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Behavioural Economics and Investment Decisions: Analyzing How Psychological Biases Influence Individual and Institutional Investments

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Abstract:

The paper focuses on how psychological effects influence the ordering of investments with the help of the comparative analysis of the traditional and behavioral view on the matter. It analyses sentiments like overconfidence, herding, loss aversion, anchoring and confirmation both with the retail investor and the institutional investor. These biases complicate rational decision-making, hence destabilize markets, lead to inefficiencies and possible financial fiascos. The work also introduces ways to manage biases in the financial literacy process, such as financial education, technology-based interventions, and behavioral interventions. Studying the consequences of these biases, the paper stresses the necessity of employing a comprehensive approach to enhance investment and enhance the financial stability.

Keywords: Behavioral Economics, Psychological Biases, Investment Decisions, Overconfidence Bias, Loss Aversion

1. Introduction

What factors influence the investment patterns of individuals and institution according to their behavioral economics? It is in this area that behaviors and psychology are most relevant to economic actions in the way the individuals and institution invest. Consumer behavior of economic agents is often complicated and cannot be portrayed as rational. Instead, behavioral economists talk about behavioral concepts; tendencies to behave in a non-rational manner and to deviate from the norm. Such behavioral deviations are often observed when the individual and institution is in a highly emotional and uncertain situation (Puccio et al., 2022). Wherever there are financial and market decisions, institutional and individual investors are prone to biases that threaten their performance and choice in the right market. For example, such deficiencies in decision-making processes are capable of leading to non-optimal choices that can in turn cause severe risks to economies like bubbles, market crashes, liquidity crises, and currency devaluations. Owing to this, various strategies and policies on the investment approach can be put in place to minimize

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the risks of expensive errors which would jeopardize the market order (Grennan & Town, 2020).

This study seeks to explore the impact of behavioral economics on investment patterns, focusing on how psychological and emotional factors influence the decision-making processes of individual and institutional investors. By examining the ways in which cognitive biases such as overconfidence, loss aversion, and anchoring can lead to suboptimal choices, the research will provide a deeper understanding of the mechanisms behind financial decisions. Behavioral economics suggests that investors often do not act rationally, particularly under conditions of uncertainty or market volatility, which can lead to systematic errors in judgment. These errors have real-world consequences, including the creation of asset bubbles, crashes, or even financial crises. This study will also consider how these psychological biases are exacerbated by market conditions, social influences, and media coverage.

Furthermore, the study aims to identify strategies that can help mitigate these biases and improve investment outcomes. By analyzing existing behavioral models and their application in real-world financial markets, the research will suggest practical solutions for both individual and institutional investors to minimize the risks posed by irrational behavior. Additionally, understanding these behavioral patterns can assist policymakers in designing better regulations and interventions that promote more rational decision-making in the financial markets. In doing so, the research will contribute to a more comprehensive understanding of investment behavior, which can ultimately lead to a more stable and efficient economic environment.

2. Literature Review

2.1 The Foundations of Behavioral Economics

Behavioral economics focuses on the psychological factors that are often ignored in economic models that consider people as perfectly rational beings who always act in their best interests (Blake, 2022). Traditional theories that place heavy reliance on rationality brigades claim that investors do not prejudge risks and benefits but assess all existing information before concluding (Frase, 2020). On the other hand, this branch of economics gives explores ways in which this is not true, through concepts like Prospect Theory which explains that in reality people do not just consider the risk vs the reward, but rather the losses and gains and oftentimes this leads to illogical beliefs (Ferro et al. 2021). For example, one such bias is illustrated by loss aversion which explains that the pain from a loss is twice as harrowing than the pleasure collected from a gain discouraging behaviors associated with the rational choice theory.

Probably heard of Prospect Theory, it is one of the reasons for understanding Galletas irrationality when risks come into play. Jain et al. (2023) observed that thinking, feelings, and standard shortcuts to making quick decisions can result in a wide range of abnormal decision-making processes. Thus, there may be a 'boom and bust' type of investing behavior in which people buy a stock after any price increase no matter how small, which is a cause of nervousness and often leads to selling out investments well before the target value is reached (Phillips & Pohl, 2021). These effects are even stronger in financial crises, where anxiety and fear are so high and such behavior results in poor decisions. In this way, behavioral economics, in conjunction with psychological economics, addresses the problem of economic behavior in its relation to economic decision-making by showing how specific actors, including but not limited to the institutions, conduct themselves in the arena of economics (Hanlon et al., 2021).

2.2 Investment Decision-Making: Traditional vs. Behavioral Approaches

The Efficient World Capital Markets theory does not pose any issues in selecting the optimal portfolio for investment. According to Tan et al. (2024), it claims correctly that all information related to the prices of assets is contained in those prices only, thus making any attempts to forecast wrongly the prices, impossible. Tang (2021) states that the efficient market hypothesis assumes investors make decisions based on information available at that point, and therefore, they cannot enhance their returns above the economic profits level of the system. This model holds that financial market price changes are stochastic and there is no autocorrelation of such changes with past price data such that observed price changes in the past would not assist in predicting price changes in the future.

