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Original Paper

Research on the Impact of Science and Technology Financial Policy on the Financing Constraints of High-Tech Enterprises: Evidence from China

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Abstract

Sustainable development of high-tech enterprises' innovation cannot be separated from sufficient financial support. Based on the background of science and technology financial policy, this paper adopts the high-tech enterprises listed on Chinese A-shares in Shanghai and Shenzhen from 2012 to 2020 as the research samples, and empirically analyzes the impact of the policy of "the Second Pilot Program to Promote the Integration of Science, Technology and Finance" on the financing constraints of high-tech enterprises implemented in 2016 by using the double-difference method. The results show that: (1) the pilot policy does effectively alleviate the financing constraints of high-tech enterprises, and the conclusion still holds after a series of robustness tests. (2) The pilot policy alleviates the financing constraints of high-tech enterprises by expanding financial capital support and reducing corporate financing costs. (3) The heterogeneity analysis shows that the pilot policy has a more significant effect on the alleviation of financing constraints for non-state-owned enterprises, enterprises in the growth period and enterprises in more developed, higher city grade and higher level of scientific and technological talent concentration areas. The results of the study have certain prospective and reference value for promoting the optimization of the financing structure of high-tech enterprises and the future development of science and technology financial policy.

1. Introduction

In this era of rapid development of information, science and technology is the first productive force, finance is an important part of the innovation-driven development model, and the integration of science and technology and financial development has gradually become the main focus of high-quality economic development.

There is a large body of research that demonstrates that financing constraints have a negative impact on the growth and deepening of firms, and that businesses in poor nations typically experience more severe financial constraints than businesses in wealthy nations (Dethier, Hirn, & Straub, 2011;

Chowdhury & Maung, 2021). In addition, developing countries rely more on government decision-making to guide financial resources than developed countries (Liu, Dai, Chen, & Zhong, 2023; Ayyagari, Demirguc-Kunt, & Maksimovic, 2012). From an enterprise's point of view, the production and operation of an enterprise requires a large amount of capital, and if there are financial problems or difficulties in liquidity, the company will face rapid closure. Insufficient working capital can also impede a company's continued operation, especially during a period of rapid industry development and transformation (Tan & Zhu, 2022). From a national perspective, the primary factor propelling development for high-tech companies is innovation (According to China's Catalogue of Statistical Classification of High-tech Industries, China's current definition of high-tech industries includes eight types of industries, namely, nuclear fuel processing, information chemicals manufacturing, electronics and communications equipment manufacturing, aviation and spacecraft manufacturing, pharmaceutical manufacturing, manufacturing of medical devices and equipment, office and electronic computer equipment, and public software services.), innovation is the source of their vitality. It is impossible to separate enterprise innovation and development from adequate funding, financing constraints have become one of the important problems faced by many enterprises in innovation and development, and greatly impede the optimization of the economic structure of enterprises, which in turn adversely affects the high-quality development of China's real economy (Pan & Zhou, 2023). Therefore, it is worthwhile for us to investigate how the Chinese government can utilize the science and technology financial policy, which is a "product of the times", to solve the financing constraints faced by enterprises (Xu, Liu, Lin, Zhang, Liu, & Xie, 2022). The Chinese government should also consider how to utilize the "product of the times" to solve the financial limitations that businesses encounter.

From the existing research, it seems that most scholars' research on financing constraints mainly involves financial technology, digital inclusive finance, environmental and social governance and other aspects. According to several academics, using financial technologies, governments, businesses, and financial institutions can all benefit from effective information dissemination (Du & Geng, 2024), this successfully lessens the information asymmetry that exists between businesses and financial institutions, hence easing the financial constraints (Du & Geng, 2024). Lu et al. use the method proposed by Fazali, Hubbard and Peterson (1988) to measure financing constraints, and they believe that those enterprises that are highly sensitive to endogenous financing have financing constraints, and they use the DIG index to indicate the level of digital financial services, which is directly proportional to the degree to which digital financial services have advanced in the region, and they construct a related model to draw the conclusion that the development of digital inclusive finance is conducive to the reduction of the financing constraints of small and medium enterprises (SMEs). The development of digital inclusive finance is conducive to reducing the financing constraints of SMEs. Hao et al. explored the relationship and transmission mechanism between corporate environmental, social and governance (ESG) performance and corporate financing constraints, and concluded that listed companies, by transparently disclosing ESG information and demonstrating their performance in

environmental protection, fulfillment of social responsibility and business management, can aid in increasing information disclosure's transparency, which will benefit investors, open up more funding options, and reduce funding limits.

However, little research has been done on how financial limitations affect high-tech companies, starting from the pilot policy of combining science and technology and finance in China. In 1978, Deng Xiaoping explicitly proposed that "the key to modernization is the modernization of science and technology" and "to make it a real bank", and the integration of science and technology and finance began to develop gradually in China. In 1994, the first council of China Association for the Promotion of Science and Technology Finance (CAPSTF) formally used the concept of "science and technology finance", marking the development of China's science and technology finance has officially entered a new journey. In recent years, Chinese high-tech enterprises have been facing serious financing constraints, and in order to alleviate their financial constraints, promote innovation, and bolster corporate social responsibility, China has put forward and deepened the development of science and technology finance policies in the past few years. The Ministry of Science and Technology (MOST) and the three banks jointly launched the "Pilot Program for Promoting the Integration of Science, Technology and Finance" policy in 2011, which was implemented in two batches. In November 2011, 16 regions with high density of science, technology and financial resources were identified as the first batch of pilot regions, involving a total of 41 cities. To further deepen the S&T finance policy, in June 2016, nine cities were identified as the second batch of pilot cities. By changing the manner that money is invested in science and technology, the strategy directs and encourages a variety of capital sources, including venture capital, banking, securities, and insurance financial institutions, to develop new financial products, enhance service models, and create service platforms., recognizing the natural fusion of the financial capital and science and technology innovation chains, offering unique financial services to science and technology businesses at every step of growth, from inception to maturity, and easing the financing of science and technology enterprises by providing more than one solution to the financing constraints of science and technology enterprises. It has provided many solutions to alleviate the financing constraints of science and technology-based enterprises. However, the existing research on science and technology financial policies mostly focuses on enterprises listed on SMEs, GEMs or New Third Board, and most of them mainly study the first batch of pilot policies, which may have problems such as limitations in the selection of samples and timeliness, and it is difficult to comprehensively reveal the effect of science and technology financial policies on the financing constraints of hi-tech enterprises.

Based on this, this paper adopts A-share listed high-tech enterprises in Shanghai and Shenzhen from 2012 to 2020 as the research samples, and empirically analyzes the impact of the policy of "the second batch of pilot projects to promote the combination of science and technology and finance" implemented in 2016 on the financing constraints of high-tech enterprises by using double-difference method, and in-depth investigation on the impacts of enterprises with different property right properties, life cycle

enterprises and enterprises in different city grades, different locations and different levels of scientific and technological talent concentration on the above relationship. It also explores the impact of different property rights, different life cycle enterprises and enterprises in different cities with different city grades, different locations and different levels of scientific and technological talent concentration on the above relationship, which has certain prospective and reference value for China's development of emerging high-tech industries, promoting the optimization of the financing structure of high-tech enterprises, accelerating the high-quality development of the economy, and promoting the coordinated development of the region.

