

The Impact of Investor Sentiment Divergence on AH Share Premium: Evidence from SMIC

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Abstract: As a matter of fact, plenty of Chinese companies increasingly choose to cross-list on both AH market. However, many shares of Chinese companies listed on both sides of the border have a long history of high AH share premiums. With this in mind, this study will take SMIC as an example to analyse the impacts, whose AH share premium has been high for a long time. By means of using principal component analysis to construct an index of investor sentiment difference between AH, this study will analyse the impact of investor sentiment difference on its AH share premium, as well as further evaluate it based on the combination of macro factors. According to the analysis, it is found that investor sentiment is closely related to AH share premium, and the superimposed influence of macro factors and investor sentiment makes SMIC's AH share premium rate stay high for a long time. Overall, these results shed light on guiding further exploration of AH share premium.

1 INTRODUCTION

Many Chinese companies are now successfully listed on exchanges around the world, such as Hong Kong, New York and London. The existence of A-shares and H-shares provides Chinese companies with multiple listing options. AH-share listed companies refer to enterprises that are listed either sequentially or concurrently in both Mainland China and Hong Kong. As of the end of December 2024, 151 companies have opted for dual cross-listing to meet their corporate development and expansion needs. In line with the principle of the law of one price, stocks listed in both places should maintain the same market price. However, there has been a long-standing AH share premium for stocks listed in both places.

Some scholars have analysed the causes of AH share premium from the perspective of traditional finance, giving explanations from the perspectives of demand difference, liquidity difference, information asymmetry and market segmentation (Andy et al., 1998; Ding, 2023; Ma, 2020; Tan et al., 2017). Since 2014, despite the implementation of liberalization policies such as the Shanghai-Hong Kong Stock Connect and the Shenzhen-Hong Kong Stock

Connect, the AH share premium has not been narrowed. Therefore, individual stock fundamentals and market segmentation factors under rational expectations cannot fully explain the phenomenon of high AH stock premiums. With the development of behavioural finance, many scholars try to explain the discount-premium phenomenon of AH cross-listed stocks from the perspective of investor sentiment. A number of studies have shown that investor sentiment significantly affects the market and has predictive capacity for stock market premiums (Lu & Zhou, 2015; Liu & Guo, 2022; Zhang et al., 2013). Investor sentiment may provide a new analytical perspective to explain the AH stock premium.

Currently, most studies on AH share premiums focus on the macro perspective. Few studies have examined the impact of the difference in investor sentiment between the two places on the AH share premium from a micro perspective. At the industry and company level, the semiconductor industry rebounded in the first three quarters of 2024, with the global semiconductor market registering a 26% year-on-year growth in revenue, and the semiconductor industry is receiving a lot of attention from the global market. SMIC, a leading domestic foundry, has successfully jumped to become the world's third

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largest foundry for chips after TSMC and Samsung by increasing its market share to 6% in the third quarter of 2024. Currently, China's overall domestic chip self-sufficiency rate is low, and the demand for domestic substitution is more urgent. With the increasing support of national policies for the semiconductor industry, SMIC is expected to gain more market share in this trend. In addition, SMIC's strong market performance is characterized by a significant AH share premium. In recent years, its premium has been maintained at a high level for a

long time, even exceeding 200%, which is representative.

In summary, SMIC's outstanding performance in the semiconductor industry and its AH share premium characteristics make it a typical representative for studying the impact of investor sentiment differences between the two places on its AH share premium. Therefore, this paper selects SMIC as the research object to explore the impact of investor sentiment differences between the two places on its AH share premium.

