Proceedings of the 2nd International Conference on Business and Policy Studies
DOI: 10.54254/2754-1169/8/20230292

The Impact of Investor's Overconfidence Bias on Investment Strategy Based on Behavioral Finance

Yixin Zhang[1,a,*]

[1]*Management school, Lancaster University, Lancaster, United Kingdom, LA1 4YX*
a. y.zhang145@lancaster.ac.uk
**corresponding author*

Abstract: As international financial markets continue to diversify and become more complex, the application of behavioral finance in financial markets is becoming more and more widespread. At the same time, as people's living standards continue to rise, the securities market is a relatively optimal investment choice. To protect the wealth of investors and improve the standard of living of the nation, it is essential to ensure the stability of the investment market, which forces us to study the impact of imperfectly rational behavior on the stock market. Overconfidence bias is one of the most common types of imperfectly rational psychology. Therefore, it is of great significance to study the impact of overconfidence on investment portfolios. This paper aims to examine the effect of overconfidence bias on an investor's investment strategy through a literature review and empirical methods. The paper concludes that overconfidence bias shows a different relationship with return yield in the initial, completion, and diminishing periods. Secondly, overconfidence bias for investors exists. The characteristics of better-than-average-effect (BTAE) and the illusion of control have different effects on trading volume, return volatility, and market efficiency, and the role of contrarian investment strategy (CIS) in overcoming this bias is discussed.

Keywords: investment decision, behavioral finance, overconfidence biases

1. Introduction

The Efficient Market Hypothesis is the cornerstone of modern financial theory. According to its assumption, the market is efficient. All the investors in the market are rational and have homogenous expectations, which means investors want to maximize their benefits at a given level of risk.

Besides, under the Capital Asset Pricing Model (CAPM) theory, investors are information traders, which means they are rational. While the appearance of BAPM challenged this model, BAPM combined finance with psychology and sociology, which is the core of behavioral finance. It is also an extension of CAPM. The market also contains those noise traders who are not mean-variance investors. When those investors dominate the market, it will lead the market to be inefficient.

In a study investigating behavioral finance and wealth management, Pompian suggested that most investors' decisions are not optimal. Those investors are not rational, but rather, they have cognitive limitations, limited knowledge, and are influenced by emotions [1]. The main biases in investor psychology, behavioral characteristics, and perceptions of academic importance to behavioral finance research are overconfidence bias, herd behavior, familiarity biases, and loss aversion.

DOI: 10.54254/2754-1169/8/20230292

As not many papers focus on this side in detail, this paper aims to examine the effect of overconfidence bias on investor investment strategy through literature review and empirical methods. The paper firstly introduces the characteristics of the overconfidence bias, explores the change in the overconfidence bias, and returns at different stages through a model. Secondly, the article investigates the impact of the overconfidence bias on investment strategies, specifically to evaluate the relationship between the overconfidence bias, trading volume, return volatility, and market efficiency. Subsequently, factors that affect overconfidence bias in the investment decision process are adopted, specifically focusing on bull and bear markets and personal characteristics. The assignment will also clarify investment strategies to overcome the bias before drawing a logical conclusion. Based on the study findings, an outlook and perspective on future challenges to investment according to behavioral finance were conducted. Against the background of the continuous diversification of international financial markets, this paper analyses the impact of this irrational psychology on the securities market from the research perspective of overconfidence bias in behavioral finance, which helps investors to enhance their risk awareness and establish rational investment strategies and also contributes to the stability of the investment market. Analyzing the shortcomings of the current research and the directions worth exploring in the future also provides guiding ideas for future financial market regulators to establish a unified risk metric.

2. Overconfidence Bias

2.1. Characteristics of Overconfidence Bias

Overconfidence Bias is an emotional bias. Those investors overestimate their ability and personal traits and do not analyze the market situation rationally, and they will make a poor investment decision based on emotion.

One characteristic of the Overconfidence Bias conducted by Svenson is better-than-average-effect (BTAE). A survey found that the majority of drivers considered themselves more proficient and less risky than the average level in each group [2]. This is supported by Zell, who reported that BTAE describes the characteristics of people who believe that their abilities and knowledge are better than the average of their peers [3].

Another important feature of overconfidence is the phenomenon of the illusion of control [4]. People unconsciously increase their perception of the probability of success while the objective probability is relatively low.

