How Investment Portfolio Reduce the Additional Risks from Investor Sentiment

Yicen Duan

American University
Corresponding author. Email: yd9162a@student.american.edu

ABSTRACT

The price of stocks is determined by the market, and the relationship between supply and demand affects the fluctuation of stock prices. However, the three main factors driving stock prices to rise or fall are fundamental factors, technical factors and market sentiment. The relationship between the market sentiment and investor sentiment is included. Therefore, this article will focus on the types of market sentiment and how investor sentiment affects the market. For example, when the market dries up, what background conditions will investors affect their risk tolerance? Next, this article will introduce a two-step principal component analysis method to construct an investor sentiment index based on the actual situation in China and the availability of data Sexual selection of five proxy variables. The five proxy variables are the number of newly opened stock accounts, turnover rate, margin balance, net active purchases and investor attention. The analytic method proves that as investor sentiment fluctuates, the five proxy variables will also fluctuate. Therefore, when these five proxy variables fluctuate violently, it proves that the market is also covered by investor sentiment. Finally, this article will use investment portfolios to reduce additional risk factors caused by emotions.

Keywords: *Investor sentiment, financial behaviors, stock markets*

1. INTRODUCTION

With the development of behavioral finance, the influence of investors' irrational factors on the stock market has attracted more and more attention. Although institutional investors have rational expectations, no one has rational expectations. And this is a normal person who acts and makes decisions under the influence of emotional and cognitive errors [5].

During the COV ID-19 pandemic, the number and influence of retail investors have increased significantly. The US stocks that retail investors now trade are almost equal to the sum of mutual funds and hedge funds. In the Indian stock market, the proportion of individual investors has risen from 33% to 45% in the past five years. Retail investors have also increased their purchases on the London Stock Exchange and now hold 15% of the UK stock market [7]. Therefore, as individual investors gradually increase in the market, investor sentiment has become a research hotspot in this field.

Investor sentiment has brought a lot of prejudice and extremes in the stock market. For example, "fear of missing out" (FOMO) is an emotional drive. These investors will chase stocks that perform well because they fear that they will miss the opportunity to make money. This has led to speculative behavior that does not consider potential investment strategies. In fact, the recent cryptocurrency boom is an example. Many investors worry that their colleagues and neighbors will "get rich quickly" without them. This may be stimulated by chasing crypto stocks with unproven business models. As rational behavior began to emerge, crypto stocks plummeted, and inexperienced investors were forced to bear the consequences [9]. Therefore, it is necessary to understand some behavioral banking finance. This article will also briefly describe some common behaviors of some investors affected by emotions.

Moreover, According to the research of the behavioral finance study [5], the personality traits are an aspect of this research because they can determine how everyone handles the information in the market, thereby changing their relationship with risk and make them be aware of the relationship between personality and financial decision-making. The study shows that personality traits are the decisive factor in consolidating

Copyright © 2022 The Authors. Published by Atlantis Press International B.V.
This is an open access article distributed under the CC BY-NC 4.0 license -http://creativecommons.org/licenses/by-nc/4.0/.

investors' risk status, and individuals with strong cognitive abilities have a higher tolerance for risk.

Finally, rational financial modeling methods can be used to avoid the additional risks of behavioral finance. For example, the "margin of safety" investment mentioned by Benjamin Graham, investing in a downturn, and so on. In addition, this article also diversifies risks by establishing a diversified investment basket which can also be called investment portfolio. Therefore, in order to reduce additional risks, investment should be carried out in a more rational and scientific way.

2. THE TYPES OF FINANCIAL BEHAVIORS

With the development of technology, information such as public opinion is now easily spreading through social media and other channels, indirectly affecting investor sentiment. When the market's performance is not very optimistic, such as encountering some black swan incidents, the mood of most investors will fluctuate greatly, and their sentiment will spread to the entire market. From a behavioral perspective, investor psychology mainly has the following characteristics: Overconfidence, Optimism and Wishful Thinking, Representativeness, Conservatism, Anchoring, Fear, Herb, Availability Biaes, Belief Perseverance [2].

