

Influence and Countermeasures of Pricing Information Asymmetry of Companies Listed on Science and Technology Innovation Board

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Abstract: As an important measure of China's capital market reform, the Science and Technology Innovation Board is an important pilot of the registration system reform and a new platform to serve the national strategy and technological innovation. The issuance pricing system of the Science and Technology Innovation Board has the characteristics of high returns and high risks, and the asymmetry of pricing information is one of the important reasons affecting the valuation level of companies listed on the Science and Technology Innovation Board. The article starts with the asymmetry of issuance pricing information of listed companies on the Science and Technology Innovation Board, and through empirical analysis, it is found that the degree of asymmetry in the pricing information of enterprises on the Science and Technology Innovation Board is relatively high, which leads to low issuance prices. Further research found that the impact of pricing information asymmetry on companies listed on the Science and Technology Innovation Board is mainly reflected in two aspects: corporate governance and governance capabilities. Based on the impact of pricing information asymmetry, this article puts forward corresponding countermeasures and suggestions, hoping to provide reference for the construction of the science and technology innovation board market and investor risk management. Through empirical analysis, it is found that the countermeasure of "improving investor suitability management" can reduce the information asymmetry to an average of 43.72%.

1. Introduction

The Science and Technology Innovation Board adopts a market-based inquiry mechanism in terms of issuance pricing, and investors participate in the inquiry and pricing and bear certain risks. The asymmetry of pricing information on the Science and Technology Innovation Board is relatively high. On the one hand, it will affect the income level of the issuer and the lead underwriter when determining the issue price, and on the other hand, it will affect investors' judgment of the company's value during the price inquiry process, resulting in low issue prices for

companies listed on the Science and Technology Innovation Board.

In recent years, many excellent experts have conducted research and analysis on the problem of pricing information asymmetry. Hickman, L. Emily studied the motivations behind the release of corporate social responsibility reports, especially the impact of information asymmetry between firms and their owners. The results showed that private companies were less likely to publish CSR reports than similar public companies [1]. Goel, Anshi, using a sample of NIFTY 500 stocks from April 1, 2000, to March 31, 2018, attempted to examine the relationship between information asymmetry and expected stock returns on the National Stock Exchange of India (NSE) by employing three different indicators of information asymmetry: transaction volume, institutional ownership, and idiosyncratic volatility. Empirical evidence suggests that as the information asymmetry associated with a portfolio increases, returns also expand to compensate investors for taking information risk, this verifies that there is a significant positive correlation between information asymmetry and NSE expected stock returns [2]. Using customer data platform questionnaire data from 717 European companies over three years (2011-2013), Schiemann, Frank found that information asymmetry was generally smaller when companies reported their physical risks. His research is relevant because it demonstrates the importance of physical risks associated with climate change [3]. Nagar, Venky examined an important source of uncertainty—the uncertainty of government economic policy, which may not be affected by most managers and investors. It turned out that this uncertainty was associated with higher bid-ask spreads and lower stock price responses to earnings surprises. He concluded that government economic policy uncertainty was an important part of firms' information asymmetry and managers' voluntary disclosure decisions [4]. Although the above studies have conducted in-depth research on information asymmetry, they are slightly insufficient in details, and there is also a lack of research on pricing information asymmetry among companies listed on the Science and Technology Innovation Board.

In terms of corporate governance, companies listed on the Science and Technology Innovation Board have pricing information asymmetry, and pricing information asymmetry will affect corporate governance. The pricing information of companies listed on the Science and Technology Innovation Board is relatively asymmetric, and there are various conflicts of interest and risk factors in the pricing process. The high degree of asymmetry in pricing information of companies listed on the Science and Technology Innovation Board will lead to problems such as low issuance prices of companies and damage to investors' interests. The content of the article is arranged as follows: the second part introduces the market construction of the Science and Technology Innovation Board and investor risk management; the third part analyzes the asymmetry of pricing information; the fourth part puts forward countermeasures and suggestions.

2. The Evolution of the Stock Market System and the Analysis of the Science and Technology Innovation Board

2.1 The Listing Threshold is Low, and the Investor Structure Presents Institutional Characteristics

According to the rules of the science and technology innovation board, the issuance conditions of enterprises listed on the science and technology innovation board are relatively loose, and the requirements for profitability are relatively low, which provides more innovative and technological innovation enterprises with opportunities for listing and financing[5]. Judging from the industry distribution of companies listed on the Science and Technology Innovation Board, there are a large number of companies in emerging industries such as new-generation information technology and biomedicine, accounting for more than 70%. Most of these emerging industries are small and

medium-sized enterprises, so the listing threshold is relatively low, so that more innovative enterprises can enter the capital market for financing and development [6].

