Journal of
Risk and Financial Management

MDPI

Article

How Retail vs. Institutional Investor Sentiment Differ in Affecting Chinese Stock Returns?

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Abstract: This paper evaluates the impact of retail investors' bullish sentiment in comparison to that of financial institutions on the return of Chinese CSI 300 index stocks over the period of 2015 to 2023. We document several regularities. First, the stronger the retail (institutional) investors' bullish sentiment, the lower (higher) the stock returns, and such contrasting associations hold after an array of robustness tests. Second, mechanism test results show that the retail and institutional investor sentiments affect stock returns mainly by influencing the analysts' attention and the equity liquidity. Third, heterogeneity analyses reveal that the adverse effect of retail investors' bullish sentiment on stock returns becomes more prominent for non-state-owned, manufacturing, and non-heavily polluted enterprises, but the positive effect of the emotions expressed by institutional investors on stock returns is greater for non-state-owned, non-manufacturing, and heavily polluted enterprises. Therefore, this paper sheds light on detailing of investor sentiment types and hedging investment risks.

Keywords: retail investors; institutional investors; stock returns; bullish sentiment

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Academic Editor: Thanasis Stengos

Received: 2 January 2025
Revised: 9 February 2025
Accepted: 10 February 2025
Published: 12 February 2025

Citation: Cui, J., Wei, Q., & Gao, X. (2025). How Retail vs. Institutional Investor Sentiment Differ in Affecting Chinese Stock Returns? *Journal of Risk and Financial Management*, *18*(2), 95. https://doi.org/10.3390/jrfm18020095

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1. Introduction

In exploring the basis of stock price formation, traditional financial theory, with the efficient market hypothesis as its cornerstone, rigorously characterizes stock prices as if they were precise reflection of firm fundamentals, measured only by the discounted value of expected dividends. This theory highlights the importance of market efficiency and rational expectation but seemed to ignore the role of human behaviors. With the deepening of financial market reforms and the evolution of financial practices, behavioral finance emerged to reveal the important role of investor psychology in asset pricing and to challenge the strictly rational assumptions of the traditional theory. Behavioral finance emphasizes that, in addition to rational factors such as the fundamental value of a company, irrational factors such as investor emotions and cognitive biases also have a profound impact on stock prices. Though this phenomenon occurs worldwide, it is especially prominent in fast changing markets such as the one in China. The Chinese A-share stock market has become the second largest in the world in terms of market capitalization after just a few decades of rapid development, with approximately 177 million effective investor accounts as of the end of 2020.

Unlike mature markets in the U.S., the U.K., and other developed countries, the Chinese stock market is characterized by two distinct attributes: the prevalence of individual investors and the pursuit of government guidance. As a result, the according psychological

biases such as overconfidence and herd behavior among retail investors in China's stock market continue to shape market dynamics and return trends to a significant extent. In addition, China's macroeconomic, meso-level, and firm-specific information disclosures have become more transparent, which gradually influences the trading patterns of more experienced institutions and big-hand individuals. Lastly, the Chinese authority endogenously lays down the stock market regulatory rules to reconcile between development and stability goals. Some of the rules turn out to be helpful, but others might cause unexpected outcomes. Given the characteristics of investor groups in China's stock market, the ongoing challenges in regulation, and the improvement in the macro environment, the impact exerted by investor bullish sentiment on asset pricings is also undergoing noticeable changes. Therefore, a thorough exploration of how different types of investor sentiment affect the cross-section of stock market returns utilizing China as the laboratory has theoretical and practical implications.

In China's stock market, there are prevailing retail investors and a relatively small number but influential institutional investors (Tan et al., 2023). Retail investors often lack the patience for long-term holding and tend to trade frequently in response to stock price fluctuations, constantly flowing in and out based on their emotional swings. On the other hand, institutional investors choose to hold for the long term rather than trade frequently, as holding high-quality stocks over the long term will help them achieve stable capital appreciation and dividend income. Therefore, the number of institutional investors does not change with the inflow and outflow of retail investors. Hence, it is necessary for this paper to separately study the consequences brought up by the bullish sentiment of retail vs. institutional investors.

Regarding the topic of connecting investor emotions with stock returns, research conducted around the world generates conflict results according to which sample country or industry is selected and what is the source of sentiment. Take the more recent studies for example. Cheema and Fianto (2024) explored the relationship between higher stock returns and stronger investor sentiment during Ramadan in Muslim countries through the lens of the religious events. Kresta et al. (2024) used the American Association of Individual Investors Sentiment Index to evaluate how retail investor sentiment affect stock return, volatility and transaction volume. Shah (2024) analyzed the complex impacts of cultural dimension, investor sentiment, and policy uncertainty on bank stock returns. Liu et al. (2024) demonstrated the transmission channels of investor sentiment affecting asset returns in the context of coal prices. Yaakoubi (2024b) linked investor sentiment and stock pricing by incorporating investor sentiment into the relationship between the sensitivity of implied market bias to new interest rates and expected investment returns. Ung et al. (2024) deepened the study of investor sentiment signaling equity returns by improving the current universe of investor emotion indices. This study empirically examines the relationship between bullish sentiment among retail vs. institutional investors and the cross-sectional returns of representative stocks in Chinese A-share market. We first distinguish ourselves from previous studies by adopting the perspective of the Chinese market with its unique investor structure and sentiment functionary mechanism. Second, while the existing literature on investor sentiment often focuses only on either the retail or institutional investor sentiment, this paper incorporates both into our research scope established under a comparison framework.