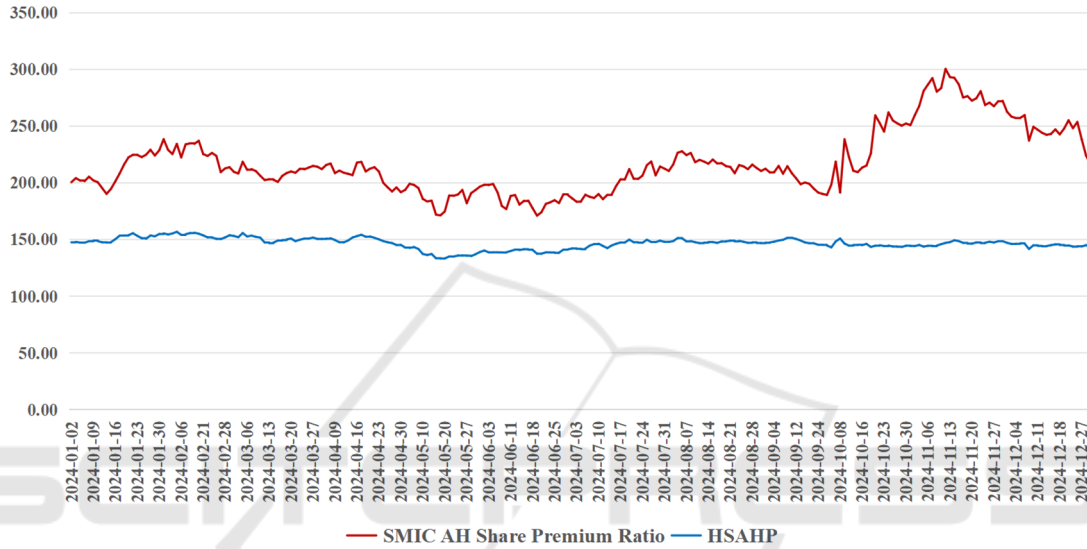


Figure 1: 2024-2025 SMIC AH share premium rate trend chart (Photo/Picture credit: Original).

2 CASE DESCRIPTION AND RESEARCH HYPOTHESIS

SMIC was respectively listed in Hong Kong and Shanghai in 2004 and 2020. SMIC is a foundry offering a wide range of technology nodes from 0.35um to 14nm. Its technology nodes are mainly used in smartphones, tablets, artificial intelligence, automotive electronics, and Internet of Things. In addition, SMIC has a broad customer base, including well-known chip design companies at home and abroad, such as Huawei Hesse and Qualcomm and others. The premium situation in the AH share market is usually measured by the AH share premium ratio, which is calculated by the formula:

$$\text{premium rate} = \frac{\text{A-share price} - \text{H-share price}(\text{exchange rate adjusted})}{\text{H-share price}(\text{exchange rate adjusted})} \times 100\% \quad (1)$$

The Hang Seng Shanghai-Shenzhen-Hong Kong Stock Connect AH Share Premium Index (HSAHP)

is commonly used in the market to reflect the overall AH share premium. The index selects stocks listed on both A-share and H-share lists that are eligible for trading on the Shanghai-Hong Kong Stock Connect or Shenzhen-Hong Kong Stock Connect as constituents. The AH share premium of each constituent is then weighted and averaged by the outstanding market capitalization weights to arrive at the overall premium index with the following formula:

$$\text{HSAHP} = \frac{\sum (\text{AH share premium of constituent}_i \times \frac{\alpha + \beta}{\gamma})}{\gamma} \quad (2)$$

where α in the formula is the outstanding market capitalization of A-shares of constituent i , β is the outstanding market capitalization of H-shares of constituent i , and γ is the sum of the outstanding market capitalization of A-shares and H-shares of all constituents.

To reflect the AH share premium of SMIC, this paper intercepts the daily closing price of SMIC A shares after ex-rights, the daily closing price of H

shares after ex-rights, the daily exchange rate of HKD to CNY, and the HSAHP for the period from January 1, 2024 to January 1, 2025. The trend of SMIC's AH share premium from 2024 to 2025 was calculated and compiled as shown in Figure 1. The long-term fluctuation range of the HSAHP is generally between 130%-150%. As can be seen from Figure 1, SMIC's AH share premium has been significantly higher than the HSAHP for a long period of time, and the premium has been higher than 200%, or even more than 300% for a long period of time, which indicates the anomalous nature of its premium.

Based on the phenomenon of long-term high premium of SMIC, combined with relevant theories, this paper puts forward the following hypothesis: the high premium of SMIC is not only the result of traditional market segmentation, but also the differentiated response of investors' sentiment in two places to favorable policies and industry outlooks, which leads to the long-term existence of the premium. This driving mechanism will be verified by principal component analysis and event study method in the following section.

