

A Review of Research on the Causes and Initiatives of Small and Medium-sized Enterprises Financing Constraints

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Abstract

Green financing for SMEs faces severe financing constraints, which has become a key obstacle to their green transformation. By systematically combing relevant literature, this paper finds that green financing for SMEs in China mainly faces three major constraints: information asymmetry, insufficient collateral and high financing cost. To address these problems, three countermeasures are proposed: building a risk-sharing mechanism, developing a financial technology regulatory platform and introducing third-party green certification. The study suggests that intangible asset collateralization and financial product innovation need to be promoted in the future to effectively alleviate the financing difficulties of SMEs and promote green transformation. The study provides an important reference for improving the green financial system.

Keywords

Financing Constraints; Research Review; Small and Medium-sized Enterprises

1. Introduction

In recent years, with excessive global greenhouse gas emissions, climate and environmental changes have intensified, seriously affecting biodiversity and threatening the natural environment on which humankind depends. Faced with the harsh environmental reality, mankind has gradually realized the importance of reducing the use of fossil fuels and reducing carbon emissions. Governments around the world have introduced policies that require enterprises to carry out green technological innovation and continuously seek a green and sustainable development path. The signing of the Kyoto Protocol has raised public awareness of the impact of climate change on the environment, and made people realize the seriousness of environmental pollution caused by carbon emissions from the transportation industry. As a large carbon emitting country and a large manufacturing country, China has demon-

strated its role as a great power and international responsibility in reducing carbon emissions and responding to climate change. China actively participates in global climate governance, including participating in international climate change negotiations, promoting the implementation of the Paris Agreement and carrying out South-South cooperation on climate change, etc.; domestically, it actively establishes a carbon market, provides tax incentives, supports green credit and other policies and other actions in support of combating climate change and carbon emission reduction; in September 2020, China explicitly put forward the "Carbon Peak" goal of 2030 and the 2060 goal of "carbon emissions" and the 2060 goal of "carbon emissions". In September 2020, China clearly put forward the goals of "carbon peak" by 2030 and "carbon neutral" by 2060.

At present, small and medium-sized enterprises (SMEs) in China account for the vast majority of enterprises in China, and are a major group in realizing green technological innovation. SMEs are generally private enterprises with great vitality in green technological innovation, but SMEs are generally faced with the problem of financing constraints. Green credit policy can optimize the allocation of credit resources, ease the financing constraints of enterprises with lower interest rates and promote the coordinated development of the economy and the environment.

This paper will systematically sort out and integrate the relevant literature at home and abroad, summarize the multifaceted reasons why SMEs are now facing financing constraints, and seek relevant methods and approaches to solve the financing constraints of SMEs. Finally, it will summarize the research and discuss the future research direction in this field.

2. Literature Review

2.1. Concept of Financing Constraints

The Financing constraints refer to the various restrictions and barriers that firms face in obtaining external funds, which may stem from factors such as information asymmetry, market imperfections, policies and regulations, etc. Usually, traditional lending operations require borrowers to repay higher interest rates and collateral, which results in firms not being able to obtain the funds they need at a reasonable cost, thus affecting their investment, operations and development. Since 1998, when Fazzari et al. (1988)[1] first studied financing constraints and proposed an investment-cash flow sensitivity model, financing constraints have been an important research topic in the field of corporate finance, especially in developing countries and emerging markets.

The existence of financing constraints is mainly related to information asymmetry. On the one hand, the financial management of most small and medium-sized enterprises (SMEs) is unstandardized and unprofessional, which leads to financial institutions not being able to discern the real corporate financial situation, even if SMEs obtain credit, while financial institutions are difficult to judge the business situation

of enterprises, resulting in high credit costs for financial institutions and difficult to issue credit[2]; on the other hand, enterprises may use the financing they receive for non-contractual projects, resulting in moral hazard[3]. At present, the sustainable financial supply of SMEs in China mainly relies on green credit, which accounts for more than 85% of the scale, but most of these green credits mainly flow to large enterprises and large projects, and SMEs are also difficult to obtain green credit financing due to factors such as lending standards and lack of data[4].

2.2. Reasons for Financing Constraints

2.2.1. Information Asymmetry

Generally speaking, SMEs are unable to bear the costs of green projects and their own green qualifications due to their own scale and lack of cash flow. According to the requirements of relevant green credit policies, enterprises are unable to meet the requirements of green information disclosure, and it is difficult for them to provide financial institutions with sufficient green project data (such as emission reduction effect, environmental benefits, etc.). Financial institutions will also find it difficult to assess their green qualifications, resulting in a lower willingness to finance. Even if SMEs have the funds to complete the green certification, the reality is that the threshold for green certification is usually set based on the qualifications of large enterprises, and some SMEs are unable to reach the same level. Similarly, for the same reason, SMEs do not have a sound financial mechanism, and financial institutions also have difficulty in assessing the repayment ability of SMEs, which also increases the financing constraints of SMEs.