2. Literature Review and Research Hypothesis

2.1 Pilot Policies for Integrating Science, Technology and Finance

Sheng et al. (2022) believe that science and technology finance refers to the government's innovative financial investment in science and technology. According to Sheng et al. (2022), science and technology finance refers to the government's innovative financial investment in science and technology, it directs several forms of finance, including venture capital, banks, securities, and insurance, to lean toward the system of innovation in science and technology, and realizes the organic unity of the scientific and technological chain and financial chain. Gao et al. (2022) believe that science and technology finance refers to a group of financial instruments designed to encourage technical and scientific advancement as well as the conversion and use of scientific research findings to produce financial gains. Gao et al. believe that the profit-seeking nature of financial capital and the high return of technological innovation are the reasons behind the merger of science, technology, and finance. When the two are used effectively, they can support the interconnected development of these fields.

In order to promote the integration of science and technology and finance, and accelerate the transformation of scientific and technological achievements, the five departments carried out the policy of "Promoting the Pilot Combination of Science and Technology and Finance" in 2011 and 2016 respectively, and mainly chose the pilot areas of national high-tech zones, national demonstration zones for independent innovation, pilot provinces (municipalities) for the national technological innovation project, and pilot cities for innovation etc., which are densely populated with scientific and technological financial resources, to prioritize the pilot areas. The policy prioritizes pilot projects in areas with intensive science and technology financial resources. The policy eases the financing constraints of science and technology enterprises by increasing the input of financial funds for science and technology, driving the financial institutions in the pilot areas to increase their investment, promoting scientific and technological innovation of enterprises in the pilot areas, and lowering the cost of enterprise financing. This new pilot policy is considered to be the key to strengthening the integration of the financial and technological chains, and puts forward new requirements for S&T financing and the optimal allocation of funds, thus enhancing the S&T financial policy effect (Lu, Guo, Ahmad, & Zhang, 2022).

2.2 Financing Constraints of High-tech Enterprises

The classical theory of finance proposed by Modigliani and Miller (1958) suggests that in a complete and frictionless capital market, firms invest independently of external financing conditions. However, the reality of the capital market is contrary to its theory, due to the existence of information asymmetry and financing transaction costs, the cost of exogenous financing tends to be higher than the cost of endogenous financing, which makes most firms can only be forced to focus on endogenous financing. Garcá-Quevedo et al. (2018) argued that due to the existence of financing constraints, the decision-making of the management of the enterprise on innovation activities is somewhat limited, and also has a certain impact on innovation experiments. constraints and can also have an impact on the results of innovation experiments. Especially for high-tech enterprises, insufficient investment in R&D capital will greatly limit their innovative development and industrial upgrading, which in turn affects the innovation and high-quality development of China's real economy.

The report of the 18th Party Congress proposes the implementation of an innovation-driven development strategy. Zhao et al. (2019) argues that technological innovation is the foundation of overall progress, but there are other types of innovations that propel economic development as well, such as institutional innovation, business model innovation, and technological innovation. Schumpeter (1942) in his book "The Theory of Economy and Development" for the first time compared finance and innovation activities, and he believed that banks provide financial support to enterprises by identifying information about the quality and value of their operations, thus promoting their technological innovation and industrial upgrading. He believes that banks provide financial support to enterprises by recognizing their business quality and value information, thus promoting technological innovation and industrial upgrading. As the main body of technological innovation, high-tech enterprises, solving their financing constraints plays an important role in promoting the innovative and high-quality development of China's economy. However, high risk, significant investment in scientific research, and protracted cycle are characteristics of high-tech companies' operations, coupled with the lack of scientific and professional assessment of their operation and development by financial institutions and the existence of information asymmetry, which leads to the obvious disadvantage of high-tech enterprises in external financing compared with traditional enterprises with a fixed production model. In China, bank financing is the source of financing for most enterprises, and there are limited financing channels for enterprises and financial inhibition problems such as interest rate control, which undoubtedly further increase the difficulty of financing for enterprises (Li, Meng, Wang, & Zhou, 2008).

Zhao et al. (2019) argue that in the context of incomplete capital markets and interest rate controls in China, the key to influencing the investment decisions of financial institutions is their risk ratings of firms. However, because information asymmetry exists, the financial institutions' assessment of the value of high-tech enterprises with high risk is not comprehensive enough, which exacerbates investors' risk avoidance of investing in enterprises, and increases the cost of financing, which leads to the emergence of problems such as difficulties in the operation of enterprises (Coles, Daniel, & Naveen,

2006). Chowdhury et al. (2012) found that with the continuous development of the financial market, the information asymmetry in R&D investment has been effectively alleviated, which further reduces the financing cost of enterprises. The "Pilot Program to Promote the Integration of Science and Technology and Finance" is precisely to serve science and technology-based enterprises and promote the development of the financial market. Relevant departments through the construction of some scientific and technological information service platform, the development of scientific and technological insurance products, loan risk compensation fund, credit mutual guarantee mechanism, etc. to reduce the cost of information acquisition and improve the security of input funds, to promote the exchange of information between scientific and technical businesses and financial institutions to further lower the cost of corporate financing, and the introduction of relevant policies to increase the support of the financial institutions to alleviate the financing constraints of the scientific and technological enterprises. Figure 1 shows the number of policy documents in which the term "science and technology finance" appears in the central government regulations from 2012 to 2020, from which it can be found that since the implementation of the second batch of pilot policies in 2016, the number of science and technology finance-related policies has risen, indicating that China places a high value on this policy's implementation. Data is from NUFB (https://www.pkulaw.com/).

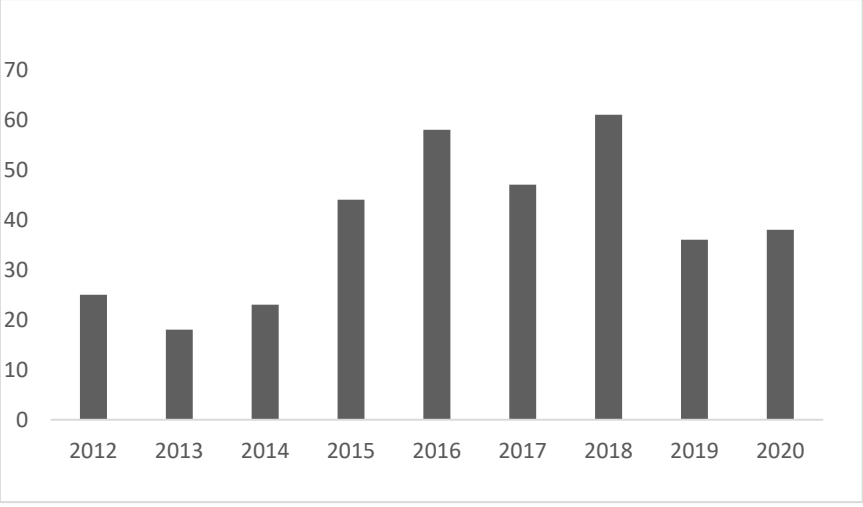

Figure 1. Number of Policy Documents Related to "Science and Technology Finance" in Central Regulations, 2012-2020

The second batch of pilot policies implemented for the purpose of deepening the effect of the first batch of pilot policies, standing on the shoulders of the existing experience, can be more effective and targeted to alleviate the financing constraints of high-tech enterprises in the relevant pilot areas. Based on this, this paper puts forward the following hypotheses:

Hypothesis 1: China's A-share high-tech firms face financing constraints, and the policy of the "Second Pilot Program to Promote the Integration of Science, Technology and Finance" can effectively alleviate

their financing constraints.

