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The Impact of Investor Sentiment on Stock Returns of Different Industries in China

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Abstract: This paper selects the stock data of different industries in China's stock market. It conducts benchmark and heterogeneity regression analyses using the CICSI investor sentiment index and each sector's weighted average monthly excess returns, with the monthly GDP growth rate as a control variable. The results show that investor sentiment significantly impacts the stock returns in China. The impact on the manufacturing industry, scientific research and technical services, and health and social work is the greatest for different industries. Meanwhile, the impact on public administration, social security, and social organization industries is also much more significant. Based on the results, this paper suggests that in asset pricing and investment decision-making, the impact of investor sentiment should be considered appropriately according to the differences between different industries. At the same time, investors should integrate sentiment analysis into their investment strategies, primarily when investing in sectors highly sensitive to investor sentiment, and diversify their portfolios based on the sensitivity of industries to investor sentiment to manage risk.

Keywords: Behavioral Finance, Investor Sentiment, Stock Returns, Different Industries.

1. Introduction

Within the framework of traditional finance theory, the efficient market hypothesis (EMH) has long been considered central to explaining the workings of capital markets. The theory assumes that market prices reflect all available information and that market participants are rational and always make optimal investment decisions to maximize their interests. Under this assumption, market prices are always correct, reflecting the intrinsic value of assets, and any deviation in prices is quickly corrected by arbitrage opportunities.

However, over time, there has been increasing evidence that markets are not always efficient and rational. The rise of behavioral finance directly responds to this idealized assumption of traditional financial theory. Behavioral finance reveals how human cognitive biases and emotional fluctuations affect investor decision-making, and thus the dynamics of capital markets. It focuses on factors that cause market participants to deviate from fully rational behavior, including overconfidence, herd behavior, loss aversion, and emotion-based decision-making.

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2. Literature Reviews

De, Shleifer, Summers, and Waldman *[1]* introduced investor sentiment into the price determination model for the first time, pointing out that in a limited arbitrage environment, if investor sentiment influences each other, the arbitrageur will be unable to eliminate mispricing caused by irrational behavior. As a result, it will become a systemic risk, influencing the equilibrium price of financial assets. Since then, several experts' empirical studies have demonstrated that investor emotion influences stock market performance. Lee et al. *[2]* noted that investor sentiment is a systematic element influencing pricing. Excess returns are linked to variations in sentiment, and sentiment affects return fluctuations. Brown and Cliff *[3]* believe that changes in the degree of sentiment are substantially connected with stock market performance. Baker and Wurgler *[4-6]* proposed a theoretical framework for the impact of investor sentiment on stocks. They discussed the impact of sentiment on major global stock markets and the infectivity of sentiment among markets due to capital flows.

In the Chinese stock market, the impact of investor sentiment is particularly significant. Wang Meijin and Sun Jianjun *[7]* demonstrated through empirical study that investor attitude in reaction to price signals is a systematic element influencing stock returns. Furthermore, their findings suggest that institutional investors may pose a risk to noise traders. Jiang Yumei and Wang Mingzhao *[8]* examine the overall and cross-sectional effects of investor attitude on stock returns. The findings reveal that sentiment is positively connected with short-term market returns and negatively correlated with long-term market returns, implying that investor sentiment has a systemic impact on stock prices. Wen Fenghua et al. *[9]* divided investor sentiment into positive and negative emotions. Their findings indicate that positive emotion has a significant positive impact on stock returns, while negative emotion has no noticeable impact on stock returns. Moreover, fluctuations in investor sentiment have a significant impact on stock return fluctuations. Based on empirical research of AH cross-listed stocks, Lu Jing Zhou Yuan *[10]* investigated the impact of investor sentiment on stock prices and discovered that investor sentiment had a considerable impact on both the A-share and H-share markets during the same timeframe. Song Shunlin and Wang Yanchao *[11]* investigated how investor sentiment influences stock pricing and discovered that both market sentiment and attitude toward individual stocks had a strong impact on IPO premiums. Ma Yong, Yang Wenwei, and Jiang Yiqing *[12]* show that the inclusion of the investor sentiment factor can further improve the validity of the pricing model and suggest that the pricing of the Chinese stock market is not entirely determined by company fundamentals but rather by the presence of more obvious sentiment-driven factors. Zhao Qingguo and Qu Xiaoyu *[13]* used principal component analysis to create investor sentiment indexes and investigate how investor sentiment affects stock returns in several industries in China. They determined that stock returns in the majority of Chinese industries are highly sensitive to investor sentiment, and that investor sentiment is susceptible to market volatility.