According to the investor psychology, behavioral perspective explains some irrational behaviors of investors. For example, after the 2008 financial crisis, investors withdrew their funds from the stock market in order to avoid losing everything when they saw the market sell off. As a result, they missed the opportunity to make up for losses in the rapid recovery. This is because investors often have a behavioral emotion that is the fear of losing everything [9]. Although investors do not want to be excluded, they do have strong sentiment coming from the fear that they will lose all their investment. When market volatility causes the stock market to fluctuate sharply, people may feel uneasy, causing them to abandon investment to avoid a sharp sell-off or a stock market crash. For this, Warren Buffett's method of avoiding emotions is to be fearful when others are greedy or greedy when others are afraid.

In addition, when the market is in crisis or optimistic, the herd effect is very obvious. This kind of behavior refers to the behavior of investors following a leader in the investment blindly. There are three forms of herding behavior in the stock market. When everyone responds to the announced information in the same way, information-based herding occurs. Reputation-based flocks are caused by respected investors or major trading companies taking specific trading stances. Salary-based herd effects occur when certain conditions prompt large-scale institutional fund managers to take profits, usually to protect fund returns before the year-end report. These actions have created a large amount of trading volume in the stocks or industries invested by certain popular institutional portfolios, prompting those followers to react quickly [6].

Futhermore, research articles explain why this herd mentality or imitation behavior appears to investors [1].There are several factors that influence the decision of the profit/utility maximizing investor and make them change the plan after observing others'. First, for example, the behavior of some people reveals that they know some information about returns, which is only relevant to fund managers who invest on behalf of others. Second, the incentives provided by some compensation plans and employment terms may increase imitation, because the third reason for imitation is that individuals may have an inherent herd preference [1]. According to those information which can be seen that investors' emotions and irrational behavior have brought additional risks and impacts on the financial market.

3. DIFFERENT INVESTORS'REACTION TO MARKET

Investors with different levels of risk acceptance are often determined by some analyzable factors. For example, according to the research of the behavioral finance study [5], this report studies the risk acceptance of investors from three aspects. The first aspect is that personality traits determine the investor's risk status; the second is that individuals with strong cognitive ability have a stronger tolerance for risk, and the performance of the last investor's preference conforms to the premise of the prospect theory. This research report uses an experimental method, which uses a series of different data collection tools: Some structured online questionnaires represent an understanding of your risk status and personality, as well as a software package, which is used to simulate investment tracking participants' decisions when managing their portfolios. Finally, according to the conclusion of the research application, with the investor's status, cognitive ability, adherence to prospect theory, and openness to changes in the personality characteristics of the experience gained on IPA, the participants also show the different of the probability of a medium or high risk state.

Besides, the research found that there are significant differences in the behavior of investors in different market segments when investing in the secondary market [11]. In addition, factors such as age, gender, education level, experience, and income also affect investors' risk appetite.

However, it is actually difficult to estimate the risk tolerance of investors. It may change over time, and the value and development of securities, bonds, and stocks will also change over time. The time frame of investment plays a key role. In addition, the risk tolerance of investors may be affected by decision-making abnormalities such as framework effects and heuristics, or investors may lose control of their emotions when taking financial risks [12]. Therefore, with the improvement of risk tolerance, the positive attitude towards the market gradually increases.

4. PROXY VARIABLES THAT REFLECT INVESTOR SENTIMENT

According to the study of the a dynamic analysis of the relationship between investor sentiment and stock market realized volatility [4], they decided to choose five proxy variables to construct an investor sentiment index. Because the data indexes of different countries are different, they chose reasonable proxy variables in the Chinese stock market, which are the number of new stock accounts, margin balance, turnover rate, net active purchases, and investor attention. This is the figure of the thesis research.