2.2. Relationship Between Overconfidence Bias and Return Yield

The process for those investors who are overconfident can be divided into three stages. The period of overconfidence formation, the overconfidence completion period, and the period of overconfidence weakening. Different return yields over three periods of overconfidence can be proved by the following steps based on the empirical model of TANG [5]:

$$R = xe^{yt-z} \tag{1}$$

Where R represents the stock return, t represents time, x,z are constants and are all positive, y is negative. According to model (1), we can prove that $\lim_{n\to 0}(xe^{yt-z})$ =0 and $\lim_{n\to \infty}(xe^{yt-z})$ =x.

Considering the time-varying image of returns described by model (1), we first derive it as follows:

$$g(t) = \frac{dR}{dt} = xyzt^{-z-1}e^{yt-z} \tag{2}$$

From the model (2), we know that g(t) is always greater than zero, which shows that R is an increasing function of t. Consider the change in slope and derive g(t) as follows:

DOI: 10.54254/2754-1169/8/20230292

$$\frac{dg(t)}{dt} = xyzt^{-z-2}e^{yt-z}(-z-1-yzt^{-z}) \quad (3)$$

It is known that since $-xyzt^{-z-2}e^{yt-z}$ is greater than zero, therefore, the sign of model (3) is determined by $(-z-1-yzt^{-z})$.

Let $(-z-1-yzt^{-z})$ equals to zero, we can get:

$$t < \sqrt{\frac{-yz}{z+1}} \quad (4)$$

It shows that when $0 < t < \sqrt{\frac{-yz}{z+1}}$, g(t) increases, when $t > \sqrt{\frac{-yz}{z+1}}$, g(t) decreases, when $t \to \infty$, $g(t) \to \infty$.

In summary, the model of $R = xe^{yt-z}$ can accurately describe the fluctuation of return at different stages of overconfidence. The rate of return increases with time during the initial period of overconfidence formation, with the rate of increase gradually increasing, reaching the highest rate of increase during the completion period of overconfidence. The rate of return growth gradually decreases during the period of weakening overconfidence, and the rate of return remains stable.

While most studies are positive about the sentiment-reward relationship hypothesis and even suggest using this relationship to predict transient market patterns, there are still a few researchers who take the opposite view, arguing that investor sentiment is not correlated with market value. Solt & Statman argued that the sentiment index does not show a significant correlation with stock prices regardless of whether the market is in a bullish or bearish state and that sentiment indicators do not have the ability to predict the market [6].

2.3. The Influence of Overconfidence Bias on Investment Decision

Overconfidence bias leads to increased trading volumes, increasing volatility, and makes the market inefficient. Previous research has long studied the relationship of overconfidence bias with trading volume, return volatility, and market efficiency. Sheikh found that overconfident investors incorrectly credit their trading and valuation abilities for prior market performance [7]. The clarity and accuracy of their information are overstated. In an overconfident mood, traders become more confident in their own trading decisions, believing that they have unique information, and they increase their trading volume by underestimating other traders' trading information. Those investors who trade more aggressively as a result of solid market returns in order to maximize their usefulness. Gervais and Odean agreed that the trading volume of overconfident noise traders would result in more after-market gains and fewer after-market losses [4].

However, Sheikh did not discover significant evidence of overconfidence-related trading related to the volatility of conditional returns [8]. However, a study by Abbes argued that, according to the results of EGARCH, overconfidence bias-related trading volume is positively correlated with conditional volatility [1]. This discovery offers a compelling justification for the unusual financial instability that sparked the 2008 epidemic. However, because investors have lost faith in the financial market during the subprime financial crisis, overconfidence bias cannot account for volatility.

Ko and Huang identified that a certain degree of overconfidence could enhance market efficiency and improve the stock market's liquidity [8]. When the degree of investor overconfidence is not very high, the negative externality when overconfident investors lead to mispricing is lower than the positive externality of providing information, so a moderate degree of overconfidence can improve market efficiency. Even if the level of investor overconfidence is arbitrarily high, overconfidence can also have a positive impact on market efficiency under certain circumstances. A certain level of overconfidence is not only good for the stock market but also for the value of the company. Goel & Thakor indicated that under value-maximizing corporate governance, overconfident CEOs are better able to maximize shareholders' interests than rational CEOs because they overestimate the accuracy

DOI: 10.54254/2754-1169/8/20230292

of the information, thereby mitigating under-investment decisions and ultimately increasing the value of the firm [5]. However, if overconfidence exceeds a certain level, decisions can make the company overinvest, leading to underfunding and reducing the value of the company.

