event analysis, special focus has been placed on confirming the market's response to Tiscali's acquisitions and investment choices as well as to changes in recommendations⁶⁸.

On 27 October 1999, Tiscali was listed on the Nuovo Mercato segment of Borsa Italiana with an IPO price of €46. The following day, the stock closed at €73—an increase of nearly 60% in a single session. Retail investors, inspired by the tech rally in the U.S. and convinced by the early surge, rushed to buy shares. Within just five months, by March 2000, the share price had reached an astonishing €1,197, an increase of nearly 2,500% from its IPO price. For a brief period, Tiscali's market capitalisation soared to €18 billion, even overtaking Fiat, which was valued at €13 billion at the time⁶⁹.

On the one hand, the computation of Tiscali's underpricing at the beginning is trivial since it is given by the difference between the closing price on the first trading day and the offer price. On the other hand, a precise calculation of the market return is needed in a long run analysis in order to define the abnormal returns.

Every report released from the IPO date till the first half of 2001 has been examined by Cervellati. The reason to cease examining reports within this time frame is because on April 25, 2001, Tiscali announced its final significant acquisition to take the lead in the European internet market; the target firm was Line One. The most pertinent reports—those pertaining to M&A deal valuation—have received more attention⁷⁰.

⁶⁸ Ibid.

⁶⁹ <https://davideberti.it/blog/la-new-economy-italiana-e-il-caso-tiscali-storia-di-una-bolla-made-in-italy>

⁷⁰ Cervellati, E. M. (2008). Analysts' distorted valuation of hi-tech stocks. Retrieved from <https://www.researchgate.net/publication/289016282>

Table 4: Main European acquisitions made by Tiscali by date of deal announcement

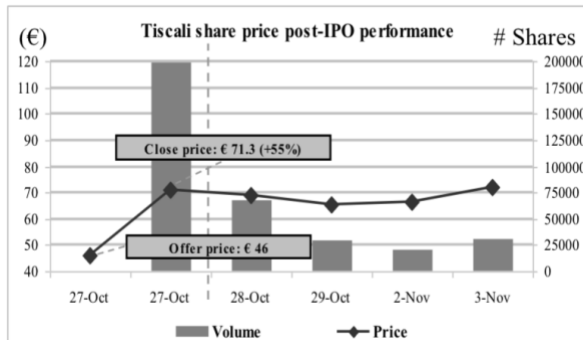
Date	Company	Sector/Type	Nationality
23/12/99	Nets SA; A Telecom SA	Telecom	French
14/01/00	Datacomm AG	ISP	Swiss
24/01/00	cd-Telekomunikace	Telecom	Czech
03/02/00	Ideare Srl	Internet	Italian
10/02/00	Link line	ISP	Belgian
25/02/00	Nikoma Beteiligungs GmbH	Telecom	German
13/03/00	Interweb SpA	ISP	Belgian
12/05/00	Quinary	IT	Italian
07/09/00	World Online	ISP	Anglo-Belgian
20/12/00	Addcom	ISP	German
08/01/01	Liberty Surf	ISP	French
12/02/01	Excite Italia	ISP	Italian
12/04/01	Planet Interkom	ISP	German
24/04/01	SurfEU	ISP	German
25/04/01	Line One (Springboard Internet Service Ltd)	ISP	British

Cervellati, E. M. (2008). Analysts' distorted valuation of hi-tech stocks. Retrieved from <https://www.researchgate.net/publication/289016282>

Table 4 lists the company's primary acquisitions throughout the time under consideration. The majority of the publications in the sample concentrate on two transactions: the purchase of Liberty Surf and the merger with World Online. Analysts did not devote the same amount of attention to the other purchases.

The closing price of the Tiscali's stock was € 71.3, representing an underpricing of 55% with respect to the offer price of € 46, as shown in Figure 11.