According to EMH, while some theoretical and real arbitrage may be discovered in some spans of time, no one can keep on earning them including the investor. There are however behavioral economics that fits challenges this postulate by proving that some investors do not behave rationally and manage to ignore the information. This irrationality takes the form of biases like anchoring where persons cling to a certain unconnected number, for instance, the purchase price of an asset, and adjust it very little when the real figure comes (Dunham et al, 2022). In the same way, confirmation bias inspires investors to look for information only that is congruent with what they believe and to do away with evidence that disproves it (Tanesini, 2020). Such biases are in direct conflict with the efficient market hypothesis as they show the existence of

dislocations in the markets for instance during the time of asset price bubbles and market crashes where prices have a huge disconnect from the fundamental value as a result of the investor temptation to emotions of fear or greed.

2.3 Institutional and Individual Investors

A notable division of labor can be noticed between individual and institutional investors, and both experience some cognitive biases though the forms of those biases and their impacts differ altogether. Within the class of institutional investors consisting of pension fund managers, hedge fund, and mutual funds managers and the likes, the market is generally perceived to be at a higher level as regards the availability of resources, tools and the competence of the professionals (Dopierała et al, 2020). Nevertheless, such levels of sophistication do not eliminate the ordeal of psychological barriers they experience. Because institutional investors are usually subject to layers of supervision from shareholders, boards of directors and clients, and time constraining work demands they tend to over chained. These situations open up room for groupthink tendencies and herding behavior where unconnected investors follow the actions of others and create artificial trends that are akin to market Ponzi.

In contrast, individual investors are easily swayed by emotional and psychological aspects when it comes to making investment decisions. They do not have the same advantages as institutional investors and thus tend to overreact to price fluctuations and to biased articles and news in the mass media and make overpriced skimpy decisions (Alzoubi & Aziz, 2021). Such reactionary actions produce a cycle of buying and selling which involves large transactional costs and often leads to the implementation of an inefficient trading system. Individual investors also face the problem of loss aversion which compels them to close a winning trade out of greed, while holding on to a losing trade in hope of a recovery bull market, even when common sense and market conditions dictate otherwise. This tendency to hold onto negative behaviors can hinder them from rebalancing their portfolios and growing their investments over time.

3. Key Psychological Biases in Investment Decisions

3.1 Overconfidence Bias

The overconfidence bias has a prevailing impact on both retail investors and institutional investors as it makes them buy into the idea that they would be able to forecast the markets. This leads them to on many occasions take unnecessary risks and in some instances to active bets which in the long run wear out possible returns as a result of very high transaction costs and poor timing. As shown in the radar chart below where the level of overconfidence is compared over different markets, this syndrome is common to both individual and institutional investors, though it presents in them in different forms.

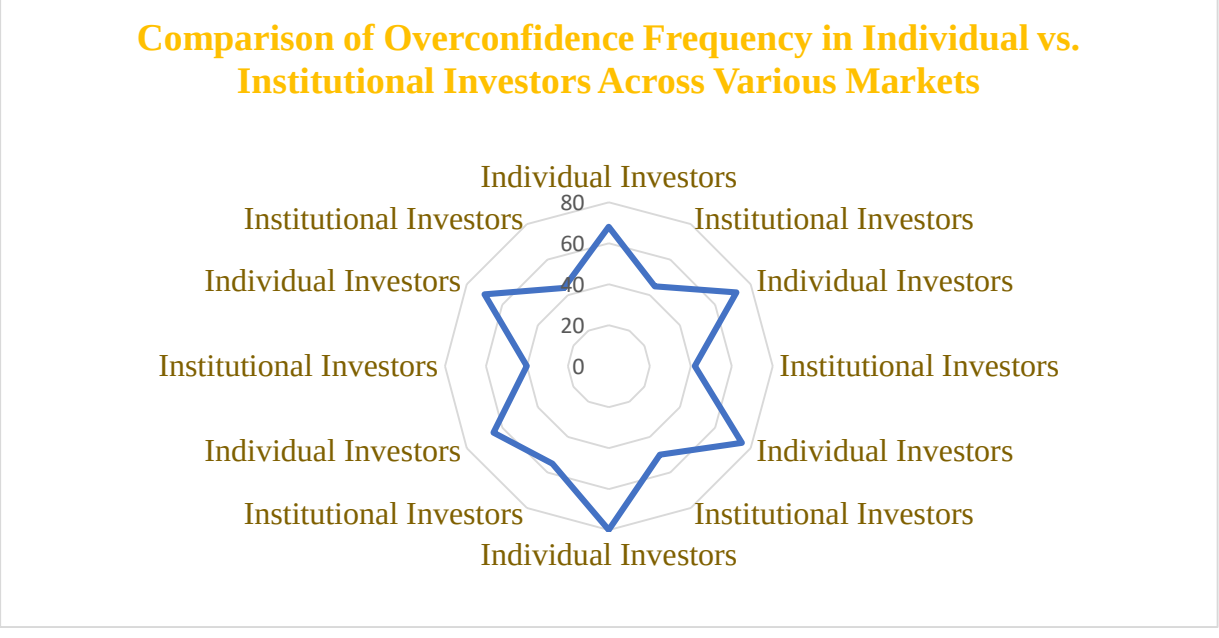

Fig 1: Comparison of Overconfidence Frequency in Individual vs. Institutional Investors Across Various Markets

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While that is the case, overconfidence with retail investors is often exhibited as a movement with the market leading them to buy or sell for short time horizons far too often. It is evident in the chart however that the institutional type of an investor's tendency to overestimate their abilities does not arise from pure hubris. Such belief may at times produce better decisions; however, it also leads to an illusory superiority. As a result, institutional investors tend to ignore the risk as noted by Karki et al. (2024) and embrace strategies that tend to put the portfolio at risk greatly increasing the volatility of the portfolio.

