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Investigating Financial Bubbles and Bursts: A Psychological Perspective

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ABSTRACT

This paper investigates the role of psychological biases in financial bubbles and their bursts, challenging the traditional view of rational investor behavior proposed by the Efficient Market Hypothesis. By examining historical bubbles like the South Sea and Dot-Com bubbles, and analyzing biases such as overconfidence, herding, and confirmation bias, the paper aims to reveal how these cognitive errors influence investor actions during crises. Additionally, this paper compares past bubbles with current cryptocurrency market trends. Ultimately, the aim of this paper is to enhance our understanding of investor psychology and its impact on financial stability in the economy.

Keywords: Behavioural Finance, Biases, Financial Bubbles, Dot-Com Bubble, South Sea Bubble

1. INTRODUCTION

Are human beings always rational? It has been observed throughout history that people do not base their decisions solely on logic. Instead, they tend to let their emotions, preconceived notions, and other opinions play pivotal roles when making judgements. In the context of financial markets, this idea is explored in behavioral economics. This field is generally concerned with deciphering the psychology behind economic decision-making, ultimately helping us understand different types of behavior in the market. One particular subset of this field is behavioral biases. As the name suggests, this concept refers to cognitive errors and beliefs that influence one's ability to manage information rationally. Notable examples of the same include overconfidence, herding, anchoring, and recency bias, most of which will be explored in this paper.

The existence of behavioral biases is starkly contrasted to traditional finance and the Efficient Market Hypothesis (EMH), both of which support the idea that investors are completely rational in their decisions, and unaffected by certain biases. With the emergence of behavioral finance theories, experts are better able to explain deviations from the norm – something that was not possible with orthodox ideas of finance. For instance, market anomalies are assets that perform contrary to the predictions of the EMH. Some well-known examples include the January Effect, Days of the Week paradox, and Sell-In-May Effect. Investor psychology also plays a key role during stock market crashes as it helps us understand the varied decisions that are made in a state of panic. By providing a more nuanced perspective towards different financial crises, behavioral economics helps close the gap between an ideal market and the real world.

Another example is a financial bubble – an odd occurrence that is a result of the price of an asset rapidly increasing, eventually reaching a point that far exceeds its intrinsic value. Although the exact cause of bubbles being created has not yet been identified, most economists believe that it is due to investors expecting exponential returns from certain assets. This is followed by a 'bubble burst', essentially referring to the stage where the prices plummet back down, creating a sense of panic and frenzy among investors. The 'burst' is generally a result of a change in investor psychology, and diminishing hope in the profitability of the asset. A financial bubble is one of the most common cases where one can see cognitive biases at play, largely

due to the high stakes, tense environment, and sense of uncertainty that are all generally associated with this period.

The aim of this paper is to thoroughly examine the different psychological biases that contribute to both financial bubbles and bursts. This paper seeks to understand and interpret investor behavior during the above-mentioned periods. In order to achieve these objectives, the paper will dissect a multitude of well-known financial bubbles throughout history, including the 'South Sea bubble and the 'Dot-Com bubble.' Furthermore, a comparison between the characteristics of past bubbles and the market for certain commodities in the present day will also be included. By doing so, this paper aims to draw parallels between the two, and eventually, make a prediction as to which markets today could possibly evolve into bubbles.

2. EFFICIENT MARKET HYPOTHESIS

Originally developed by Fama (1970), the EMH is a vastly debated topic in finance, and is the premise of various economic theories. This hypothesis is based on the idea that in a stock market that is efficient, stock prices reflect all the information about a given company at all times. In other words, markets make use of all the available knowledge to decide asset prices. Another key principle of this hypothesis is that markets adapt quickly to any new changes in information, and asset prices are adjusted accordingly. For instance, if the price of a stock is predicted to rise from $10 to $20 in the next few days, the EMH asserts that the price will rise today itself. This is because any bid below $20 will result in immediate profits. As a result, it is nearly impossible for investors to outperform the market or make abnormal profits. Since prices would not be overvalued or undervalued, investors cannot receive returns that are greater than the market average.