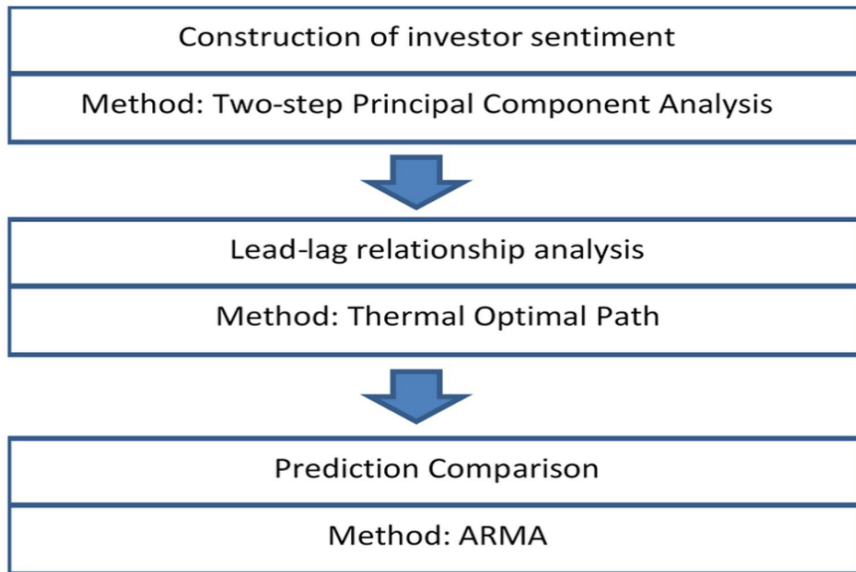

Figure 1. Flow chart for this research

The study found that the trends of these five variables are:

New accounts: The number of new accounts increases with the increase in the optimism of the stock market. For example, when the stock market is very optimistic, the number of new accounts will increase accordingly. On the contrary, if the stock market is in a downturn, the number of new accounts will be small; Margin balance: Margin balance is related to the confidence of investment in the market and the atmosphere of the stock market at that time. If investors remain optimistic and enthusiastic and the atmosphere in the stock market is good, the margin balance will also increase. In contrast, the decline in the margin balance indicates that investors tend to sell stocks, the market investment atmosphere is pessimistic, and investors are in a wait-and-see mood; the turnover rate refers to the turnover of trading volume, which reflects the overall activity and liquidity of the securities market. When the turnover rate increases, it means that people are actively trading stocks, and the stock market is also very optimistic; net active buying is an important factor affecting the short-term trend of the stock market, and stock market investors usually conduct capital operations through net active buying. For example, when the net active purchase volume is large or very large, it will also drive the strength of the stock price increase, which is positively correlated with the stock price assumption. As for Investor attention (SVI), the research shows that as the positive development of the stock market increases, the attention of investors also increases [4].

The research report shows that the correlation coefficient between the realized volatility and the proxy variable is obtained through the principal component analysis method. And it verifies the correlation between the five proxy variables and market sentiment.

Table 1. The correlation coefficients between the realized volatility and the proxy variables.

	INR_t	SMT_t	$TURN_t$	$FUND_t$	SVI_t	INR_{t-1}	SMT_{t-1}	$TURN_{t-1}$	$FUND_{t-1}$	SVI_{t-1}
RV_{SSECI}	0.2671	0.4023	0.5565	0.1910	0.7769	0.4120	0.5195	0.6417	0.1583	0.6814
RV_{SZSME}	0.2424	0.3057	0.5817	0.1580	0.7074	0.3170	0.4062	0.6219	0.0846	0.6429
$RV_{CHINEXT}$	0.2534	0.3616	0.5520	0.1980	0.7657	0.3670	0.4847	0.6109	0.1690	0.6848

In the contrary, when the market is in a bear market, investor sentiment will fluctuate greatly. At this time, negative investor sentiment will spread rapidly. Yutao Chen, Shuzhen Zhu, and Haoyuan He used the SIRS model to simulate changes in investor sentiment and trading ratios in a balanced stock market. The assumptions of this model are based on the development representation of Figure 2. And, according to the research report of the Influence of Investor emotion on the stock market stated when the market is extremely depressed, investor sentiment will also produce huge fluctuations. This situation will spread wantonly like a disease, and the intensity of infection in this process will also change with the state of the market. In addition, different information and media will be affected during the entire infection process, and these factors will also change the intensity of the infection. Therefore, many emotional investors will also affect the normal, rational and balanced state of the entire market. When investors are affected, the degree of trading volume will also be affected by investor sentiment, which will further cause market imbalances and changes. [3].