Hypothesis 2: The "Second Pilot Program to Promote the Integration of Science, Technology and Finance" policy reduces the financing constraints of high-tech enterprises by expanding financial support.

Hypothesis 3: The "Second Pilot Program for Promoting the Integration of Science, Technology and Finance" policy eases the financing constraints of high-tech firms by reducing their financing costs.

Borisova et al. (2011) and Megginson et al. (2014) argue that SOEs have the advantages of invisible guarantees provided by the central government and access to state-owned banks, which can effectively reduce their financing constraints. Government interference and a bias in favor of state-owned enterprises have been features of China's credit facility distribution. Brandt et al. (2003) consider China's special situation, state-owned enterprises tend to be more mature, bear greater social responsibility, and because they directly represent the local or central government, the possibility of default is lower, so state-owned enterprises are more likely to obtain financial institutions to invest in compare of the non-state-owned enterprises, while non-state-owned enterprises will be "credit discriminatory" in the credit market. Cull et al. (2005) find that SOEs account for a large share of the credit support provided by China's major (and largely state-owned) banks in China. Cull et al. (2000) argue that an increasing number of state-owned banks in China have been forced by various policy considerations to finance poorly-run state-owned enterprises, leading to an increasingly inefficient allocation of credit funds by state-owned banks. The result is that state-owned banks are becoming less and less efficient in the allocation of credit funds. Even so, due to the existence of information asymmetry and other problems, financial institutions are often unable to make accurate and professional value assessment of higher-risk non-state enterprises in the face of their financing needs, which still leads to limited financing channels for non-state enterprises. The main target object of the pilot policy of combining science and technology with finance is science and technology-oriented enterprises, which provides a variety of financing facilities for non-state enterprises and can alleviate to a certain extent the financial problems required for their R&D and innovation, which in turn helps to increase the motivation of non-state enterprises to innovate, and high-quality development of China's economy will be promoted. Based on this, the following hypotheses are proposed:

Hypothesis 4: The effects of the "Second Pilot Program to Promote the Integration of Science, Technology and Finance" policy differ for enterprises with different property rights, and are more pronounced in reducing the financing constraints of non-state-owned enterprises.

The high quality development of a city is all-encompassing and multi-faceted, and Benneworth et al. (2007) point out the important role of human capital and technological innovation in the high quality development of urban economy from the perspective of knowledge. Zanakis et al. (2005) pointed out that the excellent growth of the urban economy is also significantly influenced by non-economic factors. In May 2020, the New Tier 1 Cities Institute announced the 2020 City Business Attraction Ranking, which evaluates the advancement of cities in 2019.The list is divided by CBN Weekly based

on a detailed study of five important indicators: concentration of business resources, urban hubs, activeness of urbanites, diversity of lifestyles, and plasticity in the future. The document classifies China's cities into six tiers: new first-tier, first-tier, second-tier, third-tier, fourth-tier and fifth-tier cities. Obviously, developed cities naturally have better science and technology infrastructure and financial service systems, as well as more adequate science and technology innovation subjects and human capital than less developed cities, which may lead to differences in the effects of the implementation of the pilot policy on science and technology and finance in different levels of the city, therefore, this paper puts forward the following hypotheses:

Hypothesis 5: The effects of the "Second Pilot Program to Promote the Integration of Science, Technology and Finance" on enterprises in different levels of cities differ, and are more pronounced in easing the financing constraints of enterprises in the frontline cities.

Balasubramanian and Lee (2010) studied the issue of the relationship between firm innovation and firm age by counting and analyzing data from 494 firms and 180,505 patents in the United States, and concluded that the innovative capacity of firms is inversely related to the age of firms. Enterprises in the growth period need to quickly seize the market and gain competitive advantages by increasing R&D efforts due to insufficient internal funds and unstable development prospects; enterprises in the maturity period prefer to utilize their current accumulated business experience and reputation to consolidate their market position and adopt a steadily rising development strategy to maintain market share; enterprises in the decline period tend to maintain market share due to the problems such as declining business capacity and technological backwardness and other issues, tend to adopt a conservative development strategy of operating to preserve capital and make minor innovations to existing products. Pilot policies to accelerate the implementation of the innovation-driven development strategy may have different effects on alleviating the financing constraints of enterprises with different life cycles. The following hypotheses are proposed:

Hypothesis 6: There is a difference in the effectiveness of the "Second Pilot Program to Promote the Integration of Science, Technology and Finance" in alleviating the financing constraints of enterprises with different life cycles, and it is more significant in alleviating the financing constraints of enterprises in the growth period.

The National Bureau of Statistics divides the 31 provinces into eastern, central and western economic zones, the eastern region compared with the central and western regions have more convenient transportation conditions, more closely located economic development conditions, which is conducive to the formation of large-scale scientific and technological enterprises and the agglomeration of financial resources, and the eastern region of the higher level of marketization, the transaction environment is also more transparent, the factors of production can be more effective allocation. This has laid a good foundation for the implementation of the pilot policy of combining science and technology and finance, so assumption 7 is made:

Hypothesis 7: The "Second Pilot Program to Promote the Integration of Science, Technology and

Finance" policy has a more significant effect on alleviating the financing constraints of high-tech enterprises in the eastern region.

Innovation is the driving force for the development of high-tech enterprises, and scientific and technological talents are important strategic resources for innovation. Figure 2 shows the number of employees in scientific research and integrated technology service industry in pilot cities from 2012-2019, which is not shown due to the missing data in 2020. Since the implementation of the policy in 2016, the number of scientific and technological talents has risen with a certain time lag, but the overall trend shows an upward growth, with the most significant rise in 2019. Talents in science and technology contribute to the development of high-quality businesses through intelligent transformation, independent innovation, and research into cutting-edge knowledge and technology (Li & Yao, 2024). Therefore, fully mobilizing the enthusiasm and creativity of scientific and technological talents is the key to promoting the high-quality development of high-tech enterprises and alleviating their financing constraints. And the number of included scientific and technological talents varies from region to region due to factors such as talent subsidy policy, public service system, ecological environment, geographic location, etc. (Luo & Zhu, 2023). Enterprises located in the area of scientific and technological talents may have more innovative outputs and thus can obtain more R&D funds, based on this, this paper proposes hypothesis 8:

Hypothesis 8: The "Second Pilot Program for Promoting the Integration of Science, Technology and Finance" policy has a more significant effect on alleviating the financing constraints of enterprises located in areas with a concentration of scientific and technological talent.