The EMH is categorized into three distinct forms: weak, semi-strong, and strong. The weak form posits that all historical information, such as past prices and trading volumes, is fully reflected in current asset prices. As a result, investors cannot rely on technical analysis, to gain an advantage and earn abnormal profits. This form of the hypothesis is the most widely supported by empirical studies and can be observed in certain markets. The semi-strong form of EMH asserts that stock prices reflect not only historical information but also all publicly available information. This includes accounting statements, company announcements, and any other information disclosed to the public. Under this form, investors cannot achieve abnormal profits through fundamental analysis since the information is already incorporated into asset prices. Lastly, when a market is efficient in the strong form, it means that both historical and public, as well as private information are all considered when the market sets stock prices. This implies that using privileged information cannot lead to abnormal profits. Although this may seem implausible, it is well-known that insider trading is illegal without regulatory approval. Therefore, access to private information does not necessarily give investors an advantage in the stock market (Malkiel, 1989).

The EMH relies on the idea that there is absolute information symmetry in the market, particularly in the strong form of the hypothesis. This implies that information, both public and private, is considered when assets are priced. This seems highly unlikely, weakening the argument in favor of the EMH. One might ask why, despite most empirical evidence being against it, is the EMH still an important concept in modern markets? One of the biggest advantages of this theory is that it is a tangible, concrete model for financial organizations globally, setting a universal benchmark. Behavioral finance, on the other hand, lacks the same which makes it difficult to standardize. Instead, it is better used to explain movements away from this very benchmark– such as financial bubbles. Hence, both of these theories are vital in order to explain changes in stock prices (Chatterjee and Nayyar, 2024).

3. FINANCIAL BUBBLES

Market bubbles have intrigued economists throughout history due to their unique characteristics and significant economic impacts. A bubble occurs when the price of an asset skyrockets far beyond its intrinsic value, often driven by the irrational behavior of market participants. Bubbles inevitably burst, leading to rapid declines in asset

prices and often triggering market crashes. Aliber, Kindleberger, and McCauley (2015) categorize the lifecycle of a bubble into five stages: displacement, boom, euphoria, distress, and revulsion. These stages illustrate how a bubble is shaped by the varying emotions experienced by investors during these periods.

In the displacement stage, a new innovation or event captures the attention of investors, leading to increased interest and investment. During the boom phase, prices begin to rise rapidly as more investors enter the market, driven by the fear of missing out (FOMO). Euphoria sets in as asset prices reach unsustainable levels, and speculative buying reaches its peak. The distress stage begins when doubts about the sustainability of the high prices emerge, causing some investors to sell off their assets. Finally, the revulsion stage sees a sharp decline in prices as panic sets in and investors rush to exit the market.

This section delves deeper into the theories of Aliber, Kindleberger, and McCauley (2015) and examines the historical details of two notable financial bubbles: the Dot-com bubble and the South Sea bubble. By employing Aliber, Kindleberger, and McCauley's (2015) proposed stages as references, this section will analyse the irrationality of investor actions during these bubbles.

3.1 South Sea Bubble

Frequently referred to as 'The Twin Crises', both the Mississippi Bubble in France and the British South Sea bubble are two of the first modern financial crises. In 1716, John Law, a Scottish fugitive, established the Banque Générale Privée (BGP) with government backing in France – a trading company and bank that worked similar to those in Britain. The business was hugely successful in gaining the support of investors, ultimately leading to its stock prices soaring. This was the Mississippi Bubble of France. On the other side, a group of businessmen aligned with an opposing political party, the Tories, noticed the success of Law's bank. These entrepreneurs decided to form the South Sea Company (Bruner and Miller, 2020).

One of the earliest market bubbles, the South Sea bubble was a speculative financial frenzy that affected England. It revolved around the British South Sea Company, which assumed a large amount of England's national debt in return for being awarded a monopoly on trade with Spanish America. Despite Great Britain being in a conflict with Spain that strictly prohibited trade at the time, the company was hopeful about earning massive profits once the situation got resolved. This created a significant opportunity for profit through trade, sparking investor interest in the South Sea Company's shares – the displacement stage of the South Sea Bubble had begun (Bruner and Miller, 2020).

