Study on the impact of registration system reform on the financing efficiency of technology-based enterprises based on GEM data

Shujun Sheng

Tianhua College, Shanghai Normal University, Room 215, Rihua Building, No. 1661, Shengxin North Road, Jiading District, Shanghai

shengsj_1013@163.com

Abstract. The country has implemented registration system reform in GEM to improve the financing efficiency of technology-based enterprises and solve their financing difficulties. However, whether the registration system reform can affect the financing efficiency remains to be studied. Therefore, this paper focuses on the actual impact of the registration system reform on the financing efficiency of technology-based enterprises under the GEM. This paper takes the technology-based enterprises under the GEM in my country from 2017 to 2022 as samples, uses the DEA model to calculate the financing efficiency of technology-based enterprises before and after the registration system reform, and uses the results as the explained variables of the DID double difference model to conduct an attribution analysis on the increase in financing efficiency after the registration system. Finally, it is concluded that the registration system reform has a promoting effect on the financing efficiency of technology-based enterprises. And based on the empirical conclusions, corresponding policy recommendations are put forward.

Keywords: Registration system; Technology-based enterprises; Financing efficiency

1 Introduction

In order to solve the financing difficulties of technology-based enterprises and promote the sustainable development of technology-based enterprises, my country has steadily promoted capital market reform, carried out a pilot registration system for the Science and Technology Innovation Board in 2019, and implemented the registration system reform on the Growth Enterprise Market in June 2020. The implementation of this system has brought vitality to the capital market. From the perspective of the system itself: the registration system first reduces the requirements for listing, giving small and medium-sized enterprises new impetus for listing; secondly, it simplifies the listing process and shortens the time for small and medium-sized enterprises to go public. However, the impact of the registration system reform on the financing efficiency of my country's technology-based enterprises remains to be studied.

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2 Literature Review and Research Hypotheses

2.1 Current Status and Development Trends Abroad

Regarding the financing efficiency theory, Modigliani and Miller (1958) proposed the MM theory[16]. The MM theory believes that when corporate income tax is not considered, the operating risk is the same but the capital structure is different, the company's market value does not change due to changes in the capital structure, and the capital structure is irrelevant. Myers and Majluf (1984) proposed the theory of pecking order financing, which holds that when financing new projects, enterprises should give priority to using internal surplus, followed by bond financing, and finally equity financing[17]. Vilfredo Pareto (1912) proposed the "Pareto optimality", which states that when resources are limited, resources can be allocated optimally through resource allocation[18]. M.J Farrell (1957) took the agricultural production efficiency of the United States as an example and proposed a method to measure the production efficiency of enterprises by constructing enterprise production functions, and regarded technical efficiency and allocation efficiency as important components of measuring enterprise production efficiency[19]. Research on the reform of the registration system can be traced back to Spindt Paul A (1989) who investigated how investment bankers use the interest signs of client investors to price and allocate financing [1].

Regarding the research on the measurement method of financing efficiency, Fu Chuanming (2011) used the entropy method to evaluate and compare the efficiency of the financing methods commonly used by local governments[20]. Titman and Wessels (1988) selected US manufacturing listed companies and used the classical regression method to specifically analyze the relevant factors affecting corporate financing, and further pointed out the relationship between corporate profits and debt ratios [2]. Yaxi Huang selected 198 listed companies in emerging industries and used the DEA data envelopment analysis model to study the efficiency of equity financing [3]. The results showed that the efficiency of equity financing was low and could not reach the effective financing level.