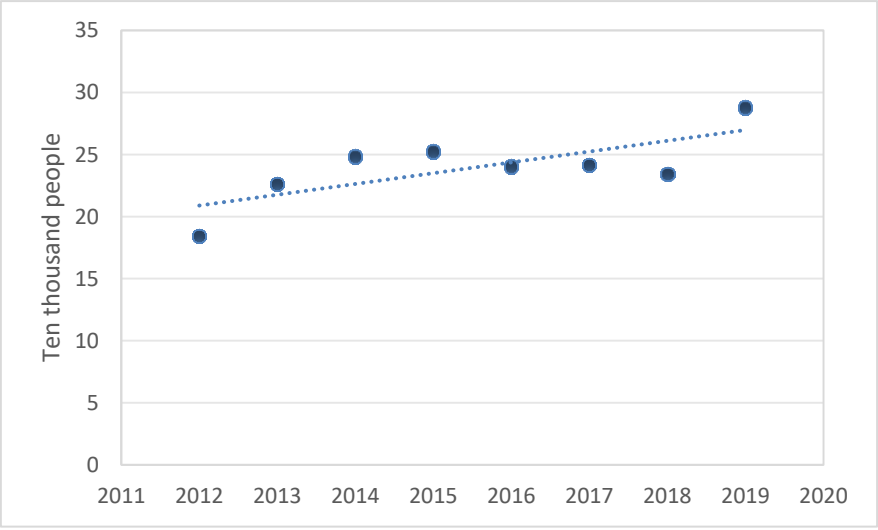

Figure 2. Number of Employees in Research and Integrated Technology Services in Pilot Cities, 2012-2019

3. Empirical Analysis

3.1 Data Sources

In this paper, we select a sample of high-tech enterprises listed on China's A-share market in Shanghai and Shenzhen during the period of 2012-2020 (The high-tech industries involved in the sample of this paper include: general equipment manufacturing, special equipment manufacturing, transportation equipment manufacturing, electrical machinery and equipment manufacturing, communication equipment, computer and other electronic equipment manufacturing, instrumentation and cultural and office machinery manufacturing, chemical raw materials and chemical products manufacturing, pharmaceutical manufacturing, and chemical fiber manufacturing. Derived from the Catalogue of Statistical Classification of High Technology Industries, which was first issued by the National Bureau of Statistics in 2002.). And consider the "second batch of pilot policies on combining science and technology with finance" implemented in 2016 as a quasi-natural experiment, and consider it as one of the first batch of pilot cities in the nine cities involved: Zhengzhou, Xiamen, Ningbo, Jinan, Nanchang, Guiyang, Yinchuan, Baotou, and Shenyang. Among the nine cities involved: Zhengzhou, Xiamen, Ningbo, Jinan, Nanchang, Guiyang, Yinchuan, Baotou and Shenyang, Ningbo Hi-Tech Zone is considered as one of the first pilot cities in view of the policy spillover effect and the accuracy of the experimental results, as the pilot program had been conducted as early as 2012. At the same time, in order to exclude the influence of the policies of the first batch of pilots, the cities involved in the first batch of pilots were excluded. Using Excel to exclude the samples of enterprises with missing data, data anomalies, ST, *ST, and adopting a 1% shrinking tail treatment for all continuous variables, we finally get 2097 enterprises -year observations, totaling 233 high-tech enterprises. All data in this paper come from CSMAR database and EPS database and China Urban Statistical Yearbook.

3.2 Benchmark Regression Model Design

Kaplan and Zingales (1997) and Lamont (2001) modeled the FHP, further analysis based on the FHP model, using ordered logit regression, obtained the KZ index to measure firms' financing constraints. The commonly utilized KZ index is employed as an explanatory variable to gauge the financial limitations of high-tech businesses in order to test hypothesis 1. The policy of "the Second Pilot Program to Promote the Integration of Science, Technology and Finance" carried out by China in 2016 is the core object of the research in this paper. $Treat_{i,j}$ as a group dummy variable, if the samples of enterprises in the eight pilot cities in the second batch are regarded as the experimental group, $Treat_{i,j}$ is 1, and the value of 0 is assigned to the control group. $Year_t$ as the time dummy variable, 2016 is regarded as the year of policy implementation, and 2016 and subsequent years are assigned a value of 1, and vice versa as 0. Constructing the core explanatory variable, i.e., the interaction term $did_{i,j,t} = Treat_{i,j} * Year_t$, which when it takes the value of 1 represents the city and year in which the firm implemented the batch of pilot policies. Based on this, the following double difference model is constructed:

$$KZ_{i,j,t} = \alpha_0 + \alpha_1 * did_{i,j,t} + \beta * Control\_micro_{i,t} + \gamma * Control\_macro_{j,t} + \mu_i + \delta_t + \varepsilon_{i,t}$$

Where i、j、$t$represent firm, city, and year, respectively. $Control\_micro_{i,t}$ represents the firm-level control variables, the $Control\_macro_{j,t}$ represent city-level control variables, the$\mu_i$and$\delta_t$represent individual and time fixed effects, respectively, and $\varepsilon_{i,t}$ is the rand omized disturbance term.

The variables and their descriptions are shown in Table 1, and the descriptive statistics of the relevant variables are shown in Table 2.

Table 1. Description of Variables

Variable type	Variable name	Notation	Calculation method
explanatory variable	Corporate finance constraints	KZ	Data from CSMAR
explained variable	Policy dummy variables	did	$did_{i,j,t}$= 1 indicates that the city in which the enterprise is located has implemented the "Second Pilot Program for Promoting the Integration of Science, Technology and Finance" in the current year; the opposite is 0.
Firm-level control variables	gearing	lev	Total liabilities/total assets
	Enterprise size	size	Logarithmic total assets of the enterprise
	revenues	lnsale_scale	Logarithmic enterprise revenue
	return on net assets	roe	Net profit/total owners' equity
	Age of business	age	Difference between the current period and the year of initial establishment of the enterprise
	Corporate Growth	growth	Corporate revenue growth/previous year's revenue
City-level control variables	Level of economic development	lngdp	Gross regional product in logarithms
	Financial expenditure on science and technology	fund	Fiscal expenditure on scientific services/GDP
intermediary variable	Strength of financial capital support	FD	Balance of loans from financial institutions/GDP at the end of the year
	Corporate finance costs	FC	Finance costs/total liabilities

Table 2. Descriptive Statistics of Relevant Variables

Variables	Obs	Mean	Std. Dev.	Min	Max.
KZ	2097	0.951	1.824	-4.461	4.42
lev	2097	0.396	0.185	0.055	0.816
size	2097	8.452	1.072	6.469	11.517
lnsale_scale	2097	21.583	1.247	19.028	25.053
roe	2097	0.066	0.089	-0.386	0.268
age	2097	17.416	5.238	2	37
growth	2097	0.279	0.511	-0.54	2.737
lngdp	2097	8.055	0.605	6.402	9.225
fund	2097	0.003	0.003	0.001	0.017

3.3 Benchmark REGRESSION RESULTS

The results of the benchmark regression are shown inTable 3. , both times controlling for time and individual fixed effects. Column (1) is the result after adding firm-level control variables, and the regression is significant and negative. Column (2) is the result after adding enterprise and city level control variables, the regression coefficient is -0.299 and significant at 95% level, which indicates that the policy of "the second batch of pilot projects to promote the combination of science and technology and finance" does effectively alleviate the financing constraints of high-tech enterprises, and hypothesis 1 is proved.

