The Influence of Technology and Finance Policy on Financing of Small and Medium-sized Enterprises under the Background of Digital Transformation

Yixin Shen, Lei Gu

Harbin University of Commerce, Harbin, 150000 Heilongjiang, China

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Abstract: Under the wave of digital transformation, the financing problem of Small and medium-sized enterprises (SMEs) has become a key issue in economic growth. This article focuses on the influence of technology and finance's policies on the financing of SMEs, analyzes the current situation of policies and financing by combing relevant theories, and explores the influence mechanism to carry out research. It is found that technology and finance's policies have a significant impact on SMEs in terms of financing scale, cost and channels. The policy expands the financing scale by means of financial subsidies and tax incentives, reduces the financing cost by means of risk compensation and building platforms, and at the same time promotes the development of multi-level capital markets and broadens financing channels. However, the financing problem of SMEs still exists, and the degree of digital transformation affects the policy effect. Enterprises with a high degree of digitalization can better improve their financing situation with the help of policies, while enterprises with lagging transformation have limited benefits. This article provides theoretical reference and practical ideas for further improving technology and finance's policies and improving the financing efficiency of SMEs.

1. Introduction

In today's era, digital transformation has become the core trend of global economic growth, profoundly changing the operating mode and financial ecology of enterprises [1]. In this context, as an important force of economic growth, the financing problem of SMEs has attracted much attention [2]. As a key means to guide and support the development of small and medium-sized scientific and technological enterprises, "technology and finance Policy" plays a decisive role in improving the financing difficulties of SMEs [3].

SMEs are important subjects to promote economic growth, innovation and employment, but for a long time, financing problems have seriously restricted their development and growth [4]. Due to the limitations of traditional financing channels, SMEs are faced with financing difficulties and expensive financing [5]. The introduction of the technology and finance policy aims to integrate financial resources through policy guidance and help SMEs get more financing support [6]. At the same time, digital transformation has brought new opportunities and challenges to SMEs, changed their business processes and business models, and also had a far-reaching impact on their financing behavior.

Under this situation, it is of great theoretical and practical significance to study the internal relations among digital transformation, technology and finance policy, SMEs, financing impact and policy optimization [7]. Theoretically, it is helpful to further enrich the relevant theoretical system of financing between technology and finance and SMEs. From a practical point of view, it can provide reference for the government to formulate more targeted and effective policies for technology and finance and for SMEs to make better use of policies to improve their financing situation under the background of digital transformation. Based on relevant theories, this article will deeply analyze the influence mechanism of technology and finance's policies on the financing of SMEs, so as to provide useful ideas for solving the financing problems of SMEs.

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2. Related theories and literature review

SMEs often face the "Macmillan gap" in financing because of their small scale and imperfect financial system [8]. The theory of information asymmetry points out that the information between SMEs and financial institutions is opaque, which leads financial institutions to avoid risks and raise the financing threshold for SMEs. The pecking order theory holds that enterprises prefer endogenous financing, followed by debt financing, and finally equity financing. SMEs rely more on exogenous financing because of limited endogenous financing, which aggravates the financing dilemma.

Technology and finance's policy aims to promote the deep integration of science and technology and finance, and promote scientific and technological innovation and industrial upgrading through policy guidance. By formulating policies such as tax incentives and financial subsidies, the government reduces the investment risk of financial institutions to small and medium-sized scientific and technological enterprises and guides the flow of financial resources to SMEs. At the same time, build a multi-level capital market system to provide diversified financing channels for SMEs. Digital transformation refers to the comprehensive transformation of business processes and business models by enterprises using digital technology [9]. In the field of financing, big data, artificial intelligence and other technologies can help SMEs improve information transparency, reduce the cost of information collection of financial institutions, and alleviate the problem of information asymmetry, thus improving the financing environment.

International research focuses on the influence of technology and finance policy on the innovation and growth of SMEs, and finds that policies can effectively alleviate financing constraints and enhance the innovation ability of enterprises. China scholars focus on the effect of policy implementation and the direction of improvement. Some studies show that there are some problems such as insufficient pertinence and poor synergy in the implementation of technology and finance policies. In addition, the research on the role of digital transformation in the relationship between technology and finance's policies and SME financing is still weak, and this article will make an in-depth analysis in this respect.

3. Technology and finance's policy and the financing status of SMEs

3.1. Technology and finance policy system and development process

With the increasing importance of the integration of science, technology and finance, China has gradually established a relatively complete technology and finance policy system. In the early days, the policy focused on supporting scientific research projects through financial funds and laying the foundation for the development of scientific and technological enterprises [10]. Subsequently, the policy gradually tilted towards guiding financial institutions to participate in technology and finance, such as encouraging banks to carry out innovative business such as intellectual property pledge loans. In recent years, with the deepening of capital market reform, policies have focused on improving multi-level capital markets and providing more financing channels for SMEs.