While there is a wealth of literature on the impact of investor sentiment on stock market returns, these studies have tended to focus on the macro level and examine the impact of sentiment in the context of the entire market. They have not explored in depth how sentiment works in different ways across different industries. Particularly in a complex and volatile market environment such as China, investor sentiment may affect stock returns in different industries to different degrees due to differences in industry characteristics, policy orientations, and market participant structures. In addition, existing studies seldom consider intra-industry heterogeneity, e.g. industries such as the manufacturing industry, scientific research and technical services, and health and social work may be more sensitive to sentiment fluctuations due to their special characteristics.

This research gap suggests that there is less existing literature on studying how investor sentiment is transmitted and affects stock returns across industries in the Chinese stock market based on industry

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characteristics. This limitation not only reduces the explanatory power of the theory to real market dynamics but also restricts the effective formulation of investment strategies, especially in terms of industry selection and asset allocation. Therefore, an in-depth exploration of the specific impact of investor sentiment on stock returns between different industries in China can not only fill the gaps in existing research but also provide investors and policymakers with more nuanced and targeted insights.

3. Hypotheses

Based on the above findings, this paper proposes hypothesis one:

H1: Investor sentiment has a significant impact on stock returns in most industries. This hypothesis aims to verify the general influence of investor sentiment as an important market factor in the stock returns of different industries.

According to Ma Yong, Yang Wenwei, and Jiang Yiqing's conclusions *[12]* on how investor sentiment affects the stock prices of companies in different industries and the above analyses, as well as due to the high sensitivity of the manufacturing industry to economic cycles and policy changes, the high-risk nature of the scientific research and technical services due to the high volatility of expectations for scientific and technological innovations and research and development results, and the increased volatility of share prices due to health crises and policy changes in the health and social work, this paper further proposes hypothesis two:

H2: Investor sentiment has a more significant impact on the manufacturing industry, scientific research and technical services, and health and social work.

By validating these hypotheses, this study not only expects to broaden the theoretical horizon of behavioral finance but also provides empirical support for understanding and responding to the industry-differentiated characteristics of the Chinese stock market, which in turn provides more precise guidance for investment decision-making and policy formulation.

4. Data Selection

All the data in this paper comes from CSMAR.

There are two main types of definitions of Investors' Sentiment in academic research: (1) The extent to which noise traders' expectations about the future share price of a stock deviate from the beliefs of rational arbitrageurs (De Long et al., *[1]*). (2) A belief that investors form based on their expectations of an asset's future cash flows and investment risk (Baker and Wurgler, *[4]*). Meanwhile, the selection of investor sentiment indicators mainly includes the following three categories: (1) Objective indicators. Including closed-end fund discount, IPO issuance volume, first-day returns, trading volume, etc. (2) Subjective indicators. Including securities analyst sentiment index, and consumer confidence index. (3) Composite Indicators. Using principal component analysis, objective and subjective indicators, etc. are combined. This paper chose the monthly CICSI (China Investor Sentiment Index) Investor Sentiment Index. The selection of indicators for the CICSI Investor Sentiment Index is similar to that of subjective and objective indicators, with appropriate adjustments for China. The CICSI Investor Sentiment Index encompasses investor sentiment reflections of what has happened in the market (e.g., the performance of yields, trading volume), expectations of future information about the market, the different characteristics of investor sentiment exhibited at different times, and the different characteristics of investor sentiment in different industries at different times. This paper refers to the CICSI Investor Sentiment Index built by Yi Zhigao and Mao Ning *[14]*. The CICSI Investor Sentiment Index is constructed by combining multiple specific market variables including the discounted closed-end fund (DCEF), the trading volume of the last month (TURN), the number of IPOs (IPON), the first-day return on IPOs (IPOR), the number of new investor accounts