During the boom and euphoric stages of the bubble, the South Sea Company actively promoted its stock, guaranteeing significant profits through its exclusive trading rights. As a result, there was an increase in demand for the company's shares, which sent share values over the roof. For instance, despite the South Sea Company having little actual trade with Spanish America, its shares increased from £130 in February 1720 to its highest recorded price of £1050 by June 25th of the same year. Particularly at its peak, the South Sea bubble saw investors buying shares not based on the company's actual profitability but on the expectation of further price increases. There were reports of people mortgaging their homes and selling their possessions to invest in these shares, solely due to the belief that prices would continue to rise indefinitely (Dale, Johnson, and Tang, 2005).

The South Sea Company decided to close its books for two months during the summer of 1720. When they finally reopened, the share price had dramatically fallen from £1050 to £820, before ultimately reaching a shocking low of £170 in October of the same year. This clearly indicated that the bubble had burst, and led to a market crash. This was most likely due to the fact that the company's financial reports revealed that its actual profits were far lower than what had been speculated. This realization sparked panic selling, ultimately causing share price to collapse rapidly (Dale, Johnson, and Tang, 2005). Finally, the stage of revulsion set in as the bubble came to an end. The British public

became agitated as the South Sea bubble burst, prompting Parliamentary investigations, a multitude of allegations and journalistic ridicule. However, The Bank of England's and British political institutions' guidance enabled the country's people to "forgive" modern finance and accept it as a fundamental component of the country's future (Bruner and Miller, 2020).

3.2 Dot-Com Bubble

Prior to the formation of a bubble, the economy is usually prosperous and is performing well. This was the case during the 1990s, in the United States, as well. With the implementation of an expansionary monetary policy and fewer legislations, the U.S. economy was on the upturn. At the same time, the technology industry was booming and more government funds were being allocated to this industry. These initiatives contributed to the displacement stage of the bubble, creating new opportunities and shifting investor attention towards internet-related technologies. The media also featured multiple stories that highlighted the scope of this new technology. For instance, in the month of May, 1993, Newsweek's cover article suggested that the digital revolution will give rise to a zillion-dollar sector. Other magazines, advertisements, and TV programs also praised this industry, using terms such as 'the techno-fad of the decade' to describe it. All of these factors combined ultimately laid the groundwork for the internet boom (Goodnight and Green, 2010).

The 'boom' phase of the Dot-Com bubble was characterized by a rapid expansion of internet startups and investments. On the 9th of August, 1995, Netscape launched an initial public offering (IPO) of the company after having developed 'Mosaic'-- the first web browser. This marked a significant moment where investor enthusiasm and valuations soared, as the IPO rose exponentially from a price of $28 per share all the way to $71. This trend continued for various other IPOs that followed Netscape's model, mainly due to certain behavioral biases that will be explored later in this paper. For example, the search engine Yahoo offered an IPO that traded up 152 percent on its very first day. The Dot-Com bubble reached the euphoria stage as investors were drawn in by the hype around internet stocks. In 1996, Alan Greenspan, the Chairman of the Federal Reserve Bank, popularized the phrase "irrational exuberance," which highlighted the euphoric mood in which traditional metrics were ignored in favor of expectations for future growth of internet companies (Goodnight and Green, 2010).

The fourth stage, financial distress, began to emerge as early as the year 2000 when doubts about the sustainability and profitability of internet companies grew. Many startups were rapidly losing cash without generating sufficient revenue, leading to a large number of bankruptcies and failed businesses. Stock prices of such companies plummeted as investors frantically tried to sell off their holdings, triggering a sharp decline in the market. For instance, selling picked up immense speed between March 10th and 13th in the year 2000. As a result, the NASDAQ opened about four percentage points down on March 13th, marking the largest percentage "pre-market"' sell-off of the year. This was a clear indication of the burst of the Dot-Com bubble, ultimately leading to a market crash. As for the final stage, revulsion, there was a period of skepticism towards the stocks and investments of internet companies that followed the burst of the bubble. This crash led to investors rethinking their investment practices and returning to more cautious valuation methods (Goodnight and Green, 2010).

