Research on the Impact of Investor Confidence on Stock Price Fluctuation based on the Shanghai Composite Index

Changying Chen[1, *], Xianglong Li[2]

[1] School of Accountancy, Anhui University of Finance and Economics, Bengbu, Anhui, China

[2] Jinling College, Nanjing Normal University, Nanjing, Jiangsu, China

[*] Corresponding author: 1023986932@qq.com

Abstract

With the wide application of irregular text in different scenes, text extrac-tion from The development of the Chinese stock market has been going on for more than 30 years, and successive stock market fluctuations have witnessed its continuous development. Behind the huge fluctuations in the stock market, it is exposed that the Chinese capital market has not established a sound relevant mechanism, and it also reflects the limited rationality of investors. The limited rationality of investors will cause inefficiency in the market and deviation of asset prices from intrinsic value, this leads to a systemic bias in the market as a whole. This article is based on empirical evidence from the Shanghai Composite Index from 2010 to 2020, and uses Eviews software to establish a time series linear regression model. The investor confidence index is used as the explanatory variable, and the Shanghai Composite Return, Shanghai Super Large Cap Index, and Shanghai Small and Medium Cap Index are used as the dependent variables to study the impact of investor confidence on stock price volatility. And based on the model results, relevant suggestions are proposed to find a relative balance between investor irrationality and capital market uncertainty, thereby helping to establish a more open, transparent, and orderly stock market and promoting the healthy development of China's capital market.

Keywords

Investor Confidence; Stock Price Fluctuations; Shanghai Stock Exchange Return Rate; Shanghai Composite Ultra Large Cap Index; Shanghai Composite Small and Medium Cap Index.

1. Introduction

Since the establishment of the Shanghai Stock Exchange and Shenzhen Stock Exchange, the scale of China's securities market has been continuously expanding, the number of investors has been increasing, and the types of financial products available for investment have become increasingly diverse. The enhancement of China's international status plays an important role in attracting investment, promoting industrial structure transformation, and optimizing resource allocation. However, compared to mature securities markets in the West, there are still many problems in terms of operational mechanisms, investor structure, and risk prevention and control. The main manifestations are prominent irrational behavior of investors, severe information asymmetry, and imperfect monitoring mechanisms. From the perspective of investors' speculation and irrationality, investors often make irrational investment decisions due to emotional and psychological reactions. The price of stocks purchased by investors may deviate from their actual value, and investors can also promote stock prices to return to their intrinsic value through rational investment behavior. It can be

seen that investors' emotions and psychological reactions have an impact on the stock market, leading to fluctuations in stock prices. Therefore, this article is based on empirical evidence from the Shanghai Composite Index from 2010 to 2020, and uses Eviews software to establish a time series linear regression model to study the impact of investor confidence on stock price volatility. The research results indicate that the investor confidence index is positively correlated with the Shanghai Stock Exchange's return rate, has a greater impact on the Shanghai Small and Medium Cap Index than the Shanghai Super Large Cap Index, and has a greater impact on the Shanghai Private Enterprise Index than the Shanghai State owned Enterprise Index. The research results of this article help investors recognize their psychological biases, understand the operating mechanism of the stock market and the formation process of stock prices, learn how to invest reasonably and prevent risks, while improving the return on investment; It helps the company choose the appropriate time to initiate financing activities based on the emotional state of investors in the market, in order to increase the company's size and improve its financial situation. It helps regulatory agencies understand changes in market sentiment, prevent excessive intervention in the market, and minimize stock market turbulence caused by significant fluctuations in investor sentiment due to the introduction of new policies.

2. Theoretical Basis and Literature Review

2.1 Theoretical Basis

2.1.1. Investor Confidence Index

The investor confidence index is an index that can reflect the future direction of the entire stock market, and the investor confidence index studied in this article instead represents the fluctuation of stock prices by securities investors during the process of buying and selling stocks in the securities market, as well as the changes in their confidence in whether the future trend of stocks is good or bad.