Table 3. Benchmark Regression Results

Variables	(1)	(2)
	KZ	KZ
did	-0.295**	-0.299**
	(0.118)	(0.119)
lev	7.230***	7.220***
	(0.305)	(0.306)
size	-0.564***	-0.566***
	(0.121)	(0.121)
lnsale_scale	0.0312	0.0304
	(0.106)	(0.106)
roe	-2.892***	-2.887***
	(0.364)	(0.364)
age	-0.0512***	-0.0550***
	(0.0159)	(0.0200)
growth	0.0750	0.0759

	(0.0640)	(0.0640)
lngdp		0.0348
		(0.213)
fund		9.644
		(15.02)
Constant	3.676**	3.463
	(1.665)	(2.162)
Observations		2,097
R-squared		0.356
Number of id	233	233

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

3.4 Robustness Tests

3.4.1 Parallel Trend Test

The reliability of the results of the double differencing method relies on the assumption that the experimental and control groups share a common trend before the implementation of the policy. Therefore, the study performed a parallel trend test to confirm that the changes in the experimental group before and after the pilot policy's adoption were, in fact, brought on by the policy's implementation. The results of the parallel trend test are shown in Figure 3. As shown in Figure 3, it can be seen that there is no significant difference between the experimental group and the control group before the implementation of the "second pilot program to promote the integration of science, technology and finance", which means that the parallel trend test is passed. Further research found that after three years of policy implementation, there is a significant difference and a negative effect, indicating that the experimental group's financing constraints have been eased, and the policy has a certain time lag.

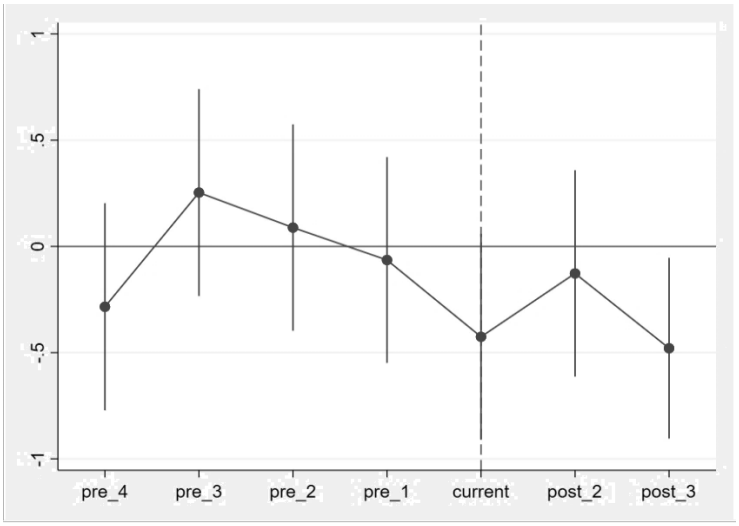

Figure 3. Parallel Trend Graph

3.4.2 Placebo Test

To rule out chance, this paper was tested by fictitious interaction terms and a random sample of 500 placebo tests. The results of the test are shown inFig shown, most of the p-values lie above 0.1, and the previous did coefficient value (-0.295) is also in the small probability region in the kernel density plot, suggesting that the pilot policy's role in alleviating the financing constraints of high-tech firms is not by chance, and the findings of this paper are robust.

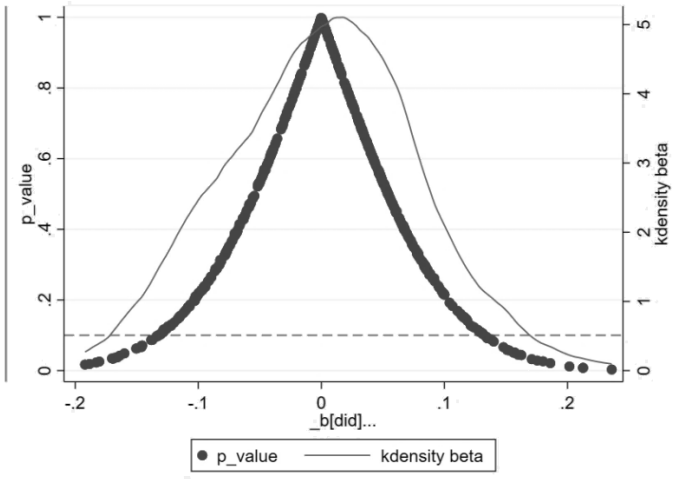

Figure 4. Placebo Test Chart

3.4.3 Analysis of PSM-DID Test Results

The propensity matching score method can effectively reduce the interference of sample selectivity bias on the results, so this paper uses radius matching to overcome the problem of selectivity bias. As Figure 5 shows, there is a large difference between the covariates before matching, and the standardized

deviation of the covariates after matching is significantly reduced and close to 0. Meanwhile, the Table 4 shows the specific matching results, after matching the covariates P-value are not significant. Since the test results of the experimental group and the control group do not differ significantly, it can be concluded that matching data are available. On the basis of meeting the matching equilibrium assumption, the effects of this pilot policy are further tested based on the matching results, and the results are as follows Table 5. As shown in Table 5, the regression results are basically consistent with the benchmark results, the coefficients are lower than the benchmark results, but it is enough to show that the policy of "the second batch of pilot projects to promote the integration of science and technology and finance" can effectively alleviate the financing constraints of high-tech enterprises, and the experimental results of this paper are more robust.

Table 4. Propensity Score Matching Balance Test

Variables	brochure	Experimental group mean	Control group mean	Standard deviation (%)	T-value	P-value
lev	prematch	0.46066	0.38884	39.2	5.50	0.000
	after matching	0.45899	0.45245	3.6	0.37	0.713
size	prematch	8.7946	8.4113	36.2	5.05	0.000
	after matching	8.7781	8.672	10.0	1.05	0.292
lnsale_scale	prematch	21.85	21.552	24.1	3.36	0.001
	after matching	21.838	21.692	11.8	1.25	0.211
roe	prematch	0.05131	0.06732	-16.7	-2.53	0.012
	after matching	0.05153	0.04819	3.5	0.32	0.747
age	prematch	19.636	17.156	51.5	6.71	0.000
	after matching	19.601	19.703	-2.1	-0.22	0.827
growth	prematch	0.4268	0.26124	28.8	4.57	0.000
	after matching	0.42913	0.39242	6.4	0.62	0.533
lngdp	prematch	8.6483	7.9859	134.2	16.31	0.000
	after matching	8.643	8.5758	13.6	1.76	0.079
fund	prematch	0.00458	0.00336	52.7	6.19	0.000
	after matching	0.00457	0.00495	-16.2	-1.20	0.232