Initial proportion of investors affected by emotions
Total number of investors
impact rate
Normal investors
Contact
Investors affected by emotions
Calm and stable Investors without immunity of emotional information
Calm rate
Media and government
New normal investors

Figure 2. Causal loop diagram

5. INVESTMENT PORTFOLIO

When encountering a downturn in the stock market, emotions can easily bring a bit of risk. Assuming that investors in the market are all risk-averse and intend to avoid additional risks, based on the medium and long-term performance of different industries in the market, the author used portfolio modeling to build a relatively conservative investment portfolio. This investment portfolio consists of 6 parts, namely Country bond, developing countries equity, domestic Stocks, futures, Hedge fund, and cash. This investment portfolio is based on the combination established during the 2008 financial crisis to counter the risks brought about by the 2008 crisis. First, it is national debt. In the 2008 financial crisis, the risk of national debt was the smallest risk compared to other bonds and funds, almost zero. Although interest rates were adjusted to almost zero by the Federal Reserve at that time. But the risk is still 0, so the author put it in the portfolio of 22%.

In the 2008 financial crisis, developing countries played a dominant role in promoting global economic growth. And in this crisis, developing countries were the least affected, and among them, Ethiopia's GDP in 2009 increased by about 65% compared with the GDP in 2007. Ann Harrison and Claudia Sepúlveda indicated in their research report that before the crisis, the average GDP growth rate of developing countries was 5.6% [8],

compared to the developed countries' growth rate of only 1.3% in the past ten years. After the crisis, the economic recovery of developing countries has also been faster than that of developed countries [8]. Therefore, equity investment in developing countries accounts for 22% of our portfolio. Moreover, according to the 2008 Standard & Poor's Index, healthcare, food, consumer staples, and basic transportation are relatively inelastic industries that can perform well in an economic recession. For example, in 2008, the discount retail sector rose nearly 60%, such as Wal-Mart [10]. Therefore, the proportion of domestic stocks in my portfolio is 34%. Finally, there are futures, hedge funds and cash. All of these are to avoid risks. They accounted for 2%, 9%, and 11% respectively.