2.4. Factors Affecting Investors' Overconfidence Bias

2.4.1. Bull Markets or Bear Markets

Shi &Wang identified that investors in bull markets are more overconfident than those in bear markets, as the former can wrongly attribute their successful trades (luck) to their own abilities [9]. This also leads to worse investment performance in the bull market. Shi &Wang also proved that investors in the bull market turn over their investment portfolios more frequently than those in the bear market [10-12].

2.4.2. Personal Characteristics

The relationship between investors' personal characteristics and overconfidence bias has a certain impact and has also received significant attention, mainly reflected in gender, age, income, and education.

In a study conducted by Barber and Odean, it was argued that overconfidence is, to some extent, related to gender. Men show more confidence in trading stocks than women [2]. Barber and Odean analyzed data from 35,000 households to analyze investors' overconfidence from February 1991 to January 1997, using gender as a pro xy [2]. According to the results of the survey, men trade 45 percent more than women. Although women do not trade as often as men, they perform better than men in terms of earnings. Data shows that trading reduces men's net returns by 0.93 percentage points more than those compared with women. However, a recent study by Sonawane casts doubt on the effectiveness of gender in the overconfidence bias [13]. Sonawane conducted a hypothesis test with a t-test using the data collected from the questionnaire. The significance level of all the results is> 0.05, indicating that there is no evidence shows that there is a significant impact of gender [14-15].

Dhar & Zhu indicated that investors with richer working experience and higher income show less trading frequency, which tends to reduce the disposal effect [3]. Mishra & Metilda support that the level of investor overconfidence increases with past investment experience and education [16].

2.5. Investment Strategy to Overcome Overconfidence Bias

We need to conduct a comprehensive and rational analysis of the market scenario. If you are an experienced investor and have the ability to analyze the information in the market [17], Mitali's research reported that fundamental analysis and technical analysis of the assets are needed before you make any decisions on your investment. Mitali also suggests new investors who are new to the market and lack financial knowledge. It is advisable to consult with a financial professional or investment community about your investment strategy and let them give sound advice rather than take irrational actions such as speculation. Also, having financial literacy helps to better understand overconfidence bias, improve investors' financial awareness, make successful investment decisions, and mitigate portfolio risk.

In an investigation into the UK stock market during the period between 1975 and 1998, Gregory's research compared those stocks that have either poor past performance or low expected future performance with those stocks that have either good past performance or good expected future performance [18]. The evidence shows that the former has a significantly higher return than the latter. This is supported by Kern, who reported that investors tend to exhibit the effects of confirmation bias, as most investors will seek out the arguments that support their investment strategy and avoid or

DOI: 10.54254/2754-1169/8/20230292

ignore the opposing viewpoints [19]. Therefore, it might be argued that the best attitude for investors is to seek opposing views and then weigh the pros and cons of the investment strategy.

3. Discussion

An overview of the academic research on investor overconfidence and portfolios leaves something to be desired. Firstly, most research on investor overconfidence is based on qualitative analysis and lacks quantitative data on the overall capital market and the broader economic environment. Some of the research findings presented in the article are mainly in the form of sampling methods, where a certain number of groups or stocks in the stock market at a specific time or specific country are selected, and the small sample size may not be persuasive and accurate. It might be argued that future research should not be limited to groups of investors in a single country or region and that a cross-sectional comparison and analysis of the overconfidence that exists in the stock markets of different countries could be undertaken.

Although more and more theoretical studies and models on "overconfidence" are being established, there are limitations and subjectivity in the existing literature for quantifying the indicators of "overconfidence." The author suggested that there is a need to continue to study the establishment of standardized and comprehensive "overconfidence measurement indicators" in the future. Each country or region, according to its economic development, can work together with financial market regulators to formulate relevant policies and regulations to improve the system of measuring the comprehensive index of overconfidence, to guide and intervene in investors' investment decisions effectively, and to enhance the efficiency of the market circulation.

