Frontiers in Economics and Management Volume 5 Issue 9, 2024
ISSN: 2692-7608 DOI: 10.6981/FEM.202409_5(9).0004

Research on the Impact of Digital Inclusive Finance on Financing Constraints for Small and Medium Sized Enterprises

Fangqi Shi[a]

School of Nanjing University of Science and Technology, Nanjing 210000, China

[a]shifangqi0016@163.com

Abstract

The continuous promotion of digital industrialization and industrial digital transformation has led to the unstoppable development of the digital economy, which has given rise to digital inclusive finance. This concept was first announced at the 2016 G20 Summit. It is a perfect combination of inclusive finance, technology, and data, with both inclusiveness and technicality. It can reduce information asymmetry, alleviate financial exclusion, and effectively balance credit allocation. However, at present, the development of digital inclusive finance in China is relatively slow, with uneven regional development, single financing channels for small and medium-sized enterprises, high financing difficulties, weak trends and corporate awareness, and increased difficulty in digital inclusive finance for small and medium-sized enterprises. Banks are facing more difficulties in developing digital inclusive finance. Therefore, this article proposes some measures to solve the difficulties faced by small and medium-sized enterprises in financing through digital inclusive finance, including improving the debt recovery system, reducing loan costs, innovating inclusive financial services, and promoting the digital transformation of small and medium-sized enterprises.

Keywords

Digital Inclusive Finance; Small and Medium-sized Enterprises; Financing Constraints.

1. Introduction

Digital inclusive finance is an innovative development based on inclusive finance in the digital age. It not only has the characteristics of inclusive finance, but also has significant advantages such as convenience and accuracy, taking into account the fairness and efficiency of economic development. Injecting new vitality into the basic functions of financial services for the real economy and improving people's livelihoods, it is considered an important financial service model that practices the concept of shared development and maintains high-quality and sustainable economic development. It has a profound impact on promoting inclusive growth of the Chinese economy. Small and medium-sized enterprises generally face the problem of difficult and expensive financing, mainly because the supply of financial resources cannot fully meet the needs of small and medium-sized enterprises, thus forming the "Macmillan gap", which brings varying degrees of obstacles and difficulties to the operation and development of small and medium-sized enterprises. With the help of Internet, big data, artificial intelligence and other digital technologies, digital inclusive finance can design more accurate risk products based on SMEs, facilitate banks to carry out risk assessment more quickly, break through the geographical restrictions of financial services, and provide digital tools for banks' credit funds to "accurately feed" SMEs. Existing research on financing constraints for small and medium-sized enterprises generally suggests that digital inclusive finance can alleviate the financing constraints faced by these enterprises.

ISSN: 2692-7608 DOI: 10.6981/FEM.202409_5(9).0004

2. Overview of Digital Inclusive Finance

2.1. The Meaning of Digital Inclusive Finance

Digital inclusive finance is an area of inclusive finance development. The concept of digital inclusive finance was introduced into the "G20 High Level Principles for Digital Inclusive Finance" released at the 2016 G20 Hangzhou Summit, becoming the first high-level guiding principle for the international community to use digital technology to address inclusive issues in the financial sector. In addition to empowering traditional financial institutions to strengthen the practice of inclusive finance, innovative Internet financial enterprises are also equipped with high-level information technology tools such as cloud computing and big data, which helps inclusive finance effectively expand its service scope and service capabilities and further promote the development process of inclusive finance. Therefore, inclusive finance developed in conjunction with digital technology is called digital inclusive finance. Through its own information technology progress and online financial product innovation, Internet finance has reduced the cost of financial services, expanded the coverage, and strived to achieve a win-win situation for Internet financial institutions and customers.

2.2. Development Status of Digital Inclusive Finance

In 2006, China first introduced the concept of inclusive finance. In 2016, China released the "Digital Inclusive Finance Development Plan (2016-2020)", which comprehensively defined the concept and principles of digital inclusive finance and pointed out the development direction of China's digital inclusive finance. In recent years, with the gradual maturity of digital technologies such as big data, cloud computing, blockchain, and artificial intelligence, digital inclusive finance has begun to leap forward, effectively solving the problem of low efficiency and becoming a new direction and mainstream for the development of inclusive finance. Digital inclusive finance has played an important role in promoting poverty alleviation with its advantages of low threshold, easy operation, and wide application scope. Of course, the most important thing is that the promotion and application of digital inclusive finance have effectively alleviated the problem of financing difficulties for small and medium-sized enterprises, helping most of them overcome the difficulties of high financing thresholds, strict credit conditions, and insufficient information disclosure. The average growth rate of the Digital Inclusive Finance Index since 2017 has been 7.8%, steadily increasing. With the continuous issuance of regulatory documents and the continuous improvement of risk supervision systems, digital inclusive finance has been widely and deeply applied and developed.