As such, the radar chart indicates that overconfidence is not only present among investors of one type, it is rather an omnipresent factor that adds to the instability of the market. The results indicate that this bias is equally likely to be experienced by both individual and institutional investors. This revelation indicates that there are no safe investors. Investors of whatever means can be afflicted with overconfidence, which can make them take actions that undermine the market equilibrium especially in high turbulence periods. In doing so, the radar chart demonstrates in a very striking way how the influence of overconfidence is experienced in different market investors.

3.2 Herding Behavior

The phenomenon of herding is another bias that impacts investors both at the individual level as well as the institutional level, and is more prevalent among the latter. This psychological factor encourages investors to imitate others rather than assess information on their own, which in many cases leads to the creation of asset price bubbles. This is the impact of herding in this case represented by the bubble chart which plots important historical events concerning specific market values from the year 2000 to 2023. Examples of those periods are the dot com boom in the late 1990s and the real estate bubble in the mid-2000s when investors managed to rationally binned all these risks and inflated the prices higher than they could outlive. In his studies, Aharon (2023) notes that this tendency is usually observed in many who disregard losses and risks and goes to the extreme of crowd's behavior when individual judgment is compromised. The persistent recession that followed also lasted for years and of course affected the majority of portfolios of individual investors and funds equally.

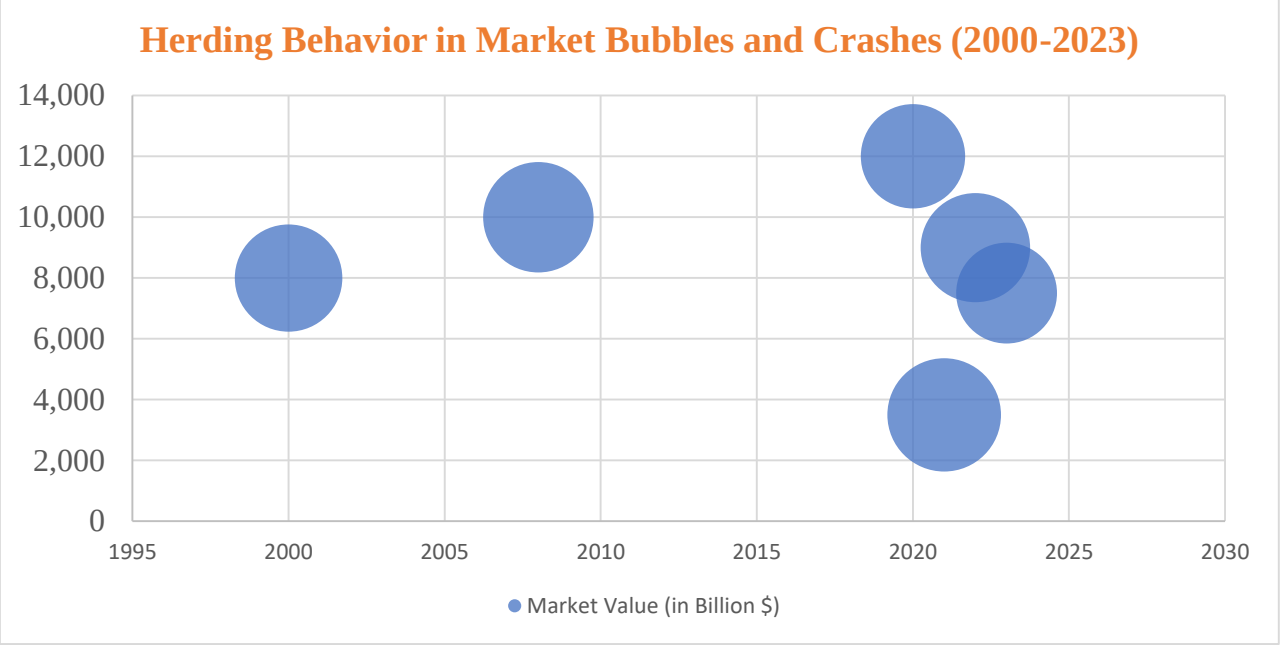

Fig 2: Herding Behavior in Market Bubbles and Crashes (2000-2023)

Institutional investors are not immune from the herding bias as they also suffer from the fear of losing face or are put under peer pressure. Consider for example how fund managers would tend to look for what their peers are doing and do the same in order to avoid being singled out whenever a particular strategy proves to be wrong. Fischer et al. (2020) assert that fund managers are concerned about the consequences of being different and not winning. This kind of behavior which prioritizes matching other investors over thin principles often results in faulty investments as crowd wisdom is resorted to instead of analysis. The chart above illustrates the position of institutional investors who like other investors; contribute to the reinforcing of the market particularly in bubbles. "Herding

behavior can drive irrational extremes in markets, as participants follow the crowd rather than independent analysis. This often leads to a cycle of fear and greed, destabilizing markets as investors collectively push prices higher during booms or exacerbate declines during crashes." This quote indicates the power of hysteria over market participants, which reinforces both extremes, and explains how it is that herding behavior, which is all pervasive, has the tendency to destabilize markets especially when they are in an irrational up or down phase.