Figure 11: Tiscali's initial underpricing

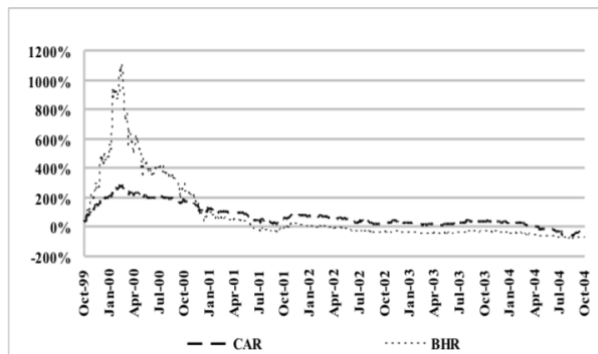


Cervellati, E. M. (2008). Analysts' distorted valuation of hi-tech stocks. Retrieved from <https://www.researchgate.net/publication/289016282>

Tiscali's case was not isolated in the Italian landscape. There were other IPOs in the Italian Stock Exchange that recorded high level of underpricing during the dotcom bubble. Finmatica (an Italian software provider for the banking sector that declared bankruptcy in 2004), for example, had an initial underpricing of +686.8%. The period 1998-2001 recorded the highest concentration of IPOs since the 1980s. The CARs

(Cumulative Abnormal Return) and the BHRs (Buy and Hold Return) were calculated according to 5-year time frame, starting from October, 27 1999 until October 27, 2004, as shown in Figure 12.

Figure 12: CARs and BHRs for Tiscali's stock in the five years after the IPO



Cervellati, E. M. (2008). Analysts' distorted valuation of hi-tech stocks. Retrieved from <https://www.researchgate.net/publication/289016282>

However, the collapse was as dramatic as the rise. Within days of reaching its peak, the share price halved. By the end of March 2000, it had returned to €40 and would continue to decline in the months that followed. Today, after mergers and restructuring, the company trades under the name Tessellis, with a stock price around €0.60—over 99% below its peak.

The Tiscali episode exemplifies a textbook speculative bubble driven by FOMO, excessive optimism, and narrative-driven investing. Investors were not analysing fundamentals, but chasing exponential returns seen in early tech stories like Amazon or Yahoo. While there was no coordination on digital platforms akin to Reddit, the psychological dynamics were strikingly similar⁷¹.

Importantly, the story of Tiscali illustrates the dangers of hype and momentum investing without proper risk planning. As some commentators observed, “those who bought at the top and didn’t sell by March 2000 never recovered their initial capital”⁷². It remains a cautionary tale: financial markets are not playgrounds for short-term speculation, but

⁷¹ <https://davideberti.it/blog/la-new-economy-italiana-e-il-caso-tiscali-storia-di-una-bolla-made-in-italy>

⁷² Ibid.

tools for long-term capital allocation. When approached without due diligence, even the most promising narratives can lead to irreversible losses.

Moreover, Tiscali remains one of the first clear examples in Italy of a narrative-driven stock surge, with investors buying into a vision of digital revolution rather than into traditional financial metrics. Unlike GameStop, Tiscali never faced criminal investigations or fraud accusations, but its rise and fall left a lasting mark on the Italian retail investing psyche—particularly among those who had trusted in the promises of a “new economy.”

Today, Tiscali still operates as a niche telecom player, far from the revolutionary promise it once represented. Yet its legacy continues to serve as a cautionary tale: market stories matter, but so do fundamentals.

4.6 Could a GameStop-style event happen in Italy? A data-driven assessment

Even while the retail investment scene in Italy has developed over the last ten years, the current institutional, legal, and cultural circumstances make a large-scale, Reddit-style speculative event unlikely.

First of all, cautious tactics are typically employed by Italian individual investors. Only 14% of retail portfolios in Italy were invested in stocks in 2023, compared to over 65% in nations like the Netherlands, according to the European Securities and Markets Authority (ESMA)⁷³. Government bonds and low-risk savings options are strongly preferred. The Italian Treasury raised around €14.9 billion in February 2025 through a retail-targeted "BTP Plus" bond, highlighting small investors' predominately risk-averse inclination⁷⁴.