With the advent of the digital age, digital inclusive finance has become a new model for the development of inclusive financing. Inclusive finance in the digital era can make full use of the power of Internet technology to improve the efficiency of comprehensive financial services. At present, the number of entities involved in digital inclusive finance is gradually increasing, and some emerging financial entities such as Ping An Inclusive, Ant Financial, and JD Finance have further improved the service level and efficiency of inclusive finance. The development trend of digital inclusive finance is good.

3. Research Design

References are cited in the text just by square brackets [1]. (If square brackets are not available, slashes may be used instead, e.g. /2/.)

3.1. Research Hypothesis

Assumption 1: Based on the characteristics of digital inclusive finance, which reduces financial service costs and improves financial service efficiency through digital technology, thereby

ISSN: 2692-7608 DOI: 10.6981/FEM.202409_5(9).0004

increasing the accessibility and convenience of financing for small and medium-sized enterprises.

H1: The development of digital inclusive finance can significantly alleviate financing constraints for small and medium-sized enterprises.

Assumption 2: The higher the level of development of digital inclusive finance, the more significant the alleviation effect of financing constraints on small and medium-sized enterprises. This can be verified by comparing the level of digital inclusive finance development and the degree of financing constraints for small and medium-sized enterprises in different regions and stages of development.

H2: The development level of digital inclusive finance is positively correlated with the degree of alleviation of financing constraints for small and medium-sized enterprises.

Assumption 3: The development of digital inclusive finance is not only influenced by technological factors, but also constrained by external environments such as policies and the economy. Therefore, it is necessary to control these external factors in the research to more accurately evaluate the impact of digital inclusive finance on financing constraints for small and medium-sized enterprises.

H3: External factors such as policy environment and economic development level have an impact on the effectiveness of digital inclusive finance in alleviating financing constraints for small and medium-sized enterprises.

3.2. Variable Selection

1) The dependent variable is the degree of financing constraints for small and medium-sized enterprises (FC_SME). This can be obtained through questionnaire surveys, corporate financial statements, and other methods, using indicators such as financing costs, financing terms, and financing amounts to measure.

2) Explanatory variable: Development level of digital inclusive finance (DIF-DL). This can be measured by constructing a digital inclusive finance index, which includes aspects such as the breadth of coverage, depth of use, and level of innovation of digital financial services.

3) Control variables: Policy Environment (PE), Economic Development Level (EDL), Enterprise Scale (ES), Enterprise Credit Rating (ECR), etc. These variables may have an impact on the financing constraints of small and medium-sized enterprises and the development of digital inclusive finance, so they need to be controlled in the research.

3.3. Model Construction

To test hypothesis 1 on the impact of the development of digital inclusive finance on alleviating financing constraints for small and medium-sized enterprises, the following model was constructed:

$$FC_SME = \beta 0 + \beta 1 tDIF_DL + \beta 2 tPE + \beta 3 tEDL + \beta 4 tES + \beta 5 tECR + \epsilon \quad (1)$$

Among them:

(β0) is a constant term;

(β 1, β 2, β 3, β 4, β 5) are the regression coefficients of each variable, indicating the degree of impact of each variable on the financing constraints of small and medium-sized enterprises;

(ϵ) is the random error term, representing the parts that the model cannot explain.

To verify hypothesis H2, which suggests a positive correlation between the level of development of digital inclusive finance and the degree of alleviation of financing constraints for small and medium-sized enterprises, a similar linear regression model is constructed, but special attention needs to be paid to the strength and direction of the relationship between the

ISSN: 2692-7608 DOI: 10.6981/FEM.202409_5(9).0004

explanatory variable (level of development of digital inclusive finance) and the dependent variable (degree of financing constraints for small and medium-sized enterprises).

The specific model formula is as follows:

$$FC_SME = \alpha 0 + \alpha 1 tDIF_DL + \alpha 2 tPE + \alpha 3 tEDL + \alpha 4 tES + \alpha 5 tECR + \mu \quad (2)$$

Among them:

(α0) is a constant term;

(α1, α2, α3, α4, α5) are the regression coefficients of various variables, among which (α 1) is particularly important because it represents the impact of the level of digital inclusive finance development on the degree of financing constraints for small and medium-sized enterprises;

(μ) It is a random error term.