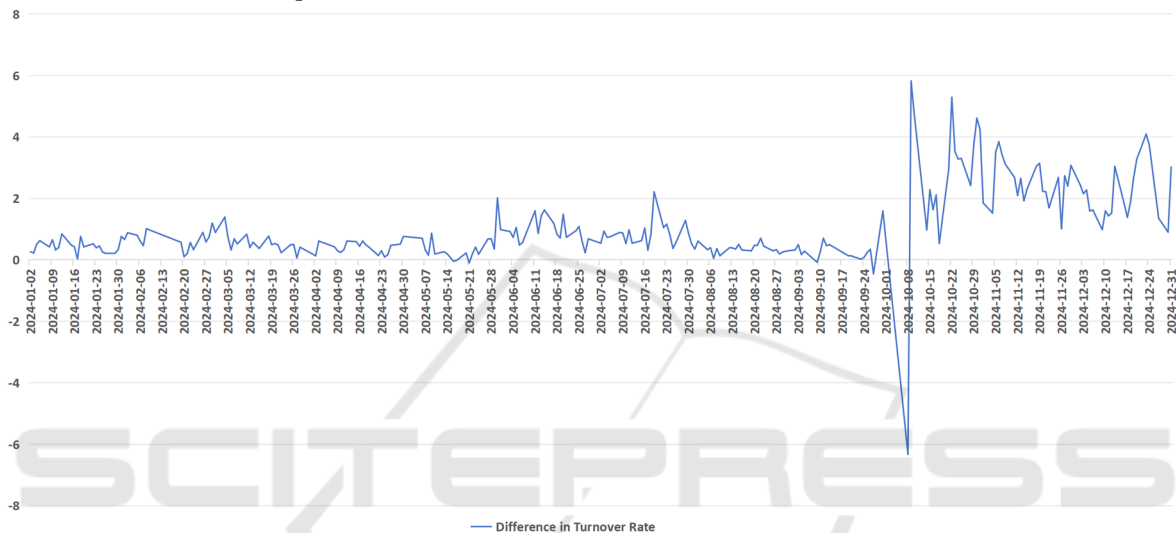


Figure 2: Difference in turnover rate variation analysis (Photo/Picture credit: Original).

3 SYNTHESIS OF SMIC AH-SHARE INVESTOR SENTIMENT DIFFERENCE INDICE

Investor sentiment is observable market behavior that can be indirectly measured by proxy variables. The more dominant measure in existing research is the synthesis of single direct or indirect indicators by principal component analysis (Baker et al., 2006; Yi et al., 2009). In order to measure the difference in investor sentiment between SMIC AH shares, this paper constructs an index of investor sentiment difference between SMIC AH shares by principal component analysis. Three indicators were selected as proxy variables for this paper. The time span of the data is from January 1, 2024 to January 1, 2025. The data frequency is daily data.

The turnover ratio represents the proportion of a stock's turnover relative to its outstanding share capital during a specific time period. The turnover rate reflects the frequency of market trades and captures investor sentiment differences from the short-term trading behaviour dimension. The higher the investor sentiment, the higher the market turnover; conversely, the lower the investor sentiment, the lower the market turnover (Yu & Zhong, 2009). In addition, there are limitations to the turnover ratio. It is susceptible to short-term noise such as market rumors and technical adjustments. However, by analyzing the change in the turnover ratio over a longer period of time and combining it with other indicators to make a comprehensive judgment, the possibility of being misled by short-term noise can be reduced. The difference in turnover rate quoted in this article is the difference between the daily turnover rate in the A-share market and the daily turnover rate in the H-share market. Figure 2 illustrates the difference in turnover rate.

The P/E ratio is calculated by dividing the stock price by the earnings per share, reflecting investors' expectations of a company's future earnings. The P/E ratio is viewed as a common metric for examining whether a stock's valuation is reasonable. If a company's P/E ratio is high, this may imply that the company's stock is overvalued or that investors are highly optimistic about future growth rates. In addition, the P/E ratio can reflect investor sentiment

to some extent. Specifically, when investors are bullish on the prospects of a stock or a company, its P/E ratio will be high, reflecting high investor sentiment (Yao et al., 2019). The P/E difference quoted in this paper is the difference between the daily rolling P/E of SMIC's A-share market shares and the daily rolling P/E of its H-share market shares (seen from Figure 3).