Second, Italy's financial literacy is still lower than the OECD average. Persistent challenges in comprehending important financial concepts like compound interest, inflation, and risk diversification are highlighted in the European Investment Bank's 2024

⁷³ European Securities and Markets Authority (ESMA). (2025). Market Report – Costs and Performance of EU Retail Investment Products.

⁷⁴ Reuters. (2025). Italy Raises €14.9 Billion from New Retail BTP Bond.

assessment on Italian investor mood. In addition to discouraging active investing, this educational disparity lowers the probability of widespread impulsive or speculative conduct.

Thirdly, although online trading has become more accessible due to digital platforms like Fineco, Directa, and eToro, Italy does not have a unified online retail trading community like r/WallStreetBets. Financial discussions are typically dispersed over smaller forums or YouTube channels that prioritize knowledge above mobilisation. As a result, there is still little chance of widespread retail cooperation fuelled by digital feeling.

The Markets in Financial Instruments Directive II (MiFID II) and the Market Abuse Regulation (MAR), which compel brokers to do risk assessments and give regulators more tools to identify and stop manipulation, provide Italy with significant regulatory protection. Before granting access to leveraged or sophisticated instruments, Italian intermediaries must assess investor suitability, in contrast to the comparatively lax oversight that existed during the GameStop incident in the United States⁷⁵.

Finally, additional obstacles are imposed by the market structure of Italy. Compared to their American counterparts, stocks listed on Euronext Milan, particularly small and mid-cap companies, may have reduced liquidity and free float, which reduces the possibility of significant price swings caused only by retail activity. Furthermore, it is more difficult for specialist stocks to have a nationwide ripple effect in Italy due to the country's higher market capitalisation concentration, which means fewer companies control index performance.

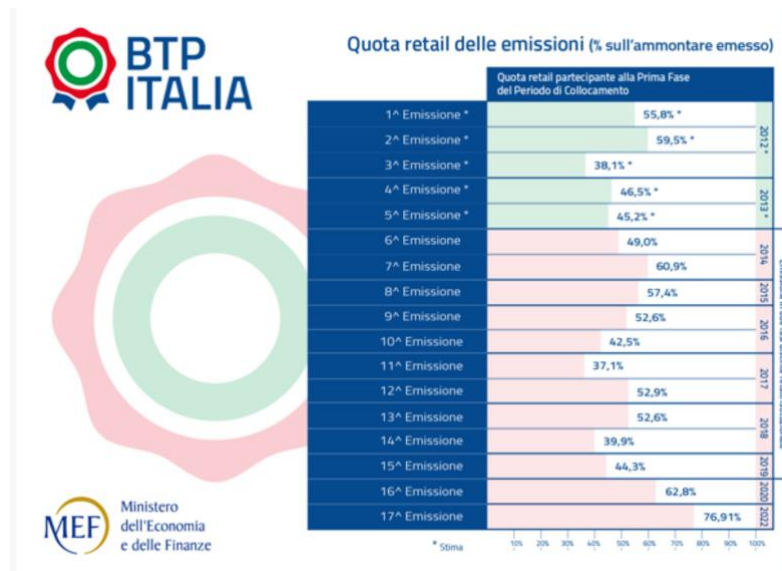
In conclusion, Italy now lacks the prerequisites for a GameStop-style occurrence, which include a high tolerance for risk, financial coordination via digital channels, and a lax regulatory framework. Irrational exuberance can happen, as seen by speculative surges like the Tiscali bubble, but these are still exceptional instances. However, future events could put this stability in jeopardy as digital engagement increases and financial education advances, necessitating ongoing scholarly and regulatory examination.

Strong participation in government bond programs, especially the BTP Italia (Buoni del Tesoro Poliennali), is another indication of the preferences of Italian retail investors, as

⁷⁵ Chambers & Partners. (2024). Equity Finance 2024 – Trends in Italian Regulation

shown in Figure 13. Retail investors have continuously shown a great deal of interest in these inflation-indexed bonds, which are intended especially for small savers.