2.1.2. Behavioral Finance

Traditional financial theories believe that stock investors are rational in the process of investment, but in behavioral finance, due to psychological and self-awareness biases, the rational behavior of stock investors is often limited. Therefore, investors adopt a limited rational approach in the investment process. This situation will lead to a decrease in market efficiency, asset prices deviating from their intrinsic value, and the entire market becoming inefficient, this further affects investors' rational judgment of asset prices, leading to psychological biases and self-awareness biases that self reinforce in the long term, ultimately leading to assets deviating from their intrinsic value in the long term. Due to bounded rationality, individual investors often follow their inner thoughts and make blind investments, that is, the psychological tendency towards future stock prices rising or falling, which is an irrational state and can be represented by the investor confidence index.

2.1.3. Supply and Demand Relationship

In economics, the meaning of supply and demand relationship is that supply and demand affect the final price of goods, with prices positively correlated with demand and negatively correlated with supply and demand. The trading of stocks requires both buyers and sellers, and buyers can be regarded as demand and sellers as supply. Therefore, every stock transaction requires both demand and supply factors to exist simultaneously in order to be successful. When investors are pessimistic about the future trend of stocks and believe that their prices will decline, they will reduce their holdings. In order to reduce losses, investors will sell stocks, resulting in oversupply and a drop in stock prices; On the contrary, when investors have an optimistic and positive attitude towards the future trend of stocks and believe that the price of stocks will rise in the future, they will increase their holdings, buy stocks in large quantities, and increase their future returns. At this time, supply is in short supply, and the price of stocks will rise.

2.2 Literature Review

At present, there are countless studies on related fields in the theoretical community. Pu Enkai (2019) believes that the fluctuation of investor sentiment indicators is roughly consistent with the rise and fall of stock indices. By comparing the constructed comprehensive investor sentiment indicators with the trend of the Shanghai Composite Index during the same period, investors are optimistic when the market index is high; Investors are pessimistic when the market index is low. Hu Yating, Wang Luxiu, and Zhao Yue (2020) believe that stock returns can have an impact on positive investor sentiment. Positive investor sentiment can also affect stock returns, and stock returns can also have an impact on school level investors. However, it cannot be said that negative investor sentiment can have an impact on stock returns. Zhu Wenjue (2021) believes that when investor sentiment is high, the return on the ChiNext board index performs better, while when investor sentiment is low, the return on the ChiNext board index is negative. At the same time, the returns of the ChiNext index also significantly affect investor sentiment, and when the index returns, investor sentiment also decreases. Song Chengcheng (2021) believes there is a significant positive correlation between investor sentiment and stock market returns. When investor sentiment is high, stock market returns rise, while when investor sentiment is low, stock market returns decline. Moreover, sentiment is a systematic influencing factor on stock market returns. Zhang Keqin (2022) believes that in a bear market, the Shanghai Composite Index yield can predict changes in investor sentiment, but investor sentiment cannot explain changes in stock market returns; On the contrary, in a bull market, the Shanghai Composite Index yield cannot be used to explain changes in investor sentiment, but investor sentiment can be used to predict changes in stock market returns.

In summary, there are few studies on the heterogeneity of investor confidence in stock price fluctuations. This article is based on empirical evidence from the Shanghai Composite Index from 2010 to 2020, exploring the heterogeneous impact of investor confidence on stock price volatility, and proposing relevant suggestions to provide a reference basis for investors when investing, and jointly promote the stable development of the stock market.

3. Research Design

3.1 Selection and Data Sources

This article takes January 2010 to December 2020 as the research interval, and constructs monthly data for each variable indicator for a total of 132 months. The data sources are Wind database and Reset database.

3.2 Experimental Assumptions

According to literature research, investor confidence has a significant impact on the stock market. When investors have high confidence, they are more likely to buy stocks, pushing up stock prices, and thus driving up the return on the stock market index; On the contrary, when investors lack confidence or panic, they may sell stocks, leading to a drop in stock prices and a decrease in stock index returns. Therefore, it is assumed that the investor confidence index does have a significant impact on the Shanghai Stock Exchange's return rate and is positively correlated. Based on the above analysis, this article proposes research hypothesis H1:

H1: The investor confidence index has a positive correlation with the Shanghai Stock Exchange return rate.