To verify hypothesis H3, which suggests that external factors such as policy environment and economic development level have an impact on the effectiveness of digital inclusive finance in alleviating financing constraints for small and medium-sized enterprises, the following model was constructed:

$$FC_SME = \gamma 0 + \gamma 1 tDIF_DL + \gamma 2 tPE + \gamma 3 tEDL + \gamma 4 tES + \gamma 5 tECR + n \quad (3)$$

Among them:

(γ0) is a constant term;

(γ1, γ2, γ3, γ 4, γ5) are regression coefficients for each variable, representing the impact of the level of digital inclusive finance development, policy environment, economic development, enterprise size, and enterprise credit rating on the degree of financing constraints for small and medium-sized enterprises;

(n) It is a random error term.

3.4. Sample and Data Sources

This article conducts empirical research using companies listed on China's SME board and ChiNext board from 2016 to 2023 as empirical samples. The sample data is extracted from the "Peking University Digital Inclusive Finance Index" and the financial statements of various companies in the Ruisi Financial Research Database. During data cleaning, companies with insolvency and incomplete financial data were removed, resulting in 1272 sample observations.

3.5. Empirical Analysis

Table 1. Descriptive Statistics Table

Variable	Mean value	Standard deviation	Minimum value	Maximum value
FC_SME	6.52	1.83	2.10	12.40
DIF_DL	55.78	12.45	23.10	89.60
PE	6.34	1.42	3.50	9.20
EDL	7235.45	1852.30	3200.00	12500.00
ES	287.56	158.23	50.00	980.00
ECR	7.12	1.15	4.50	9.80

The average level of financing constraints for small and medium-sized enterprises (FC_SME) is 6.52, indicating that the average level of financing constraints for small and medium-sized enterprises is relatively high during the sample period. The standard deviation is 1.83, reflecting the relatively large differences in financing constraints among different enterprises.

ISSN: 2692-7608 DOI: 10.6981/FEM.202409_5(9).0004

The range of minimum and maximum values from 2.10 to 12.40 shows a wide variation in financing constraints for small and medium-sized enterprises. The data shows that small and medium-sized enterprises generally face financing constraints, and the degree of these constraints varies significantly among different enterprises.

The average level of development of digital inclusive finance (DIF-DL) is 55.78, indicating the average level of development of digital inclusive finance during the sample period. The standard deviation is 12.45, indicating significant fluctuations in the level of digital inclusive finance development across different regions or time periods. The range from 23.10 to 89.60 reflects the diversity and imbalance of the development of digital inclusive finance. This indicates that although the development of digital inclusive finance in China has achieved certain results, there is still great room for development and imbalance.

The average policy environment (PE) is 6.34, reflecting the average level of support from the policy environment for financing for small and medium-sized enterprises during the sample period. The standard deviation is 1.42, indicating a relatively high stability of the policy environment in different regions or time periods. The range is from 3.50 to 9.20, although there is some variation, it is relatively stable compared to other variables. This means that the policy environment provides relatively consistent support for financing for small and medium-sized enterprises, but there is still some room for adjustment.

The average level of economic development (EDL) is 7235.45, representing the average level of economic development in the sample region. The standard deviation is 1852.30, reflecting significant differences in economic development levels among different regions. The range from 3200.00 to 12500.00 shows a wide range of changes in the level of economic development. These data indicate that there are significant differences in the level of economic development among different regions in China, which may have a significant impact on financing constraints for small and medium-sized enterprises.

The average enterprise size (ES) is 287.56, reflecting the average size of small and medium-sized enterprises. The standard deviation is 158.23, indicating significant differences between enterprise sizes. The range from 50.00 to 980.00 indicates the diversity of enterprise sizes. The differences in enterprise size may affect their financing needs and capabilities, making it an important factor to consider in research.

The average Enterprise Credit Rating (ECR) is 7.12, representing the average credit rating of small and medium-sized enterprises. The standard deviation is 1.15, reflecting the relative stability of the enterprise's credit rating. The range is from 4.50 to 9.80, although there are some changes, the overall stability is relatively stable. It can be seen that the credit rating of enterprises is an important indicator for evaluating their financing risks and has a direct impact on the financing constraints of small and medium-sized enterprises.

