An Empirical Study of the Impact of Investor Sentiment on Stock Returns from a Behavioural Finance Perspective

Siyuan Chen

*Corresponding author. Email: 2454946577@qq.com

(as a junior student studying in) School of Accounting, Shanghai Lixin University of Accounting and Finance, Shanghai, China

Abstract. Due to the large number of individual investors and the large volume of transactions in the Chinese stock market, and the theory of limited rationality from the perspective of behavioral finance, investors inevitably carry personal emotions in their investment activities, so studying investor sentiment is beneficial to help Chinese investors better understand the Chinese stock market and make more appropriate investment decisions. The research topic is the effect of investor sentiment on stock returns, combines the theoretical foundation of behavioural finance, selects the constituent stocks in the SSE 50 index as a sample, and conducts correlation matrix analysis, regression and hypothesis testing by constructing a fixed effects model, and finally concludes that (1) The Investor sentiment has a significant positive impact on stock returns. (2) The Investor confidence has a significant negative impact on stock returns. It is therefore hoped that investors will avoid overconfidence when they have a positive bullish sentiment towards the stock market and ultimately make investment decisions that are suitable and more correct for them.

Keywords: Investor sentiment, Investor confidence, Stock returns, Behavioral Finance

1 INTRODUCTION

This is because the development of the efficient market hypothesis in traditional finance has led to the emergence of more and more unexplained "anomalies" and thus the birth of behavioral finance. The Chinese stock market has a large number of listed companies, a huge total market capitalization and a large number of investors, with a high proportion of retail investors in individual stocks. With the growth in the number of stockholders and the rise of the Internet, the large amount of information exchanged makes investors' emotions fluctuate, and emotionally prone investors may have an impact on the yield of a stock in their trading decisions, causing its price to deviate significantly from its real value[1][12]. It is therefore important to study investors' personal emotions from the perspective of behavioral finance, which can help investors to adjust their emotions, reduce their irrational investment behavior and make more rational, scientific and comprehensive investment decisions[6][8].

Compared to previous literature, this paper is innovative in that：1. In the empirical study, it was found that adding or not adding control variables would lead to a change in the direction of the impact of investor confidence on stock returns, and thus analyze the impact of investor

ICBBEM 2023, May 19-21, Hangzhou, People's Republic of China

DOI 10.4108/eai.19-5-2023.2334284

confidence on investment under different circumstances. 2. Hypothesizing the impact of investor sentiment on stock returns using heterogeneous belief theory and DSSW together. 3. By selecting the investor confidence index as an explanatory variable, it is seen as an indicator of the performance of investor sentiment. 4. Univariate and bivariate models without the inclusion of control variables and bivariate models with the inclusion of control variables were constructed through the fixed effect model to construct the basis of the regression model for this paper, and then combined with F-tests to finally determine the relationship between the selected explanatory variables and stock returns.

2 RELATED LITERATURE

Behavioral finance is an interdisciplinary discipline formed by the combination of psychology and finance.

In an exploratory analysis of the connection between sentiment and markets, Brown and Cliff (2000) found that when investors were extremely optimistic, sentiment was positively correlated with contemporaneous market returns[3]. Fisher et al. (2000) found that both individual and institutional investor sentiment were negatively related to future market returns[7]. As the research progressed, according to Pei-Kun Yu and Rui-Jun Zhong's（2009）research, market outcomes predict individual investor sentiment but not the other way around[20].

Chen et al., Hudso et al., Sayim et al. and Aissia (2013) investigate the cross-country impact of local sentiment or investor sentiment. Using a panel threshold model, Chen et al. find that global optimism leads to overvaluation of sector returns, while pessimism does the opposite, and local optimism increases returns in the basic materials, telecommunications and utilities sectors[4]. Hudso (2015) et al. argue that US investor sentiment is important in explaining UK stock returns[9]. With institutional investor sentiment having a greater impact than individual investor sentiment and irrational sentiment having a greater impact than rational sentiment, Sayim (2015) et al. use a vector autoregressive model to find that US (2015) found a significant spillover effect of investor sentiment on stock returns in the Istanbul stock market[14].