Companies listed on the Science and Technology Innovation Board also show obvious institutional characteristics. According to the data provided by the Shanghai Stock Exchange, as of December 31, 2019, there were 1,665 listed companies (including registered and effective companies) on the Science and Technology Innovation Board. The number of shares held in the company in 2019 reached 1.846 billion shares. Among the companies listed on the Science and Technology Innovation Board, there are companies such as Wald (300468), Jingfeng Mingyuan (688393), and BLT (688333) that have a relatively high proportion of institutional investors [7].

2.2 The Trading System is Flexible and Investors Have Strong Risk Tolerance

In the science and technology innovation board trading, investors only need to meet the suitability conditions and complete the risk assessment before they can participate in the stock trading on the science and technology innovation board. The trading method is different from other A-share boards. The Science and Technology Innovation Board has relatively strict conditions for investors' ability to resist risks: First of all, 20 working days before the account is opened, the investor's stock, fund and other accounts have an average of at least 500,000 yuan per day (excluding the investor's money, funds, etc. in the form of securities lending); the second is to be engaged in stock trading for more than 24 months; the third is to have two or two years of trading experience. Although the investment requirements of the Science and Technology Innovation Board are relatively high, its trading mode is obviously different from other stock markets. In the science and technology innovation board transactions, investors have three transaction modes, namely, auction transactions, after-hours fixed-price transactions and block transactions. Among them, the threshold for after-hours fixed price trading is relatively low, and investors can make their own choices based on their actual conditions. After listing on the Science and Technology Innovation Board, centralized bidding will be adopted, without any fluctuations, and the maximum daily range will not exceed 20%; the daily average market value of securities for 20 trading days shall not be less than 500,000 yuan as the lower limit; the threshold for block trading is that when investors entrust via the block trading platform, the minimum price change unit that can be declared each time is 1 price [8].

Compared with other boards of A shares, the trading system of the Science and Technology Innovation Board is more flexible. Since most companies listed on the Science and Technology Innovation Board have high technological content and growth potential, their stock price volatility is also much higher than that of traditional industries. Therefore, for such stocks, if investors lack certain risk tolerance and investment experience, it is easy to suffer losses. However, since the stock price limit of companies listed on the Science and Technology Innovation Board is relaxed to 20%, this gives investors more investment opportunities and risk tolerance [9-10].

3. The Influencing Factors of Pricing Information Asymmetry

The article adopts the principal component analysis method, takes the risk factor of the issuing company as the explanatory variable, and conducts an empirical analysis on the asymmetry of pricing information. In order to make the empirical analysis more pertinent and effective, the article analyzes from two dimensions of corporate governance and governance capacity.

First, from the perspective of corporate governance, since most of the companies listed on the Science and Technology Innovation Board are newly established companies with a short listing time, small scale, unstable and large-scale ownership structure, stock prices are easily affected by investor sentiment and market fluctuations[11]. Therefore, there are more uncertainties in the operation of

companies listed on the Science and Technology Innovation Board, and due to factors such as the short listing time, small scale, and unstable ownership structure of science and technology innovation companies, they are more prone to information asymmetry. Among the companies listed on the Science and Technology Innovation Board, companies with poor corporate governance structures and internal control capabilities are prone to asymmetric pricing information [12]. Therefore, in order to further explore the influencing factors of pricing information asymmetry, the article selects corporate governance and internal control as explanatory variables.

Second, from the perspective of corporate governance capability, corporate governance capability mainly refers to whether the company's management can timely adjust the business direction and decision-making according to market changes. There are more uncertainties in the development process of companies listed on the Science and Technology Innovation Board, which requires companies listed on the Science and Technology Innovation Board to have certain risk management capabilities [13]. Among them, whether the management can adjust the business direction and decision-making in time according to market changes is the main factor affecting the asymmetry of pricing information. In the sci-tech innovation board market, although there is a certain degree of equity incentive system and equity incentive plan, the management of companies listed on the sci-tech innovation board adopts a project system for management. Under project management, the management can adjust the direction and progress of the project by communicating and negotiating with the project team according to the actual situation. In this case, the degree of management participation in enterprise management is relatively low [14]. Therefore, the management cannot timely grasp and adjust the business development status and possible risks of the enterprise. In addition, there are a large number of internal incentive systems such as employee stock ownership plans, restricted stocks, and equity incentive plans among companies listed on the Science and Technology Innovation Board [15]. Therefore, the article selects the employee shareholding ratio and employee salary level as explanatory variables.