2.2 Domestic Status Quo and Development Trend

Regarding the research on financing efficiency, the earliest domestic research can be traced back to Zeng Kanglin (1993) who first proposed the definition of financing efficiency and proposed seven factors affecting equity financing efficiency[21]. After that, domestic scholars began to gradually deepen their research and define financing efficiency from different aspects. Song Wenbing (1998) believed that market financing efficiency includes two aspects, namely, capital allocation efficiency and transaction efficiency[22]. Ye Wangchun (1999) believed that corporate financing efficiency refers to the cost of financing, financing risk and the convenience of financing, and then bringing funds into production [15]. Lu Fucai (2000) divides financing efficiency into two aspects: macro and micro [4]. The micro aspect refers to the impact of a certain enterprise financing method and system on the enterprise itself, while the macro aspect refers to the overall economy of a country: capital allocation and economic security, etc. Ma

Yajun and Song Lin (2004) believe that enterprises pursue financing efficiency in order to promote the improvement of capital resource allocation efficiency [5]. Fang Fang and Zeng Hui (2005) believe that enterprise decision makers should obtain the required funds with the highest return-to-cost ratio and the lowest risk [6]. The cost is inversely proportional to the efficiency, and the return is proportional to it. Gao Shan (2010) explored the problem of financing difficulties and high financing costs for my country's high-tech SMEs[23]. He used the DEA model to examine the financing problems of my country's high-tech SMEs and defined financing efficiency as the return on investment/return on capital. Zhao Qiuju (2022) used the DEA model to study the financing efficiency of technology-based enterprises under the GEM [7]. In the selection of measurement indicators, it mainly focused on the individual financing efficiency, and measured the changes in financing efficiency before and after the registration system reform through total efficiency indicators, pure technical indicators and scale efficiency indicators. Regarding the research on technology-based enterprises, Liu Zheng Anhui (2023) explored the financing difficulties of technology-based enterprises and used a multivariate linear regression model to explore the impact of supply chain finance on the financing efficiency of technology-based enterprises [8].

Regarding the research on the registration system reform, Ye Feiyang (2019) studied the impact of the registration system reform on the financing efficiency of enterprises in the Science and Technology Innovation Board [9]. Using the DEA model, the number of IPO companies, the number of delisted companies, and the annual turnover rate were used as input indicators; IPO financing amount and gross domestic product (GDP) were used as output indicators to calculate the overall financing efficiency of enterprises. Jiang Yi (2022) studied the impact of the registration system on the financing efficiency of strategic enterprises under the GEM, and used the double difference method (DID) model to analyze the factors affecting financing efficiency, and concluded that the registration system reform has a promoting effect on the financing efficiency of strategic emerging enterprises [10]. Zhao Chenlu (2021) studied the pricing efficiency of IPOs under the registration system reform, explored the impact of the registration system reform on the overall IPO rate of the GEM, and used OLS and DID models for empirical analysis [13]. Sun Han (2023) explored the impact of the registration system reform on the stock price of the A-share market, and used the DID model to conduct an attribution analysis of the underpricing of A-shares [14].

2.3 Research Hypothesis

In summary, in terms of the research on financing efficiency, foreign scholars have studied and defined financing efficiency relatively early, and the research content is more about the discussion of financing theory, and there are fewer specific case studies. In contrast, domestic scholars explore financing efficiency from multiple perspectives. The research content includes current situation, channels and empirical analysis.

In terms of research objects, domestic and foreign research on the registration system is mainly concentrated between various sectors, and there is less research on specific industries. Therefore, combined with the reform background of the registration system

in the GEM and the importance of technology-based enterprises to national development, this paper chooses technology-based enterprises under the GEM as the research object.

In terms of empirical research and analysis methods, most scholars mainly use the DEA analysis model. This paper attempts to combine the DEA model with the DID double difference to evaluate the net effect of policy reforms, and then verify whether the changes in the financing efficiency of technology-based enterprises are caused by the registration system reform.

Based on the above literature, this paper proposes the hypothesis:

The reform of the registration system has a promoting effect on the financing efficiency of technology-based enterprises.

3 Data Source and Sample Selection

Since technological innovation is crucial to the development of the country, technology-based enterprises should receive more attention. However, due to their special profit model, they face huge financing difficulties in the early stage, which affects their development. In order to solve this problem, the state has introduced many policies to seek ways to improve the financing efficiency of technology-based enterprises and solve the financing difficulties under the policy background of the registration system reform. In order to study this issue, this paper selected the data of technology-based enterprises under the GEM from 2017 to 2022 as the experimental group, and selected technology-based enterprises under the main board market in the same time period as the control group, and used the double difference model to explore whether the change in the financing efficiency of technology-based enterprises is caused by the policy variable of the registration system reform. In terms of data sources, it mainly comes from the Guotai An database, and these data are screened to exclude ST listed companies and companies with incomplete data. Finally, a total of 15,646 sample values including the experimental group and the control group are selected.