4. Issues in Alleviating Financing Constraints for Small and Medium-sized Enterprises through Digital Inclusive Finance

4.1. Lack of Supervision and Outdated Risk Prevention and Control Mechanisms

When it comes to digital inclusive financial services, financial institutions often lack effective regulation. For some emerging financial service platforms, there are often concerns about financial risks due to a lack of in-depth understanding and forward-looking analysis of their operating models. In this situation, regulatory agencies have also been found to have incomplete understanding of relevant laws and regulatory policies, which is a factor of inadequate regulation. However, the existence of these issues and the obstacles to developing new financial fields are two sides of the same problem. Therefore, it is increasingly necessary

ISSN: 2692-7608 DOI: 10.6981/FEM.202409_5(9).0004

to strengthen the regulation of digital inclusive financial services to better protect consumer rights. Clear regulatory policies can promote the stable development of digital inclusive financial services. In recent years, China's digital inclusive financial services have developed rapidly, but there are still some problems. With the deepening of digitization, regulatory agencies are facing severe challenges and need to better respond to create a healthier, safer, more stable, and more reliable market environment. Therefore, fintech companies must comply with laws and regulations, ensure that their compliance work is fully implemented, actively participate in the work of regulatory agencies, and provide support for them.

4.2. The Credit Reporting System is not Sound Enough, and Credit Information is Scattered

The digital credit system can effectively alleviate the phenomenon of information asymmetry in the loan process, while also making the approval process simple and fast, reducing manual approval costs, and motivating small and medium-sized enterprises to obtain higher credit scores and use high-quality financial services. In addition, the platform can also provide loan risk warning, improve loan approval efficiency, reduce enterprise financing costs, and promote the development of small and medium-sized enterprises through big data analysis. However, due to the relative dispersion of credit information, the entire credit system in China has not been improved, and the information has not been effectively integrated, the information resources of the financial information database can not be integrated into the entire credit system in China, and the Internet credit information is relatively dispersed, which can not be effectively used. Therefore, the credibility of information disclosure and query platforms is relatively low. Therefore, the construction of the credit system needs to be further improved to enhance the quality and reliability of credit data. At the same time, it is necessary to strengthen information security protection to prevent personal information leakage. In addition, it is necessary to strengthen the supervision of the use of personal information, improve relevant laws and regulations, and standardize the collection, use, and processing of personal information. At the same time, it is necessary to strengthen the supervision of online platforms, crack down on illegal and infringing behaviors, and effectively protect the legitimate rights and interests of citizens, legal persons, and other organizations.

4.3. Relatively Low Level of Digital Management

Enterprise Management Information System (EMIS) is a key control device for enterprises to collect and compare data. In China, the digitalization level and data collection rate of small and medium-sized enterprises are relatively low, making it difficult for financial institutions to assess their credit risk and effectively manage it. Meanwhile, due to the high financing costs for small and medium-sized enterprises, it is difficult to obtain bank financing support, which has affected their growth and development. Therefore, the government should fully leverage its leadership role in improving the financing capabilities of small and medium-sized enterprises and strengthen financial support for them through various channels. At the same time, it is necessary to further optimize the credit structure, increase credit investment in manufacturing, technological innovation, and other fields, and vigorously support high-quality economic development.

5. Countermeasures for Digital Inclusive Finance to Alleviate Financing Constraints for Small and Medium sized Enterprises

5.1. Improve the Financial Regulatory System

From the perspective of comprehensive financial model innovation, financial institutions can increase collaborative loans by introducing government subsidies to achieve bank insurance, risk sharing, and win-win cooperation, thereby strengthening cooperation between banks,

ISSN: 2692-7608 DOI: 10.6981/FEM.202409_5(9).0004

governments, and enterprises. In terms of innovation in comprehensive financial services, especially during the Pan Dynamic Special Period, financial institutions can allow small and medium-sized enterprises to apply for deferred loans and actively work to solve difficulties. This simplifies the process of applying for loans for enterprises, encourages online financial procedures, and provides tangible convenience for businesses. According to the development stage of small and medium-sized enterprises, loan services and consulting services with phased functions can be provided. Relevant government departments should actively introduce the latest information systems, use digital technology to upgrade financial services, empower financial institutions to implement digital inclusive financial services, and reduce service costs. At the same time, it is necessary to gradually increase the supply of small loans, develop innovative financial products and services, and explore more convenient financial financing channels. In fact, regulatory agencies should implement the responsibility system of responsible institutions in accordance with the law, strengthen the control and prevention of risks in digital inclusive finance, and improve the credit risk management capabilities of financial institutions. In addition, regulatory agencies should establish and improve operational risk warning and disclosure systems to enhance enterprises' confidence in digital inclusive financial services, thereby supporting small and medium-sized enterprises to carry out financing activities.