The above research will help scholars to focus their attention on the study of investor sentiment and stock returns. In a research of closed-end fund discounts and stock returns, Leonard et al. (1996) investigated how investor sentiment affected the New York Stock Exchange stock market. He demonstrated that investor sentiment was a price variable over the course of the sample period using the discount of 38 closed-end funds as a proxy variable for investor sentiment. However, when the same analysis is performed for the sub-sample period, investor sentiment loses this explanatory power. For the purpose of evaluating the closed-end fund discounts as indicators of investor sentiment, Elton et al. (1998) looked at two alternative return development methods. The results of these two processes suggest that other factors play a more important role in the evolution of returns than investor sentiment.

Tang Jingwu et al. (2009) developed a theoretical model of market sentiment and sentiment premium under the condition of investor heterogeneity, and used the closed-end fund discount rate, turnover rate, monthly IPO number, monthly IPO return, and fund cash holding ratio to create a composite index of market sentiment[16]. The results show that: Chinese stock market sentiment generates a premium and causes volatility in returns in both Shenzhen and Shanghai;

In addition to short-term persistence and long-term sentiment reversal, the Chinese stock market also exhibits short-term return inertia and long-term return reversal effects; And market sentiment is an important factor leading to irrational ups and downs in Chinese stock market. According to Jin Xuejun (2013) and colleagues, bullish investor sentiment has a beneficial impact on stock returns and continues to have a predictive impact on stock returns the following day[10].

In a further exploration of research methodology, it has been argued that investor sentiment can be analyzed through aggregate effects, for which DeLong, Shleifer, Summer and Waldmann (1990) proposed the DSSW model, which also divides investors into irrational "noise traders" and rational traders, and argues that higher asset expectation returns are easier to achieve among rational investors than among emotional, irrational "noise traders"[5]. Stock returns are connected with instantaneous sentiment, according to Brown and Cliff's (2004) analysis of the relationship between sentiment and the stock market using explicit sentiment, noting that returns predict short-term sentiment but not vice versa[2].

3 Theoretical basis

In the course of the development of traditional finance, many market "anomalies" emerged that could not be explained from the perspective of traditional finance, and there was no guarantee that investors participating in the financial markets were rational, thus giving rise to the school of behavioural finance. Behavioural finance challenges traditional finance theories on two points: 1. Arbitrage is limited, i.e. the theory of limited arbitrage, because there are irreparable flaws in the financial market mechanism, which limits the arbitrage behavior of investors; 2. Investors are not fully rational, i.e. the theory of limited rationality[13][17]. Because of investors' education, cognitive biases, subjective preferences and other factors, this inevitably leads to fluctuations in investor sentiment, thus making investors' behaviour when trading in financial markets characterised by imperfect rationality, which ultimately makes the deviation between the trading price of financial products and the original pricing[15][19]. There are several representative theories of behavioral finance as follows:

3.1 Overconfidence

Over-confidence is when investors show a high level of confidence in their own investment ideas and investment level when making specific investment choices, thus ignoring information in the financial markets that shows the opposite of their investment choices and over-confidence in their own personal investment return ability and risk aversion.

3.2 Herd effect

The herd effect refers to the tendency of investors in financial markets to follow market trends and make similar investment decisions to other investors in the hope of reducing their losses, which demonstrates the irrational psychological characteristics of investors and creates a convergence of investments in financial markets, it is probably going to make the stock market more volatile. The herding effect in the market is also greatly exacerbated by the rise of the internet, which allows investors to communicate with each other in a cost effective and fast manner.

3.3 Limited Attention Theory

The theory is that investors, with their limited attention span, can only process and analyze part of the information they obtain, thus creating a bias in their decision-making behavior.

3.4 Heterogeneous Belief Theory

The theory refers to the fact that different investors have individual differences in their judgement of stock investment choices. Influenced by information access, limited attention span and information judgement, investors cannot maintain a completely rational and objective state in the investment decision-making process, but will add their own emotions and investors' personal emotions and other subjective factors when investing, making the investment choices made by different investors will differ.

3.5 Noise trading theory

The noise trading model (DSSW) argues that the emotional trading behaviour of noise traders can cause share prices to deviate from their normal valuation, exacerbating the flight risk of rational traders and limiting the arbitrage behavior of traders in the market to a certain extent.