4. DISCUSSING BUBBLES: A PSYCHOLOGICAL PERSPECTIVE

4.1 Behavioral Economics

Why is behavioral finance important for the economy? As discussed before in the paper, the EMH and other traditional finance theories are generally unable to explain anomalies, bubbles, and unusual cases in the market. Investors are often unaware of the biases affecting their behavior. However, if they recognize these psychological biases, they can make more rational financial decisions, thereby improving the quality of their choices (Dervishaj, 2021). So, what exactly is behavioral economics? It is defined as a field that acknowledges that investors are not always the

logical, rational individuals that conventional economic theory portrays them as. Instead, their decisions are affected by a multitude of other factors: emotional responses, behavioral biases, and social influences. The way investors think and feel influences their behavior in making investment decisions, and these effects are referred to as psychological or behavioral biases (Bhanu, 2023). By analyzing bubbles with the aid of biases, this section aims to explain the irrationality of financial bubbles and bursts in great detail.

4.2 Analyzing Biases in the South Sea and Dot-Com Bubbles

4.2.1 Herding

One of the most prominent biases that contributes to bubbles, herding behavior is present in both the formation of a bubble and its burst. By definition, herding behavior refers to when people, motivated by FOMO and the comfort of large groups, often follow the crowd without thoroughly evaluating the implications of their investment choices (Bhanu, 2023). There are a multitude of reasons as to why this bias manifests in individuals. For instance, humans naturally have a desire to be liked and 'accepted' by society. They might feel pressured to conform to the norm just to avoid being seen as an outsider. Another reason could be that people generally believe that if a large number of people are following something, it is most likely correct. In this case, one might believe that since everybody is investing in a particular stock, it must be highly profitable, and end up investing themselves. The latter is usually applicable to people that are new to the stock market and/or have very little knowledge about the same (Dervishaj, 2021).

So, how does herding behavior contribute to speculative bubbles? During periods of market exuberance, people tend to invest in popular assets and drive their prices exponentially, often to a level that cannot be maintained. This behavior exacerbates market bubbles by perpetuating positive feedback loops. This means that as investors receive huge returns, more people decide to invest in the stock, and this creates a never-ending cycle. Similarly, herd behavior also plays a part in the bubble burst. As investors begin losing confidence in the stock, they begin selling shares. This causes a wave of distress, prompting a surge of panic selling in the market, eventually leading to a crash (Bhanu, 2023).

This behavior is clearly visible in both the South Sea and Dot-Com bubbles. This is mainly seen by the surge in the number for people investing in the shares for both bubbles. For instance, the South Sea Company's share price rose from £130 in February 1720 to £1050 by June 25th, showing a £920 increase in the span of just five months. The share price then fell from £1050 to only £170 by October. Both the dramatic rise and fall of prices indicate herd behavior– the numbers suggest that a large number of people were buying and selling shares at the same time. As for the Dot-Com bubble, a study conducted by Singh (2013) provided two different findings. First, herding for all stocks increased during the Dot-Com boom compared to previous times. Secondly, herding for internet stocks increased relative to other stocks during this time.

4.2.2 Overconfidence Bias

Another major behavioral bias, overconfidence is one the key reasons for the formation of a speculative bubble. In general, overconfidence bias is a cognitive bias in which people tend to overestimate their own abilities, knowledge, and judgment. It can lead to individuals making poor decisions based on a false sense of confidence, and they often disregard evidence that suggests otherwise. Overconfidence is caused by both the "illusion of knowledge" and the "illusion of control". The former refers to the false belief that having more information always leads to greater level of knowledge, while the latter describes the perception that one has greater control over an event and its outcome than is actually the case (Baldini, 2023). In the context of financial bubbles, overconfidence bias may lead to investors overestimating their ability to predict future market movements or their understanding of a particular asset. In fact, there is a positive correlation between overconfidence and the volume of trading in the market. Such surges in trading volumes, driven by speculative trading rather, can ultimately contribute to a bubble.