Compared to large enterprises, small and medium-sized enterprises are more susceptible to the psychological fluctuations and buying and selling behavior of investors due to their smaller market value and better market liquidity. Therefore, the Shanghai Composite Small and Medium Cap Index is more susceptible to the influence of investor confidence index compared to the Shanghai Composite Ultra Large Cap Index, and investors are more sensitive to the price fluctuations of small and medium cap stocks. Based on the above analysis, this article proposes the research hypothesis H2:

H2: The impact of investor confidence index on the Shanghai Small and Medium Cap Index is greater than that of the Shanghai Super Large Cap Index.

Private enterprises have a wider business scope, greater market flexibility and sensitivity; In contrast, the business scope of state-owned enterprises is usually limited by policies and more influenced by them, making it easier for private enterprises to adapt to market changes. Based on the above analysis, this article proposes research hypothesis H3:

H3: The impact of investor confidence index on the Shanghai Private Enterprise Index is greater than that of the Shanghai State Enterprise Index.

3.3 Variable Description

3.3.1. The Dependent Variable

Shanghai Stock Exchange Rate of Return: The daily rate of return of the Shanghai Stock Exchange Index over a period of time is (today's closing price - yesterday's closing price)/yesterday's closing price. This article uses monthly data, which is the weighted average of daily data, to determine the impact of investor confidence index on China's stock market.

Shanghai Stock Exchange Super Large Cap Index: Select 20 large and liquid super large cap stocks listed on the Shanghai Stock Exchange as the sample of the index, comprehensively reflecting the comprehensive performance of the stocks of large listed companies on the Shanghai Stock Exchange. Use this index to determine whether the investor confidence index will have a differentiated impact on enterprises of different sizes.

Shanghai Small and Medium Cap Index: Composed of Shanghai Mid Cap Index and Shanghai Small Cap Index constituent stocks, it is used to comprehensively reflect the overall situation of small and medium-sized listed companies on the Shanghai Stock Exchange. Use this index to determine whether the investor confidence index will have a differentiated impact on enterprises of different sizes.

Shanghai Private Enterprise Index: Select 50 representative private listed companies with large scale, good liquidity listed on the Shanghai Stock Exchange as samples, comprehensively reflecting the overall performance of the stocks of large private listed companies in the Shanghai Stock Exchange. Use this index to determine whether the investor confidence index will have a differentiated impact on enterprises with different property rights.

Shanghai State owned Enterprise Index: Composed of the Shanghai Central Enterprise 50 Index and the Shanghai Local State owned Enterprise 50 Index, it comprehensively reflects the overall performance of the stocks of large state-owned enterprises listed on the Shanghai Stock Exchange. Use this index to determine whether the investor confidence index will have a differentiated impact on enterprises with different property rights.

3.3.2. Explanatory Variables

Investment confidence index: mainly including confidence index, bear market index, and bull market index. Among them, the bull market index believes that the future market of the stock market is good and the prospects are optimistic; A bear market is a belief that the future market of the stock market is bearish and the outlook is pessimistic; The confidence index is an index that reflects the future volatility of the entire market. When the investor confidence index is below 50, it is considered that stocks may experience a decline in the future; On the contrary, when the investor confidence index is above 50, it is believed that the stock may experience an upward trend in the future.

3.4 Model Design

Based on the previous assumptions, establish a linear regression model:

(1) The impact of investor confidence index on the return rate of Shanghai Stock Exchange.

$$SSERR_t = CICSI_t + \mu_t$$

(2) The impact of investor confidence index on stock prices of enterprises of different sizes.

$$SSCI_t = CICSI_t + \mu_t$$
$$SMSCI_t = CICSI_t + \mu_t$$

(3) The impact of investor confidence index on stock prices of heterogeneous enterprises with different property rights.

$$SPEI_t = CICSI_t + \mu_t$$
$$SSOEI_t = CICSI_t + \mu_t$$

In the above formula, the subscript t represents the period, SSERR represents the Shanghai Stock Exchange return, and represents the overall stock return; SSCI represents the Shanghai Composite Ultra Large Cap Index, reflecting fluctuations in the stock prices of large enterprises; SMSCI represents the Shanghai Stock Exchange Small and Medium Sized Index, which reflects the fluctuations in stock prices of small and medium-sized enterprises; SPEI represents the Shanghai Private Enterprise Index; SSOEI represents the Shanghai State owned Enterprise Index; CICSI stands for Investor Confidence Index; μt represents the random error term.