4 Variable Selection and Measurement

4.1 Explained Variable

This paper takes financing efficiency (Fe) as the explained variable, but there is no ready-made indicator for financing efficiency. Therefore, based on previous experience, this paper uses the DEA model to calculate the financing efficiency of technology-based enterprises. Selecting appropriate input and output indicators is an important part of building DEA.

The data source for calculating financing efficiency is the technology-based enterprises under the GEM. A total of 927 technology-based enterprises from 2017 to 2022 were selected as sample data. Through longitudinal comparison, we can intuitively understand the changes in the financing efficiency of technology-based enterprises before and after the registration system reform. In terms of data processing, the DEA model

stipulates that all data are non-negative values, which requires the data to be dimensionless. After processing, the results are all in the range of 0-1. The processing method is as follows:

$$Y = 0.1 + 0.9\frac{X - X\min}{X\max - X\min} \tag{1}$$

Note: X is the original value, Y is the adjusted value; Xmin is the minimum value of the variable, Xmax is the maximum value

After the above data are processed, DEAP2.1 software is used to calculate and analyze the financing efficiency of technology-based enterprises under the GEM from 2017 to 2022 from three aspects: total efficiency, pure technical indicators and scale indicators. The calculation results are shown in Table 1 below.

Table 1. Analysis of Financing Efficiency of Technology-based Enterprises in my country.

Year	Total Efficiency	Pure Technical Indicators	Scale Efficiency
2017	0.867	0.948	0.915
2018	0.863	0.941	0.917
2019	0.860	0.943	0.911
2020	0.850	0.931	0.913
2021	0.880	0.974	0.904
2022	0.874	0.972	0.900

Data source: Manually sorted by Guotai An database

The total efficiency index in Table 1 reflects the financing level of enterprises under a certain scale, certain institutional level and overall environment in the stock market; pure technical efficiency is the efficiency change caused by factors such as policy system, economic environment, financial system, and market effectiveness in a country or region. Scale efficiency is the change in efficiency caused by factors such as changes in stock market scale, direct financing and indirect financing scale, reflecting the efficiency difference between actual scale and optimal scale. The relationship between the three is: total efficiency = pure technical index *scale efficiency.

From the data in the table, we can see that the financing efficiency of technology-based enterprises has declined slightly from 2019 to 2020, which is mainly caused by the social macro-environment. For example, macro factors such as the COVID-19 pandemic have led to a sluggish market economy, thereby reducing the financing efficiency of technology-based enterprises. By 2021, after the registration system reform, the total financing efficiency of technology-based enterprises has improved to a certain extent. From the data, this is mainly due to the improvement of pure technical indicators, which has promoted the improvement of total financing efficiency. However, this trend did not continue to rise in 2022, but instead fell slightly. From the table data, it can be seen that this is mainly due to the decline in financing efficiency caused by the reduction in scale efficiency. In general, after the registration system reform, the financing effi-

ciency of technology companies has improved compared with that before the registration system reform. However, whether this improvement is caused by the single variable of the registration system still needs further verification.

4.2 Explanatory Variables

This paper uses did as the explanatory variable, and did is the product of the policy implementation time variable and the grouping dummy variable (did=treat*post). Among them, Post is the policy implementation time variable, and the period of time when the companies listed after August 24, 2020 and the new stock issuance system is the registration system is taken as post=1, and the period of time when the companies listed before August 24, 2020 and the new stock issuance system is the approval system is taken as post=0. Treat is a grouping dummy variable, and the GEM that is actually affected by the registration system is taken as the experimental group treat=1, and the main board market that is not affected by the registration system is taken as the control group treat=0.

4.3 Control Variables

On this basis, this paper draws on Du Chaoyun and Lu Yaoxin (2023) [11]and sets the following variables as control variables to control the impact of other factors on financing efficiency.