3.3 Loss Aversion and Prospect Theory

As highlighted in the behavioral finance theories within the Prospect Theory framework, loss aversion shows how investors find it more important to avoid losses than to pursue gains. As Farinha and Maia (2021) report, loss aversion is the sensation that the majority of people experience loss more than they do gain. This becomes a problem since it makes people act irrationally, particularly when investors are at risk of losing investments. The investment performance charted between 2015 and 2023 also shows that, in stark contrasts to those suffering from loss aversion, who performed worse than this by striving to maintain their returns, those who did not have loss aversion were able to further enhance their returns, reaching the level of 140% by the year 2023. On the other hand, the investors influenced by loss aversion reduced their performance during the same period tackling an improvement of only 78%, which emphasizes the negative effects of this bias particularly on long-term returns.

Another example of loss aversion is what is known as the 'disposition effect,' which refers to the tendency of investors to hold on to losing stocks rather than realize a loss. Many investors, on the other hand, are said to limit their losses (the sale of a stock for a loss) because of Von Beschwitz and Massa (2020) sell at losses for fear of looking foolish in admitting by inaction that one made a bad investment. This often leads to a failure to invest the assets elsewhere in the hope of earning better returns. In the figure, it can be seen that loss-averse investors had a continuous downturn in returns, which was particularly evident after 2018, as it seems that the retention of poorly performing assets had a role in rounding off causing the value of the investors' portfolios to shrink.

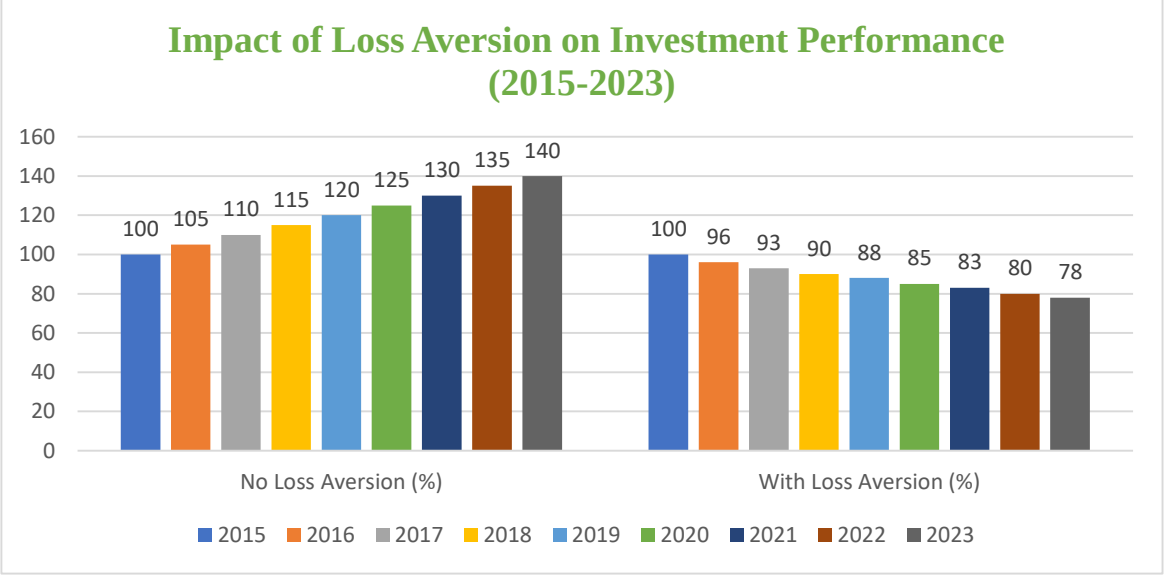

Fig 4: Impact of Loss Aversion on Investment Performance (2015-2023)

While both types of investors are susceptible to loss aversion, there may be different reasons for this. In the case of institutional investors, there is a propensity to keep below expected return assets only because it is better not to be blamed by investors for their 'poor' performance. This is detrimental to the growth of a portfolio as it prevents an improvement in the existing investment strategy in relation to the market due to change. Otuteye and Siddiquee (2020) observed that the tendencies towards aversion from losses created negative performance, as presented in the graph depicting diminishing returns that performance declines with time. These investors are stuck on those lines and suffer losses as there are opportunity costs in holding on these lines for too long, and the lines themselves also can extend low income periods in the portfolios. And the chart illustrates this causation in that the effect of aversion to losses leads to persistent underperformance erosion over time, rendering the such effective investment strategies."

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3.4 Anchoring Bias

The attachment to the first piece of information encountered, known as an anchor, is an impediment to sound judgment when making investment decisions for both individual and institutional investors. This tendency to anchor, which comes with many emotional and cognitive biases, often creates problems when investors start concentrating on the purchase price of a stock rather than its market price. Most, for example, would dislike selling shares that had lost value simply because the investors were anchored by a certain price at which they purchased the stock. This fixation results in a failure to devise new plans that are more suited to present circumstances, resulting in the suffered consequences of keeping unproductive stocks. As noted by Adelson et al. (2023), this also creates an additional bias of unsafe behaviors, or cycles of inaction, where the investors remain still since they believe the stock will decline and later return back to its original price except this time it will be too late, the market already moved on.

Institutional investors try to find ways past the anchoring bias but this often crops up as the need to apply precedent information in the present task. For instance, certain segments may approach their current strategies bearing in mind the previous up surge of a market cycle and forget the current phase. While these metrics may be useful, their excessive attention can trap institutional investors in strategies that are not appropriate for the current climate. As discussed by Bystranowski et al. (2021), over-reliance on outdated data can create inefficiencies within an organization since institutional investors would still pursue outdated trends without accommodating changes in the market.