To be more specific after the above general discussion, we rely on the stock return data of the Chinese CSI 300 index component companies during the period of 2015 to 2023 to evaluate the impact of investors' bullish sentiment on equity investment returns. We add to the literature by distinguishing between retail and institutional investors and digging into the mechanism of these two types of investors' impacts from the perspective

of external and inherent determinants of trading behaviors. It is found that retail investors' bullish sentiment is significantly negatively correlated with stock returns, while institutional investors' bullish sentiment and contemporaneous returns have a significant positive association. Moreover, the sentiment of individual and institutional investors affects stock returns through the mechanisms of analyst attention and stock liquidity. The results of heterogeneity analyses indicate that the adverse impact of retail investors' bullish sentiment on stock returns is greater among non-state-owned, manufacturing, and non-heavily polluted firms; the positive impact of institutional investors' bullish sentiment on stock returns is greater in non-state-owned, non-manufacturing, and heavily polluted firms. The impact of retail and institutional investor sentiment on stock returns differs due to the disparities in their market influence and investment goals. By comparing the economic consequences of the two types of investors, we can gain a deeper understanding of the distinct channels through which different market participants affect the market and reveal the influence of different investment psychologies on investment performance. Such comparative analysis not only enriches the academic research findings in the field of behavioral finance, but also provides valuable references for market regulator and investment decision maker, aiding them in enacting more reasonable supervisory rules and profitable strategies.

The remainder of the paper is organized as follows. Section 2 reviews the literature and formulates the hypothesis. Section 3 describes data sources and the sample, defines variables, and specifies the empirical specification. Section 4 presents baseline regression results, followed by endogeneity checks, robustness tests, mechanism exploration, and heterogeneity analyses. Finally, Section 5 concludes the paper.

2. Literature Review and Hypothesis Development

With the rise of behavioral finance and the depth of its current research progress, numerous theoretical and empirical studies have shown that the capital market is not completely efficient, and its participants are not completely rational. Investor sentiment, as a core branch of behavioral finance research, highlights the important aspect of investor irrationality. As a factor that cannot be ignored, investor sentiment has received widespread attention in both academia and industry.

Investor sentiment is viewed as a subjective belief about future cash flows and investment risks that is not based on facts (Baker & Wurgler, 2006). Investor sentiment not only affects overall market returns (Brown & Cliff, 2004; De Long et al., 1990) but also has a bearing on single stock returns. It even exerts significant influences on liquidity, which moderates capital market's informational efficiency and thus alters the information content contained in stock prices (Debata et al., 2018). In addition, investor sentiment is also associated with stock price drivers, including financing constraints (You & Wang, 2024), corporate green innovation (Dong et al., 2024), market-wide liquidity pricing (Yaakoubi, 2024a), risk of stock price crashes (Bashir et al., 2024), and sectoral returns (Rohilla et al., 2023), to an inescapable extent.

More recent studies on investor sentiment focus on its usages. Gao et al. (2024) emphasized the role of investor sentiment in predicting stock index futures prices. Miranda and Machado (2024) explored the impact of investor optimism on the investment horizons generated by accruals-based and real activity-based surplus management, concluding that during optimistic periods, firms will increase surplus manipulative behavior to boost profits. Yang et al. (2024) examined the spillover effects of social media sentiment across stock, bond, foreign exchange, and commodity markets. Yang and Xiong (2024) constructed a firm-level measure of the speed of investor sentiment contagion and examined the relationship between the speed of investor sentiment contagion and stock price spikes and falls. Zhu and Shen (2024) investigated the separate and combined effects of various

investor emotions in stock mispricing. Fu et al. (2024) explored the asymmetric influences of investor sentiment on the price and consumption of traditional and new energy sources. Jiang et al. (2024) examined the impact of investor sentiment on the level of risk disclosure of publicly listed companies.

Stock returns, as the leading indicator of the capital market barometer, its fluctuations and trends profoundly affect the market performance. In-depth research about identifying factors of stock returns is not only the key to revealing market puzzles and grasping the timing of investment, but also an indispensable navigational beacon for every investor in the pursuit of maximizing investment gains. To get a sense of new developments in this strand of literature, we give examples below. Kontoghiorghes (2024) utilized the 2013 legislative change that allow capital gains and dividend to be included in tax-free investment accounts for stocks listed on a sub-platform of London Stock Exchange to investigate how income tax policies causally affect stock returns. Cakici and Zaremba (2024) resorted to machine learning techniques to examine the cross-sectional variation in national equity returns by aggregating information from multiple market characteristics. Abdelaziz et al. (2024) examined the impact of corporate social performance on stock returns by decomposing the dynamics of stock returns of large U.S. firms into two components: the Gaussian and non-Gaussian innovations in extreme risks. There are also novel viewpoints that consider geopolitical risk, economic policy uncertainty, financial stress (Korsah & Mensah, 2024), and biodiversity risk (Ma et al., 2024) to be associated with stock market returns.

When combining the above analysis on investor sentiment outcomes and stock return determinants, distinguishing between retail and institutional investors becomes an important issue. The buying and selling behavior of retail investors aligns with the noise trader model (Riaga, 2008). When retail investors exhibit bullish sentiment, it is often accompanied by a large influx of funds. Influenced by noise, they invest irrationally, thereby affecting stock returns (Kang et al., 2013). Additionally, in the Chinese market, there are many retail investors, and the existing research has shown that most of them lack relevant knowledge and training. The funds brought in by their bullish sentiment can disrupt the market's investment value, leading to a decrease in stock returns. Institutional investors, as professional investors, often take a leading role in investment decisions. When institutional investors are generally bullish about futures, their investment behavior can send positive signals to the market, enhancing the confidence and participation of other investors. This improvement in market sentiment and increased investor participation tend to push up stock prices, increasing stock returns. In summary, this paper proposes two side-by-side hypotheses:

Hypothesis 1. *Bullish sentiment among retail investors reduces cross-sectional stock returns.*

Hypothesis 2. *Bullish sentiment among institutional investors increases cross-sectional stock returns.*