4. Regression Analysis

This article uses Eviews software to establish a linear regression model for the explanatory variable and the dependent variable. The t-Statistics (hereinafter referred to as t-value) of the regression model is used to determine whether the explanatory variable has a significant impact on the dependent variable. The regression coefficient of the explanatory variable is used to determine whether the explanatory variable has a significant impact on the dependent variable β to analyze and study whether the investor confidence index will have a differentiated impact on the stock prices of enterprises of different sizes, and whether it will have a differentiated impact on the stock prices of enterprises with different property rights. The results obtained from the model are all rounded to four decimal places. According to the t-distribution table, the degree of freedom can be found to be 130, with a significance level α at 0.05, t 0.025 (130)=1.978. At the level of significance α = 0.01, t0.005 (130)=2.614.

4.1 The Impact of Investor Confidence Index on Shanghai Stock Exchange Return

Table 1. Regression results of investor confidence index and stock price volatility

Shanghai Stock Exchange Return Rate	t-Statistic	Prob
	6.9724	0.0000

According to the experimental results in Table 1, it is found that t*= 6.9724 at significance level α= 0.05, t*= 6.9724 > t0.025 (130)=1.978. At this point, reduce the significance level, at the significance level α= 0.01, t*= 6.9724 > t0.005 (130)=2.614, and the accuracy of the experimental results is as high as 99%. It can be considered that the explanatory variable investor confidence index does have a significant impact on the dependent variable Shanghai Stock Exchange return rate, and there is a positive correlation between the two.

The return rate on the Shanghai Stock Exchange is the fluctuation of the Shanghai Stock Exchange index over a period of time. For companies listed on the Shanghai Stock Exchange held by a large

number of investors, if they maintain confidence in the future trend of the stock price, they will increase their investment in funds. Due to the fixed number of circulating shares of listed companies, the buying volume is greater than the selling volume. According to supply and demand theory, the company's stock price will rise, and the Shanghai Stock Exchange index will show an upward trend at this time, the return rate on the Shanghai Stock Exchange also increased accordingly. On the contrary, if investors lose confidence in the future trend of stock prices, they will reduce the amount of capital invested, and the company's stock price will decline, leading to a decline in the Shanghai Composite Index and a decrease in the Shanghai Composite Return.

4.2 The Impact of Investor Confidence Index on Stock Prices of Enterprises of Different Sizes

Table 2. Regression Results of Investor Confidence Index and Enterprise Models of Different Sizes

Index	t-Statistic	Prob	β
Shanghai Composite Ultra Large Cap Index	3.2119	0.0017	25.7590
Shanghai Composite Small and Medium Cap Index	3.5354	0.0006	43.1699

According to the experimental results in Table 2, it is found that $t*1=3.2119$, $t*2=3.5354$, significance level $\alpha= 0.01$, $t*1=3.2119 > t0.005 (130)=2.614$ and $t*2=3.5354 > t0.005 (130)=2.614$, and the accuracy of the experimental results is as high as 99%. It can be considered that the explanatory variable investor confidence index has a significant impact on the dependent variables, namely the Shanghai Super Large Cap Index and the Shanghai Small and Medium Cap Index. Moreover, the regression coefficient of the Shanghai Composite Small and Medium Cap Index β Regression coefficient smaller than the Shanghai Composite Ultra Large Cap Index β, the impact of investor confidence index on the Shanghai Stock Exchange's small and medium-sized index is greater than that of the Shanghai Super Large Index. Therefore, the investor confidence index has a differentiated impact on the stock prices of enterprises of different sizes.