Among the existing mechanisms, government-guaranteed financing is an important solution, but government guarantees will also take the feasibility of the enterprise's green project and the ability to repay the failed loan as important considerations for the guarantee, so large enterprises are still the majority of government-guaranteed financing policy preferential targets.

When it comes to green credit, the credit parties are SMEs and financial institutions, according to the knowledge of game theory, SMEs as borrowers belong to the information superiority party in the dynamic game of incomplete information, and correspondingly, financial institutions are the information inferiority party, so SMEs may take advantage of the information superiority party's position to obtain green credit at a lower interest rate than the normal credit rate and whitewash their own green credentials, so as to cheat green credit, while financial institutions take into account the project's failure and repayment ability. The financial institutions will choose to remain silent in the face of such a situation, considering that the increased probability of project failure will affect their own income.

2.2.2. Insufficient Collateral Security

SMEs themselves face the problem of insufficient fixed assets, and therefore SMEs

face the dilemma of insufficient collateral security when financing green projects, which is mainly reflected in the dual constraints of limited traditional fixed assets and difficulties in realizing technological assets. On the one hand, SMEs generally lack sufficient traditional collateral such as land and factory buildings, and assets such as environmental protection equipment used in green projects are characterized by insufficient universality and poor liquidity, leading to low valuation of their collateral capacity by banks. On the other hand, technical assets are difficult to realize. Especially for high-tech companies, the technology patents they own can also be mortgaged, but technology patent mortgages have not yet been perfected in China's financial system, making it difficult for some financial institutions to collect the pledges. Similarly, although pledge financing of environmental rights and interests such as carbon emission rights and sewage rights has been piloted in some regions, the acceptance of financial institutions is still low due to problems such as unclear legal attributes, insufficient market liquidity, local-to-local certification issues and the lack of valuation systems. At the same time, in addition to the government guarantee mechanism, the rest of the guarantee system is still imperfect, which further exacerbates the difficulty of financing, commercial guarantee institutions usually consider their own revenue factors are greater, and because of the high risk of green projects and more demanding requirements for small and medium-sized enterprises, and policy guarantee funds tend to large enterprises and state-owned enterprises, limited coverage, making it difficult for small and medium-sized enterprises to credit enhancement. Even though the national policy encourages innovative collateralization methods, the actual local implementation is still facing obstacles on the ground, such as the absence of a collateral registration system and the lack of a sound mechanism for the disposal of defaults, coupled with the disconnection between regional pilots and national promotion, and the general lack of operational experience of financial institutions in small and medium-sized cities.

2.2.3. High Financing Costs

SMEs face higher financing costs when it comes to green financing. From the perspective of financial institutions, the credit supply side, SMEs are generally less technologically advanced than large enterprises, so financial institutions are generally more conservative when assessing the risk of SMEs' green projects, and due to the lack of sufficient historical data and mature assessment models, banks tend to hedge potential risks by raising interest rates, resulting in the benchmark interest rate for green loans usually being 1-3 percentage points higher than that for ordinary commercial loans. And in the guarantee segment, due to the special characteristics of green projects, traditional guarantee institutions often require higher guarantee fee rates, generally between 2-3%, much higher than the 1-1.5% for ordinary projects, which further pushes up the comprehensive financing costs. From the credit demand side of the SMEs point of view, the initial capital invested in green

technology transformation and environmental protection equipment is not only in high demand, but also has a long return on investment cycle[5], it usually takes 3-5 years to show economic benefits, which means that the enterprise needs to bear the longer-term capital costs, and SMEs often have less cash flow, once the project time is too long, the possibility of SME project failure is also more. The likelihood of SME project failure is also greater once the project takes too long. Although many places have introduced green credit subsidy policies, such as Zhejiang and Guangdong, the target beneficiaries are mainly concentrated in large enterprises, and SMEs have limited access to subsidized interest rates, complicated application procedures, and high hidden costs. At present, the development of green financial market is not perfect, green financial product innovation is insufficient, the lack of professional green bonds for SMEs, green asset securitization and other direct financing tools, forcing enterprises to seek third-party financing channels, such as P2P network lending platform. In addition, the lack of professional talents has also led to the need for SMEs to pay additional consulting fees for green project planning, declaration and operation and management, all of which have increased the financing burden of enterprises to varying degrees.

3. Suggested Measures

3.1. Innovative risk-sharing mechanisms

The innovation of a risk-sharing mechanism for green financing for SMEs requires the construction of a comprehensive system in which the government, financial institutions, the market and social capital work together. The government can reduce systemic risks by setting up a green credit risk compensation fund, providing policy tools such as loan interest subsidies and guarantee subsidies, and at the same time promoting the development of green insurance products to transfer environmental risks; financial institutions should innovate financial product design, optimize the risk-return structure by adopting modes such as syndicated loans, investment and loan linkage, and pledge of revenue rights, and realize dynamic risk monitoring with the help of blockchain, Internet of Things and other technologies; market level can enhance liquidity and diversify risks by developing tools such as green asset securitization, carbon finance derivatives and supply chain finance. The market level can enhance liquidity and diversify risks through the development of green asset securitization, carbon financial derivatives and supply chain finance and other tools, in which the credit endorsement of core enterprises can effectively make up for the shortage of collateral for small and medium-sized enterprises; and the social capital can introduce long-term funds through the PPP model, green industry guiding funds, and ESG impact investment to achieve risk sharing and benefit sharing. This "four-in-one" innovative risk-sharing system can not only reduce the lending concerns of financial institutions, but also alleviate the financing cost pressure on SMEs, and gradually promote green finance from policy-driven to market-driven through