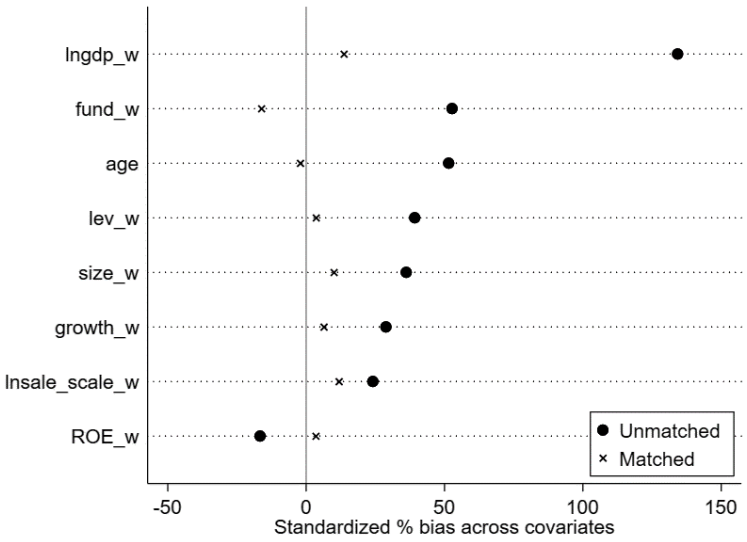

Figure 5. Sample Distribution of Propensity Matching Scores

Table 5. PSM-DID Results

Variables	(1)	(2)
	KZ	KZ
did	-0.303**	-0.307***
	(0.118)	(0.119)
lev	7.236***	7.227***
	(0.306)	(0.306)
size	-0.564***	-0.566***
	(0.121)	(0.121)
lnsale_scale	0.0339	0.0331
	(0.106)	(0.106)
roe	-2.875***	-2.870***
	(0.364)	(0.364)
age	-0.0522***	-0.0559***
	(0.0160)	(0.0200)
growth	0.0760	0.0768
	(0.0640)	(0.0640)
lngdp		0.0353
		(0.213)
fund		9.092
		(15.03)
Constant	3.632**	3.416

	(1.665)	(2.163)
Observations	2,095	2,095
R-squared	0.356	0.356
Number of id	233	233

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

3.4.4 Substitution of Explanatory Variables

Regarding the measurement indexes of financing constraints, scholars have proposed different ways of measurement, generally there are ways to measure financing constraints by using a single index of the enterprise, but the more common ones are: three indexes: the KZ index, the SA index, and the WW index. Hadlock et al. (2009) constructed a formula for calculating the SA index based on the basic method of calculating the KZ index: $A = -0.737 * size + 0.043 * size^2 - 0.04 * age$, where size generally refers to the natural logarithm of the firm's assets, and age refers to the age of the firm, and the absolute value of this index is proportional to the financing constraints. Whited et al. (2006) use the generalized method of moments estimation to estimate the coefficients of Euler's investment equation to study the link between corporate financing constraints and stock returns, and construct the external financing constraints index WW index.

Since the SA index can avoid the endogeneity problem to a certain extent compared with the WW index, this paper replaces the KZ index with the SA index, and takes the absolute value of the SA index to further measure the robustness of the experimental results. The regression results after replacing the explanatory variables are as follows Table 6 shown, it can be found that even after replacing the explanatory variables. The regression results are still very significant, and the regression coefficient is negative, indicating that the policy of "the Second Pilot Program for Promoting the Integration of Science, Technology and Finance" has effectively alleviated the financing constraints of high-tech enterprises, and the experimental results of this paper are robust and reliable.

Table 6. Regression Results with Replacement of Explanatory Variables

Variables	(1)	(2)
	SA	SA
did	-0.00492***	-0.00486**
	(0.00145)	(0.00160)
lev	0.0781***	0.0773***
	(0.0193)	(0.0192)
size	0.000656	0.000484
	(0.00489)	(0.00490)

lnsale_scale	0.00652**	0.00661**
	(0.00225)	(0.00224)
roe	0.0152	0.0159
	(0.0103)	(0.0103)
age	0.0231***	0.0232***
	(0.00225)	(0.00219)
growth	0.00281	0.00290
	(0.00167)	(0.00168)
lngdp		-0.00323
		(0.00294)
fund		1.284*
		(0.647)
Constant	3.223***	3.242***
	(0.0533)	(0.0630)
Observations	2,097	2,097
R-squared	0.980	0.980
Number of id	233	233

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

3.4.5 Exclusion of Other Policy Interferences

China has been establishing national autonomous innovation demonstration zones based on high-tech zones since 2009, and since its establishment, the State Council has approved a total of 23 demonstration zones and 66 national high-tech zones, involving a total of 60 cities across the country, with the aim of promoting the enhancement of regional innovation capacity and the development of high-tech enterprises. There are five years in the sample period, 2014, 2015, 2016, 2018 and 2019, in which national independent innovation demonstration zones have been approved, this could affect this paper's estimation results, therefore in order to eliminate this policy's interference, a new dummy variable did-zone is constructed and the dummy variable is added to the basic regression for regression, and the results obtained are shown in Table 7, which are similar and still significant to the base regression results, thus proving that the results of this paper are robust.

Table 7. Regression Results Excluding Other Policy Disturbances

Variables	(1)	(2)
	KZ	KZ
did	-0.280**	-0.278**
	(0.125)	(0.126)
did-zone	-0.0365	-0.0508
	(0.0964)	(0.0982)
lev	7.236***	7.227***
	(0.306)	(0.306)
size	-0.565***	-0.567***
	(0.121)	(0.121)
lnsale_scale	0.0355	0.0364
	(0.107)	(0.107)
roe	-2.901***	-2.899***
	(0.365)	(0.365)
age	-0.0501***	-0.0539***
	(0.0162)	(0.0201)
growth	0.0753	0.0765
	(0.0640)	(0.0641)
lngdp		0.0380
		(0.214)
fund		11.04
		(15.26)
Constant	3.574**	3.303
	(1.687)	(2.185)
Observations	2,097	2,097
R-squared	0.356	0.356
Number of id	233	233

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

3.5 Analysis of Mediating Effects

The previous tests have fully confirmed Hypothesis 1, that is, "the Second Pilot Program for Promoting the Integration of Science, Technology and Finance" does help to alleviate the financing constraints of high-tech enterprises, but the mechanism of its action needs to be further researched and tested. Therefore, this paper will draw on the mediation effect model of Baron (1986) to study the mechanism

of the pilot policy in alleviating financing constraints, and estimate the three regression equations listed below: The dependent variable should be regressed on the independent variable first, followed by the mediator variable on the independent variable, and finally, the dependent variable should be regressed on the independent variable and the mediator variable simultaneously.

3.5.1 Analysis of Mediation Effects Based on the Perspective of Financial Capital Support Strength

First, the mediating variable, financial capital support intensity (FD) with the independent variable did. The regression is performed and the results are shown in Table 8 Column (1) shows that the coefficient is 0.291 and significantly positive, indicating that the implementation of the pilot policy has indeed expanded the support of financial funds. Next, the dependent variable KZ and the independent variable did regression, we get Table 8 Column (2) of the results, it can be seen that the pilot effectively alleviate the problem of financing constraints of high-tech enterprises, and finally put the three into the regression equation at the same time for regression, the results are as follows Table 8 Column (3) shows that the expansion of financial capital support does significantly reduce the financing constraints, and the effect of the pilot policy to alleviate the financing constraints is still significant, the coefficient becomes smaller.

