Proceedings of the 2nd International Conference on Business and Policy Studies
DOI: 10.54254/2754-1169/8/20230333

# *The IPO System of the Science and Technology Innovation Board and the Status Quo of Enterprises*

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***Abstract:*** The emergence of the Science and Technology Innovation Board has brought new vitality to the capital market at a time when the global economy is full of uncertainties, the slowing of China's macro-strategic economic growth, and rising pressure for structural adjustment and transformation. However, the STAR Market provides investors and businesses with more opportunities, resources, and specific risks. In China, registered production is a new issuance and listing system. China needs more trial and error to learn and get out of China's model for mature systems in countries such as the United Kingdom and the United States. The impact of the Sci-tech Innovation Board's registration system on the Chinese company listing system and the entire capital market is currently the focus of attention and research. The current immature registration system also introduces numerous unknown risks. Through a review of the literature, this paper mentions the industry development opportunities provided by the current science and technology innovation board and registration system, including its existing risks and flaws.

***Keywords:*** science and technology innovation board, registration system, technology enterprise, agency

## 1. Introduction

Because of the new crown epidemic and other emergencies, the global economy is now much more uncertain. Aside from China's macro-strategic economy's declining growth rate and increasing pressure for structural adjustment and transformation, the establishment of the Science and Technology Innovation Board has given the capital market new life. However, the STAR Market provides investors and businesses with more opportunities, resources, and specific risks. In China, registered production is a new issuance and listing system. China needs more trial and error to learn and get out of China's model for mature systems in countries such as the United Kingdom and the United States. The current immature registration system also introduces numerous unknown risks. Through a review of the literature, this paper mentions the industry development opportunities provided by the current science and technology innovation board and registration system. And its existing risks and flaws. The importance of this study is in determining how the two new things, the Science and Technology Innovation Board and the registration system, will affect both businesses and investors. Furthermore, the paper investigates and explains some of the policy risks.

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## 2. Introduction of Science and Technology Innovation Board and Registration System

### 2.1. Introducing the Science and Technology Innovation Board

The Science and Technology Innovation Board was newly established on the Shanghai Stock Exchange in June 2019 as the first batch of registration-based pilot boards in China. The Science and Technology Innovation Board mainly uses cutting-edge technologies and breaks through key technologies for China's significant national needs. A new generation of new material technology, high-end equipment technology, energy-saving and environmental protection technology, information technology, and biomedical technology are needed for industrial development. It advocates deep integration with artificial intelligence, the Internet, cloud computing, big data, and manufacturing.

In terms of market positioning, the Shanghai Stock Exchange's main sectors serve medium-and large-growing enterprises as well as mature enterprises in China and abroad [1]. The Science and Technology Innovation Board mainly serves emerging industrial and innovative enterprises that have crossed the entrepreneurial stage and have a specific scale. There are similarities between the existing primary board market, the SME board, and the ChiNext board regarding the overall market operation mechanism and investor classification. The differences between different boards are not noticeable. Since the STAR Market emphasizes the innovation and growth of enterprises, the listing standards are diversified and lower than the listing financial standards of the main sectors, and there are specific requirements for the annual R&D expenses and the number of R&D personnel.

### 2.2. Introducing the Registration System

Since 2001, China's capital market securities issuance has used a non-market-based approval system. The right to issue securities is obtained through the approval of the securities review agency, and the issuer's right to issue shares is granted by the securities regulatory agency in a statutory form. It reflects the supervision of security issuance by administrative agencies. Most of the mature capital markets in the world use the registration-based model, and there are two main types. One is the registration system model in the United States and other countries. Issuance and listing are relatively independent processes [2]. The issuance is reviewed and registered by the Securities and Exchange Commission, and the stock exchange reviews the listing. The other is the model in the United Kingdom and other countries, where the stock exchange has the right to review both issuance and listing. Both models emphasize the role of stock exchanges, indicating that securities supervision is mainly self-disciplined. The CSRC can devote more time and energy to the supervision of security during and after the listing. The division of labour has refined the listing review process and enhanced efficiency. Compared with the approval system, the process of the registration system is much simpler. The main feature is that, under the registration system, the security issuer only reviews the registration documents and does not make substantial judgments about the quality of the enterprise. The registration system will make it easy for high-quality companies to go public, while low-quality companies can easily be delisted.