3.1 Corporate Governance

The effectiveness of corporate governance directly affects the business development of enterprises, thus affecting the degree of asymmetric pricing information. The article uses the ownership concentration, board size, independent director ratio and supervisory board size among the corporate governance variables as explanatory variables to conduct a regression analysis on pricing information asymmetry. Among them, the shareholding concentration reflects the company's shareholding concentration. The higher the equity concentration is, the more dispersed the company's equity is, and the more attractive it is to external investors, which will lead to more information asymmetry behavior of external investors when participating in corporate decision-making [16]. The proportion of independent directors reflects the proportion of independent directors in the company's board of directors. The higher the proportion of independent directors is, the stronger the independence of the company's board of directors is, so that it can exercise its own rights more effectively. The size of the board of supervisors reflects the size of the company's internal board of supervisors, and a larger board of supervisors will reduce the supervision of the company by the internal board of supervisors [17].

3.2 Governance Capabilities

The corporate governance structure and governance capabilities will have an impact on pricing information asymmetry. First of all, there are more state-owned shares in the companies listed on the Science and Technology Innovation Board. Since the ownership and management rights of state-owned shares are separated between different institutional sectors, shareholders of state-owned

shares may ignore investor needs and interests, resulting in asymmetric pricing information for sci-tech innovation companies. Since employee stock ownership plans, restricted stock and equity incentive plans are all voluntary, and these incentive systems have a certain effect on the business development of the enterprise, the degree of participation of corporate management in employee stock ownership plans and restricted stocks may affect the asymmetry of pricing information [18]. Companies listed on the Science and Technology Innovation Board have many risk factors such as R&D projects and employee salaries. If the management cannot grasp these risks in a timely manner and adjust them, it may lead to aggravated pricing information asymmetry.

4. Countermeasures and Suggestions

First, improving the transparency of pricing information. Regarding the issuance pricing of Sci-Tech Innovation Board companies, in addition to continuing to implement the reform of the registration system, it is also necessary to improve the information disclosure rules and increase the transparency of information disclosure under the premise of ensuring information disclosure. First of all, relevant departments can appropriately relax the equity restrictions on companies on the Science and Technology Innovation Board, allowing companies with relatively large equity structures to list on the Science and Technology Innovation Board. At the same time, special channels have been set up for red-chip companies and VIE (Variable Interest Entity) companies to reduce the listing threshold for red-chip companies and VIE companies. Secondly, formulating different information disclosure rules for different types of companies listed on the Science and Technology Innovation Board [19]. For technologically innovative companies, encouraging them to adopt more transparent and open information disclosure methods after listing on the Science and Technology Innovation Board; for companies in traditional industries, corporate governance information should be the main content of disclosure; for companies with red-chip structures and VIE structures, special requirements should be imposed on their information disclosure.

Second, strengthening the construction of intermediary institutions. Intermediaries, as third parties independent of issuers and investors, should better perform their responsibilities to issuers and investors. First of all, intermediary agencies need to improve their professional ability, research level and analysis ability; secondly, intermediary agencies should strengthen communication with issuers and investors, and provide them with professional opinion; finally, intermediary agencies should strengthen the dynamic tracking research on sci-tech innovation companies before and after listing, and keep abreast of the development trends of the industry in which sci-tech innovation enterprises are located and changes in the macroeconomic environment [20].

Third, improving investor suitability management. The Science and Technology Innovation Board has adopted more professional investors to participate in investment, so investors should improve their own risk identification ability and risk tolerance ability. First of all, it is necessary to clarify that investment in stocks on the Science and Technology Innovation Board is relatively risky and may have higher returns; secondly, one must choose products that suit oneself according to one's own situation and strictly abide by the regulations.

5. Empirical Analysis of Factors Influencing Asymmetric Pricing Information of Companies Listed on the Science and Technology Innovation Board

Next, the article puts the proposed countermeasures and suggestions into practical applications and conducts empirical analysis. Firstly, it analyzes the impact of governance structure and governance capacity on pricing information asymmetry (as shown in Figure 1), and then puts three countermeasures into practical application.