3.5 Confirmation Bias

Investors are prone to confirmation bias whereby they only take in reinforcements of what they hold, hence affecting their ability to diversify. According to the figure, 60 percent of the investors practice tilting towards one region of investment, which is concentrated portfolio holdings, implying the unwillingness to diversify because of this bias. This is a generically applicable pattern among individual investors who tend to ignore the obvious signs of failure such as loss of stock value. Instead, such investors listen to the optimistic side of the news and continue holding those losing stocks. As pointed out by Philippas et al. (2021), this is dangerous since it can lead to huge losses since those investors do not change their position even when it is clear that there are changes in the information environment.

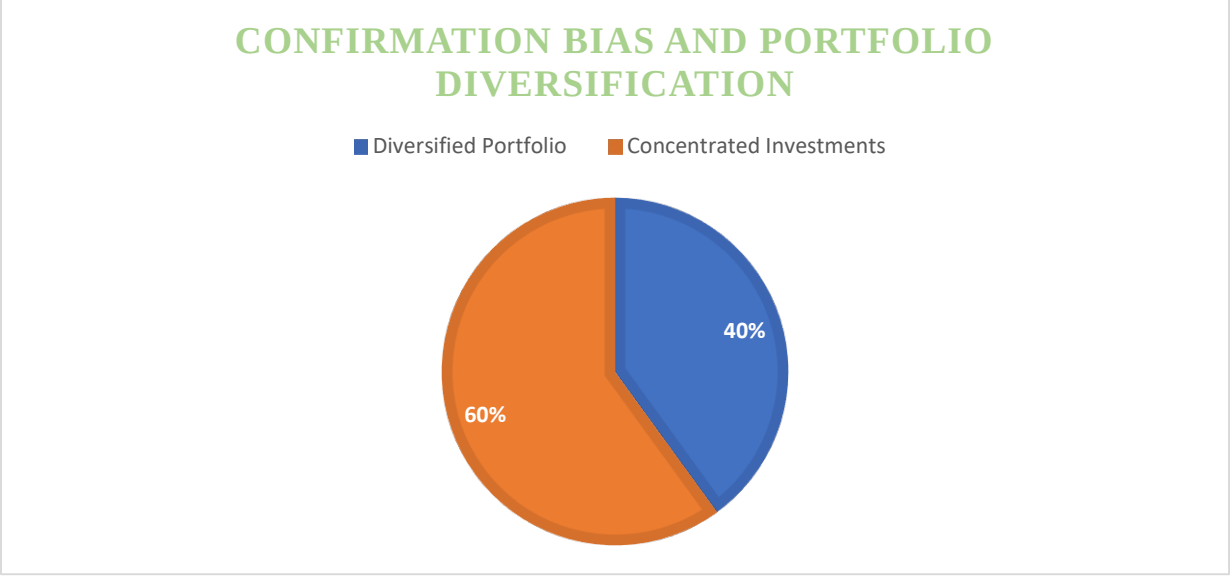

Fig 5: Confirmation Bias and Portfolio Diversification

Confirmation bias is also evident among institutionalized investors, especially in investment committees where group thinking is common. In such instances, the majority carries the day and anyone supporting the minority opinion is shunned. Athota et al. (2023) present that such behavior minimizes their healthy skepticism which makes the institution take actions based on only a slice of available data. This, as the figure demonstrates, shows that most institutional portfolios are concentrated and, so, the cause is probably the tendency not to branch out of the known. So as to overcome the effects of confirmation bias, there is a need for both individual and institution-

al investors to purposefully look for and accept diverse information and even disconfirm their beliefs. Such an approach has the potential of increasing diversification in their portfolios and minimizing the risk within the portfolio (Faugere & Stul, 2021).

4. Impact of Psychological Biases on Institutional Investment Decisions

4.1 Risk Management and Psychological Factors

In pursuit of returns, institutional investors are known to take calculated risks and make use of sophisticated factors and data analysis. However, in as much as there are such frameworks, the decision-making processes are affected by the human element that has biases that aggravate the management of risk. Neither institutional investors nor individuals are spared from overconfidence and herding both of which inhibit effective comprehension of the market and its associated risks.

Overconfidence may be described as a bias where individuals, investors in this case, institutions included, tend to assess their skills and ability to predict outcomes at a level higher than it actually is. This asymmetry in beliefs is even more apparent on the upturns of the markets. For instance, institutional investors are likely to encroach on riskier portfolios based on thinking that they possess some edge over others. Likewise, Albiston and Fisk (2021) argue that before the 2008 economic downturn, numerous institutional investors applied a poor assessment level and poured money into mortgage-backed derivatives, quite sure that the housing bubble will not burst. Individual investors as well are likely to take on too much risk in a bull market due to the perceived possibility of good outcomes. This overconfidence more often than not de levels both parties perceiving the possibility of a recession resulting in huge losses when the market reverses.

Herding makes risk management even worse because it leads investors to ignore their own judgements and merely follow the majority. As this behavior inhibits individuals who do not want to lose out and institutional investors who do not want to fall behind their counterparts, Gammon et al. (2020) elaborate that both types of actors in speculative bubbles are also prone to over optimism and go with the trends instead of standing against such unfavorable market conditions. For instance, in the boom of the dot-com bubble in the late 1990s, not only the general public but also investment firms invested heavily in IT stocks even when it was crystal clear that these industries shares were overhyped. In this light, herding behavior can drive the market volatility further, as the graph illustrates the Figure after the boom when the value increase was not just the speculation fake boom. When managing investing risks, all investors, both institutional and individual, have a strategy designed to give them the most returns, however, cognitive biases such as overconfidence and herding prevent these investors from managing the risks involved effectively. It is possible to improve on such investment approaches by eliminating these biases leading to bearing less risks and avoiding the types of expenses that in the past have caused problems within the two classes of people.