Taking the preferential tax policy as an example, the enterprise income tax is levied at a reduced rate of 15% for qualified small and medium-sized scientific and technological enterprises, which effectively reduces the tax burden of enterprises and increases their endogenous financing ability. For another example, various types of guiding funds for the transformation of scientific and technological achievements set up by the government, through cooperation with social capital, amplify the financial capital effect and provide financial support for SMEs at different stages of development.

3.2. SME financing status and difficulties

Despite the continuous improvement of technology and finance's policies, the financing problems of SMEs still exist. From the perspective of financing channels, SMEs mainly rely on indirect financing methods such as bank loans. According to the survey, bank loans account for 60%, while direct financing methods such as equity financing and bond financing account for a relatively low proportion, accounting for 15% and 10% respectively, as shown in Table 1. This reflects that the financing channels of SMEs are relatively single, relying too much on indirect financing and vulnerable to changes in bank credit policies.

Table 1: Proportion of Financing Channels for SMEs

Financing Channel	Proportion
Bank Loans	60%
Equity Financing	15%
Bond Financing	10%
Others (e.g., Private Lending, etc.)	15%

SMEs also face the problem of high financing cost. Due to the relatively low credit rating of SMEs, banks often raise the loan interest rate due to risk considerations, and the intermediate costs such as guarantee fees and evaluation fees increase the actual financing costs of SMEs. In addition, the limited amount of financing is also a common dilemma, and the loan amount of banks to SMEs is generally small, which is difficult to meet the needs of large-scale development of enterprises.

3.3. The impact of digital transformation on SME financing mechanism

Digital transformation brings new opportunities for SMEs to improve their financing situation. On the one hand, through digital means, SMEs can enhance information transparency. For example, by using big data technology to record and analyze business data, financial institutions can more accurately evaluate the credit status of enterprises and reduce the degree of information asymmetry. On the other hand, digital transformation has spawned new financing models, such as supply chain finance, which provides financing support for upstream and downstream SMEs with the help of core enterprise credit. At the same time, the development of financial technology enables financial institutions to develop financial products that better meet the needs of SMEs and improve financing efficiency. However, some SMEs have made slow progress in using digitalization to improve financing due to factors such as large investment in digital transformation and lack of talents.

4. The Influence Mechanism of technology and finance Policy on Financing of SMEs

4.1. The impact of technology and finance policy on the financing scale of SMEs

Technology and finance's policies affect the financing scale of SMEs in many ways. The government's financial subsidy policy can directly increase the disposable funds of enterprises, such as setting up special R&D subsidies, encouraging SMEs to increase investment in scientific research, thereby enhancing the innovation ability and market competitiveness of enterprises and attracting more external investment. Taking a certain area as an example, within three years after the implementation of the large-scale financial subsidy policy, the average financing scale of subsidized SMEs increased from 5 million yuan to 8 million yuan. At the same time, preferential tax policies reduce the operating costs of enterprises, increase the profit retention of enterprises, and indirectly expand the scale of internal financing of enterprises. Under the guidance of policies, financial institutions will also relax the credit limit for SMEs, increase the amount of loans, and further expand the financing scale of SMEs.

4.2. The impact of technology and finance policy on the financing costs of SMEs

Technology and finance's policies have a significant impact on the financing cost of SMEs. Take the loan interest rate as an example. Before the implementation of technology and finance policy in a certain area, the average loan interest rate of SMEs was as high as 8%. After the policy guided financial institutions to increase their support for SMEs, the risk expectation of financial institutions was reduced through measures such as risk compensation mechanism, and the average loan interest rate was reduced to 6%. In addition, the financing service platform built by the government integrates all kinds of financing information, reduces the intermediate links of enterprise financing, and reduces the search cost and guarantee cost in the process of enterprise financing. For example, the platform provides free financing consulting services, which reduces the extra costs incurred by enterprises due to information asymmetry and effectively reduces the financing costs of SMEs.