The registration mechanism is thought to represent the capital market in China's future. The adoption of the Science and Technology Innovation Board's registration system can improve the ability of China's capital market to support the growth of innovative firms and assist numerous technology enterprises in raising funds more effectively and quickly. Besides, a pilot program to change the registration system is the Science and Technology Innovation Board [3]. It is possible to use particular experience in other areas to produce a transformation and optimization to look for leaks and fill vacancies once they have been formed. Additionally, since the Sci-Tech Innovation Board is a separate sector from the original sector due to its independence, the Sci-Tech Innovation Board can

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minimize the impact on the capital market and other market volatility for the pilot registration system [4-6].

## 3. Sci-tech Innovation Board Companies and Current Situation

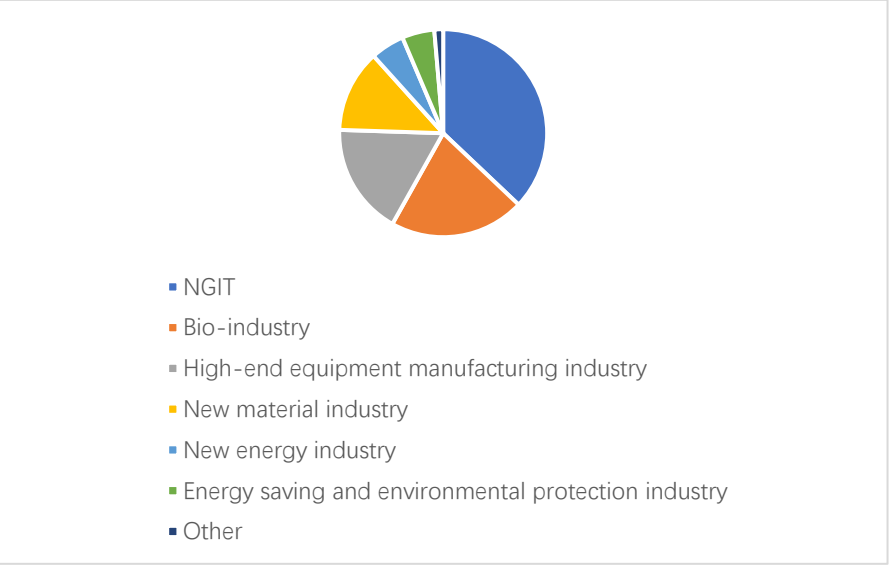


Figure 1: Proportion of companies listed on the science and technology innovation board [7].

Currently, there are 437 stocks total on the Sci-tech Innovation Board, including 162 stocks in the new generation of information technology; 92 stocks in the biological industry; 76 stocks in the manufacturing of high-end equipment; 56 stocks in the new material industry; 23 stocks in the new energy industry; and 22 stocks in the energy conservation and environmental protection industry. The top three industries accounted for more than 75% of the other six industries [7].

According to chart data, artificial intelligence, medical and health care, high-end equipment manufacturing, and big data are the key investment areas of the Science and Technology Innovation Edition. It is also the investment industry that investment institutions will pay the most attention to in the coming year.

Until now, many institutions considered artificial intelligence overvalued but still cited it as the industry to watch. Artificial intelligence is a technical science that simulates, extends, and expands human ideas, theories, technologies, and applied systems. Since its birth in the 1950s, it has experienced two waves of development. At present, the development of artificial intelligence has ushered in a new round of climax. Due to the accumulation of massive data resources, breakthroughs in deep learning algorithms, a substantial increase in computing power, and the emergence of commercial application scenarios, artificial intelligence technology has achieved breakthrough development. Artificial intelligence is more quickly applied to real-life scenarios, such as intelligent robots, smart homes, competent medical care, and innovative finance. According to a report by the Ministry of Industry and Information Technology, the national AI application level industry scale is expected to reach US$67.2 billion in 2020 [7]. Among them, the scale of intelligent robots, intelligent driving, intelligent education, intelligent security, and intelligent financial industries will exceed 68%. The scale of China's artificial intelligence industry will exceed 11 billion US dollars.