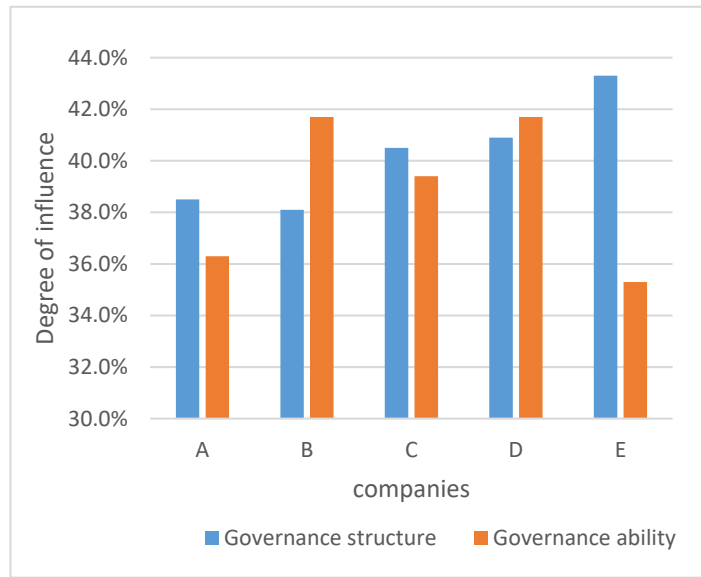


Figure 1: Analysis of the influence degree of structure and capability

It can be seen from Figure 1 that the impact of both governance structure and governance capacity on pricing information asymmetry is between 35% and 45%, and there is no particularly large difference overall. For individual enterprises, there is a big difference. For example, in enterprise E, the degree of influence of governance ability is 35.3%, while the degree of influence of governance structure reaches 43.3%, a difference of 8% between the two. After calculation, it is found that the average degree of influence of governance structure on pricing information asymmetry is 40.26%, and the average governance capacity is 38.88%, with a difference of less than 2%. The second step is to put the countermeasure of "enhancing the transparency of pricing information" into practical application, and its application effect is shown in Figure 2.

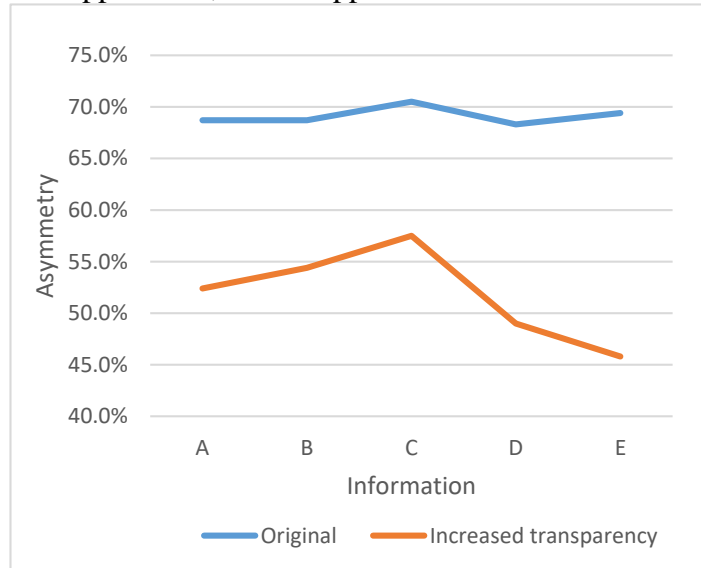


Figure 2: The application effect of increasing transparency

It can be seen from Figure 2 that after improving the transparency of pricing information, the information asymmetry reaches a minimum of 45.8%, a maximum of 57.5%, and a difference of 11.7% between extreme values, which is not very stable. Through calculation, it is found that before countermeasures are taken, the average information asymmetry reaches 69.12%, but after the

transparency is improved, the average information asymmetry is only 51.82%, a decrease of 17.3%. It can be seen that the countermeasure of "enhancing the transparency of pricing information" is effective in practical application. Then, put "strengthening the construction of intermediary institutions" into practical application, and its application effect is shown in Figure 3.