4.2 Corporate Decision-Making and Groupthink

Groupthink, a cognitive bias in which individuals neglect their critical reasoning and suppress other views within the group, tends to affect most institutional investors, especially in situations that require group decisions. Since most institutional investors work in teams, they are also more susceptible to group think. Rather than assess potential threats in an unbiased manner, the participants might focus on the need to resolve contradictions, which in turn contributes to poor investment selections. In all such situations, however, members are often expected to ignore contrary opinions in order to sustain group cohesion, which as a result, suppresses tolerance for other viewpoints. As Gershfeld and Sush (2023) explain, ‘asset managers often refrain from expressing an opinion that differs from the majority, as the current market view tends to exerts a strong influence on them.’

Despite those two situations, individual investors are not able to escape from groupthink either. Even if they are not engaged in formal committees, individual investors are still affected by the majority of their peers, as well as the media. They may subscribe to fads even if it makes little quantitative or qualitative sense, simply because they do not want to be the ones without such fad. For this reason, they make baseless, illogical decisions as they are rendered passive by the bullish crowd instead of being guided by their own critical thinking. As a consequence, both individual and organizational investors may well be victims of groupthink, underestimating dangers and subsequently incurring ponderous losses once those dangers become realities.

Whether operating within an organization or functioning independently, the threat posed by groupthinking reveals itself. While organizations may suppress opposing views to maintain consensus, on a personal level, a person may choose to ignore their own evaluation of the situation in favor of the general public’s opinion. These characteristics

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underline the importance of such a society adopting an enabling stance that encourages the expression of different opinions. By paying attention to groupthink, investors can make better decisions reflecting an understanding of risks and help avoid unnecessary losses.

4.3 Long-Term vs. Short-Term Investment Strategies

One of the age-old dilemma's institutional investors faces is the trade-off between short-term performance and sustainability in the long run. While institutional investors are supposed to think about their proposition's long-term and investment value, behavioural traits such as overconfidence and loss aversion tend to encourage them to act in a short-term manner. This shortsightedness in investing promotes undisciplined portfolio management and the creative destruction of investment values. Compliance managers, for instance, who carry out this policy, appear justified in adopting short-term approaches and practices within the organization. Organizational self-interest contributes to a manager's breach of a categorical imperative or policy instrument within a fund that restrains investment oscillation within a target range. Maslenikov (2002) believes that focusing on outperformance means taking an acceptable and justifiable loss externally. Therefore, it compels recipients to receive or reserve finances for temporary circuits in the markets. However, Ghani et al. (2023) note that such overconfidence is detrimental since it usually clouds the judgment of those who take unwarranted risks in their strategies. To achieve short-run targets, institutional investors may also pay less attention to the need to construct a viable and well-balanced portfolio capable of surviving the equity market slump. Such high-risk tactics often lead to heavy losses, especially during equity market downswings when many investors are panicking and exiting the markets.

An efficient mix of short-term and long-term investment strategies means institutional investors must be aware of and counteract behavioural biases. Overconfidence and loss aversion tendencies are some of the factors that affect decision-making, especially in the accessible market where short-term returns are the most competitive. However, institutional investors can avoid such risks by adopting a more consistent and longer-term focus in portfolio management, which is less susceptible to volatile market conditions while creating portfolios focused on achieving long-term real value. Furthermore, other changes within the sector, such as limiting focus on quarterly performance targets, could also assist in reducing the short-term syndrome in making investment decisions.

5. Impact of Psychological Biases on Individual Investment Decisions

5.1 Retail Investors and Behavioral Pitfalls

Specifically, the retail investors require more exposure to advanced instruments and are inherently vulnerable to the behavioural biases for which the institutional investors strive to avoid. Small individual investors are more likely to be influenced by biases like loss aversion and herding unlike large institutions they are likely to have at their disposal the relevant personnel and capital. Duxbury et al. (2020) also note these investors, using limited information and retain decision-making that is sensitive to their emotive reactions to price changes, often yielding unsatisfactory portfolio performance.

One of the biases that plague the retail investor most is the loss aversion bias. As has been postulated in the Prospect Theory, individuals are able to let a loss that is equal to the gain felt twice as bad (Sun et al., 2021). Small investors, unlike larger institutional investors, are not in the financial position to make up for their losses in the market; consequently, they hang on to their poor stocks with the hope that they will turn around in order not to suffer a loss. This "disposition effect|" means that they miss great chances to invest in better assets and thus the value of their investment drops even lower.

Other behavioural biases affecting retail investors include herding where people act as the rest, rather than individually come to their conclusion. Herding behaviour was more sharply revealed to the realised detriment in the 2008 Global Financial Crisis. Due to the heightened sense of risk, pertaining to herding theory, several retail investors immediately sold their stocks at a considerable loss when markets were low (Loang & Ahmad, 2020). Main reason being, retail investors are more likely to move in line with market trends, news, and charts, and also follow the crowd which makes them easily become victims of bubbles and exit when there is blood in the streets. These behaviours prevent them from making practical decisions that are positively long- term concerns within the investment forums.