Intelligent robots are generally divided into industrial, service, and unique robots. From the perspective of the development of the robot industry in recent years, service robots are closer to social needs, have low technical difficulty, and have more extensive application scenarios in the future and a broader market. However, the general application direction of existing service robots is relatively

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simple and lacks deep learning capabilities. For example, we can often see food delivery robots in hotels. The further development of the market in the future still needs the integration and application of more advanced artificial intelligence technology. The smart home is based on the family house as a platform, integrates intelligent devices related to home life, and builds an efficient residential facility management system and home ecosystem. The smart home market has experienced significant growth since 2011, and the industry has entered a period of rapid development and integration. Since 2014, traditional furniture manufacturers and Internet companies have begun intensively deploying the smart home industry. However, since the smart home needs to establish a complete ecosystem to reflect its effect, the effect achieved now is not very good. As an industry with massive data, finance is highly dependent on data. A large amount of data that needs to be processed and analyzed is generated daily in the financial market. The high-frequency trading we know is also the application of codes and formulas, reflecting the excellent future development space of financial intelligence. Innovative finance can be applied to simple information processing at the front end. such as voice recognition-based brilliant customer service to improve the convenience and uniqueness of customer service. At the same time, it can also collect relevant information such as customer characteristics and customer needs. In the middle stage, visual recognition technology can be used to carry out more secure and reliable customer identity authentication and can also carry out faster information classification and transmission. In the background, extensive data analysis is carried out on the massive data generated by the financial industry to implement precision marketing for customers. To a certain extent, improving the level of investment and risk prevention and control capabilities, to a certain extent, reduces human nature's disadvantages.

The biopharmaceutical industry has received continuous attention. With the vigorous development of basic research and the continuous breakthrough of technological innovation, the continuous expansion of the scale of the biotechnology industry has become a significant growth point for the economy. At the same time, relevant support policies have been released one after another, creating a good innovation environment for the development of the biopharmaceutical industry. Pharmaceutical companies' competitiveness comes from the scientific research evidence behind them, efficient R&D teams, and sufficient funds. Invest in leading R&D companies. Large companies' overall R&D input-output ratio is lower than that of small and medium-sized biotechnology companies. The product lines of leading companies always have areas that cannot be covered. If the products of small and medium-sized biotech companies have breakthrough progress in clinical trials, their values will take a great leap. For these results, leading companies will tend to acquire projects at high prices directly or at least participate in cooperation.

Energy vehicles use new power systems and rely entirely or mainly on new energy sources. Compared with traditional fuel vehicles, new energy vehicles use a new power system and can more easily introduce cutting-edge technologies such as autonomous driving. Therefore, it is considered to represent the future development direction of the global automobile industry and has received active attention from various governments. Currently, the Chinese government's industrial policies for new energy vehicles mainly include subsidy policies for new energy vehicles, new energy vehicle licenses and purchase restrictions, and industrial policies related to power lithium batteries. By 2025, the Chinese government predicts that the proportion of gasoline cars and trams sold by the Chinese government will be nearly half of what it is today. Presently, domestic new energy vehicles have formed a new energy vehicle industry pattern dominated by pure electric vehicles, supplemented by plug-in hybrid vehicles and fuel cell vehicles. It also means the importance of batteries for the entire pure electric vehicle. After breaking through some technical issues, electric vehicle output and production capacity will also be significantly improved. The market value of new energy vehicles' entire upstream and downstream enterprises will also have a qualitative leap [8].

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Figure 2: Average price-earnings ratios of the STAR market [8].


Figure 3: Average price-earnings ratios of the ChiNext [9].

The two graphs above show the historical P/E ratio averages for the STAR market from 2019 to 2022 and the ChiNext from 2015 to 2022, respectively. The average PE ratio of the Science and Technology Innovation Board, as depicted in the chart, was 46 times as of July 2022, whereas that of