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opened last month (NIA), and the consumer confidence index (CCI). Closed-end funds should be priced in line with the value of their equity portfolios per unit of net assets, but closed-end funds are often issued at a discount. So, the discounted closed-end fund (DCEF) is a good objective indicator of investor sentiment and is negatively correlated with sentiment. The trading volume of the last month (TURN) as an objective indicator reflects to some extent the liquidity of the market and the level of investor participation. Low IPO returns are the result of market timing, so both the number of IPOs (IPON) and the first-day return on IPOs (IPOR) are good objective indicators of investor enthusiasm and are positive indicators of sentiment. For China's fast-growing stock market, the number of new investor accounts opened each month (NIA) represents the degree of demand for and participation in securities by OTC investors, and thus reflects investor sentiment as an objective indicator. Considering the availability of data and the fact that many scholars have found that the consumer confidence Index (CCI) is a good measure of changes in investor sentiment, the CCI is chosen as a subjective indicator. These variables reflect different dimensions of the market, such as market activity, investor confidence in the future development of the market, and the degree of market participation. This index can effectively reflect investor sentiment in the Chinese stock market. The CICSI Investor Sentiment Index contains the component of macroeconomic factors or rational expectations, which cannot fully reflect changes in investor sentiment. So, the CICSI Investor Sentiment Index excluding the influence of macroeconomic factors is chosen in this paper, it more accurately reflects pure investor sentiment, independent of external economic influences. This ensures that the study focuses on the psychological component of investor behaviors. Yi Zhigao and Mao Ning *[14]* standardized the six indicators and subjected them to principal component analysis, and then selected the five principal components with a cumulative variance explained of 85% or more for weighted averaging, determined the variable coefficients of each principal component, and constructed the formula for CICSI Investor Sentiment Index. It is important to note here that the larger the discounted closed-end fund (DCEF) (i.e., the smaller the discount rate), the higher the investor sentiment (i.e., the larger the CICSI Investor Sentiment Index), and vice versa. The remaining five variables are all positively correlated with the CICSI Investor Sentiment Index. Many literatures in the field use this index of investor sentiment. This is its computational formula.

$$CICSI = 0.223DCEF + 0.329TURN + 0.272IPON + 0.313IPOR + 0.252CCI + 0.392NIA \quad (1)$$

Note: DCEF—Discounted Closed-end Fund; TURN—Trading Volume of Last Month; IPON—Number of IPOs; IPOR—First-day Returns of IPO; CCI—Consumer Confidence Index; NIA—Number of New Investor Accounts Opened Last Month.

Next, this paper chose the monthly total stock market value, monthly stock return, and monthly risk-free interest rate to calculate the monthly weighted average excess return. This measure was chosen to capture real investment returns above the risk-free rate, providing a clear picture of industry performance independent of general market trends. Next, referring to the control variables selected by Zhao Qingguo and Qu Xiaoyu *[13]* when exploring the impact of investor sentiment on stock returns of different industries in China, this paper chose the GDP growth rate for month □ as a control variable. The GDP growth rate is a composite measure of economic health and growth that effectively captures the impact of the macroeconomic environment on stock returns across industries. By controlling the GDP growth rate, the interference of macroeconomic fluctuations on the regression results can be reduced to ensure that the focus is on the impact of investor sentiment. Meanwhile, it improves the explanatory power and forecasting accuracy of the model, making the impact of investor sentiment on stock returns clearer. Then, according to the 2012 edition of the China Securities Regulatory Commission industry classification, all stocks are divided into 18 industries, and the industry classification code to match them. This paper chose a sample period from February 2003 to April 2023. This is because the data of the CICSI investor sentiment index which excludes the

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influence of macro factors began in February 2003, and most stocks in the sample have complete data during this period.