If Hypotheses 1 and 2 hold, then a natural question to ask next is the functionary channels. Retail investors are more likely to be influenced by noise and make irrational investment decisions, and their attention significantly and adversely affect the accuracy of analysts' earnings forecasts. Furthermore, the surge in retail investor sentiment can impair the informativeness of stock prices (Zhang & Luo, 2024). As a result, when retail investors exhibit bullish sentiment, analysts may proactively reduce their market attention to avoid a decrease in the accuracy of their forecasts. Consequently, the deterioration of stock price informativeness and the reduction in analyst attention can negatively affect stock returns. In China's capital market, where there is a large number of retail investors, this effect is further amplified. Institutional investors, with their professional research teams and abundant information resources, are usually able to capture market changes

and opportunities earlier. When institutional investors exhibit bullish sentiment and take corresponding actions, they share their investment views and logic through research reports and public speeches. These behaviors not only provide valuable information to the market but also increase analysts' research interest and attention to the related stocks or industries. Thus, this paper proposes the following set of hypotheses:

Hypothesis 3A. *Bullish sentiment of retail investors reduces stock returns by decreasing analysts' attention and thus stock returns.*

Hypothesis 3B. *Institutional investors' bullish sentiment increases stock returns by increasing analyst attention.*

In addition to the analyst attention channel, the ability to transact an asset rapidly in the market without affecting its price may also serve as an influencing channel of sentiment affecting returns. When retail investors are generally bullish, they tend to actively buy stocks, thereby expanding the shareholder base and improving stock liquidity (Ding & Hou, 2015). Institutional investors, on the other hand, choose to hold for the long term rather than trade frequently, because long-term holding of these high-quality stocks will help them obtain stable capital appreciation and dividend income, which in turn reduces the shareholder base and lowers stock liquidity. The aggressive buying by retail investors pushes up stock prices, causing them to deviate from their intrinsic value in the short term. When stock prices are overvalued, future returns (i.e., the potential for stock price growth) decrease because the stock price already reflects excessive optimism. In addition, retail investors often lack the patience to hold for the long term and are prone to trade frequently amid stock price volatility, which increases transaction costs and reduces overall returns. Since institutional investors focus on obtaining stable capital appreciation and dividend income, their bullish sentiment sustains their long-term holding of these high-quality stocks, which helps them gain stable capital appreciation and dividend income, thereby increasing stock returns. Consequently, this paper proposes the hypotheses below regarding liquidity as the underlying mechanism of the identified sentiment-return relationships:

Hypothesis 4A. *Bullish sentiment of retail investors reduces stock returns by increasing stock liquidity and thus reducing stock returns.*

Hypothesis 4B. *Bullish sentiment of institutional investors increases stock returns by decreasing stock liquidity.*

3. Data and Methodology

3.1. Sample and Variable Construction

The research sample of this paper is the constituent stocks of the CSI 300 index. This index consists of the 300 largest and most liquid stocks in China's Shanghai and Shenzhen stock markets and aims to comprehensively reflect the overall performance of the Shanghai and Shenzhen A-share markets. The sample period is from 1 January 2015 to 31 December 2023 and the data frequency is daily. Relevant stock market data and firm characteristics data are sourced from the WIND and CSMAR databases.

Following Kumar and Lee (2006), this paper calculates the bullish sentiment of retail and institutional investors using inflows and outflows as in Equation (1):

$$BSI_{i,t} = (INFLOW_{i,t} - OUTFLOW_{i,t})/(INFLOW_{i,t} + OUTFLOW_{i,t}), \quad (1)$$

where $INFLOW_{i,t}$ and $OUTFLOW_{i,t}$ denote the inflows and outflows of a specified type of investor funds to stock i at time t, respectively. The output bullish sentiment indicators for retail and institutional investors are denoted as Indbsi and Inibsi.

The dependent variable is the logarithmic return of a stock (RET), which is computed based on the natural logarithmic difference between two consecutive observations of that stock's price. According to the existing research (e.g., Fama & French, 2015), we control for pricing factors other than the sentiment factor, which includes the market risk (MKT), the small minus big risk (SMB), the high-minus-low risk (HML), the operating profitability risk (RMW), and the cash management account risk (CMA) factor. In addition, with reference to papers that study firm-level drivers of stock returns, this paper also controls for the firm size (SIZE), which is proxied by the logarithm of total assets at the end of the period, the book-to-market ratio (MB), which equates to the ratio of shareholders' equity to the firm's market capitalization, and the gearing ratio (LEV), which is measured by the ratio of total liabilities to total assets of the firm under concern.

Table 1 presents the descriptive statistics of the variables used in this paper. The sample contains 531,354 observations of stock returns with a mean value of 0.001, which indicates that RET exhibits barely positive returns over the sample period. There are 531,880 and 521,723 observations of bullish sentiment values of retail and institutional investors with mean values of 0.045 and −0.077, respectively, which shows that retail investors tend to be more optimistic compared to institutional investors. In addition, the table provides statistical information on the MKT, SMB, HML, RMW, and CMA, which are calculated based on 627,900 observations. The means of these risk factors are all close to zero, with standard deviations ranging from 0.005 to 0.013, reflecting their medium volatility over the sample period. The observations for the firm size, book-to-market ratio, and gearing ratio are 557,009, 549,557, and 603,529, respectively, corresponding to varying mean values of 25.094, 0.674, and 0.533, respectively.

Table 1. Descriptive statistics.

	No. of Obs.	Mean	Std. Dev.	Min	50%	Max
Indbsi	531,880	0.045	0.173	−1.000	0.045	1.000
Inibsi	521,723	−0.077	0.344	−1.000	−0.069	1.000
RET	531,354	0.001	0.031	−0.200	0.000	3.590
MKT	627,900	0.000	0.013	−0.093	0.001	0.065
SMB	627,900	0.000	0.009	−0.080	0.001	0.055
HML	627,900	−0.000	0.008	−0.038	−0.000	0.054
RMW	627,900	0.000	0.006	−0.037	−0.000	0.062
CMA	627,900	−0.000	0.005	−0.039	−0.000	0.022
SIZE	557,009	25.094	2.035	19.955	24.843	31.431
MB	549,577	0.674	0.324	0.044	0.702	1.559
LEV	603,529	0.533	0.232	0.014	0.538	2.290

3.2. Model Specification

We use the following benchmark regression Equation (2) to examine the impact of retail and institutional investors' bullish sentiment on stock return performance:

$$\begin{aligned} RET_{i,t} &= \alpha_0 + \alpha_1 Indbsi_{i,t} + \sum Controls_{i,t} + \sum Year + \sum Industry + \varepsilon_{i,t}; \\ RET_{i,t} &= \alpha_0 + \alpha_1 Inibsi_{i,t} + \sum Controls_{i,t} + \sum Year + \sum Industry + \varepsilon_{i,t}, \end{aligned} \quad (2)$$

where *RET* is the dependent variable, representing stock returns; *Indbsi* and *Inibsi* are explanatory variables, representing retail and institutional investors' bullish sentiment, respectively; *Controls* is a list of control variables; *Year* and *Industry* are fixed effects, repre-

senting the fixed year and industry effect, respectively; ε is the usual error term; and the subscripts of each variable i and t, respectively, represent individual firms and time.