The Shanghai Stock Exchange Ultra Large Cap Index comprehensively reflects the comprehensive performance of the stocks of large listed companies on the Shanghai Stock Exchange. The listed companies included in it are relatively large in scale, with stable operating conditions, complete rules and regulations, and a leading position in the industry. The company's reputation and other aspects are relatively good, and there are few negative impacts. The factors affected by stock price fluctuations are relatively few, so the company's market value will be relatively large, the stock price is also relatively stable. Due to investors' speculative and speculative behavior, and their tendency to make short-term profits, their investment intention in large companies is relatively weak, resulting in a relatively small impact of the Shanghai Composite Ultra Large Cap Index on investor confidence index. The Shanghai Small and Medium Cap Index is composed of the Shanghai Mid Cap Index and the constituent stocks of the Shanghai Small Cap Index. It is used to comprehensively reflect the overall situation of small and medium-sized listed companies on the Shanghai Stock Exchange. Small and medium-sized listed companies have the characteristics of simple management models and high flexibility, and companies will focus on research and development. Research and development will be faster and easier to achieve results in a short period of time. Investors will tend to favor small and medium-sized listed companies, which can make short-term profits; In addition, due to the imperfect capital market system and weak regulation, the stock prices of small and medium-sized enterprises are easily manipulated by institutional investors, thereby seeking exorbitant profits. Therefore, the Shanghai Composite Small and Medium Cap Index is relatively influenced by the investor confidence index.

4.3 The Impact of Investor Confidence Index on Stock Prices of Enterprises with Heterogeneous Property Rights

Table 3. Regression Results of Investor Confidence Index and Enterprise Models with Different Property Rights

Index	t-Statistic	Prob	β
Shanghai Private Enterprise Index	3.5976	0.0005	22.9186
Shanghai State owned Enterprise Index	3.6335	0.0004	12.2517

According to the experimental results in Table 3, it is known that in Experiment 3, t*1=3.5976, t*2=3.6335 at the significance level α= 0.01, t*1=3.5976 > t0.005 (130)=2.614 and t*2=3.6335 > t0.005 (130)=2.614, and the accuracy of the experimental results is as high as 99%. It can be considered that the explanatory variable investor confidence index has a significant impact on the dependent variables Shanghai Private Enterprise Index and Shanghai State owned Enterprise Index, respectively. And the regression coefficient of the Shanghai Private Enterprise Index β Regression coefficient greater than the Shanghai Composite State owned Enterprise Index β, the impact of investor confidence index on the Shanghai Private Enterprise Index is greater than that of the Shanghai State owned Enterprise Index; Therefore, the investor confidence index will have a differentiated impact on the stock prices of enterprises with different property rights.

The Shanghai State owned Enterprise Index not only includes central enterprises, but also includes local state-owned enterprises. It comprehensively reflects the overall performance of large state-owned enterprise stocks listed on the Shanghai Stock Exchange. These companies are generally funded and operated by the central government or various levels of government, and are generally operated under national policies, closely following national strategic guidelines, and have a central or state-owned enterprise identity. The company has high credibility and relatively smooth development, there is very little malicious manipulation of stock prices by market makers, so stock prices are relatively stable. Investors want to obtain high returns in the short term, so their tendency towards the central government or state-owned enterprises during the investment process is relatively low. At this point, the Shanghai Composite State owned Enterprise Index is relatively less affected by the investor confidence index. The Shanghai Private Enterprise Index is composed of 50 typical and well developed private listed companies listed on the Shanghai Stock Exchange. It comprehensively reflects the overall performance of large private enterprise stocks listed on the Shanghai Stock Exchange. The private enterprise economy has become an indispensable force in China's economic development, and the government is also vigorously supporting private enterprises. This is a good investment direction for investors who pursue high investment return ratios. However, compared to state-owned enterprises, private enterprises often experience cash flow disruptions due to their smaller scale, low working capital, and difficulty in financing. At this time, investors may panic and significantly reduce their holdings, which is the direct reason for the decline in stock prices.

5. Conclusion and Suggestions

This article is based on empirical evidence from the Shanghai Stock Exchange Index from 2010 to 2020. Through three sets of experimental analysis, the following conclusions are drawn: firstly, the investor confidence index has a significant impact on the Shanghai Stock Exchange return rate, and there is a positive correlation between the two; The second is the impact of investor confidence index on the heterogeneity of stock prices of enterprises of different sizes, with a greater impact on the Shanghai Stock Exchange's small and medium-sized market index than the Shanghai Super Large Market index; Thirdly, the investor confidence index has a heterogeneous impact on the stock prices of enterprises with different property rights, with a greater impact on the Shanghai Private Enterprise Index than the Shanghai State owned Enterprise Index. This article suggests the following: firstly,