(1) Enterprise size (Size)

Enterprise size can reflect the debt repayment ability and risk resistance of the enterprise. The larger the enterprise size, the lower the probability of default, the smaller the risk, and the higher the enterprise financing efficiency.

(2) Asset-liability ratio (Lev)

The asset-liability ratio reflects the financial risk and debt repayment ability of the enterprise. If the asset-liability ratio is too high, it will increase the financial risk and debt repayment pressure of the enterprise, thereby affecting the financing efficiency.

(3) Return on total assets (ROA)

The return on total assets is an important indicator to measure the profitability of an enterprise. The higher the return on total assets, the higher the profitability of the enterprise and its stronger financing ability.

(4) Dual

The dual position means that the chairman and CEO of the enterprise are the same person. To a certain extent, this indicator can reduce the agency problem and agency costs, thereby improving the financing efficiency of the enterprise.

(5) Board size (Board)

The board size represents the size of the board. If this indicator is too high, the differences of opinion within the company will be greater, and it will be difficult to form a unified opinion, which will be detrimental to improving the financing efficiency of the enterprise.

(6) Whether the company holds shares in other financial institutions (Finlnst)

By calculating the shareholding ratio of major shareholders, we can understand whether the company's equity structure is concentrated. If the equity structure is too dispersed, it will lead to low investment efficiency, which is not conducive to the company's decision-making and thus affects financing efficiency.

According to the above variable description, we can organize it into Table 2.

Table 2. Variable definitions.

Variable Types	Variable Name	Symbol	Variable Design
Explained variable	Financing efficiency	Fe	Calculated by DEA
Explanatory variables	Interaction term between policy implementation variable and grouping dummy variable	DID	Did=Post*Treat. Before the registration system reform, it was post=0, and after the reform, it was post=1; the GEM was treat=1; the main board market was treat=0.
Control variables	Company size	Size	Logarithm of total corporate assets
	Debt-to-asset ratio	Lev	Total liabilities/total assets
	Return on total assets	ROA	Net profit/total assets
	Two positions in one	Dual	Chairman and CEO concurrently, "1" if concurrently, "0" otherwise
	Size of board of directors	Board	Number of board members, logarithm
	Whether to hold shares in other financial institutions	Finlnst	Shareholding ratio of major shareholders

4.4 Model Construction

This paper will use the difference-in-differences (DID) model to conduct research. The difference-in-differences model is the most commonly used model to evaluate policy effects for the following two reasons:

(1) It is statistically significant

Compared with the traditional comparison method of directly comparing the mean changes before and after the policy, the difference-in-differences model sets a dummy variable, that is, whether the policy occurs, and then conducts regression analysis to determine the impact of the policy, making the results more statistically significant.

(2) Avoid endogeneity

The difference-in-differences model can eliminate the impact of the policy as an explanatory variable. At the same time, the policy cannot be determined by micro-subjects such as enterprises, so there will be no reverse causal problems.

The difference-in-differences model is usually used to study policies that have been implemented. Before and after the policy is promulgated, all samples are divided into

two groups. After being affected by the policy, the changes in the samples are observed. The samples that are actually affected by the policy are marked as the experimental group, and the samples that are not affected are marked as the control group. The difference-in-differences model is as follows:

$$Fe_{it}=\beta_0+\beta_1 du+\beta_2 dt+\beta_3 du*dt+\varepsilon_{it} \quad (2)$$

The registration system reform can be studied as an external event. This paper takes the technology-based enterprises in the GEM under the registration system reform as the research object, and marks them as the treatment group, and marks the technology-based enterprises in the main board market as the control group, in order to verify the impact of the registration system reform on the financing efficiency of technology-based enterprises. This paper uses the double difference model for empirical analysis.

$$Fe_{it}=\beta_0+\beta_1 did_{it}+\sum Control_{it}t+y_t+id_i+\varepsilon_{it} \quad (3)$$

Fe_{it} is the explained variable, which indicates the financing efficiency of technology-based enterprises. The subscripts i and t represent the enterprise and year, respectively. β_0 is the constant term, and did is the explained variable. $\sum$Control is the collection of all control variables, and ε_{it} represents the residual term.In order to control unobservable variables that do not change over time, this paper controls year fixed effects (y_t) and individual fixed effects (id_i).This model needs to pay attention to the positive or negative coefficient of the did interaction term β_1. If the coefficient is greater than 0, it means that the registration system reform has a promoting effect on the financing efficiency of technology-based enterprises. Otherwise, it has an inhibitory effect.