Figure 13: Retail share of issues (percentage of the amount issued)



<https://www.corriere.it/economia/finanza/cards/btp-italia-nuova-emissione-novembre-come-funziona/apprezzamento-investitori-retail.shtml>

Retail investors accounted for a significant portion of all subscriptions in a number of recent BTP Italia issuances, sometimes exceeding 60% of total demand during public placement periods, according to statistics published by Corriere della Sera – Economia.

The Italian investing public's risk aversion is demonstrated by their considerable interest in government bonds. BTP Italia securities are seen as reliable, state-backed investments with steady returns, making them particularly alluring during difficult economic times. The speculative, high-volatility stocks like GameStop that became the centre of retail excitement in the United States stand in stark contrast to such choices.

Further evidence that Italian investors tend to see financial markets as tools for long-term capital preservation rather than short-term speculation comes from the constantly high retail demand for BTPs. A large speculative event, propelled by coordinated, high-risk

investing and viral social media narratives, is much less likely to occur naturally in the Italian setting as a result of this attitude⁷⁶.

4.7 Conclusion

Although Italy has the financial infrastructure required for retail trading, the investigation carried out in this chapter indicates that a speculative event such the GameStop phenomena is improbable at present time. The lack of mass-coordinated online groups, strict EU rules, and cultural conservatism in investment behaviour all serve as stabilising factors that reduce the likelihood of unplanned market upheavals.

The case study of Tiscali, however, show that speculative surges are not unusual in the Italian market; instead, they typically manifest in more narratively driven, less coordinated ways. Even in supposedly developed financial ecosystems, these instances emphasise the significance of keeping an eye on emotion, transparency, and risk literacy.

The retail investing landscape may change in the upcoming years due to the growth of digital trading platforms and the progressive financial empowerment of younger generations. According to the Consob Report on Retail Investing (2023), more than 35% of new accounts were opened using mobile platforms, indicating a rise in app-based trading, especially among millennial and Gen Z investors⁷⁷.

Furthermore, future studies should look at how Italy's changing market culture might adjust to the new participatory finance period, when financial behaviour is increasingly influenced by identity, emotion, and digital networks.

⁷⁶ Corriere della Sera – Economia. (2023). BTP Italia: nuova emissione e apprezzamento degli investitori retail.

⁷⁷ Consob. (2023). Report on Financial Investments of Italian Households. <https://www.consob.it>

Conclusion

The GameStop incident signalled a major change in the way that institutional tactics and economic indicators influence financial markets, as well as the emotion of the community, digital mobilisation, and the actions of individual investors. Fundamentally, the event demonstrated how technology can magnify social and emotional factors in financial decision-making, blurring the boundaries between collective action and logical investing.

I have examined the GameStop instance in this thesis to provide an example of broader systemic changes rather than market outliers. My plan was to demonstrate that behavioural biases like FOMO, herd mentality, and overconfidence are crucial, and they are frequently exacerbated by the echo chambers of online networks. Despite their

narrow focus, the regulatory responses made clear how vital it is to reconsider conventional approaches of supervision in light of community-generated trading activity and platform-driven speculation.

Using the Italian context as a starting point, I have investigated whether comparable processes might manifest in a financial environment that is marked by less platform interaction, more investor conservatism, and tighter regulatory filters. The structural, cultural, and institutional distinctions imply that a GameStop-like occurrence is less likely to occur naturally, even though examples such as Tiscali in the early 2000s show that speculative surges are not unusual in Italian markets. Additional safeguards include the lack of a vibrant, meme-driven investor community like r/WallStreetBets and the more stringent application of EU regulatory requirements (e.g., MiFID II).

The scene is changing, though, as seen by the emergence of digital influencers, the growing accessibility of investing platforms, and the generational shift in financial engagement. Future difficulties could arise from the convergence of digital narratives and investment options, especially if regulatory agencies are unable to adjust to the new trends in investor participation and identity.

To sum up, the GameStop instance offers a vital perspective for analysing the financial markets of the future, where technology, psychology, and regulation all interact in intricate ways. In an increasingly digitised world, it is essential to comprehend these intersections in order to construct inclusive, resilient, and equitable financial ecosystems as well as to predict similar occurrences.

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