Such a comparative research design is appropriate for answering our research questions due to two reasons. First, it can hold other conditions constant and identify different patterns of the individual and institutional type of investors. Direct comparison facilitates the identification of similarities and differences throughout time or among several groups, thereby elucidating overarching trends or persistent themes. Moreover, it can augment data reliability by aggregating and contrasting information from many sources. This comparative framework enhances the credibility of study outcomes.

4. Empirical Analysis

4.1. Baseline Regression Results

Table 2 reports the estimated coefficients obtained from evaluating the impact of retail investors' bullish sentiment and institutional investors' bullish sentiment on stock returns. Columns (1), (2), and (3) show the results of the impact of retail investors' bullish sentiment on stock returns in the absence of controls and fixed effects, including controls but remove fixed effects, and in the presence of both controls and fixed effects, respectively. It can be seen that the coefficients are −0.082, −0.066, and −0.068, respectively, and are all significant at the 1% level, indicating that a greater sentiment of individuals lead to a decrease in stock return. This observation verifies Hypothesis 1, which states that the irrational high emotion of retail investors will reduce the stock return. Columns (4), (5), and (6) correspond to the results of estimating the impact of the bullish sentiment of institutional investors on the stock return under the conditions of no control variables and fixed effects, with the inclusion of control variables with no fixed effects, and with the inclusion of control variables and fixed effects, respectively. The concerned coefficients are 0.031, 0.024, and 0.024, respectively. And these estimates are all statistically significant at the 1% level. The implication is that the more positive sentiment expressed by the financial institutions, the higher the contemporaneous stock return, which verifies Hypothesis 2 arguing that institutional investors' bullish sentiment will increase the stock return simultaneously or in the near future.

Table 2. Benchmark results.

	(1)	(2)	(3)	(4)	(5)	(6)
Indbsi	−0.082 ***	−0.066 ***	−0.068 ***			
	(−370.300)	(−326.680)	(−330.490)			
Inibsi				0.031 ***	0.024 ***	0.024 ***
				(260.890)	(227.350)	(227.170)
MKT		0.879 ***	0.874 ***		0.958 ***	0.958 ***
		(310.280)	(308.920)		(322.170)	(321.780)
SMB		0.108 ***	0.114 ***		0.112 ***	0.113 ***
		(18.030)	(18.930)		(17.700)	(17.740)
HML		−0.421 ***	−0.416 ***		−0.416 ***	−0.415 ***
		(−69.990)	(−69.410)		(−65.370)	(−65.180)
RMW		−0.021 *	−0.024 *		−0.034 ***	−0.034 ***
		(−2.250)	(−2.550)		(−3.430)	(−3.460)
CMA		0.078 ***	0.090 ***		0.051 ***	0.057 ***
		(7.790)	(8.970)		(4.850)	(5.360)
SIZE		−0.001 ***	−0.001 ***		−0.001 ***	−0.001 ***
		(−25.410)	(−12.62)		(−12.910)	(−16.340)
MB		0.003 ***	0.003 ***		0.000	0.001 ***
		(15.870)	(12.620)		(1.440)	(5.400)
LEV		0.003 ***	0.003 ***		0.001 **	0.001 *
		(15.390)	(12.710)		(3.010)	(2.230)

Table 2. *Cont.*

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.004 ***	0.019 ***	0.013 ***	0.003 ***	0.019 ***	0.019 ***
	(95.550)	(30.120)	(13.520)	(29.560)	(16.110)	(17.880)
Year/Sector Fixed Effects	No	No	Yes	No	No	Yes
No. of Obs.	531,263	528,830	528,830	521,246	518,851	518,851
Adj. R^2	0.202	0.351	0.354	0.115	0.290	0.291

Note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively; *t*-values adjusted for robust standard errors are in parentheses.

4.2. Endogeneity Checks

Firstly, this paper uses retail investor bullish sentiment one period ahead (L.Indbsi) and institutional investor bullish sentiment one period ahead (L.Inibsi) as instrumental variables and applies them into a two-stage least squares specification. Columns (1) and (2) in Table 3 record the results of the regression of retail investors' bullish sentiment on stock returns in the first and second stages, respectively, with a regression coefficient of 0.305 in the first stage and a regression result of −0.016 in the second stage, and all of them are significant at the 1% level, which corroborates with the previous findings. Columns (3) and (4) in Table 3 show the outcomes of regressing stock returns against institutional investors' bullish sentiment in the first and second stage regression results respectively, the regression coefficient of the first stage is 0.305, the second-stage regression result is −0.016, and both are significant at the 1% level, aligning with our conclusions. In the test of instrumental variable reasonableness, the Anderson-LM statistics are all significant at the 1% level, indicating that there is no problem of under-identification, and all Cragg–Donald Wald F statistics exceed the threshold value of 10, implying the nonexistence of weak instrumental variable problem. In sum, these statistical tests justify the validity of the instrumental variables employed in this study.

Table 3. Instrumental variable approach.