The above results show that hypothesis 2 is confirmed: the policy of "the Second Pilot Program to Promote the Integration of Science, Technology and Finance" reduces the financing constraints of high-tech enterprises by expanding the support of financial funds.

Table 8. Intermediation Effects Based on the Perspective of the Strength of Financial Capital Support

Variables	(1)	(2)	(3)
	FD	KZ	KZ
did	0.291***	-0.299**	-0.214*
	(0.0192)	(0.119)	(0.126)
FD			-0.293**
			(0.143)
lev	0.0272	7.220***	7.228***
	(0.0496)	(0.306)	(0.306)
size	0.0435**	-0.566***	-0.553***
	(0.0196)	(0.121)	(0.121)
lnsale_scale	-0.0728***	0.0304	0.00909
	(0.0172)	(0.106)	(0.107)
roe	0.0573	-2.887***	-2.870***
	(0.0590)	(0.364)	(0.364)
age	0.118***	-0.0550***	-0.0204
	(0.00324)	(0.0200)	(0.0262)

growth	-0.000764	0.0759	0.0757
	(0.0104)	(0.0640)	(0.0640)
lngdp	-0.719***	0.0348	-0.176
	(0.0346)	(0.213)	(0.237)
fund	14.65***	9.644	13.94
	(2.433)	(15.02)	(15.15)
Constant	6.199***	3.463	5.281**
	(0.350)	(2.162)	(2.336)
Observations	2,097	2,097	2,097
R-squared	0.654	0.356	0.358
Number of id	233	233	233

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

3.5.2 Analysis of Intermediation Effects Based on the Perspective of Corporate Finance Costs

Based on the previous analysis, the three-step regression was utilized to sequentially obtain the Table 9 the results of columns (1), (2) and (3) of Table 9. The coefficient of column (1) is -0.00338 and significant, which can indicate that the second batch of pilot policy can effectively reduce the financing cost of high-tech enterprises, and the coefficient of column (2) is the same as that of the previous section, which again indicates that the pilot policy has the effect of alleviating the financing constraints of enterprises. Column (3) shows that by reducing the financing costs of high-tech enterprises does significantly reduce the financing constraints, and the effect of the pilot policy to alleviate the financing constraints is still significant, the coefficient has been reduced.

The above results are enough to prove that hypothesis 3 is true, that is, the pilot policy can alleviate the financing constraints by reducing the financing costs of high-tech enterprises.

Table 9. Intermediation Effects Based on the Perspective of Corporate Finance Costs

Variables	(1)	(2)	(3)
	FC	KZ	KZ
did	-0.00338	-0.299**	-0.266**
	(0.00238)	(0.119)	(0.116)
FC			9.978***
			(1.137)
lev	0.114***	7.220***	6.087***
	(0.00614)	(0.306)	(0.327)
size	-0.0111***	-0.566***	-0.455***

	(0.00242)	(0.121)	(0.119)
lnsale_scale	0.0116***	0.0304	-0.0858
	(0.00213)	(0.106)	(0.105)
roe	-0.0231***	-2.887***	-2.656***
	(0.00730)	(0.364)	(0.358)
age	0.00142***	-0.0550***	-0.0692***
	(0.000401)	(0.0200)	(0.0197)
growth	0.00229*	0.0759	0.0531
	(0.00128)	(0.0640)	(0.0628)
lngdp	-0.000238	0.0348	0.0372
	(0.00428)	(0.213)	(0.209)
fund	0.389	9.644	5.764
	(0.301)	(15.02)	(14.73)
Constant	-0.221***	3.463	5.671***
	(0.0434)	(2.162)	(2.134)
Observations	2,097	2,097	2,097
R-squared	0.256	0.356	0.382
Number of id	233	233	233

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

3.6 Heterogeneity Analysis

For the purpose of better functioning of the pilot policy, this paper will further analyze the differences in the effects of the financing constraints of high-tech enterprises with different property rights, in different city grades, with different life cycles, in different locations, and with different levels of scientific and technological talent concentration, which are affected by the pilot policy, and make relevant references and suggestions for the direction of the implementation of the policy.

3.6.1 Heterogeneity in the Nature of Property Rights

In this paper, the original sample is divided into two groups, non-state-owned enterprises and state-owned enterprises, according to the nature of their enterprise property rights. And these two groups are regressed separately, and the final results are as follows Table 10 shown. The coefficient of column (1) obtained from the regression of non-state-owned enterprises is -0.414 and is significant, while the coefficient of column (2) obtained from the regression of state-owned enterprises is not significant, so we can see that the hypothesis 4 is valid, that is, the effect of the implementation of the policy of "Second Pilot Program for Promoting the Integration of Science, Technology and Finance" is indeed a difference in the role of different property rights of the nature of the enterprises and the effect

of reducing the financing constraints of non-state-owned enterprises is more obvious. The effect on reducing the financing constraints of non-state-owned enterprises is more obvious.

Table 10. Heterogeneity in the Nature of Property Rights

Variables	non-state enterprise	nationalized business
	(1)	(2)
	KZ	KZ
did	-0.414**	-0.0940
	(0.190)	(0.148)
lev	7.286***	6.859***
	(0.389)	(0.557)
size	-0.623***	-0.553***
	(0.166)	(0.175)
lnsale_scale	-0.235	0.188
	(0.150)	(0.152)
roe	-2.439***	-2.851***
	(0.481)	(0.591)
age	-0.146	-0.103
	(0.182)	(0.118)
growth	0.112	-0.0644
	(0.0881)	(0.0924)
lngdp	0.269	-0.190
	(0.294)	(0.321)
fund	14.80	-3.223
	(22.70)	(19.04)
Constant	8.342**	3.095
	(4.062)	(3.831)
Observations	1,207	890
R-squared	0.380	0.350
Number of id	139	105

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

3.6.2 Urban Hierarchical Heterogeneity

This paper divides the samples into two groups according to the "2020 City Business Attractiveness Ranking", the first group of samples are enterprises in the new first-tier and second-tier cities, and the

second group is in the third-, fourth-, and fifth-tier cities which are more backward in terms of development, and regresses the samples of the two groups separately, obtaining Table 11. The results are summarized in Table 11. Obviously, enterprises in more developed cities are significantly affected by the pilot policy to alleviate their financing constraints, which is consistent with the original hypothesis 5, i.e., there are differences in the effects of the implementation of the policy of "Second Pilot Program for Promoting the Integration of Science, Technology and Finance" on the enterprises located in different tier cities, and the effect of alleviating the financing constraints on the enterprises located in more developed cities is more obvious.