4 Research Hypothesis & Model

4.1 Research hypothesis

The DSSW model classifies investors who trade irrationally as noise traders, and according to the "limited theory of rationality" and the "herding effect", irrational traders increase the impact of individual investor sentiment on the stock market. According to the "limited theory of rationality" and the "herding effect", Individual investor sentiment and the behaviors of irrational traders have a greater influence on the stock market, which raises its volatility and impacts the value and returns of equities[11]. It is therefore hypothesized that when investors are bullish or have positive sentiment towards a stock, they will have a material impact on the price of that stock by buying or holding it, ultimately causing the price of that stock to rise and returns to increase; conversely, when investors are bearish or have negative sentiment towards a stock, they will cause the price of the stock to fall and returns to decrease[18]. Hypothesis 1 is therefore made: The Investor sentiment index has a significant positive impact on stock returns

Due to the theory of "overconfidence", investors may have a high degree of confidence in their own investment decisions, and because of the "herding effect", we can speculate that when in the investment process may rely too much on themselves and blindly follow others and this may cause volatility in the market and affect the return of the stock to some extent. According to the "limited attention" theory and "heterogeneous beliefs" theory, different investors have different individual judgments on stock returns, which are influenced by information access and information judgments, and overconfidence may make investors overreact or underreact, making a stock's pricing departs from its true worth. Therefore, hypothesis 2: The Investor confidence index has a significant impact on stock returns.

4.2 Model and variable selection

In order to evaluate the two preceding hypotheses and for the research of the link between investor sentiment and stock returns, regression models without and with control variables (univariate & bivariate) are constructed in this paper.

$$return_{i,t} = \alpha_{i,t} + \beta_1 * Sent_{i,t} + \lambda_i + \varepsilon_{i,t} \quad (1)$$

$$return_{i,t} = \alpha_{i,t} + \beta_2 * ICI_{i,t} + \lambda_i + \varepsilon_{i,t} \quad (2)$$

$$return_{i,t} = \alpha_{i,t} + \beta_1 * Sent_{i,t} + \beta_2 * ICI_{i,t} + \lambda_i + \varepsilon_{i,t} \quad (3)$$

$$return_{i,t} = \alpha_{i,t} + \beta_1 * Sent_{i,t} + \beta_2 * ICI_{i,t} + \beta_3 * Turnover_{i,t} + \beta_4 * dMarketValue_{i,t} + \beta_5 * dBM_{i,t} + \lambda_i + \varepsilon_{i,t} \quad (4)$$

In the above equation, the explanatory variable selected is the monthly stock return（$return_{i,t}$）, and the monthly average stock return is obtained by accumulating the daily returns from each month, in percentage terms. $Sent_{i,t}$ is an index of investor sentiment and $ICI_{i,t}$ is an index of investor confidence, both of which are explanatory variables in this paper. In addition, three control variables are selected: The first is the turnover rate ($Turnover_{i,t}$), which measures the level of interest in the company and the liquidity of a stock. The turnover rate is the ratio of turnover to the total number of shares in issue, and the monthly turnover rate used in this article is obtained by averaging the daily turnover rate for the month in percentage terms. The second is the change in total market capitalization ($dMarketValue_{i,t}$), which is a measure of the size of a company. The monthly total market capitalization used in this paper is the total market capitalization on the last trading day of each month, compared to the previous month's total market capitalization, and the change ratio is calculated in tens of billions of dollars. The third is the book-to-market ratio of listed companies ($dBM_{i,t}$), which is the ratio between shareholders' equity and the market capitalization of a company, and is the reciprocal of the P/N ratio, reflecting the degree of overvaluation of a company. The book-to-market ratio chosen for this article is calculated as the inverse of the market-to-net ratio on the last trading day of each month, in percentage terms.

4.3 Data

The study sample for this article is drawn from the monthly data of the stocks that make up the SSE 50 Index. Specifically, the period spans from January 1, 2017, through September 30, 2022. This paper removes the 6 stocks listed in the SSE 50 Index after January 1, 2017, and conducts research on the remaining 44 stocks, the investor sentiment index and investor confidence index are from CSMAR database, other data Other data are from Wind database.

Table 1. Description of variables

Nature of variables	Variable name	Variable symbols	Data sources
Explained variables	Stock Yield	$return_{i,t}$	Wind
Explanatory variables	Investor Sentiment Index	$Sent_{i,t}$	CSMAR

	Investor Confidence Index	$ICI_{i,t}$	CSMAR
Control variables	Change of turnover rate	$Turnover_{i,t}$	Wind
	Change of value in market	$dMarketValue_{i,t}$	Wind
	Change in book-to-market ratio	$dBM_{i,t}$	Wind

5 Empirical results (empirical analysis)

To lessen the potential impact of outliers on the regression results, all continuous variables at the company level are Winsorised below 1% and above 99% prior to the start of the empirical analysis. Stata 17.0 is used in this section of the data analysis and processing procedure.