5 Empirical Analysis of the Impact of the Registration System Reform on the Financing Efficiency of Technology-Based Enterprises

5.1 Descriptive Statistics

Before conducting empirical analysis, this paper conducts descriptive statistical analysis on the sample data of technology-based enterprises under the GEM and the main board, as shown in Table 3.

Table 3. Descriptive statistical results of variables.

Variable Name	(1) Sample size	(2) average value	(3) Standard Deviation	(4) Minimum	(5) Median	(6) Maximum
Fe	15646	0.873	0.038	0.636	0.882	0.942
did	15646	0.140	0.347	0.000	0.000	1.000
Size	15646	22.199	1.032	20.070	22.100	24.838

Lev	15646	0.410	0.168	0.066	0.412	0.766
ROA	15646	0.034	0.056	-0.275	0.037	0.141
Dual	15646	0.314	0.464	0.000	0.000	1.000
Board	15646	2.086	0.178	1.609	2.197	2.398
FinInst	15646	0.006	0.079	0.000	0.000	1.000

Table 3 shows that the average financing efficiency (Fe) of technology-based enterprises from 2017 to 2022 is 0.873, which is relatively effective in financing, but there is still a lot of room for improvement from effective financing (i.e. financing efficiency = 1). In addition, the standard deviation of Fe is 0.038, indicating that the financing efficiency gap between technology-based enterprises is small and they are all at a relatively inefficient level. From the perspective of explanatory variables, the average value of did is 0.142, indicating that the registration system has limited effect on improving financing efficiency and needs to be strengthened. From the perspective of control variables, the standard deviation of enterprise size is 1.032, indicating that the size of enterprises varies greatly among samples. From the perspective of debt-to-asset ratio, the average value is 0.410. Overall, the debt-to-asset ratio of enterprises is in a reasonable range (between 40% and 60%). The average value of return on total assets is only 0.034, indicating that the profitability of enterprises is relatively poor, and the minimum value is even negative. The average value of dual-position holding is 0.314, indicating that there are few cases in technology-based enterprises where the same person holds two positions, resulting in high agency costs. The mean value of board size is 2.086, while the standard deviation is 0.178, indicating that the differences between samples are small. The mean value of the shareholding ratio of other financial institutions is 0.006, indicating that the equity structure of technology-based enterprises is relatively concentrated.

5.2 Regression Analysis and Empirical Results

Parallel Trends.

Before performing regression analysis, it is necessary to perform a parallel trend test on the double difference model. By analyzing the data for the two years before and after the registration system reform and plotting the results, the final parallel test results are shown in Figure 1 below.

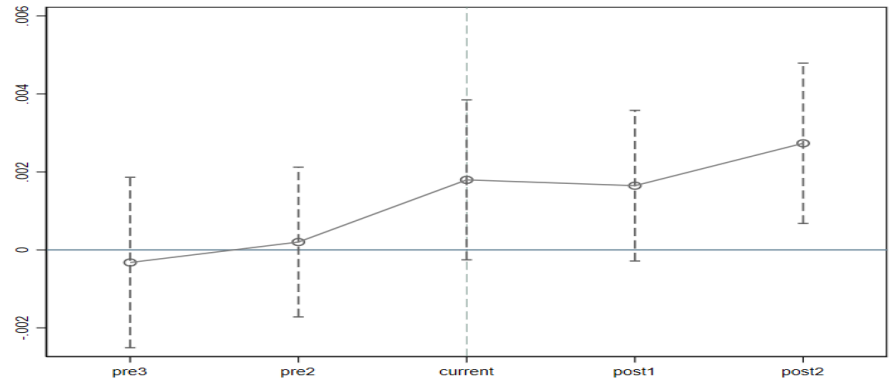

Fig. 1. Parallel trend test.