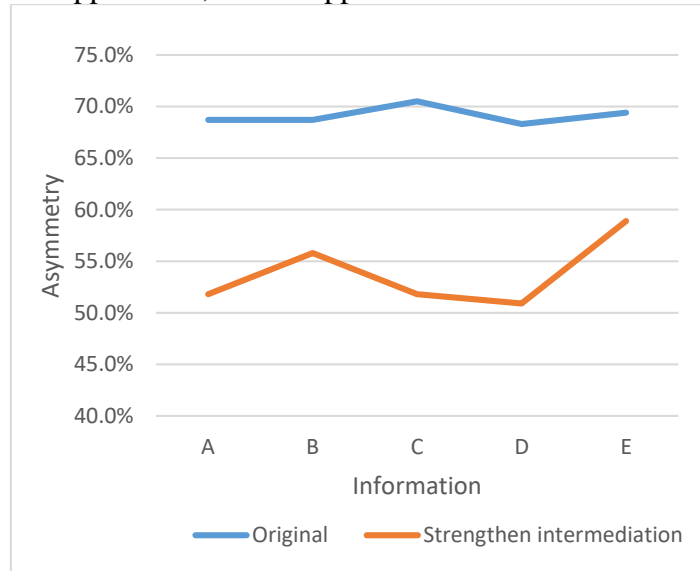


Figure 3: The application effect of strengthening the construction of intermediary institutions

It can be seen from Figure 3 that after strengthening the construction of intermediaries, the information asymmetry reaches a minimum of 50.9% and a maximum of 58.9%, with a difference of 8% between extreme values, which is relatively stable. Through calculation, it is found that after adopting the countermeasure of "strengthening the construction of intermediaries", the information asymmetry dropped from an average of 69.12% to 53.84%, a drop of 15.28%. It can be seen that the countermeasure of "strengthening the construction of intermediary institutions" has also achieved good results in practical application. Finally, putting "improving investor suitability management" into practical application, and its application effect is shown in Figure 4.

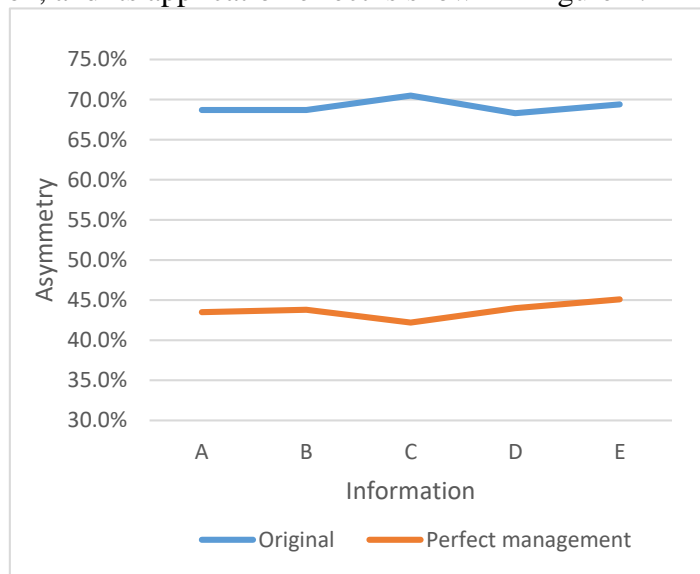


Figure 4: Application effect of perfect management

It can be seen from Figure 4 that after improving investor suitability management, the minimum

information asymmetry is only 42.2%, the highest is only 45.1%, and the difference between the extreme values is only 2.9%, which is in a stable state. Through calculation, it is found that after adopting the countermeasure of "improving investor suitability management", the average value of information asymmetry drops from 69.12% to 43.72%, with a difference of 25.4%. It can be seen that the effect of the countermeasure of "improving investor suitability management" in practical application is the most significant among the three countermeasures, and it is also the most stable.

6. Conclusions

The Sci-Tech Innovation Board registration system is a major measure to deepen the reform of China's capital market. It is a milestone in the development of China's capital market. It provides more direct financing channels for technological innovation companies and provides investors with new investment options. The asymmetry of pricing information is an important factor affecting the pricing of enterprises on the Sci-Tech Innovation Board. The high-risk characteristics under the registration system of the Science and Technology Innovation Board make the impact of pricing information asymmetry on the enterprises on the Science and Technology Innovation Board more complicated, and are affected by corporate governance and governance capabilities. Therefore, improving corporate governance, strengthening information disclosure and risk prevention should become important means for companies listed on the Science and Technology Innovation Board to deal with asymmetric pricing information. In the future, we should continue to improve relevant systems in terms of optimizing the issuance system, strengthening information disclosure, and strengthening investor protection to protect the legitimate rights and interests of investors.

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