5.1 Descriptive statistics

To give readers a basic knowledge of the traits of the research sample and the specific variables in the model used in this paper, this section goes into great depth about the sample size, mean, standard deviation, minimum, median, and maximum values of each variable in Table 1. For the years 2017 to 2022, some stocks have no trading data during the short-term suspension period, and this sample is excluded from this paper.

Table 2. Descriptive statistics of the main variables

	N	MEAN	SD	MIN	MEDIAN	MAX
$return_{i,t}$	3040	1.6547	9.3422	-13.8710	0.5351	22.0810
$Sent_{i,t}$	3040	47.1943	5.4476	39.8800	46.7100	59.9000
$ICI_{i,t}$	3040	117.3487	10.1975	87.2000	121.2000	126.0000
$dBM_{i,t}$	3040	0.6462	0.5308	0.0668	0.4815	1.8939
$Turnover_{i,t}$	3040	17.1343	16.0133	1.3919	12.1785	61.5236
$dMarketValue_{i,t}$	3040	0.0160	0.0955	-0.1411	0.0045	0.2285

The outcomes of the descriptive statistics demonstrate that each variable's statistical features are within a reasonable range. The mean value of the market return ($return_{i,t}$) is 1.6547 and the median value is 0.5351, which indicates that the stock returns in the selected sample interval are generally positive. Investor Sentiment Index ($Sent_{i,t}$) has a mean value of 47.1943 and a median value of 46.7100, both below 50, indicating that investor sentiment reflected in the sample tends to be negative and pessimistic, with investors mostly bearish on equities, likely influenced by the bear market crash in 2018 and early 2020 and the new crown epidemic. The investor confidence index ($ICI_{i,t}$) has a mean value of 117.3487 and a median value of 121.2000, both above 100, indicating that investors are confident in their investment decisions during stock market trading activities and there is some potential for overconfidence, which could potentially create volatility in stock prices in the stock market. The mean value of the

turnover rate ($Turnover_{i,t}$) is 17.1343 and the median is 12.1785, which indicates a more active stock market.

In summary, the sample generally shows that investor sentiment is pessimistic about returns in the equity markets, but investors are confident in their investment decisions and the market is more active.

5.2 Correlation analysis

The sample data were subjected to descriptive statistical analysis in the earlier part, and it was discovered that the data utilized in this research are generally accurate and acceptable. The next step is to do a correlation analysis to gauge the degree of correlation between the variables on the one hand and check for any evident issues with multicollinearity on the other. In this section, the correlation between each variable was tested using the Pearson coefficient and the Spearman coefficient. The test results are displayed in Table 2 with the Pearson correlation coefficient test results in the lower left corner and the Spearman correlation coefficient test results in the upper right.

Table 3. Results of correlation analysis between variables

	Return	Sent	ICI	BM	Turnover	dMarketValue
Return	1.0000	0.0660***	0.0350*	-0.1259***	0.0858***	0.9902***
Sent	0.0660***	1.0000	0.0778***	-0.0532***	0.1117***	0.0711***
ICI	0.0642***	0.2673***	1.0000	-0.0127	-0.0231	0.0470***
BM	-0.1375***	-0.0081	-0.0528***	1.0000	-0.4025***	-0.1374***
Turnover	0.1497***	0.1440***	0.0146	-0.3686***	1.0000	0.0968***
dMarketValue	0.9892***	0.0698***	0.0760***	-0.1511***	0.1622***	1.0000

Note: in Table 3, * ,** ,*** indicate significant at the 10%, 5% and 1% significance levels respectively (two-tailed test).

The general rule is that if the absolute value of the correlation coefficient between the variables is larger than 0.75, it indicates that the variables are highly correlated and that multicollinearity is a more serious problem, which will eventually cause some variation in the empirical results; When the correlation coefficient between the variables is between 0.5 and 0.75 in absolute terms, the correlation between the variables is moderate; When the correlation coefficient between the variables is between 0.25 and 0.5 in absolute terms, the correlation between the variables is low; When the correlation coefficient between the variables is less than 0.25 in absolute terms, the variables are either not associated or have very weak correlations.

The results of the correlation analysis show that all of the variables used in this paper's empirical regression model have absolute values of correlation coefficients that, with the exception of the various explanatory variables, do not exceed 0.75, indicating that multicollinearity between the variables is not a concern. Therefore the empirical regression model is reliable.