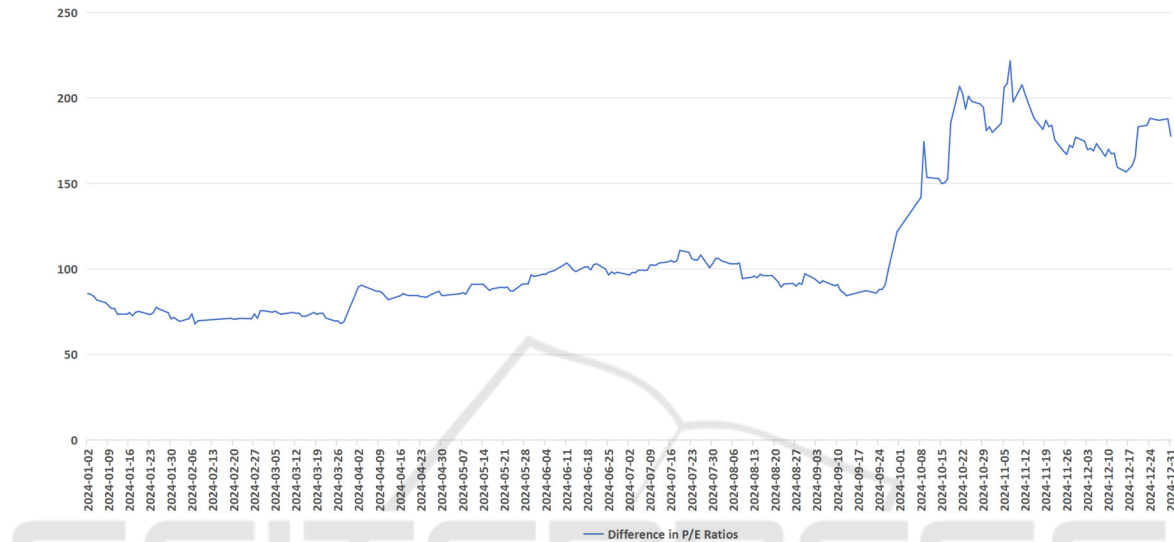


Figure 3: Difference in P/E ratio variation analysis (Photo/Picture credit: Original).

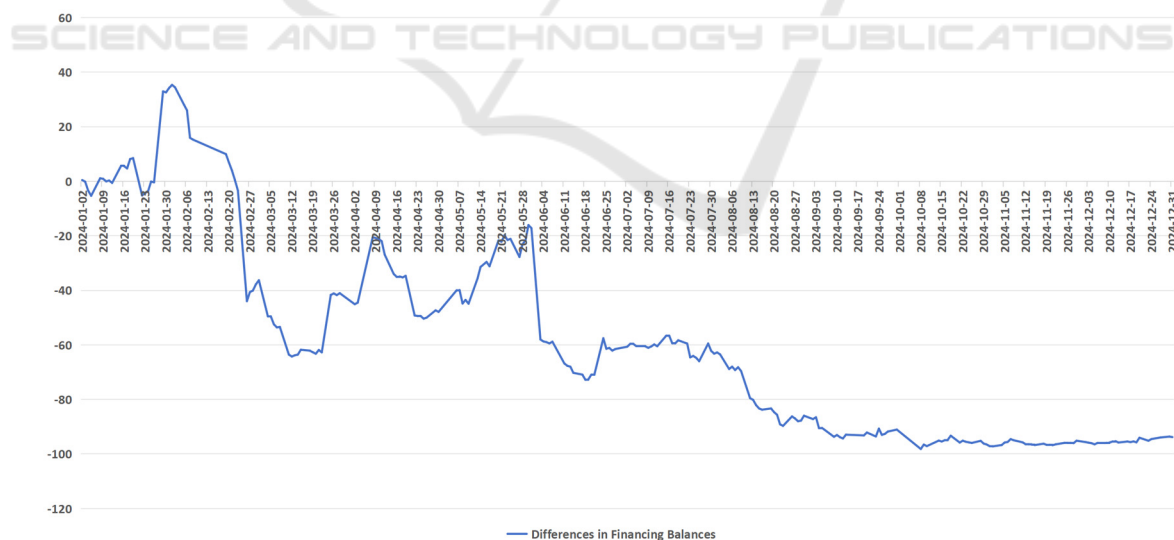


Figure 4: Difference in the bond borrowing balance variation analysis (Photo/Picture credit: Original).