4. Conclusion

This paper focuses on the relationship between behavioral finance and investment strategies and analyses the impact of overconfidence bias on investment strategies. The paper has addressed five questions, including the characteristics of better-than-average-effect (BTAE) and illusion of control of overconfidence bias; the return performance of different stages of overconfidence bias; the impact of overconfidence bias on equity market trading volume, volatility, and market efficiency; and the extent to which overconfidence bias is affected by different market scenarios and individual investor characteristics. Finally, it investigates the strategies and mechanisms to deal with this bias. This thesis has provided a deeper insight into the relationship between behavioral finance and investment strategies, helping investors and companies to develop a proper understanding of investment mindset, enhance risk awareness, and adopt appropriate investment decisions. The major limitation of the recent study is the lack of quantitative data on the general economic environment and the overall capital market. Future research should be devoted to the development of conducting standardized "overconfidence measurement indicators" and relevant regulations for the financial regulatory market.

References

[1] *Abbes, M.B. (2013) Does Overconfidence Bias Explain Volatility During the Global Financial Crisis? Transit Stud Rev, 19, 291–312.*

[2] *Barber, B. M., & Odean, T. (2001). Boys will be boys: Gender, overconfidence, and common stock investment. The quarterly journal of economics, 116(1), 261-292.*

[3] *Dhar, R., Zhu, N. (2006). Up close and personal: Investor sophistication and the disposition effect. Manage. Sci., 52(5), 726-740*

[4] *Gervais, S., & Odean, T. (2001). Learning to be overconfident. The review of financial studies, 14(1), 1-27.*

[5] *Goel, A. M., & Thakor, A. V. (2008). Overconfidence, CEO selection, and corporate governance. the Journal of Finance, 63(6), 2737-2784.*

DOI: 10.54254/2754-1169/8/20230292

[6] Gregory, A., Harris, R. D., & Michou, M. (2001). An analysis of contrarian investment strategies in the UK. Journal of Business Finance & Accounting, 28(9-10), 1192-1228.
[7] Kern, D. (2017). 6 Tips for Investors to Overcome Behavioral Bias. Retrieved fromhttps://money.usnews.com/money/blogs/the-smarter-mutual-fund-investor/articles/2017-04-19/6-tips-for-investors-to-overcome-behavioral-bias
[8] Ko, K. J., & Huang, Z. J. (2007). Arrogance can be a virtue: Overconfidence, information acquisition, and market efficiency. Journal of Financial Economics, 84(2), 529-560.
[9] Langer, E.J. (1975), The Illusion of Control. Journal of Personality and Social Psychology, 32, pp. 311-28.
[10] Mishra, K.C., & Metilda, M.J. (2015), A study on the impact of investment experience, gender, and level of education on overconfidence and self-attribution bias, IIMB Management Review, 27(4), 228-239.
[11] Mitali, D.(2021). How to Overcome Behavioral Biases that Impact Your Investment Decisions. Retrieved from https://www.personalfn.com/dwl/financial-planning/how-to-overcome-behavioral-biases-that-impact-your-investment-decisions.
[12] Pompian, M. M. (2012). Behavioral finance and investor types: managing behavior to make better investment decisions. John Wiley & Sons.
[13] Sheikh, M. F., & Riaz, K. (2012). Overconfidence Bias, Trading Volume and Returns Volatility: Evidence from Pakistan. World Applied Sciences Journal 18 (12), 1737-1748.
[14] Shi, Z., & Wang, N. (2012). Don't Confuse Brains with a Bull Market: Attribution Bias, Overconfidence, and Trading Behavior of Individual Investors. SSRN Electronic Journal.
[15] Solt, M., & Statman, M. (1988). How Useful is the Sentiment Index? Financial Analysts Journal 44(5):45-55.
[16] Sonawane, M., Sayankar, V., & Joshi, P. M. (2021). A Study on Impact of Demographic Factors on Overconfidence Bias in Investment Decision Process. International Journal of Management (IJM), 12(5).
[17] Svenson, O. (1981), "Are We All Less Risky and More Skillful Than our Fellow Drivers?" ActaPsycholgica, 47, pp. 143-48. Vol. 14 No. 1, pp. 1-27.
[18] TANG, L. (2019), Is There Overconfidence in China's Stock Market? Behavioral Mechanism and Empirical Test, Chinese Review of Financial Studies,11(03).
[19] Zell, E., Strickhouser, J. E., Sedikides, C., & Alicke, M. D. (2020). The better-than-average effect in comparative self-evaluation: A comprehensive review and meta-analysis. Psychological Bulletin, 146(2), 118–149.