Another reason for retail investors' behavioural vices is their lack of diversification in their portfolio. Lacking the adequate risk management measures like diversification, a retail investor puts all his trades in a small set of assets which can be disastrous when the market situation turns south. Such concentration is often attributed to complacency in identifying great stocks to invest in, and a blind spot towards investing in other forms of securities.

Research also reveals that retail consumers trade more

frequently as a result of the self-generated conviction that they can overcome market efficiency (Economou et al., 2023). But research shows that these investors get inferior realized returns because they are prone to making impulsive purchases and rash sales due to emotions that result from daily trading. more number of trades raises the cost associated with each trade while exposing the small investors to greater risks as they operate in what they consider short-term trends despite long term fundamentals.

5.2 Role of Emotions in Individual Investment Choices

Investor's decisions are influenced by emotions in a very huge way. Proper fear and greed employ emotional aspects, which depose all other aspects in the financial markets. Uncertainty leads investors to sell stocks during bear runs and invariably realizes profits. And at the same time, overconfidence drives large-scale purchases during bull runs in an apparently attractive return that does not exist. That sort of environment leads to ramping, which is expressed as buying high and selling low; an action that reduces the worth of an investment portfolio within the long run (Liu et al., 2021).

Fear tends to be more pronounced in investment decision-making during turbulent market conditions. For example, with falling stock prices, individual investors tend to panic and sell their positions, fearing more losses. While this is understandable, losses are usually realized because of the lack of consideration for a change in the trend. The visceral response to equity loss results in a rapid-fire mobilization coupled with the release of resources into an irrational strategy regardless of any thoughts about the appropriate market conditions. Researchers have shown that fear is one of the emotions that management is crucial to because it often makes individual investors quit a long-term strategy in place of a knee-jerk market stimulus response (Hampsher-Monk & Prieger, 2020).

From the inception of their discipline, behavioural economists have postulated that it is necessary to deal with fear and greed foremost to improve an individual's investment performance. One solution to this problem is to formulate a more rigid, inflexible, and extended investment performance appraisal period, favourably reducing the effect of the short-term behavioural biases of the market participants. Even the basic principles of asset allocation, which include diversification, prevent investors from the adverse effects of market fluctuations and from acting out irrationally driven impulses of fear and greed. Other approaches include incorporating automatic investment devices like robo-advisers that determine portfolio management solely based on models, thereby excluding the emotional aspect of decision-making.

6. Strategies to Mitigate Biases in Investment Decisions

6.1 Education and Awareness

Out of a wide range of strategies available for reducing the adverse effects of behavioural biases in investing, financial literacy and its promotion is the best option. Several biases, such as overconfidence, anchoring, and loss aversion, manifest themselves due to investors' ignorance that psychological aspects can interfere with their decision-making level. Once investors are informed about these biases, it is reasonable to assume that they can spot and escape them quickly during decision-making. This results in more rational and controlled investment behaviour. Teixeira et al. (2021) affirm that financial education can empower people to manage their investments within parameters that enable them to avoid psychological traps unique to investing. For instance, once retail investors learn to herd, they will likely assess market trends rather than mindlessly follow them.

Moore (2024) adds that even the enhancement of practical aspects of financial education contributes to the discipline of the investors as they are mindful of stopping the absence of activities during the reliant markets and abstaining from excessing when bikers rule the markets. Due to the changing nature of the markets and potential risks, continuous financial education for investors is important because it lessens the risk of ill-advised investment decisions.

6.2 Use of Technology and Algorithms

The advent of technology and algorithmic trading provides a way of controlling human inclination in the financial markets. On the contrary, Algos and robo-advisors use models that rely purely on data and make decisions based on pure number crunching, overcoming bias on aspects such as fear or over-expectation. This is a particularly effective means for both everyday and professional investors. Such systems are rules-based, meaning specific rules and trading strategies are to be followed, which help reduce emotional influence.

For instance, in the case of institutions engaging in high-volume transactions, algorithmic trading has helped address cognitive biases such as herding or overconfidence. According to Chang et al. (2020), the risks of undue dependence on market movement, especially by financial institutions, are reduced when data is analyzed and informed decisions are made using the models. Through

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such models, traders are less likely to make emotional buy or sell decisions since the models automatically carry out these tasks. The authors also observed that time can be an advantage, even within such systems, as data would be centralized for decision-making machines, which can also be referred to as time taken and speed processing machinations.

6.3 Behavioral Coaching and Professional Advice

The decision-making process among investors is highly influenced by psychological biases that almost always result in adverse outcomes, internal and external investors inclusive. This is evident with well-known biases, such as overconfidence, herding, loss aversion, anchoring, and confirmation, which distorts one's risk assessment and decision-making, which in turn helps bring about market volatility and sometimes even financial crises (Svetlova & Thielmann, 2020).

Moreover, through managing these biases requires a multifaceted approach combining education, technology, and behavioural training. Regarding this concern, institutional investors bear the burden of implementing more objective and systematic means of managing investment risk to avert the impact of groupthink and herding tendencies (Ali, 2023). In the same way, active investors stand to gain better insight into their emotional reactions to market happenings, as well as to self-apply computer systems for trading to reduce cognitive mistakes.

Fig 6: Mitigating Psychological Biases in Investment Decision-Makin

7. Conclusion

Summary of Findings and Implications

As this research yielded a number of key findings, the task is to analyze these findings and present the contributions of the study in terms its implications. It has been shown in this study the extent to which individual and institutional investors succumb to cognitive biases. Biases such as overconfidence, herding, loss aversion, anchoring and confirmation biases affect consistently individual investors causing them to make decisions which are irrational to the extent of endangering the financial systems. Therefore, it is noted that there is a need for focused measures to tackle these weaknesses and improve the level of rational thinking in decision making.