	(1)	(2)	(3)	(4)
	Indbsi	**RET**	**Inibsi**	**RET**
Indbsi		−0.016 ***		
		(−22.940)		
L.Indbsi	0.305 ***			
	(207.850)			
Inibsi				0.006 ***
				(4.500)
L.Inibsi			0.075 ***	
			(47.610)	
Controls	Yes	Yes	Yes	Yes
Constant	0.231 ***	0.018 ***	−0.192 ***	0.015 ***
	(16.790)	(10.980)	(−6.130)	(8.270)
Anderson-LM statistic	38,927.450	39,400	2253.800	2253.802
CD-Wald F statistic	43,200.800	43,000	2267.130	2267.131
No. of Obs.	393,749	393,749	382,116	382,116
Adj. R^2	0.176	0.327	0.035	0.298

Note: *** indicates significance at the 1% level; *t*-values adjusted for robust standard errors are in parentheses.

Furthermore, considering the endogeneity issue potentially caused by reverse causality in the aforementioned results and drawing on existing research, this paper once again employs the one-period lag (L.Indbsi) and one-period lead (F.Indbsi) of retail investors' bullish sentiment, as well as the one-period lag (L.Inibsi) and one-period lead (F.Inibsi) of institutional investors' bullish sentiment, as the concerned independent variables to

validate the aforementioned findings. Columns (1) and (2) in Table 4 present the regression results of L.Indbsi and F.Indbsi on stock returns, respectively, with 1%-level coefficients of −0.005 and −0.014, which stays in line with the findings in Table 2. Columns (3) and (4) in Table 4 present the results of regressing stock returns on L.Inibsi and F.Inibsi, respectively, with regression coefficients of 0.001 and 0.003 and both being significant at the 1% level, which again align with the findings in Table 2.

Table 4. Two-way causality checks.

	(1)	(2)	(3)	(4)
L.Indbsi	−0.005 ***			
	(−21.900)			
F.Indbsi		−0.014 ***		
		(−52.880)		
L.Inibsi			0.001 ***	
			(4.910)	
F.Inibsi				0.003 ***
				(20.010)
Controls	Yes	Yes	Yes	Yes
Constant	0.007 ***	0.011 ***	0.006 ***	0.012 ***
	(6.690)	(8.690)	(5.890)	(9.170)
Year/Sector Fixed Effects	Yes	Yes	Yes	Yes
No. of Obs.	393,770	393,775	386,301	386,224
Adj. R^2	0.261	0.222	0.260	0.217

Note: *** indicates significance at the 1% level; *t*-values adjusted for robust standard errors are in parentheses.

4.3. Robustness Test Results

To begin with, it is well known from the existing studies that periods of extreme stock price volatility in 2015 and the COVID-19 epidemic lockdown in 2020 will exert sizeable effects on the returns of all financial assets in China. As a result, we exclude the 2015 and 2020 data and then regresses the rest observations to reduce the uncertainty brought up by abnormal years. Columns (1) and (2) in Table 5 illustrate the impact of retail investors' bullish sentiment and institutional investors' bullish sentiment on stock returns after excluding abnormal years, respectively. The coefficients of the two columns are −0.062 and 0.021, respectively, at 1%-level significance, which indicates that the stronger the positive sentiment of individuals, the lower the stock returns after excluding the abnormal years. Conversely, the stronger the positive sentiment of institutions, the higher the stock returns, which stays in line with the previous findings.

Table 5. Excluding abnormal periods and the financial sector.

	(1)	(2)	(3)	(4)
Indbsi	−0.062 ***		−0.070 ***	
	(−298.050)		(−300.670)	
Inibsi		0.021 ***		0.025 ***
		(195.140)		(205.450)
Controls	Yes	Yes	Yes	Yes
Constant	0.011 ***	0.014 ***	0.014 ***	0.019 ***
	(10.510)	(11.260)	(12.530)	(15.450)
Year/Sector Fixed Effects	Yes	Yes	Yes	Yes
N	418,722	409,928	437,388	428,108
Adj. R^2	0.326	0.252	0.350	0.286

Note: *** indicates significance at the 1% level; *t*-values adjusted for robust standard errors are in parentheses.

Next, companies belonging to the financial industry will have an impact on the return due to their own industry characteristics. Thus, this paper excludes the data of companies belonging to the financial industry and then regresses them to reduce the uncertainty

of the special industry on the research results. Columns (3) and (4) in Table 5 give the results of how retail and institutional investors' bullish sentiment impact stock returns after excluding the financial sector, respectively. The coefficients of the two columns are −0.070 and 0.025, respectively, and both are significant at the 1% level. The indication is that the stronger the positive emotion of individuals equates lower stock returns after excluding the special industries. Similarly, a high degree of positive emotion of institutional investors is associated with a larger return on equity investment. These results are again consistent with the previous findings.

4.4. Mechanism Exploration

This section further analyzes the mechanism of how the positive emotion of individuals and financial institutions can directly the cross-section of affect stock returns via the potential channels of analyst attention and stock liquidity.

Table 6 reports the results of testing the "investor sentiment affecting stock returns through analyst attention" influencing channel. With reference to the existing literature, this paper chooses the perspective of analyst attention to analyze the moderating effect of external monitoring on investor sentiment on stock returns. In this paper, analyst attention is the number of analysts who have followed the company in a year, and the data are obtained from the CSMAR database. Columns (1) and (2) report the results of the mechanism test of retail investors' bullish sentiment on stock returns. In column (1), the estimated coefficient of retail investors' bullish sentiment on analyst attention is −0.420 and significant at the 1% level, which indicates that retail investors' bullish sentiment reduces analyst attention. As shown in column (2), the regression coefficients of retail investors' bullish sentiment, analyst attention's regression coefficient of retail investors' bullish sentiment, and analysts' attention are all significantly negative at 1% level, which indicates that there is a partial mediation effect of analysts' attention. This shows that analyst attention plays a role of partial mediating effect between retail investors' bullish sentiment and stock returns, i.e., analyst attention is one of the potential mechanisms through which retail investors' sentiment leads to stock returns, and Hypothesis 3A is confirmed.

Table 6. Analyst attention mechanism.