5. Research methods and results

This paper chose to use regression analysis to study the impact of investor sentiment on stock returns because it can effectively quantify the relationship between the independent variable (investor sentiment) and the dependent variable (stock returns) while controlling for other influences.

This paper conducted benchmark regression on the monthly weighted average excess return of the industry and the monthly investor sentiment index. The main regression function is

$$WAER_{it} = \alpha_0 + \alpha_1 IS_t + \beta_1 GDPG_t + \varepsilon_{it} \quad (2)$$

Note: $WAER_{it}$—The weighted average excess returns of industry i in month t; IS_t—Investor sentiment index for month t; $GDPG_t$—The GDP growth rate for month t as control variable; ε_{it}—Error term.

Then, this paper obtained the following benchmark regression results.

Table 1: Benchmark Regression Result

Variable name	*WAER*
IS	0.00242***
	(0.00)
GDPG	0.0554**
	(0.02)
Constant	0.00603***
	(0.008)
Observations	4497
R-squared	0.002

Standard errors in parentheses:*** p<0.01, ** p<0.05, * p<0.1

The benchmark regression results show that the coefficient α_1 of investor sentiment is 0.00242 and significant at the 1% level. So, the benchmark regression is valid.

Next, this paper continues to carry out heterogeneity regression. Here are the regression results.

Table 2: Heterogeneity Regression Result

VARIABLES	(1) Agriculture, Forestry, Fisheries and Husbandry	(2) Mining Industry	(3) Manufacturing Industry	(4) Electricity, Heat, Gas, Water Production and Supply Industry	(5) Construction Industry	(6) Wholesale and Retail Trade
IS	0.00482	0.00232	0.00415***	0.00294	0.00345	0.000591
	(0.16)	(0.437)	(0.00)	(0.23)	(0.28)	(0.77)
GDPG	0.0558	0.207**	0.0551*	0.131*	0.168*	0.0902

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Table 2: (continued)

	(0.61)	(0.03)	(0.07)	(0.09)	(0.09)	(0.18)
Constant	0.00583	-0.00812	0.0112***	-0.00443	-0.00522	0.00375
	(0.56)	(0.34)	(0.00)	(0.53)	(0.57)	(0.53)
R-squared	0.008	0.019	0.074	0.014	0.013	0.007

VARIABLES	(7) Transportation, Warehousing and Mail Business	(8) Hotel and Catering Services	(9) Information Transmission, Software, and Information Technology Services	(10) Financial Industry	(11) Real Estate	(12) Leasing and Business services	(13) Scientific Research and Technical Services
IS	0.000552	0.00223	-0.000314	-0.00388	-0.00238	0.00283	0.0179***
	(0.81)	(0.50)	(0.91)	(0.25)	(0.49)	(0.35)	(0.01)
$GDPG$	-0.0360	-0.0343	0.0187	0.0371	0.0436	-0.212**	0.288*
	(0.62)	(0.74)	(0.84)	(0.73)	(0.69)	(0.03)	(0.07)
Constant	0.00975	0.0113	0.0117	0.00476	0.00800	0.0311***	-0.00378
	(0.14)	(0.23)	(0.17)	(0.62)	(0.42)	(0.01)	(0.79)
R-squared	0.002	0.003	0.000	0.007	0.004	0.029	0.051