The bond borrowing balance is the sum of the amounts investors have borrowed by borrowing stocks and selling them short. Its change is a direct reflection of the market's expectation of the future

price of the stock. There have been studies showing that the bond borrowing balance is a valid indicator of investor sentiment (Chu & Cao, 2018). The bond borrowing balance are negatively correlated with

investor sentiment. Specifically, when investor sentiment is high, the bond borrowing balance is suppressed by reduced bearish demand. Whereas, when sentiment is low, short-selling behavior increases, leading to a rise in the bond borrowing balance. To address the potential distortion caused by the scale disparity in bond borrowing balances between the A-share and H-share markets, this paper employs the relative difference method to calculate inter-market variations in bond borrowing balances. The calculation formula is as follows:

$$\text{Difference in Bond Borrowing Balance} = \frac{\mu - \varphi}{\mu + \varphi} \times 100\% \quad (3)$$

Here, μ is the balance of A-share bond borrowing and φ is the balance of H-share bond borrowing. For the sake of comparability, the H-share bond borrowing balance in the formula is converted into CNY units based on the exchange rate of HKD to CNY on the

same day. The analysis of the difference in the bond borrowing balance is presented in Figure 4.

In this paper, SPSS statistical software is utilized to implement the dimensionality reduction of the datasets under principal component analysis. The time span of the data in this paper is from January 1, 2024 to January 1, 2025, with a total of 233 data sets. The data are obtained from Oriental Wealth Choice database, Wind database, etc. In the first step, this paper standardizes the three aforementioned variables thereby eliminating the effect of the scale and obtaining smoother data. In the second step, correlation analysis between variables is performed. If there is a strong correlation between the variables and no multicollinearity it is more suitable for principal component analysis. As can be seen from Table 1, all variables are significantly correlated and the absolute value of correlation coefficient is greater than 0.3, indicating that principal component analysis can be performed.

Table 1: Correlation analysis among proxy variables after dimensionless quantification.

	Difference in Turnover Rate	Difference in P/E Ratios	Difference in Bond Borrowing Balance
Difference in Turnover Rate	1		
Difference in P/E Ratios	0.730**	1	
Difference in Bond Borrowing Balance	-0.412**	-0.680**	1

Note: ** indicates significant correlation at the 0.01 level.

Table 2: KMO and Bartlett's test of sphericity.

KMO Value		0.577
Bartlett Sphericity Check	Approximate Chi-Square χ^2	324.487
	df	3
	P-Value	0.000

Table 3: Explanation of variance of each component and characteristic root table.

number	Characteristic Root			Principal Component Extraction		
	Characteristic Root	Variance Rate%	Explained accumulation %	Characteristic Root	Variance Rate%	Explained accumulation%
1	2.224	74.132	74.132	2.224	74.132	74.132
2	0.590	19.664	93.796	-	-	-
3	0.186	6.204	100.000	-	-	-

Table 4: Component matrix.

Variable Name	Variable Symbol	Ingredient
		Ingredient 1
Difference in Turnover Rate	a	0.558
Difference in P/E Ratios	b	0.632
Difference in Bond Borrowing Balance	c	-0.538

In the third step, KMO test and Barlett spherical test were performed. As shown in Table 1, the KMO value is 0.570, and the P value of Barlett's spherical test is less than 0.05. The basic requirements of principal component analysis are satisfied, and principal component analysis can be carried out (seen from Table 2).

The fourth step is to calculate SMIC AH Shares Investor Sentiment Difference Index. According to the Kaiser criterion, only principal components with eigenvalues greater than 1 are retained, as these principal components explain at least more variation than one of the original variables. As can be seen from Table 3, one principal component was extracted to represent three surrogate variables for principal component analysis.

In the fifth step, based on the results of the component matrices in Table 4, the SMIC AH-share Investor Sentiment Difference Index is synthesized. It is calculated as follows:

$$\text{The SMIC AH-share Investor Sentiment Difference Index} = 0.558 \times a + 0.632 \times b - 0.538 \times c \quad (4)$$

Finally, the correlation analysis between the SMIC AH-share Investor Sentiment Difference Index and three proxy variables was carried out. The results are shown in Table 5. As can be seen from Table 5, there is a significant correlation between the SMIC AH-share Investor Sentiment Difference Index and each proxy variable. Therefore, the SMIC AH Share Investor Sentiment Difference Index can objectively and accurately reflect the difference in sentiment between AH investors.

Table 5: Correlation analysis between mood difference index and proxy variables.