investors need to pay attention to the changes in investor confidence index to better understand the dynamics of the market and stock prices, and make rational investments; At the same time, it is necessary to comprehensively consider the fundamental and technical aspects of companies of different sizes and property rights, explore the intrinsic value of the company's stocks and the company's operating conditions, and achieve reasonable portfolio investment by purchasing stocks in multiple different fields to reduce risks and obtain satisfactory returns. Secondly, government departments are gradually improving their information disclosure system to enable investors to timely obtain publicly available and transparent information when selecting investment targets. Investors can make rational choices based on the information they receive. Due to the fact that the impact of new social media platforms on investor confidence may be more significant than imagined, regulatory agencies should strengthen their supervision of listed companies and require them to strictly comply with information disclosure systems. They should strengthen the information supervision of major social media platforms, promptly investigate and eliminate false information and extreme views, and encourage investors to conduct reasonable analysis and interpretation of the macroeconomic situation and national policies, to obtain accurate and effective information, reduce irrational behavior of investors, stabilize market order, and promote the healthy development of China's stock market.

Acknowledgments

References

[1] Bu Hui, Xie Zheng, Li Jiahong, Wu Junjie. The impact of investor sentiment based on stock reviews on the stock market [J]. Journal of Management Science, 2018, 21 (04): 86-101.

[2] Chen Rongze. Investor sentiment and stock index returns: a study based on China's A-share market [J]. Gansu Finance, 2018 (08): 39-44.

[3] Chen Yiming. Empirical Study on the Impact of Investor Sentiment on Stock Prices [D]. Central China Normal University, 2018.

[4] Hu Pei. Empirical Study on the Impact of Investor Sentiment on the A-share Market Price Index [D]. Chongqing Jiaotong University, 2018.

[5] Jin Xin. Empirical Study on the Impact of Investor Sentiment on the Volatility of A-shares in the Shanghai Stock Exchange under the Background of the Shanghai Hong Kong Stock Connect [D]. East China University of Technology, 2018.

[6] Liu Yamei. Research on Investor Sentiment and Stock Market Returns in China [D]. Shenzhen University, 2018.

[7] Qian Yiwen. Empirical Study on the Impact of Investor Sentiment on Stock Returns [D]. Anhui University of Finance and Economics, 2018.

[8] Peng Shuang. Empirical Study on the Impact of Investor Sentiment on the Returns of Blue Chip Stocks [D]. Huazhong Normal University, 2019.

[9] Pu Enkai. Research on the Impact of Investor Sentiment on China's Stock Market Based on Text Mining [D]. Nankai University, 2019.

[10] Zhou Bin. Research on the Relationship between Investor Sentiment and Stock Returns [D]. Guangdong University of Finance and Economics, 2019.

[11] Hu Yating, Wang Luxiu, Zhao Yue. Empirical study on the impact of individual investor sentiment on stock returns: based on the A-share market [J]. Journal of Panzhihua University, 2020, 37 (06): 64-70.

[12] Kong Lulu. Empirical Study on the Relationship between Investor Sentiment and Stock Market Returns [D]. Jilin University of Finance and Economics, 2020.

[13] Xu Dandan. Research on the Impact of Investor Sentiment on Chinese Stock Returns [J]. Times Finance, 2020 (28): 58-60.

[14] Chu Tianshu. Empirical Study on Investor Sentiment and Stock Returns [D]. Southwest University of Finance and Economics, 2020.

[15] Fang Xiang. Empirical Study on the Impact of Investor Sentiment on Stock Returns [D]. Southwest University of Finance and Economics, 2021.

[16] Liu Yu. Research on the Impact of Investor Sentiment on Stock Market Volatility [D]. Chengdu University of Technology, 2021.

[17] Song Chengcheng. The impact of investor sentiment on stock market returns [D]. Capital University of Economics and Trade, 2021.

[18] Zhu Wenjue. Research on the Interaction between Investor Sentiment and Stock Prices [D]. Shanghai University of Finance and Economics, 2021.

[19] Wang Yue. Empirical Study on the Impact of Investor Emotion on the Prices of China's Stock Market [D]. Zhejiang University of Finance and Economics, 2021.

[20] Zhang Keqin. Research on the correlation between investor sentiment and stock returns [D]. Northeastern University of Finance and Economics, 2022.