4.3. The impact of technology and finance policy on financing channels for SMEs

Technology and finance policy promotes the diversification of financing channels for SMEs. The policy encourages the development of multi-level capital markets, and the establishment of the New Third Board and science and technology innovation board provides new ways for equity financing of SMEs. At the same time, support SMEs to issue innovative bond products such as collective bonds and regional excellent bills, and broaden bond financing channels. In addition, the policy guides private capital to enter the field of technology and finance, develops venture capital and angel investment, and enriches the financing options for SMEs, so that SMEs can choose appropriate financing channels and optimize the financing structure according to their own development stages and needs. Figure 1 below shows the proportion and characteristics of different financing channels:

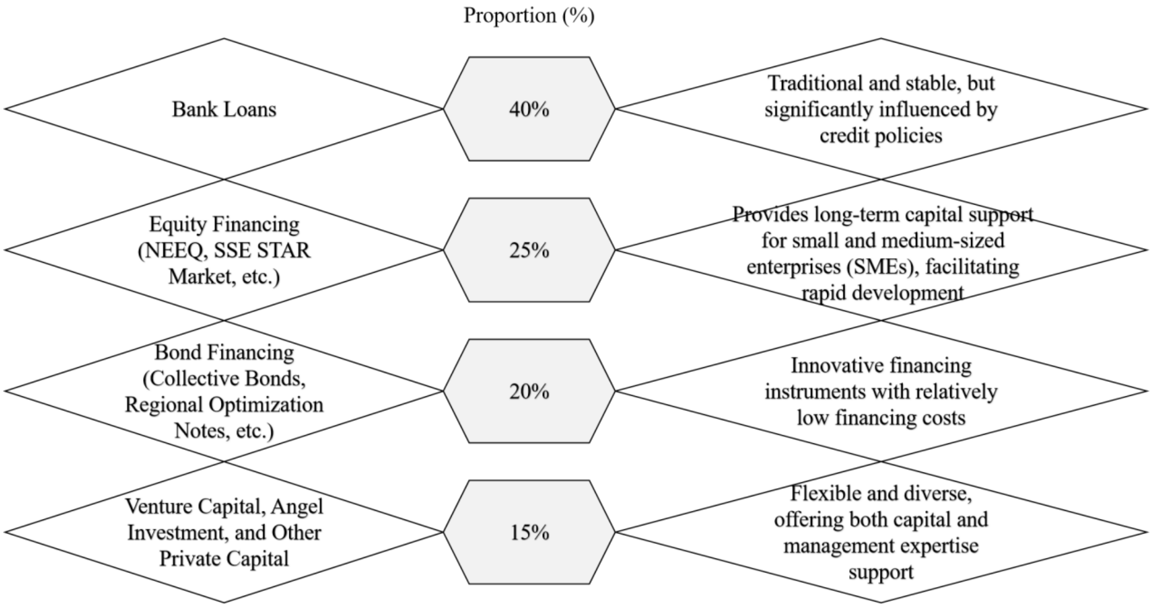

Figure 1 Diversification of financing channels for SMEs

The implementation of these policies enables SMEs to choose appropriate financing channels according to their own development stages and needs, thus optimizing financing structure, reducing financing costs and improving financing efficiency. This not only helps SMEs to solve financing problems, but also provides a strong guarantee for their sustained and healthy development.

4.4. The regulatory role of digital transformation in policy impact

Digital transformation plays an important role in regulating the relationship between technology and finance's policies and SME financing. SMEs with a high degree of digitalization can make better use of policy resources. For example, with the help of big data risk control technology, enterprises can quickly and accurately show their credit status to financial institutions, and it is easier to gain the trust of financial institutions when enjoying preferential policies, thus expanding financing scale and reducing financing costs. However, enterprises that lag behind in digital transformation, even with strong policy support, may be unable to fully benefit from technology and finance's policies due to opaque information and low management efficiency, and still face many difficulties in financing.

5. Conclusions

This article probes into the influence of technology and finance's policies on the financing of SMEs under the background of digital transformation. The research shows that the development of technology and finance's policy system has played a positive role in the financing of SMEs. From the perspective of financing scale, financial subsidies, tax incentives and credit support from financial institutions have promoted the increase of funds available to SMEs under the guidance of policies. In terms of financing cost, the policy has effectively reduced the interest rate of corporate loans and other financing costs through measures such as risk compensation and building a platform. For financing channels, the development of multi-level capital market and the introduction of innovative bond products have made the financing options of SMEs more diverse. However, the financing dilemma of SMEs has not been completely eliminated. Although the policy gives a lot of support, the financing channel is still relatively single, and the situation of over-reliance on bank loans has not been fundamentally reversed. At the same time, some SMEs can't make full use of technology and finance's policies to improve their financing situation because of their own digital transformation lag.

Based on the above conclusions, in order to better play the role of technology and finance's policies, the government should further improve the policy system and enhance the pertinence and synergy of policies. On the one hand, continue to optimize the financing environment and encourage more financial institutions to innovate financial products and services. On the other hand, increase the support for the digital transformation of SMEs, and enhance the ability of enterprises to use policy resources. Through these measures, it is expected to further improve the financing situation of SMEs, promote their healthy development and inject strong impetus into economic growth.

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