the combination of policy guidance and market-oriented operation, and ultimately form a sustainable risk-sharing ecology. In terms of technical empowerment, the use of big data credit and digital risk control tools can improve the precision of risk assessment, while standardized underlying assets and transparent information disclosure can help enhance the confidence of all parties involved, thus systematically solving the core pain points faced by SMEs in green financing, such as risk concentration, high cost and insufficient collateral.

3.2. Development of Financial Technology

The fintech platform creates a dynamic regulatory system that runs through the entire life cycle of an enterprise's environmental protection by integrating blockchain, big data and Internet of Things technologies. On the platform architecture, distributed ledger technology is used to ensure that data cannot be tampered with. Enterprises are required to regularly upload key information such as environmental qualification documents certified by a third party, carbon emission data, and operation records of pollution control facilities, and at the same time, the green project implementer is required to submit quarterly details on the use of funds and project progress reports. Environmental protection regulators use intelligent algorithms to cross-check the data uploaded from the enterprise side with real-time data from government monitoring systems (e.g., online monitoring of wastewater and waste gas emission indicators, energy consumption data, etc.). Once data anomalies are found or environmental protection indicators are exceeded, the system automatically triggers the three-tier early warning mechanism: the primary early warning pushes the enterprise to self-check, the intermediate early warning notifies the financial institution to suspend lending, and the senior early warning directly The system will automatically trigger a three-level warning mechanism: primary warning will be sent to the enterprise for self-examination, intermediate warning will notify financial institutions to suspend lending, and advanced warning will directly link environmental protection law enforcement departments to initiate on-site verification. The platform also develops a visualization cockpit function, which provides financial institutions with key indicators such as enterprise environmental credit scores and green project completion degrees, helping banks to achieve accurate risk control. In order to incentivize enterprises to take the initiative to participate, the platform can set up a point system for environmental performance, and provide positive incentives such as preferential interest rates for green credit and fast-track approval for enterprises that consistently meet the standards. The innovative value of the platform lies in the realization of the in-depth integration of environmental protection supervision and financial risk control, which not only solves the lagging problem of traditional environmental protection supervision, but also provides financial institutions with a reliable basis for green credit decision-making, and ultimately creates a benign cycle mechanism of "environmental protection compli-

ance-financing facilitation-continuous improvement".

3.3. Use of third-party agency audits

The introduction of a third-party green credit auditing organization is an important institutional innovation for regulating the green financing market for small and medium-sized enterprises. Such professional institutions should have nationally recognized environmental technology assessment qualifications, and set up a composite team consisting of environmental engineers, carbon accounting experts and financial analysts to carry out assessment work based on authoritative standards such as the Green Industry Guidance Catalogue issued by the National Development and Reform Commission, the Ministry of Ecology and Environment and other departments. The auditing process should cover the whole project cycle, including the key aspects such as the assessment of environmental benefit prediction in the early stage, the review of environmental protection technology program during the construction period, and the tracking and certification of emission reduction effect during the operation period, etc., and adopt a quantitative index system to grade the "green purity" of the project. In order to ensure fairness, it is recommended to establish a "double random" sampling mechanism and a life-long accountability system for appraisers, and at the same time, require the auditing organization to disclose the appraisal methodology and results on the blockchain platform to accept social supervision. Through this standardized and transparent third-party assessment model, not only can we effectively identify SMEs that truly meet the green standards and reduce the due diligence costs of financial institutions, but also curb the "greenwashing" behavior of enterprises that obtain green credits through false environmental protection publicity, and safeguard the healthy development of the green financial market.

4. Research Conclusions and Future Outlook

Through the processing of relevant literature, it is found that there are three main reasons why SMEs in China are currently facing financing constraints, one is information asymmetry, which is also the main reason, and financial institutions are therefore reluctant to develop green financial business. The second is the insufficiency of pledged fixed assets of SMEs, the collateral value faced by SMEs in obtaining credit is low, even if SMEs have green projects it is difficult to obtain financing from financial institutions. Thirdly, the cost of financing is too high, and green projects are also characterized by a long return period, which further increases the cost of financing.

Based on the characteristics of the current financing constraints, three measures are also proposed. First, innovative risk-sharing mechanism; second, development of financial science and technology; and third, adoption of third-party agency audit.

In the future, with the further development of information science and technology,

the collateral assets of SMEs will be further dominated by patented technology, and banks and other financial institutions will need to further create brand new financial products, innovate the financial regulatory process and the flexibility of collateralization methods, so as to contribute to the alleviation of SMEs' financing constraints.

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