	(1)	(2)	(3)	(4)
	Analyst	**RET**	**Analyst**	**RET**
Indbsi	−0.420 ***	−0.067 ***	0.313 ***	0.025 ***
	(−7.170)	(−326.330)	(11.060)	(225.900)
Inibsi				
Analyst		−0.001 ***		−0.001 ***
		(−16.010)		(−10.300)
Controls	Yes	Yes	Yes	Yes
Constant	−124.200 ***	0.007 ***	−125.200 ***	0.016 ***
	(−21.990)	(6.820)	(−24.710)	(12.610)
Year/Sector Fixed Effects	Yes	Yes	Yes	Yes
No. of Obs.	518,405	518,370	509,963	509,930
Adj. R^2	0.505	0.352	0.504	0.290

Note: *** indicates significance at the 1% level; *t*-values adjusted for robust standard errors are in parentheses.

Columns (3) and (4) report the results of the mechanism test of institutional investor bullish sentiment on stock returns. In column (3), the regression coefficient of institutional investor bullish sentiment on analyst attention is 0.313 and significant at the 1% level, which suggests that institutional investor bullish sentiment raises analyst attention. As illustrated by results in column (4), the estimates before institutional investor bullish sentiment and analyst concern are significantly positive and negative at the 1% level, respectively. The implication is that analyst concern plays a partial role in mediating the

sentiment-return nexus, i.e., analyst attention functions as one of the potential mechanisms through which institutional investors' sentiment changes lead to the fluctuations in stock returns. Therefore, these findings validate Hypothesis 3B.

Table 7 reports the results of testing the "investor sentiment affecting stock returns through stock liquidity" influencing channel. First, the illiquidity indicator Amihud is used to measure stock liquidity in reference to (Amihud & Mendelson, 1986). Since Amihud is an illiquidity indicator, the larger the value, the lower the stock liquidity, and the data are obtained from the CSMAR database. Columns (1) and (2) report the outcomes of testing the mechanism via which retail investors' bullish sentiment affect stock returns. In column (1), the estimated coefficient of retail investors' bullish sentiment on stock liquidity is −0.363 and is significant at the 1% level, which indicates that retail investors' bullish sentiment improves stock liquidity; as documented in column (2), the regression coefficients of retail investors' bullish sentiment, and stock liquidity are all significant at the significant at 1% level, which indicates that there is a partial mediation effect of stock liquidity. This shows that stock liquidity plays a role of partial mediating effect between retail investors' bullish sentiment and stock returns, i.e., stock liquidity is one of the potential mechanisms through which retail investors' sentiment leads to stock returns, and hypothesis 4A is confirmed.

Table 7. Stock liquidity mechanism.

	(1)	(2)	(3)	(4)
	Amihud	**RET**	**Amihud**	**RET**
Indbsi	−0.363 ***	−0.067 ***		
	(−31.100)	(−326.790)		
Inibsi			0.061 ***	0.024 ***
			(21.720)	(224.660)
Amihud		0.001 ***		0.003 ***
		(39.330)		(47.310)
Controls	Yes	Yes	Yes	Yes
Constant	1.197 ***	0.013 ***	0.514 ***	0.018 ***
	(14.000)	(12.510)	(15.220)	(16.690)
Year/Sector Fixed Effects	Yes	Yes	Yes	Yes
No. of Obs.	529,980	529,980	520,072	520,072
Adj. R^2	0.003	0.350	0.002	0.289

Note: *** indicates significance at the 1% level; *t*-values adjusted for robust standard errors are in parentheses.

Columns (3) and (4) report the results of the mechanism test of institutional investor bullish sentiment on stock returns. In column (3), the regression coefficient of institutional investor bullish sentiment on stock liquidity is 1%-level significant estimated at 0.061, which suggests that institutional investor bullish sentiment reduces stock liquidity. Turning to column (4), the regression coefficients of institutional investors' bullish sentiment and stock liquidity are both significantly positive at the 1% level, respectively. This implies that the liquidity in stock trading functions partially as a mediator in the relationship between institutional investors' bullish sentiment and cross-sectional stock returns. In other words, in addition to analyst attention, stock liquidity also serves as a channel through which institutions' emotion adjusts stock returns, and Hypothesis 4B is hence confirmed.

4.5. Heterogeneity Analysis

Due to differences in firm-specific characteristics, our sample companies may exhibit different performance and behavior in the market. As a result, in the heterogeneity test part of this section, we conduct a categorical regression analysis on the selected sample based on ownership attributes, manufacturing attributes, and pollution attributes.

Table 8 reports the regression results of retail investors' bullish sentiment and institutional investors' bullish sentiment on stock returns under differences in ownership attributes.

Table 8. Ownership differences.

	(1)	(2)	(3)	(4)
	State-Owned Enterprises	**Non-State-Owned Enterprises**	**State-Owned Enterprises**	**Non-State-Owned Enterprises**
Indbsi	−0.066 ***	−0.068 ***		
	(−229.520)	(−244.050)		
Inibsi			0.023 ***	0.025 ***
			(156.490)	(167.730)
Controls	Yes	Yes	Yes	Yes
Constant	0.016 ***	0.012 ***		0.021 ***
	(10.760)	(8.560)		(14.150)
Year/Sector Fixed Effects	Yes	Yes	Yes	Yes
No. of Obs.	217,935	310,895	213,900	304,951
Adj. R^2	0.415	0.327	0.349	0.266

Note: *** indicates significance at the 1% level; *t*-values adjusted for robust standard errors are in parentheses.

Columns (1) and (2) demonstrate the estimates of regressing retail investors' bullish sentiment on stock returns for state-owned and non-state-owned firms, with regression coefficients of −0.066 and −0.068, respectively and both being statistically significant at the level of 1%. In terms of the absolute value, the latter estimate slightly exceeds the former estimate, indicating that the adverse impact of individual investors' bullish emotion on stock returns is larger in non-state-owned firms. The explanations for this observation are twofold. On the one hand, state-owned firms tend to occupy unique market positions and obtain solid policy support, which provide them with a stable market environment and investor confidence to a certain extent. In contrast, non-state-owned enterprises rely more on market competitiveness and performance to attract investors. On the other hand, due to their close relationship with the government, state-owned enterprises tend to receive more attention and expectations about their business conditions and future development. This attention offsets, to some extent, the negative impact of retail investors' bullish sentiment on stock returns. Non-state-owned firms, on the other hand, are relatively weaker in this regard and are more susceptible to retail investors' mood swings.