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the ChiNext was 43 times as of that same month. Referring to other capital markets, the typical long-term price-earnings ratio is roughly 10, with developed capital markets like the US and Hong Kong serving as examples. The price-earnings ratio's inverse is the cost of equity capital valuation. The average price-earnings ratio for STAR Market equities is 46 times, or 46 yuan per shareholder. Given that the cost of equity capital is 2.17% and that the company can only generate a return of 1 yuan annually for shareholders, only investment projects with returns on investments higher than 2.17% are acceptable to shareholders [9]. However, the high value and low financing costs of public companies will result in poor investment performance. Institutional investors and currently listed businesses, however, are more logical and have the goal of making money from the stock market. Earnings for a public company and its institutional investors rise in lockstep with the stock price. The dominance of individual investors in the Chinese stock market is distinctive. Individual investor funds make up 45% and institutional investor funds make up 55%, respectively, of participants in the Chinese stock market as of December 2021. The greater the share of funds from private investors over time, the greater the individual investors differ from institutional investors in that they lack the industry knowledge and experience necessary to accurately assess a stock's intrinsic worth. Individual investors may find it difficult to determine the goal of these listed firms and institutional investors, which is to maximize the issuance and trading price of shares, which is also a key factor in the high stock price.

## 4. Problems with the Sci-tech Innovation Board

The applicable regulations for intermediaries registered with the Science and Technology Innovation Board have many positive aspects. However, there have been no amendments made to the rules governing their administrative and civil responsibilities. The division of responsibilities and sharing of responsibilities among intermediaries have not yet been implemented.

Because of the changing role of intermediaries, the punishment standards and intensity were not adjusted appropriately [4]. To some extent, the China Securities Regulatory Commission (CSRC) plays an "endorsement" role in issuing new shares under the approval system. Although the intermediary agency performs the necessary verification, the market's role is limited due to the large number of documents and matters that are under the supervision of the government securities regulatory commission. The role of intermediaries is limited. The role of the market is limited. The role of exchanges is limited, and the roles of brokers, law firms, and auditors are suppressed, which makes the CSRC feel more uneasy, thus forming a vicious circle. The role of intermediaries is strengthened in the context of the registration system, and a more comprehensive administrative and criminal liability mechanism is essential to ensure that intermediaries perform their duties. Information disclosure is the core of the entire securities law and plays a pivotal role in the harmonious development of the securities market and in protecting investors' interests [5]. However, the Securities Law has not made corresponding amendments to the administrative penalty standards for false statements made by intermediaries, their directly responsible supervisors, and other personnel.

## 5. Prospects for the Future the of Sci-tech Innovation Board

In the short term, the Science and Technology Innovation Board will undoubtedly become a hot spot in the market and will undoubtedly bring lucrative investment opportunities [6]. It is a rational choice to seize the opportunity and participate moderately. However, the macroeconomic fundamentals have not entirely changed, and the market is still a game of stock funds. Factors such as the slowdown in macroeconomic growth, the decline in corporate profitability, the rise in bank non-performing asset ratios, and the deterioration of the external environment determine the basis for the absence of a

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significant bull market. The main line that will affect the market trend in the future is the Science and Technology Innovation Board. This main line determines the rotation of the stock market between regions, industries, and hot topics. This movement has brought about a structural differentiation of the market rather than an overall synergistic effect, and this structural differentiation effect may be unprecedentedly fast-paced. The main factors affecting the market rhythm in the future will come from factors such as the progress of the Science and Technology Innovation Board, changes in policy factors, adjustments to the regulatory framework, changes in the external environment, and other driving events. Sector rotation can bring opportunities to investors, but differentiation is bound to come with risks.

## 6. Conclusion

This paper provides a clear introduction and analysis of the Science and Technology Innovation Board and the registration system. The advancement of the registration system is a readjustment of the relationship between the government and the market. It also has a fundamental analysis of the distribution of the main sectors of the Sci-tech Innovation Board and enterprise information. The current situation and future development of artificial intelligence, medical care, and new energy vehicle industries are introduced. Many of their products are pools of future capital influx as emerging technology companies. Moreover, the policy paragraph pointed out the loopholes in the Chinese registration system. It takes time for the registration system to learn from the experience of other developed markets. When taking advantage of the other's strengths to make up for one's weaknesses, it is necessary to understand the real problems and, at the same time, be clear about the specific transplant environment. This problem may be solved quickly over time, but more problems need to be solved urgently. These problems are also relatively lacking in this study, and more problems and examples are needed to illustrate them. The research on the policy side is not comprehensive enough, and it is hoped that more people will conduct further research on this aspect in the future.

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