Current in Figure 1 is the implementation time of the registration system, that is, August 24, 2020; post1 and post2 represent 1-2 years after the policy was introduced, that is, August 24, 2019 and August 24, 2018; pre2 and pre3 represent 1-2 years before the implementation of the registration system, that is, August 24, 2021 and August 24, 2022.

As can be seen from the figure, before the implementation of the registration system reform, the financing efficiency of technology-based enterprises in the GEM and main board markets had similar trends, basically fluctuating around 0. This meets the requirement that the experimental group and the control group must have the same development trend before the policy reform under the parallel trend test. Therefore, it can be seen from this result that the model has passed the parallel trend test and can be used to explore the impact of the registration system reform on the financing efficiency of technology-based enterprises, and then evaluate the net effect of the registration system policy reform.

Regression Analysis and Results.

After passing the parallel trend test, the data will be subjected to regression analysis. The regression results are shown in Table 4 below.

Table 4. Double difference regression results.

	Fe
did	0.0021***
	(3.29)
Size	-0.0135***
	(-14.95)
Lev	-0.0261***
	(-9.14)
ROA	0.4078***
	(60.65)
Dual	0.0004
	(0.60)

	Fe
Board	-0.0008
	(-0.42)
FinInst	0.0027
	(0.96)
_cons	1.1713***
	(58.96)
Firm fixed effects	Yes
Time fixed effects	Yes
N	15646
R^2	0.8658
Adj. R^2	0.8299

Note: ***, ** and * indicate significant at 1%, 5% and 10% levels respectively.

As can be seen from the table, the explanatory variable did and the explained variable financing efficiency Fe show a positive correlation at the 1% level, indicating that the hypothesis 1 of this paper is established, that is, the registration system reform has a promoting effect on the financing efficiency of technology-based enterprises, but at the same time the regression coefficient is 0.0021, indicating that this promoting effect is not obvious. Combined with the previous calculation of financing efficiency, it can be understood that this is mainly caused by the decline in scale efficiency after the registration system reform.

In terms of control variables, it can be seen that the coefficient of enterprise scale is -0.0135, and the result is negative, indicating that the larger the enterprise scale, the lower the financing efficiency. The coefficient of the debt-to-asset ratio is -0.0261, indicating that the reduction of the debt-to-asset ratio will affect the improvement of financing efficiency. Appropriate debt can help enterprises improve financing efficiency. The coefficient of total asset turnover rate is 0.4078, which is greater than zero, indicating that the improvement of the profitability of the enterprise will improve the financing efficiency of technology-based enterprises. The coefficient of holding two positions is 0.0004, indicating that when the chairman and CEO are the same person, the financing efficiency of the enterprise will improve. The coefficient of board size is -0.0008, which means that the larger the board size, the lower its financing efficiency. In terms of equity concentration, the coefficient is 0.0027, which means that the more concentrated the equity, the higher its financing efficiency.

5.3 Robustness Check

Assuming that changes in the financing efficiency of technology companies are not caused by the registration system reform, then any adjustment to the registration system reform time will lead to the same trend in financing efficiency. To this end, this article refers to the robustness testing method adopted by Li Qinyang et al. (2019) [12], adjusts the policy implementation time forward one year, that is, August 24, 2019, and conducts an empirical test again. Looking at the coefficient of the did interaction term, if the coefficient of did is significant, it means that the change in the financing efficiency of technology companies may be caused by other factors. If the coefficient of did is not

significant, it indicates that the previous empirical results are reliable. The results of the robustness test are shown in Table 5 below.

Table 5. Robustness test of policy timing one year in advance.

	Fe
did	0.0004
	(3.12)
Size	-0.0138
	(-14.98)
Lev	-0.0254
	(-9.19)
ROA	0.1837*
	(60.15)
Dual	0.0003
	(0.56)
Board	-0.0008
	(-0.41)
FinInst	0.0027
	(0.98)
_cons	0.939
	(58.23)
Individual fixed effects	Yes
Time fixed effects	Yes
N	15646
R^2	0.8674
Adj. R^2	0.8031

Note: ***, ** and * indicate significant at 1%, 5% and 10% levels respectively.