	The SMIC AH-share Investor Sentiment Difference Index
Difference in Turnover Rate	0.832**
Difference in P/E Ratios	0.942**
Difference in Bond Borrowing Balance	-0.803**

Note: ** indicates significant correlation at the 0.01 level.

Table 6: Correlation analysis between mood difference index and AH share premium ratio.

	SMIC AH Share Premium Ratio
The SMIC AH-share Investor Sentiment Difference Index	0.676**

Note: ** indicates significant correlation at the 0.01 level.

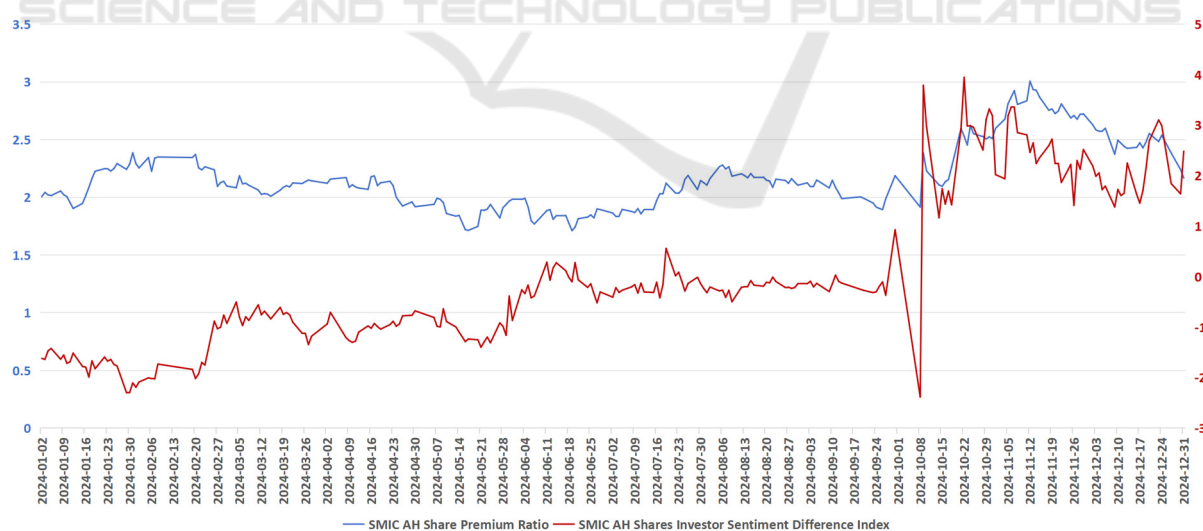


Figure 5: Time Series of the SMIC AH Shares Investor Sentiment Difference Index and SMIC AH Shares Premium Ratio (Photo/Picture credit: Original).

4 CASE ANALYSIS

The correlation analysis between the SMIC AH-share Investor Sentiment Difference Index and the premium rate of SMIC AH shares was analysed. As shown in Table 6, the SMIC AH-share Investor Sentiment Difference Index is significantly and positively correlated with its AH Share premium ratio. That is, the SMIC AH-share Investor Sentiment Difference Index is, the larger its AH-share premium is. To further specifically analyses the relationship between the two, this paper selects the SMIC AH-share Investor Sentiment Difference Index and the SMIC AH-share premium to construct a time series chart as illustrated in Figure 4. Although the SMIC AH Shares Investor Sentiment Difference Index and the AH-share premium show a significant positive correlation, the volatility trends of the two are significantly inconsistent in some time periods. This short-term volatility divergence suggests that investor sentiment difference is not the only explanatory variable, although it is an important factor driving the AH share premium. This phenomenon can be explained in two ways. On the one hand, there is a lag effect in the transmission of investor sentiment, and it takes time for the market to digest the information, which leads to a lack of synchronization between the movement of the sentiment difference and the immediacy of the stock price reaction. On the other hand, the construction of the sentiment difference index in this paper is mainly based on the market behaviour indicators, and the fluctuation of the AH stock premium may also be affected by the superimposed impact of other external shocks.

Therefore, the formation mechanism of SMIC's AH premium needs to be examined under a more complex multi-factor framework. In the following section, the paper will combine the factors of policy support, geographic risk and industry cycle to reveal how the interaction of sentiment differences and other external factors together drive the long-term deviation of the premium rate.