5.2. Establish a Sound Social Credit Reporting System

A sound social credit system can effectively reduce the information asymmetry between the supply and demand of funds in the financial market, and is an important step in promoting digital inclusive finance to solve the financing constraints of small and medium-sized enterprises. To continuously improve the credit system of Chinese enterprises, it is necessary to strengthen the integration and standardization of Chinese enterprise credit institutions, promote their marketization, and gradually establish self regulatory organizations in the credit management industry. At the same time, foreign credit companies should be introduced to promote competition in the credit industry and force credit companies to innovate and make breakthroughs in development. Authorities with public information, such as corporate taxation, public utilities, and social security, should strengthen the use of digital technology to aggregate and manage information and collaborate with financial institutions to provide information to users. This can reduce the information asymmetry between financial institutions and small and medium-sized enterprises, and correct errors in credit resource allocation. At the same time, small and medium-sized enterprises must recognize the opportunities brought by digital inclusive finance for their own development by improving their digital skills, managing their businesses digitally, and comprehensively recording all activities in their daily operations. This can provide comprehensive and effective information and data to improve the social credit system.

5.3. Actively Promote Digital Transformation

To fundamentally improve the confidence of financial institutions in lending to small and medium-sized enterprises, reduce loan risks, and promote loan incentives, small and medium-sized enterprises must continuously enhance their comprehensive strength. Specifically, small and medium-sized enterprises can start from the following four aspects: firstly, adhering to laws and regulations, operating with integrity, establishing a good corporate image, and making credit an important component of enterprise management and employee training. Secondly, improve the enterprise management system and standardize financial accounting. This can be achieved by hiring professional managers to enable businesses to operate in a standardized and rational manner, and to plan and utilize the company's assets and funds in a reasonable manner. To avoid capital chain breakage and ensure the sustainability of funds. Thirdly, learn from the development experience and best practices of excellent small and medium-sized enterprises,

ISSN: 2692-7608 DOI: 10.6981/FEM.202409_5(9).0004

and formulate development strategies that are in line with one's own reality. Fourthly, seize the opportunity of financial inclusion policies, promote exchanges and cooperation among financial institutions, establish stable mutual trust relationships, and enhance the incentive mechanism for financial institutions to provide loans.

6. Conclusion

Looking at the development trend of digital inclusive financial services, it can help improve the service efficiency of inclusive finance, alleviate the financing difficulties of small and medium-sized enterprises, and build a moderately prosperous society in all aspects. The digital inclusive financial system can comprehensively improve the investment efficiency of financial institutions and enhance the self financing ability of small and medium-sized enterprises. Small and medium-sized enterprises should gradually improve their financial management system, upgrade their management level, and expand their financing channels. The government departments should build an Internet platform to realize information exchange between enterprises and financial institutions, help enterprises achieve industrial upgrading and optimize financing mode.

References

[1] Zhu Ning, Wu Baoyi, Yu Zhiqian. Research on the Impact of Digital Inclusive Finance on the Financing Efficiency of Small and Medium sized Enterprises in China: Empirical Analysis Based on Network DEA [J]. Innovation, 2023, 17 (05): 60-72.

[2] Xing Yafei, Wang Qiuxuan Research on the Impact of Digital Inclusive Finance on Corporate Financing Constraints: A Case Study of Small and Medium sized Board Listed Companies [J]. Journal of Shandong University of Finance and Economics, 2023, 35 (04): 24-36.

[3] Zhang Yuzhou Analysis of the impact of digital inclusive finance on financing for technology-based small and medium-sized enterprises [J]. Chinese Market, 2023, (11): 46-49.

[4] Chen Wenzhuo, Xia Ruiliang. Research on the alleviating effect of digital inclusive finance on financing constraints for technology-based small and medium-sized enterprises [J]. Modern Finance, 2023, (04): 42-48+57.

[5] Peng Yaqian, Diao Jiewen. Study on the Impact of Digital Inclusive Finance on the Financing Efficiency of Technology based Small and Medium sized Enterprises in the Beijing Tianjin Hebei Region [J]. China Price Index, 2022, (12): 61-64.