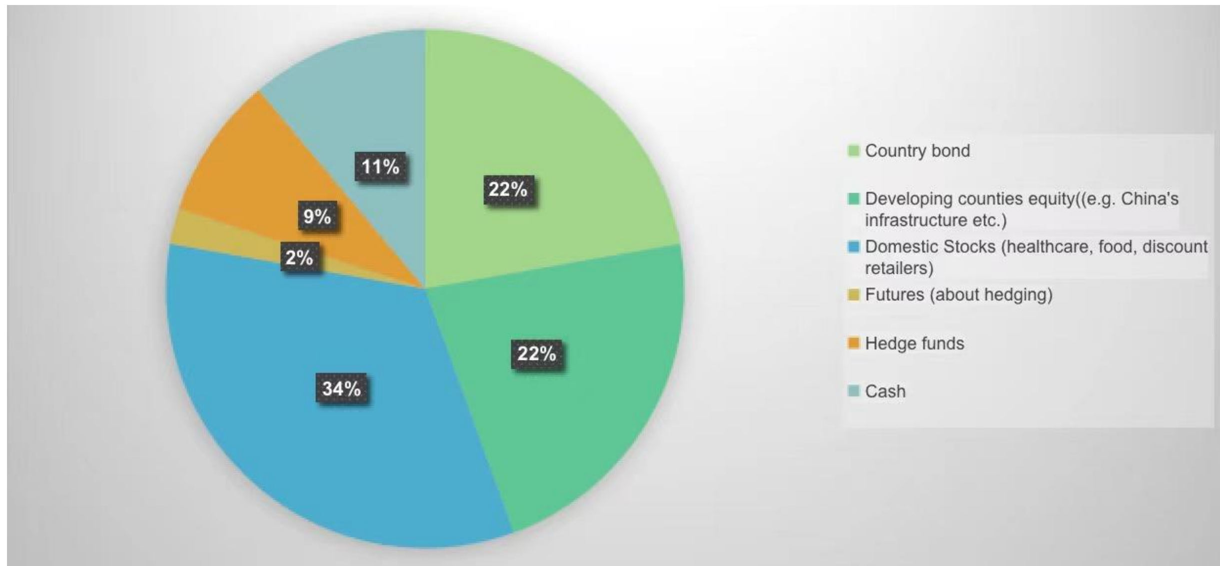

Figure 3. The proportion of investment protfolio

6. CONCLUSION

In the stock market, the volatility that affects stock prices is based on supply and demand, but the market is formed by the existence of investors. The three main analytical factors that determine stock volatility are fundamental analysis, technical analysis, and market sentiment. Market sentiment is related to investor psychology and sociology. When the market is volatile, investor sentiment is also obvious. They can be reflected in five emotional proxy variables, the number of new stock accounts, margin balance, turnover rate, net active purchases, and investor attention. To avoid some additional risks brought by emotions, this article needs to adopt a sensible way to avoid risks such as mathematical modeling, financial analysis, investment portfolio and other data methods.

REFERENCES

[1] Bikhchandani, S., & Sharma, S. (2000). Herd Behavior in Financial Markets. IMF Staff Papers, 47(3), 279-310. Retrieved September 8, 2021, DOI: http://www.jstor.org/stable/3867650

[2] Barberis, N., Thaler, R. (2002). A Survey of Behavioral Finance, NBER Working Paper. DOI: http://www.nber.org/papers/w9222

[3] Chen, Y., Zhu, S., & He, H. (2021). The Influence of Investor Emotion on the Stock Market: Evidence from an Infectious Disease Model. Discrete Dynamics in Nature & Society, 1–12. DOI: https://doi-org.proxyau.wrlc.org/10.1155/2021/5520276

[4] Chen, Y., Zhao, H., Li, Z., & Lu, J. (2020). A dynamic analysis of the relationship between investor sentiment and stock market realized volatility: Evidence from China. PLoS ONE, 15(12), 1–18. DOI: https://doi-org.proxyau.wrlc.org/10.1371/journal.pone.0243080

[5] De Bortoli, D., Jr.da Costa, N., Goulart, M., & Campara, J. (2019). Personality traits and investor profile analysis: A behavioral finance study. PLoS ONE, 14(3), 1 – 18. DOI: https://doi-org.proxyau.wrlc.org/10.1371/journal.pone.0214062

[6] Duff, V. (2017, February 7). Herd behavior in the stock market. Finance. Retrieved September 30, 2021, DOI: https://finance.zacks.com/herd-behavior-stock-market-9833.html.

[7] Heya, S. (2021). How retail investors are changing the stock market. Fair Observer. DOI: https://www.fairobserver.com/economics/finance/heya-shah-retail-investors-stock-market-social-media-gamestop-robinhood-news-25541/.

[8] Harrison, A., & Sepúlveda, C. (2011). Learning from Developing Country Experience Growth and Economic Thought Before and After the 2008–09 Crisis. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org.

[9] Healey, P. (2019). The psychology of the stock market and investment decisions. Kiplinger. Retrieved September 30, 2021, DOI: https://www.kiplinger.com/article/investing/t031-c032-s014-psychology-of-stock-market-and-investment-decision.html.

[10] Rooney, B. (2008, December 31). S&P 500: The lucky 25. CNNMoney. Retrieved October 14, 2021, DOI: https://money.cnn.com/2008/12/31/markets/SP500_year_end/index.htm?postversion=200 8123117.

[11] Singh, P., & Bedi, H, S. (2011). Investors Behaviour in Secondary Market. International Journal of Research in Finance & Marketing, Vol. 1, No. 4, pp. 96-114. (2011), Available at SSRN: https://ssrn.com/abstract=2450160

[12] Wahl, I., Kirchler, E., & Walla, P. (2020). RIsk SCreening on the Financial Market (RISC-FM): A tool to assess investors' financial risk tolerance. Cogent Psychology, 7(1), 1–11. DOI: https://doi-org.proxyau.wrlc.org/10.1080/23311908.2020.171 4108