Columns (3) and (4) tabulate the estimation results of regressing the stock returns of state-owned and non-state-owned firm against retail vs. institutional investors' bullish sentiment. The concerned regression coefficients are estimated at 0.023 and 0.025, respectively, with 1%-level significance level. These two estimates are of similar magnitudes, with the latter slightly bigger, which indicates that the positive impact of bullish institutional investor emotions on equity investment returns might be more prominent in non-state-owned enterprises. The reason might lie in the fact that state-owned enterprises are usually under the direct control or influence of the government, and their decision-making process tends to be constrained by more non-market factors. This unique governance structure restricts the voice of institutional investors in corporate decision-making, thus weakening the positive impact of bullish institutional investors' sentiment on stock returns. In contrast, non-state-owned firms have more flexible governance structures and decision-making mechanisms, hence being vulnerable to changes in the sentiment of stock market major participants—-institutional investors.

Table 9 reports the regression results of retail investors' bullish sentiment and institutional investors' bullish sentiment on stock returns under the difference in manufacturing attributes.

Table 9. Manufacturers vs. others.

	(1)	(2)	(3)	(4)
	MI	**Non-MI**	**MI**	**Non-MI**
Indbsi	−0.067 ***	−0.066 ***		
	(−225.030)	(−238.730)		
Inibsi			0.022 ***	0.025 ***
			(148.980)	(168.010)
Controls	Yes	Yes	Yes	Yes
Constant	0.015 ***	0.016 ***	0.022 ***	0.020 ***
	(6.420)	(11.850)	(8.940)	(13.610)
Year/Sector Fixed Effects	Yes	Yes	Yes	Yes
No. of Obs.	238,585	290,245	235,359	283,492
Adj. R^2	0.374	0.354	0.308	0.297

Note: *** indicates significance at the 1% level; *t*-values adjusted for robust standard errors are in parentheses.

Columns (1) and (2) tabulate the results of regressing stock returns on retail investors' bullish sentiment for manufacturing and non-manufacturing firms. The estimated coefficients are −0.067 and −0.066, respectively, and both are significant at the 1% level. The slightly higher estimate in absolute value in column (1) implies that the negative association between individuals' bullish opinions and stock returns is stronger in manufacturers. Compared to non-manufacturing enterprises, manufacturing enterprises typically have complex supply chains (Merchant & Gaur, 2008) involving multiple stages, such as raw material procurement, production, and sales. Retail investors, on the other hand, are numerous and spread across various sectors and niche markets. For instance, if most of the enterprises in a manufacturing enterprise's supply chain are also listed companies, the bullish sentiment of retail investors can influence the investment and development of these enterprises, which in turn will impact the corresponding manufacturing enterprise. This complexity makes manufacturing enterprises more susceptible to fluctuations in retail investors' bullish sentiment, thus making their stock returns more prone to the negative effects of such emotional volatility.

Columns (3) and (4) present the estimation results of regressing stock returns of manufacturing firms and non-manufacturing firms against the positive sentiment of retail vs. institutional investors, with the respective coefficients having magnitudes of 0.022 and 0.025 and a 1% level of significance. The slightly larger value of the latter tells us that the positive impact of institutional investors' bullish emotion on stock returns is stronger for non-manufacturers. Institutional investors often have more professional teams in the market and possess a greater amount of market information, with their investment decisions typically based on in-depth industry analysis and fundamental analysis of companies. Compared to manufacturing enterprises that conceal relevant patents and core secrets, in non-manufacturing enterprises, due to industry characteristics and the complexity of the market environment, institutional investors are more likely to identify potential investment opportunities. When institutional investors hold a bullish view of non-manufacturing enterprises, they will increase their investment in these companies, thereby driving up the stock price and enhancing returns.

Table 10 reports the regression results of retail investors' bullish sentiment and institutional investors' bullish sentiment on stock returns considering differences in pollution attributes of firms.

Table 10. Polluters vs. non-polluters.

	(1)	(2)	(3)	(4)
	PL	**Non-PL**	**PL**	**Non-PL**
Indbsi	−0.065 ***	−0.080 ***		
	(−283.810)	(−173.580)		
Inibsi			0.025 ***	0.022 ***
			(200.190)	(106.760)
Controls	Yes	Yes	Yes	Yes
Constant	0.016 ***	0.010 ***	0.020 ***	
	(14.470)	(3.390)	(15.920)	
Year/Sector Fixed Effects	Yes	Yes	Yes	Yes
No. of Obs.	406,632	122,198	398,488	120,363
Adj. R^2	0.350	0.379	0.293	0.292

Note: *** indicates significance at the 1% level; *t*-values adjusted for robust standard errors are in parentheses.

Columns (1) and (2) include the regression results of retail investors' bullish sentiment on stock returns of heavily polluters and non-polluters, with regression coefficients of −0.065 and −0.080, respectively, and both are significant at the 1% level. The absolute value of the latter is slightly larger than the former, which suggests that the negative impact of retail investors' bullish sentiment on stock returns is more significant in non-heavily polluting firms. Compared to non-heavily polluting enterprises, heavily polluting enterprises often face stricter regulation and policy restrictions due to their involvement in environmental pollution issues. The stock prices of these enterprises are more susceptible to various factors such as environmental policies, industry regulation, and corporate performance. As heavily polluting enterprises face relatively greater environmental pressures and operational risks, retail investors tend to be more cautious when investing in these enterprises. This caution can offset some of the effects of noise trading or the lack of professional knowledge among investors. Therefore, even when retail investors are optimistic, they are less likely to overbuy stocks of heavily polluting enterprises, thereby reducing the negative impact of buying behavior based on bullish sentiment on stock returns.