For instance, the South Sea Company was able to sell its shares at increasingly higher prices, mainly

due to the overconfidence of investors who believed that the company's success was assured. This was despite the fact that the South Sea Company had very little trade with Spanish America in reality. Many were oblivious to the bubble's inevitable burst because of their overconfidence in their financial sense and the company's prospects, which caused massive financial losses when the market crashed. During the Dot-Com bubble, investors had excessive overconfidence about the profitability of internet start-ups. As a result, they heavily invested in companies with unproven business models, leading to inflated stock prices. When the bubble burst, the reality of these companies' financial instability became apparent, resulting in significant losses for many investors.

4.2.3 Confirmation Bias

A psychological phenomenon explains why people tend to exclusively seek information that validates their own ideas, confirmation bias can also contribute significantly to speculative bubbles. Not only do people look for information that supports their points, they often disregard information that offers a contrary viewpoint as well. Hence, it influences investor views and how one makes decisions, leading to irrational behavior and choices that are not optimal (Dervishaj, 2021). In terms of financial bubbles, investors may become fixated on positive news about a certain asset class during this period. They could ignore alerts concerning overvaluation because they think the asset's value will keep rising indefinitely.

During the South Sea bubble, people carelessly overlooked the fact that the South Sea Company was making very little profit due to trade restrictions with South America. Instead of looking at the company's financial statements or records, individuals chose to simply listen to speculation about the company's potential for success. This led them to continue investing in the stock because this filtering of information created a false sense of profitability of the company. Similarly, investors chose to listen to the few successes of the Dot-Com boom, and not the numerous failures that took place. Even media outlets exclusively spread positive narratives during this time, while the loss of revenue, closure of businesses, and scams did not receive nearly as much coverage.

4.3 The Cryptocurrency Market: A Modern Bubble

In recent years, the advancement of technology has made cryptocurrency hugely popular as an alternative form of money. In simple terms, cryptocurrency is a type of digital currency that uses cryptography for security and operates independently of a central authority, such as a government or financial institution. In 2008, Bitcoin, a form of cryptocurrency, was launched as a form that would allow payment between two parties. This set off the displacement stage of the bubble, as seen time and time again with others in the past. By 2011, one Bitcoin became worth $1, despite many studies saying that bitcoin has no real value. It started receiving huge amounts of press, as is characterized by the boom stage, although not all of the press was necessarily good. As people became more interested, the price of one bitcoin rose all the way to $30 in the same year, before crashing down by 93% due to a security breach. This trend continued for a couple of years, as the price continued to rise and fall, causing Bitcoin to be viewed as extremely volatile (Koehn and Cekuls, 2019).

By December of 2017, the Bitcoin's price reached a peak of $19,783, signaling the euphoric stage. In 2018, some people had hopes that the price would continue to rise and hence, held off from selling. However, most users decided to sell while they could, and the price steadily dropped all year, ultimately declining by 75% to $3,674. This signaled the inevitable burst of the Bitcoin bubble. Through various studies, researchers have been able to observe herding behavior, overconfidence, and loss aversion in this market. Many of these biases have been identified in past bubbles as well, reinforcing the idea that bubbles will often recur, as history demonstrates (Koehn and Cekuls, 2019).

5. SUMMARY AND CONCLUSIONS

This paper presents a thorough examination of the ways in which psychological biases impact the emergence and burst of financial bubbles, posing opposing ideas to the more traditional finance theories. Through an examination of past instances like the South Sea bubble and the Dot-Com bubble, as well as an analysis of cognitive biases and

irrational behavior during these periods, this paper highlights their sheer importance in contributing to the formation and burst of bubbles.

Furthermore, this paper delves into a comparison analysis between previous bubbles and current patterns in the cryptocurrency market. In doing so, we conclude that although the factual details of each bubble may have been different, the underlying psychological principles of all are remarkably similar. This paper notes that, generally, in all bubbles, speculative excesses are still driven by overconfidence and herd mentality, and investor perception and decision-making are distorted by confirmation bias.

To reiterate, the ultimate aim of this paper is to enhance and build upon our understanding of behavioral biases in the context of financial markets. Understanding these cognitive biases is imperative in helping stakeholders manage the risks associated with financial bubbles. This paper helped in identifying and addressing the psychological variables that can cause irrational investment behavior. In addition to providing useful insights for investors seeking to make informed and rational judgments, this improved understanding also helps market regulators implement more effective rules for participants in order to avoid these speculative bubbles.

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