As can be seen from Table 5, the coefficient of did approaches 0 and is not significant. Contrary to the results of the main regression, it proves that the experimental results of this article are robust.

6 Research Conclusions and Policy Recommendations

6.1 Research Conclusion

This article selects technology-based companies under the GEM from 2017 to 2022 as the experimental group, and selects technology-based companies under the main board market during the same period as the control group, with a total of 15,646 sample data. First, the DEA model method is systematically used to comprehensively measure the

financing efficiency of sample data on the GEM to understand the changes in the financing efficiency of technology enterprises before and after the registration system reform. Secondly, the measured financing efficiency is used as an explanatory variable.

The DID double difference model is introduced to conduct attribution analysis on the increase in financing efficiency. Finally, through empirical analysis, it is concluded that the registration system reform has a promoting effect on the financing efficiency of technology-based enterprises. However, from the perspective of the regression coefficient, the coefficient of 0.0021 shows that this promoting effect still has room for improvement. By analyzing the previous financing efficiency calculation table, it can be seen that in 2022, the financing efficiency of technology-based enterprises has declined, which is mainly caused by the reduction of scale efficiency indicators. Therefore, the following will optimize the registration system reform through policy recommendations, thereby further improving the financing efficiency of technology-based enterprises.

6.2 Policy Recommendations

Combined with the theoretical mechanism and empirical analysis above, this article will put forward targeted suggestions from three aspects: investors, information disclosure, and improving the delisting mechanism, aiming to optimize the market scale, improve the financing efficiency of technology-based enterprises, and better serve the real economy.

Improve the Delisting Mechanism of Listed Companies.

After the registration system reform, the decline in scale efficiency is mainly due to two reasons. On the one hand, the registration system has lowered the listing threshold and significantly increased the scale of listing. However, since the number of delistings is difficult to match the large number of listings, the scale of the capital market exceeds the optimal scale of financing, and the scale efficiency is reduced. On the other hand, the delisting system is not perfect. After the registration system reform, the number of delistings has not increased significantly, which has led to a decrease in scale efficiency. This is because the registration system has been implemented for a short time and the delisting system still needs to be optimized in actual implementation. Therefore, the government needs to further improve the delisting system under the registration system, formulate a more detailed and strict delisting system, and promote the matching of the number of IPOs with the number of delistings, thereby improving the scale efficiency of the capital market, and the financing efficiency of technology-based enterprises will also increase.

Enhance Information Disclosure and Strengthen Market Supervision.

The regulatory authorities should strengthen the information disclosure of technology-based enterprises to reduce the opacity of the capital market, reduce information gaps, and enhance the effectiveness of the market. Improved information disclosure can

enable investors to better understand enterprises, especially for high-growth technology-based enterprises. Panel data may not be the advantage of these enterprises, but through information disclosure, investors can better see the potential of enterprises and are willing to invest in them. In addition, the increase in the number of IPOs will lead to an increase in information disclosure audits. Therefore, the corresponding regulatory authorities should strengthen the supervision of all aspects of information disclosure to avoid the possibility of distortion of the information disclosure system. At the same time, an effective punishment mechanism should be formed for illegal acts such as financial fraud and false reporting to optimize the financing environment.

Strengthen the Value Guidance of Investors.

During the registration system reform, a large amount of market noise will release investors' irrational emotions, thereby generating a follow-up effect and irrational investment behavior, causing some high-quality companies to have extremely high valuation premium rates, thereby reducing scale efficiency and reducing the overall financing efficiency of technology-based companies.

Therefore, the government should strengthen the construction of investor education mechanisms, promote investors to transform from emotional investment to value investment, guide investors to form self-judgment capabilities, and improve immunity to market noise interference, thereby reducing the herd effect, reducing the valuation premium rate of individual companies, returning the market to the optimal financing scale, and improving the financing efficiency of technology-based companies.

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