Strategic Interventions for Bias Mitigation

In trying to address these concerns, there is need for a combination of approaches. First, investor education is crucial because it makes awareness of cognitive biases and provides the investors the capacity to control such tendencies. Most importantly, fast-developing financial technologies especially AI and algorithmic trading provide effective mechanisms for controlling the influence of emotions in making financial decisions. These technologies promote structural processes based on data and slow down the rate of impulsiveness enhancing order in the practice of investments. Additionally, behavioral coaching is used to assist investors to defeat such biases and act in accordance to the wished behavior by offering the requisite psychological motivation, thus acting as an addition to the above mentioned techniques.

Final Thoughts on an Integrated Approach

In conclusion, addressing cognitive biases requires a comprehensive approach that integrates educational, technological, and behavioral interventions. By implementing these strategies within a cohesive framework, investors can make more informed, disciplined decisions, ultimately supporting the development of robust investment strategies and contributing to a more stable financial landscape. Moreover, a commitment to continuous improvement in bias mitigation techniques will enable investors to adapt to market fluctuations with resilience, safeguarding their financial objectives in an increasingly dynamic and tech-

nologically driven environment.

EPQ evaluation

Limitations

Finding a balance between the theoretical framework and cognitive biases practice was one serious challenge I faced in this research endeavor. The landscape of behavioral finance was complicated in that it also required a level of appreciation that at times proved difficult to extract from the voluminous works in literature. Other barriers included limited time for data analysis due to the extent of the research such that some cognitive biases could not be studied as earlier detailed. In spite of these constraints, the exercise was enriching and pointed to possibilities for further investigation.

Directions for Future Studies

With the speed at which financial technologies are advancing and being adopted in investment activities, future studies may consider investigating the relation between cognitive our methods of research and artificial intelligence. In particular, it could be interesting to analyze whether certain types of AI-based investing systems mitigate cognitive biases like overconfidence and herding or even induce new ones. In addition, understanding how investors make use of technology and the effects of automated decision making on them is most interesting as it shifts the focus to the effects on the behaviors of investors. There may be further cross-cultural ones so that it can be understood to what extent an investment decision of a particular bias in one country will not be made in other countries.

Reflections on EPQ Performance

In the performance of the Extended Project Qualification (EPQ), I would like to examine certain moments from my experience. I realized that when addressing complex notions, like loss aversion or anchoring bias, there is a need for careful planning for both the gathering and evaluation of associated information. This project went beyond expectations in that I was expected to analyze the given evidence, but also critically evaluate my inner assumptions regarding the actions of investors. The experience only served to emphasize the need to be flexible and adaptable because the research query that was set at the beginning, changed with the results of the investigation as well as the emergence of new issues. Such understanding contributed towards a more rewarding experience of behavioral economics and equipped myself with useful skills for academic engagements in the future that I would have not gained otherwise.

Personal Growth and Learning Outcomes

As a result of this project, I have come to admire the complexity of the investor's mindset, especially due to the effect of cognitive distortion on their decision making. Just by touching on the subject of behavioral finance, my ability to analyze has greatly improved, especially when dealing with mathematics and real-life situations. Also, this growth in development as a researcher has improved my cognitive process focused on finding solutions, which encompassed doing qualitative as well as quantitative data analyses. In the end, this engagement helped me not only grow academically, but also fostered in me an urge to resolve the issues that explain movements in the stock markets – the issues of the psyche. This paper has helped me build a solid basis on which I can pursue my future interests in finance both as an academic and a career.

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Appendixces

Appendix A: Frequency of Overconfidence Bias in Individual and Institutional Investors

Study/Market Segment	Investor Type	Frequency of Overconfidence (%)
Study 1 - US Market	Individual Investors	68
Study 1 - US Market	Institutional Investors	45
Study 2 - EU Market	Individual Investors	72
Study 2 - EU Market	Institutional Investors	42
Study 3 - Emerging Markets	Individual Investors	75
Study 3 - Emerging Markets	Institutional Investors	50
Study 4 - Tech Sector	Individual Investors	80
Study 4 - Tech Sector	Institutional Investors	55
Study 5 - Financial Sector	Individual Investors	65
Study 5 - Financial Sector	Institutional Investors	40
Study 6 - Global Aggregate	Individual Investors	70
Study 6 - Global Aggregate	Institutional Investors	44

Appendix B: Dataset: Impact of Loss Aversion on Investment Performance (2015-2023)

Year	No Loss Aversion (%)	With Loss Aversion (%)
2015	100	100
2016	105	96
2017	110	93
2018	115	90
2019	120	88
2020	125	85
2021	130	83
2022	135	80
2023	140	78

Appendix C: Dataset: Herding Behavior in Market Bubbles and Crashes (2000 – 2023)

Bubble/Crash Event	Year	Market Value (in Billion $)	Herding Score (1-100)
Dot-com Bubble	2000	8,000	85
Housing Market Crash	2008	10,000	90
COVID-19 Market Dip	2020	12,000	80
Cryptocurrency Bubble	2021	3,500	95
Tech Stock Bubble Burst	2022	9,000	88
2023 Banking Crisis	2023	7,500	75

Appendix D: Dataset: Confirmation Bias and Portfolio Diversification

Portfolio Type	Percentage (%)
Diversified Portfolio	40
Concentrated Investments	60