As the core carrier of China's semiconductor localization, SMIC's special industry status and intensive policy support have provided substantial support for the A-share market's optimistic expectations, while at the same time magnifying the H-share market's sensitivity to geopolitical risks. This dual effect makes the AH share premium a result of the intertwined effects of policy, industry and investor sentiment as given in Figure 5.

In 2020, SMIC was listed on the A-share Science and Technology Innovation Board, raising RMB 53.2 billion. The scale of fundraising has set a record for

IPOs on the Science and Technology Innovation Board, marking the strategic tilt of the semiconductor industry at the policy level. In August of the same year, the State Council of the People's Republic of China issued the Integrated Circuit Industry Policy, which provides comprehensive support for the semiconductor industry chain through tax incentives, R&D subsidies, and other initiatives. Among them, SMIC, as an industry leader, was directly supported by tax breaks and funding. The release of policy dividends quickly boosted A-share investor confidence, driving SMIC's A-share valuation to rise rapidly, and the AH-share premium rate climbed.

Between 2020 and 2022, the U.S. imposed multiple rounds of sanctions on SMIC, limiting its ability to acquire advanced technology and equipment. In particular, the escalation of export controls in 2022 caused serious disruptions to SMIC's supply chain. In response to this event, foreign institutions in the H-share market reduced their holdings significantly due to the heightened geopolitical risks, and the decline in liquidity further dampened H-share valuations. On the other hand, investor sentiment in the A-share market continues to be high as the logic of "domestic substitution" strengthens. The differentiated reaction of the two markets to the same event has widened the premium between A and H shares from 150% in 2020 to 250% in 2022.

In 2024, the global semiconductor industry ushered in the recovery, the first three quarters of revenue growth of 26% year-on-year. During the same period, the second phase of the National IC Industry Investment Fund injected capital into SMIC, and the industry subsidy policy came to fruition, which directly pushed up the A-share valuation to an all-time high, with the premium rate exceeding 300%. However, in December of the same year, the U.S. new semiconductor equipment export controls, SMIC accelerated cooperation with local suppliers to promote domestic equipment replacement process. Against this backdrop, the A-share market due to strong policy support for high sentiment to promote the A-share valuation irrational rise; H-share market is constrained by the withdrawal of foreign capital and profitability uncertainty, resulting in low valuations dominated by market forces. The two-valuation logic is further polarized, resulting in a premium rate showing the contradictory state of "policy pulls up, market depresses".

In summary, policy support has strengthened the optimistic expectation of A-shares through industry status, while geopolitical risks have magnified the pessimistic expectation of H-shares through foreign

investment behaviour, and the superimposed impacts of policy, industry and investor sentiment have caused SMIC 's AH-share premium to deviate from the traditional valuation framework for a long period of time.

5 CONCLUSIONS

The relative difference in investor sentiment between the two markets is one of the important reasons affecting SMIC 's AH premium anomaly, and the larger the AH investor sentiment difference index is, the larger its AH premium is. In addition, policy support strengthens the optimistic expectation of A-shares through industry status, while geopolitical risks amplify the pessimistic expectation of H-shares through foreign investment behaviour. Overall, the superimposed effects of policy, geopolitical risks, industry and investor sentiment make SMIC 's high AH share premium rate persist for a long time. In the future, with the deepening of the semiconductor industry's autonomy process and the normalization of the international game, the interaction between policy and sentiment may further solidify the structural characteristics of the AH share premium. In view of this, the government can embed sentiment stabilization measures in the semiconductor industry policy. Through the state-owned capital to increase holdings of H-shares or the establishment of market stabilization funds, slowing down the withdrawal of foreign capital triggered by irrational pessimistic expectations, guiding H-share investors to rationally assess the long-term value of domestic substitution.

This paper contains two shortcomings. First, the construction of the sentiment difference index in this paper is mainly based on objective sentiment indicators of market behaviour and does not incorporate subjective sentiment indicators such as investor confidence indicators. Second, when this paper constructs the sentiment difference index from the perspective of behavioural finance, it does not control the important external conditions used to explain the AH stock premium phenomenon under the traditional finance perspective such as the AH stock liquidity difference, which may have a certain impact on the results of the study. Based on the above shortcomings, in the future, a sentiment index can be constructed that encompasses both objective and subjective investor sentiment indicators, while controlling for the same external conditions such as AH stock liquidity differences.

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