VARIABLES	(14) Water, Environmental and Utilities Management	(15) Resident services, Repairs, and Other Services	(16) Education Industry	(17) Health and Social Work	(18) Culture, Sports, and Entertainment Industry	(19) Public Administration, Social Security, and Social Organization
IS	-0.00194	-0.0172	-0.000307	0.00969***	-0.00307	0.00601*
	(0.48)	(0.40)	(0.95)	(0.00)	(0.36)	(0.06)
$GDPG$	0.0230	0.421	-0.287*	-0.0563	-0.0197	0.304***
	(0.79)	(0.22)	(0.06)	(0.62)	(0.85)	(0.00)
Constant	0.00557	-0.00653	0.0309**	0.0202*	0.0123	-0.0148
	(0.48)	(0.82)	(0.03)	(0.05)	(0.21)	(0.12)
R-squared	0.003	0.032	0.014	0.036	0.003	0.038

Standard errors in parentheses:*** p<0.01, ** p<0.05, * p<0.1

According to the benchmark regression results, the coefficient of the investor sentiment index in all industries is significantly greater than zero. Among them, the manufacturing industry, scientific research and technical services, and health and social work are significant at the 1% level. Public administration, social security, and social organization industries are significant at the 10% level.

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6. Conclusion

This paper explores the impact of investor sentiment on the stock returns of different industries in China through regression analysis. The benchmark regression results show that investor sentiment has a significant impact on the stock returns of all industries, which confirms the establishment of hypothesis 1(H1).

At the same time, there is significant heterogeneity in the impact of investor sentiment on stock returns of different industries. Investor sentiment has a more significant impact on the manufacturing industry, scientific research and technical services, and health and social work, validating Hypothesis 2 (H2). Meanwhile, the impact on public administration, social security, and social organization industries is also much more significant.

About the reasons why investor sentiment has a greater impact on the manufacturing industry, scientific research and technical services, and health and social work, this paper considers the following: First, the manufacturing industry is highly sensitive to the macroeconomic environment and market outlook. Fluctuations in the economic cycle have a strong impact on it, and investor sentiment reacts significantly in upward or downward economic cycles. At the same time, policy changes (e.g., industrial subsidies, and tariff adjustments) also have a significant impact on it. Secondly, scientific research and technical services are characterized by high uncertainty and risk, and investor expectations of scientific and technological innovations and research and development results are volatile. The non-linear development and innovation of the technology industry can cause great sentiment fluctuations in the market. Meanwhile, the scientific research and technology services industry relies on government and corporate research and development investments, as a result, policy support and market expectations significantly influence investor sentiment. Finally, health and social work are closely linked to changes in the socioeconomic environment and demographics and health crises and policy changes can significantly affect investor sentiment. Health emergencies and new medical technologies cause strong reactions from investors. Health policies, health insurance systems, and public health events also have a strong impact on it.

Therefore, for investors, this paper suggests that investors should integrate sentiment analysis into their investment strategies, especially when investing in sectors that are highly sensitive to investor sentiment. Meanwhile, investors can diversify their portfolios based on the sensitivity of industries to investor sentiment to manage risk. Finally, investors should also increase their awareness of sentiment-driven biases and avoid herd behavior and sentiment trading. Policymakers and regulators can develop and implement frameworks for monitoring and reporting on investor sentiment as an indicator of market health and should ensure that sound frameworks are in place to prevent and penalize market manipulation that unfairly exploits changes in sentiment. For industry practitioners, there should be regular and transparent communication with investors, especially in industries that are highly sensitive to investor sentiment, while considering sentiment analysis as part of strategic planning.

In addition, there are some limitations in this paper, such as the CICSI index does not differentiate between retail and institutional investor sentiment, which can be broken down in future research to show the different impacts of the sentiment of different investors on stock returns. There is also the fact that the industry classification used may not accurately reflect all emerging industries and future research could use a more detailed industry classification or explore intra-industry differences. Finally, this paper does not consider international economic trends that may affect the Chinese market, and future research could incorporate global economic indicators and China's international trade relationships for analysis.

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