Columns (3) and (4) turn to presenting the estimation results of regressing stock returns of heavy polluters and non-polluters on retail vs. institutional investors' bullish sentiment. The respective 1%-level significant coefficients are 0.025 and 0.022. The slightly larger estimate of the former suggests that the bullish opinions made by institutional investors have a larger impact on stock returns among heavily polluters. Despite facing environmental pressures and regulatory constraints, heavy polluters tend to extend their businesses into greener industries, and such behavior is not driven by speculation but rather a deep strategic investment (Li & Chen, 2022). Through technological innovation and transformation and upgrading, they gradually reduce pollution emissions and improve production efficiency, thereby demonstrating strong profitability. Institutional investors, with their information and technological advantages, can see these potential investment values and are more likely to actively purchase the stocks of these enterprises, thereby promoting an increase in the stock returns of such enterprises.

5. Conclusions

5.1. Key Findings

The present article empirically examines the influences and influencing mechanisms of bullish emotions of individuals and institutions on the cross-section of stock returns, resorting to CSI 300 index portfolio companies over the period of 2015 to 2023. The study reveals that as retail investors' bullish sentiment increases, stock returns decrease; conversely, as institutional investors' bullish sentiment rises, stock returns increase. This conclusion

remains valid after an array of robustness checks. The analysis of the mechanism exploration reveals that retail and institutional investors' sentiment primarily influence stock returns by affecting analyst attention and stock liquidity levels. Heterogeneity analysis reveals that the adverse impact of retail investors' bullish sentiment on stock returns is more pronounced for non-state-owned enterprises, manufacturing enterprises, and non-heavily polluting enterprises; while the positive impact of institutional investors' bullish sentiment on stock returns is greater among non-state-owned firms, non-manufacturers, and heavily polluters. From an industry perspective, different industries also show large differences in their sensitivity to sentiment. For example, innovative industries are more susceptible to irrational bullish sentiment among retail investors due to their higher degree of uncertainty, which can lead to abnormal fluctuations in stock returns. In contrast, traditional industries such as infrastructure or energy are more likely to attract the attention of institutional investors due to their relatively stable profit models, and thus their stock returns are more likely to reflect the positive effect of institutional bullish sentiment.

5.2. Implications

The findings of this paper hold significant academic and practical importance. Theoretically speaking, the discoveries represent an important addition to the relevant models in the field of behavioral finance, providing a new perspective for future research in this area---always comparing the contrasting effect of individuals and institutions. Particularly, the intermediary mechanisms of analyst attention and stock liquidity employed in this study are empirically proven to be effective intermediaries in examining the linkages between investor sentiment and stock returns.

Additionally, the findings also carry important practical significance. Investors should fully recognition of the differential impacts of retail and institutional investors' bullish sentiment on stock returns. It is crucial for financial education and behavioral guidance. Retail investors are more susceptible to mood swings, which can lead to blind chasing when the market is high or panic selling when it is low. Therefore, strengthening financial literacy education for retail investors and helping them establish rational investment concepts should be the focus of financial institutions and regulators. Meanwhile, for institutional investors, how to make use of their professional analytical ability, based on the full cognition of the impact of mood changes on market trends, more intelligent asset allocation and risk management, is also an important issue to achieve long-term returns. Another practical implication concerns policymakers. They need to closely monitor fluctuations in investor sentiment, especially during periods of abnormal market volatility or stress, and should understand and consider the impact of differences in sentiment between retail and institutional investors on market stability. This will assist policymakers in designing more precise regulatory measures to maintain the healthy operation of the market and reduce systemic risks.

Notably, this research also provides a direction for future exploration of the application of technology tools in market sentiment monitoring. For example, real-time tracking of sentiment signals in social media, news reports and other information sources through artificial intelligence and big data technologies can help build more accurate sentiment index models. Finally, it is important to emphasize that although this study reveals an important link between sentiment and stock returns, its findings are not applicable to all market environments or economic cycles. Generalized results can only be obtained when one extends the present setting to incorporate multi-dimensional factors such as macroeconomic indicators, industry characteristics, and company fundamentals.

5.3. Future Research

Given above findings and contributions said, this study may be limited in the following aspects that can be addressed by future research. First, the sample used in this paper is limited to publicly listed companies included in the CSI 300 index, resulting in a relatively insufficient sample size. Scholars may extend the analytical framework to a broader scope of companies if they wish to pursue further along this direction. Secondly, by employing the behavioral finance tools, the theoretical foundation of the article could be further strengthened by incorporating the determinants, formulating process, and economic outcomes of investor sentiments generated by different groups of market participants. Thirdly, further extended research can attempt to reveal whether there are significant differences in the strength of sentiment effects across market environments. We suspect that during bull market periods, the negative impact of retail investors' bullish sentiment will be partially weakened due to the overall optimistic expectations of the market, but the positive effect of institutional investors' bullish sentiment will become more significant, which may be related to the fact that institutional investors are more capable of accurately capturing value opportunities in bull markets. Fourthly, another potential direction of expansion for this study is to analyze the dynamic characteristics of market volatility in more detail. For example, by introducing time series models or machine learning algorithms, future studies can explore how investor sentiment varies with factors such as macroeconomic indicators, policy changes, and international market linkages. Finally, it should be emphasized that comparative research on cross-regional markets is also of great significance. Especially in the context of current deglobalization, investor behaviors in different countries may differ due to geopolitical concerns.

Author Contributions: Conceptualization, J.C.; Methodology, J.C.; Validation, Q.W.; Formal analysis, J.C.; Investigation, X.G.; Data curation, X.G.; Writing—original draft, J.C. and Q.W.; Writing—review & editing, X.G.; Visualization, Q.W.; Supervision, Q.W.; Project administration, X.G. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The data that support the findings of this study are available from the corresponding author, X. G., upon reasonable request.

Conflicts of Interest: The authors declare no conflict of interest.

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