Table 11. Urban Hierarchical Heterogeneity

Variables	(new first- and second-tier cities)	(third, fourth and fifth tier cities)
	(1)	(2)
	KZ	KZ
did	-0.286**	0.323
	(0.144)	(0.484)
lev	6.765***	7.798***
	(0.457)	(0.418)
size	-0.498***	-0.690***
	(0.174)	(0.173)
lnsale_scale	0.127	0.0123
	(0.164)	(0.142)
roe	-2.636***	-3.211***
	(0.541)	(0.495)
age	-0.0692*	-0.0534**
	(0.0354)	(0.0250)
growth	-0.00660	0.156*
	(0.0992)	(0.0835)
lngdp	0.200	0.00980
	(0.370)	(0.266)
fund	12.27	6.429
	(20.72)	(22.96)
Constant	-0.277	4.968*
	(3.632)	(2.712)
Observations	1,035	1,062
R-squared	0.318	0.409
Number of id	115	118

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

3.6.3 Enterprise Life Cycle Heterogeneity

In this paper, the age of the firms is used as a basis for classifying the life cycle of the firms. In this paper, enterprises are grouped according to the third quartile of the age of the enterprise, and enterprises in the age of 17 and below are specified as the growth period, those in the age of 17-21 are mature enterprises, and those in the age of 21 and above are regarded as declining enterprises, and the empirical results obtained are as follows Table 12. The results show that the policy of "Second Pilot Program for Promoting the Integration of Science, Technology and Finance" has a greater effect on reducing the financing constraints of enterprises in the growth period than those in the maturity and decline periods, and hypothesis 6 is valid.

Table 12. Firm Life Cycle Heterogeneity

Variables	(Growing businesses)	(mature enterprises)	(Declining enterprises)
	(1)	(2)	(3)
	KZ	KZ	KZ
did	-0.448**	-0.235	0.393
	(0.208)	(0.407)	(0.446)
lev	7.888***	6.861***	4.791***
	(0.483)	(1.138)	(1.051)
size	-0.893***	-1.488***	-0.781*
	(0.198)	(0.496)	(0.452)
lnsale_scale	-0.0283	0.880**	0.517
	(0.177)	(0.354)	(0.410)
roe	-2.273***	-4.287***	-4.329***
	(0.577)	(1.184)	(1.087)
age	0.00260	-0.0169	-0.0347
	(0.0413)	(0.0848)	(0.0837)
growth	0.0252	0.0486	0.213
	(0.0800)	(0.169)	(0.246)
lngdp	0.187	-0.438	-0.701
	(0.436)	(0.813)	(0.631)
fund	22.85	30.76	29.34
	(25.57)	(30.81)	(30.42)
Constant	4.931	-3.641	1.152

	(4.095)	(7.942)	(8.160)
Observations	1,025	514	325
R-squared	0.400	0.304	0.264
Number of id	183	178	79

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

3.6.4 Heterogeneity of East, Central and West locations

In this paper, according to the National Bureau of Statistics of the 31 provinces in accordance with the criteria for the division of economic zones, the sample is divided into three groups of East, Central and West, and group regression, the results are as follows Table 13. Column (1) represents the regression results for high-tech enterprises in the eastern region, and columns (2) and (3) are the regression results for high-tech enterprises in the central and western regions. According to the coefficients of the three columns, it can be found that the effect of "the Second Pilot Program for Promoting the Integration of Science, Technology and Finance" on the enterprises in the eastern region is more significant, while the effect on the enterprises in the central and western regions is not obvious. Hypothesis 7 is proved.

Table 13. Heterogeneity of East, Central and West Locations

Variables	(Eastern)	(Central)	(West)
	(1)	(2)	(3)
	KZ	KZ	KZ
did	-0.347**	-0.102	-0.00227
	(0.177)	(0.237)	(0.243)
lev	7.332***	7.602***	5.579***
	(0.387)	(0.793)	(0.624)
size	-0.355**	-1.414***	-0.0891
	(0.157)	(0.303)	(0.243)
lnsale_scale	-0.146	0.365	0.191
	(0.149)	(0.246)	(0.172)
roe	-2.784***	-5.446***	-1.223*
	(0.458)	(1.079)	(0.626)
age	-0.0666***	0.0675	-0.0224
	(0.0243)	(0.0931)	(0.0476)
growth	-0.0245	0.193	0.203
	(0.0823)	(0.128)	(0.144)
lngdp	0.302	-1.132	-1.123**

	(0.254)	(1.186)	(0.512)
fund	15.12	1.243	-111.8*
	(19.09)	(3.490)	(67.64)
Constant	3.401	10.61	5.173
	(2.779)	(8.570)	(4.121)
Observations	1,278	486	333
R-squared	0.365	0.386	0.428
Number of id	142	54	37

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

3.6.5 Heterogeneity in the Level of Scientific and Technological Talent Concentration

This paper adopts the ratio of the number of employees in the city's scientific research and comprehensive technology service industry to the total number of people in the city in the current year to express the agglomeration level of scientific and technological talents, and the data are obtained from China Urban Statistical Yearbook, and this method can alleviate the problem of the differences in the size of the cities to a certain extent. According to the mean value of the aggregation level of scientific and technological talents, the sample is divided into two groups, and the results of heterogeneity analysis are shown in Table 14, column (2) represents the results of the analysis of the sample with a higher level of scientific and technological talent concentration, and the significance of the coefficients shows that the hypothesis 8 is valid, i.e., the pilot policy has a more significant effect on alleviating the financing constraints of enterprises located in the area of scientific and technological talent concentration.

Table 14. Heterogeneity in the Level of Concentration of Scientific and Technological Talent

Variables	(1)	(2)
	KZ	KZ
did	-0.0634	-0.297**
	(0.788)	(0.149)
lev	7.507***	7.363***
	(0.425)	(0.513)
size	-0.717***	-0.699***
	(0.177)	(0.191)
lnsale_scale	0.144	0.101
	(0.158)	(0.162)
roe	-3.242***	-2.401***

	(0.531)	(0.571)
age	-0.0534*	-0.0143
	(0.0324)	(0.0326)
growth	0.267***	-0.137
	(0.0934)	(0.0960)
lngdp	-0.294	0.0334
	(0.389)	(0.320)
fund	25.91	-0.0474
	(22.63)	(21.32)
Constant	4.753	2.245
	(3.558)	(3.346)
Observations	1,051	1,046
R-squared	0.420	0.313
Number of id	167	233

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

4. Conclusions and Policy Recommendations

Taking Chinese A-share high-tech enterprises in Shanghai and Shenzhen as research samples, this paper analyzes the impact of the policy of "Second Pilot Program for Promoting the Integration of Science, Technology and Finance " on the financing constraints of high-tech enterprises from the perspective of science and technology financial policy by using the double-difference method, and finds that the pilot policy can alleviate the financing constraints of high-tech enterprises by expanding the support of financial funds and lowering the cost of financing for the enterprises. Additionally, non-state-owned businesses, businesses in growth period, and businesses situated in more developed areas with a higher concentration of scientific and technological expertise will benefit more from the removal of funding restrictions.

The findings of this paper have some reference value for the future development of science and technology financial policies and the sustainable development of high-tech enterprises. In the future, China should pay more attention to the financing of small and medium-sized science and technology enterprises, expand financing channels, and innovate science and technology financial service models. It should also expand the scope of the "Pilot Program for Promoting the Integration of Science, Technology and Finance", absorb the lessons learned from the priority pilot cities, and emphasize regional coordinated development, so as to drive the overall high-quality development of China's economy.

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