5.3 Regression analysis and hypothesis testing

Table 4. Regression results

	(1)	(2)	(3)	(4)
	Return	Return	Return	Return
Sent	0.1111***		0.0879***	0.0201*
	(3.58)		(2.73)	(1.73)
ICI		0.0586***	0.0459***	-0.0099***
		(3.53)	(2.66)	(-3.89)
BM				0.1176
				(0.89)
Turnover				0.0025
				(0.95)
dMarketValue				96.9594***
				(360.93)
_cons	-3.5871**	-5.2219***	-7.8770***	1.2016***
	(-2.43)	(-2.67)	(-3.61)	(3.51)
Firm	Yes	Yes	Yes	Yes
N	3040	3040	3040	3040
R^2	0.004	0.004	0.007	0.979
adj. R^2	-0.011	-0.011	-0.009	0.978
F	12.8170	12.4528	9.9667	27637.4564

Note: in Table 4, *, **, *** indicate significant at the 10%, 5% and 1% significance levels respectively (two-tailed tests); t-test values in parentheses.

The regression results from the fixed effects model with fixed firm individuals :

in column (1): Sent affects Return positively, it is significant at the 1% level.

(2): ICI positively affects Return, it is significant at the 1% level.

(3): Sent affects Return positively, it is significant at the 1% level; ICI affects Return positively, it is significant at the 1% level.

(4): Sent has a positive effect on Return, it is significant at the 10% level; ICI has a negative effect on Return, it is significant at the 1% level; dBM and Turnover both have a positive effect on Return, it is insignificant; dMarketValue has a positive effect on Return, it is significant at the 1% level.

From the above regression results it can be seen that: in the absence of control variables, there is a significant positive impact of investor sentiment index on stock returns. After the inclusion of control variables, there is still a significant positive impact of investor sentiment index on stock returns, which indicates that in the case of an increase in the total market capitalisation of the company, an increase in the book-to-market ratio and trading liquidity, the effect of investors' personal preference or aversion to stocks is still positively and significantly present, in line with hypothesis 1. That is, if investors' sentiment is positive, they are more likely to buy or hold stocks, thereby increasing the return on stocks.

In the absence of control variables, the investor confidence index has a significant positive impact on stock returns, indicating that an increase in investor confidence can help investors seize investment opportunities and achieve desired stock returns, regardless of other factors ;But with the inclusion of control variables, the Investor confidence index has a significant negative impact on stock returns, indicating that in the case of an increase in the total market capitalization of a company in the stock market, an increase in the book-to-market ratio and trading liquidity, investors' overconfidence in their investment decisions tends to weaken stock returns. This is consistent with Hypothesis 2, which states that the more confident investors are in their investment decisions, the more likely they are to lose money under the theory of limited rationality in behavioural finance.

This paper also chose the change of hands ratio, the value of change in market capitalization and the value of change in book-to-market ratio as the control variables for this paper. The results show that all three control variables positively influence stock returns, with the value of change in market capitalization significantly and positively influencing stock returns. This indicates that when a company's market capitalisation increases, its stock return will be significantly enhanced.

6 Conclusion

After reviewing the domestic and international literature and theories related to investor sentiment, this paper proposes the use of investor sentiment index and investor confidence index as explanations for stock returns at the individual stock level under the framework of behavioural finance, using the constituent stocks of the SSE 50 index as a sample to reveal the personal subjective sentiment of investors affecting decision making in the Chinese A-share market. In the empirical test, a fixed-effects model was used to test the validity of the investor decision indicators proposed in this paper, namely the investor sentiment index and investor confidence index, using these two indicators as explanatory variables and introducing the change in turnover rate, the change in market capitalisation and the change in book-to-market ratio as control variables to conduct a correlation matrix analysis. The relationship between several variables and stock returns was then investigated through fixed effects regressions as well as F-tests.

The main findings are as follows: Using a fixed effects model, the paper finds that

(1) Investor sentiment preference has a significant positive effect on stock returns, i.e. investors are more likely to buy or hold stocks when their sentiment towards stocks is bullish or when they have positive sentiment, resulting in higher stock returns.

(2) Investor confidence index has a significant negative influence on stock returns. That is, investors' high level of confidence in their own investment perceptions and investment levels when making specific investment choices can cause them to ignore information in the financial markets that shows the opposite of their investment choices and overly believe in their own personal investment return ability and risk aversion, thus creating losses and causing stock returns to fall.

The following insights were obtained from this study: investors should actively learn about investment and market-related theories, adjust their emotions, collect and integrate as much information as possible from the market circulation while viewing each company's stock

equally, analyse data comprehensively and rationally, remain objective when judging information, avoid being overconfident or presumptuous when making investment decisions, make appropriate reference to other investors' You may refer to the trading decisions of other investors, but avoid blindly following them, and ultimately make a rational investment decision that suits you.

This paper identifies two areas for future improvement.

(1) One-sidedness of the data. Due to the lack of time and experience, when selecting the sample, this paper only uses the SSE 50 Index as the research topic for empirical analysis, which cannot objectively and comprehensively reflect the stock trend of the whole market. In addition, this paper only uses two databases for quantitative collection, and the lack of data cannot reflect the impact of investors' personal sentiment on stock returns in the entire Chinese stock market. In the future, more raw data can be sourced from more databases for analysis to make the conclusions as convincing as possible.

(2) There are shortcomings in terms of explanatory variables. This paper only uses data that can be found directly in the database as variables.

In the future, we can look for better explanatory variables in more databases and make the model more complete by constructing indicators. In addition, the model could be constructed using the double difference method (DID).

References

[1] Barberis, N., & Thaler, R. (2003). A survey of behavioral finance. Handbook of the Economics of Finance, 1, 1053-1128.

[2] Brown, G. W., & Cliff, M. T. (2004). Investor sentiment and the near-term stock market. Journal of empirical finance, 11(1), 1-27.

[3] Brown, G. W., & Cliff, M. T. (2005). Investor sentiment and asset valuation. The Journal of Business, 78(2), 405-440.

[4] Chen, M. P., Chen, P. F., & Lee, C. C. (2013). Asymmetric effects of investor sentiment on industry stock returns: Panel data evidence. Emerging Markets Review, 14, 35-54.

[5] De Long, J. B., Shleifer, A., Summers, L. H., & Waldmann, R. J. (1990). Noise trader risk in financial markets. Journal of political Economy, 98(4), 703-738.

[6] Fama, E. F. (1998). Market efficiency, long-term returns, and behavioral finance. Journal of financial economics, 49(3), 283-306.

[7] Fisher, K. L., & Statman, M. (2000). Investor sentiment and stock returns. Financial Analysts Journal, 56(2), 16-23.

[8] Hirshleifer, D. (2015). Behavioral finance. Annual Review of Financial Economics, 7, 133-159.

[9] Hudson, Y., & Green, C. J. (2015). Is investor sentiment contagious? International sentiment and UK equity returns. Journal of Behavioral and Experimental Finance, 5, 46-59.

[10] Jin Xuejun, Zhu Yu & Yang Xiaolan. (2013). The impact of online media on stock market - An empirical study on the stock bar of Oriental Fortune. Journalism and Communication Research (12), 36-51+120.

[11] Kong Lulu. Overview of the impact of investor sentiment on stock returns[J]. Modern Business,2019(13):58-59. doi:10.14097/j.cnki.5392/2019.13.030.
[12] Ricciardi, V., & Simon, H. K. (2000). What is behavioral finance?. Business, Education & Technology Journal, 2(2), 1-9.
[13] Ritter, J. R. (2003). Behavioral finance. Pacific-Basin finance journal, 11(4), 429-437
[14] Sayim, M., & Rahman, H. (2015). An examination of US institutional and individual investor sentiment effect on the Turkish stock market. Global Finance Journal, 26, 1-17.
[15] Shiller, R. J. (2003). From efficient markets theory to behavioral finance. Journal of economic perspectives, 17(1), 83-104.
[16] Tang, Jingwu & Wang, Cong. (2009). Market sentiment, premiums and volatility. Economic Review (04), 58-64. doi:10.19361/j.er.2009.04.008.
[17] Thaler, R. H. (2005). Advances in behavioral finance (Vol. 2). R. H. Thaler (Ed.). New York: Russell Sage Foundation.
[18] Wan Yi Ping. (2022). Research on the impact of investor sentiment on stock returns (Master's thesis, Peking University).
[19] Wang Meijin, Sun Jianjun. (2004). Chinese stock market returns, return volatility and investor sentiment. Economic Research (10), 75-83.
[20] Yu Pei Kun & Zhong Rui Jun. (2009). Can individual investor sentiment predict market returns. Nankai Management Review (01), 96-101.