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The Impact of Digital Inclusive Finance on Firms' anti-risk Ability and Innovation Ability——The Role of Capital Mismatch

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Abstract

Under the general trend of innovative development and digital technology-enabled financial industry, how to use digital inclusive finance to promote enterprises' anti-risk ability and stimulate the innovation vitality of small and medium-sized enterprises has become a research hotspot in this field. In this study, enterprises listed on GEM from 2011 to 2020 were taken as the research object, and combined with the data of digital inclusion finance of Peking University at city level, the fixed-effect panel model was adopted to discuss the influence of digital inclusion finance on enterprises' innovation ability and anti-risk ability. It is found that digital inclusive finance can positively affect enterprise innovation and enterprise anti-risk ability, and this conclusion is still valid after the robustness and endogeneity test. Through the intermediary effect test, this study also found that digital financial inclusion can promote enterprise innovation and improve enterprise anti-risk ability by improving capital mismatch. In addition, as the degree of marketization becomes more and more perfect, digital inclusive finance plays a more significant role in promoting enterprises' innovation input, but has a weak positive regulating effect on enterprises' anti-risk ability. The results of this study enrich the research on digital financial inclusion, further affirm the positive externality of digital financial inclusion, and provide a new way to promote enterprise innovation and improve enterprise anti-risk ability.

Keywords: *Digital financial inclusion; Enterprise innovation; Enterprise's ability to resist risks; Mediating effect;*

Introduction

At present, the world economy is highly volatile and rapidly changing, global inflation continues to develop, and the global supply chain of enterprises is facing huge challenges. In order to control inflation, countries led by the United States continue to raise interest rates, which increases the cost of enterprises and makes business more difficult. Under such circumstances, innovation and risk resistance have become necessary strategies for enterprises in the international killing battlefield. Moreover, innovation is a decisive factor leading to economic growth (Zhang Junquan et al., 2019). According to the Global Innovation Index released by the World Intellectual Property Organization in 2021, China ranked 14th in 2020, up from 29th in 2015. By the end of 2018, China had filed 1.54 million patent applications, accounting for 46.4 percent of the world's total, ranking first in the world. From an objective point of view, China's innovation input has increased significantly and its innovation output has been growing continuously. However, in the process of building an innovation-oriented country, enterprises are one of the important innovation subjects and an important force to promote economic

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innovation and development. As the most important driving force for economic development, innovation is also the lifeblood of enterprise development. Jin Chundeok (2020) points out that the financial resources obtained by enterprises only account for 25%-33% of the total financial resources, which is far lower than their contribution to the economy. Although China has introduced a series of policies and measures to promote the innovation and development of enterprises, such as tax reduction, innovation subsidy and financing preference, and the relevant work has achieved positive results, the characteristics of small and medium-sized enterprises are few assets, insufficient collateral, short, frequent and fast financing demand, large demand for innovative projects and high uncertainty (Hall, 2002), which make traditional financial institutions very prudent in credit. Enterprises still face the problem of large gap in financial demand and insufficient fund supply (Ju Xiaosheng, 2013). In particular, it has had a serious impact on the survival and development of small and medium-sized enterprises. Many enterprises have increased difficulties in production and operation, and risk factors have also increased, which is not conducive to enterprises to carry out innovative activities. The rapid development of digital inclusive finance is conducive to alleviating capital mismatch for enterprises, thus providing new breakthroughs and turning points for promoting innovation activities, and improving enterprises' ability to resist risks.

As the country's financial marketization reform has entered the deep water zone, higher requirements have been put forward for improving the capital market, promoting the development of digital inclusive finance, enriching corporate financing channels, and giving full play to the role of the market in effective allocation. At present, most of the researches on the impact of digital inclusive finance on enterprise innovation choose the main-board listed enterprises with relatively mature development as research samples. The results show that the development of digital inclusive finance is conducive to easing the financing constraints of enterprises (Liang Bang, Zhang Jianhua, 2019; Huang Rui, 2019), reducing inefficient investment and improving innovation input and output of enterprises (Wang Jianyu, 2020; Tang Song, 2020). However, digital financial inclusion has emerged mainly to address the credit problems of the majority of smes and low-income groups that have long been excluded from the traditional and formal financial systems. Small and medium-sized enterprises usually face many difficulties in the process of financing. First, many small and medium-sized enterprises lack the collaterable assets needed for loan applications, making it difficult for them to obtain financing. Second, smes often have limited credit histories, making it harder to get financing. In addition, the loan application process is complex and time-consuming, especially for small and medium-sized enterprises without internal finance or professional knowledge departments, the loan application process will be more complicated. In addition, smes often face financing competition from other enterprises and may face higher financing costs. Finally, uncertainty about the future performance of smes exacerbates the difficulty of financing. To sum up, the development of digital inclusive finance has well corrected the problems of domain mismatch and low efficiency in traditional finance, and can provide more targeted support for the development of small and medium-sized enterprises. The development of digital finance has effectively filled the gap in the development of traditional finance. In areas where the banking sector and capital market sector are poorly developed, digital finance plays an important role in driving technological innovation of enterprises. The development of digital inclusive finance effectively alleviates the problem of "difficult and expensive financing" of enterprises, and drives enterprises to deleverage and improve financial stability, which helps enterprises improve their anti-risk ability (Wang Wei, 2020). Meanwhile, the anti-risk ability of enterprises promotes the operation efficiency of digital inclusive finance. Moreover, the impact of digital

financial inclusion on those enterprises with a relatively short history and small scale is more obvious (Li Jinhua et al., 2011). Therefore, for the majority of small and medium-sized enterprises at a disadvantage in development, can digital inclusive finance play a role in improving capital misallocation, driving enterprise innovation, and enhancing enterprises' ability to resist risks? Based on small and medium-sized enterprises, this paper will explore and clarify the impact mechanism and path of digital financial inclusion and enterprise risk resistance and innovation ability as well as capital mismatch from both theoretical and empirical levels, and provide relevant suggestions for solving this problem.

Since there are few researches on the impact of the development of digital inclusion finance on the resilience and innovation of smes, this paper tries to enrich the researches on the impact of the development of digital inclusion finance on the resilience and innovation of smes from both theoretical and empirical aspects. Based on this, the purpose of this study is to analyze the impact of the development of digital inclusive finance on the risk resistance and innovation ability of GEM listed companies through empirical research based on the data of GEM companies from 2011 to 2020 and on the basis of measuring the capital mismatch index. Furthermore, digital inclusive finance is further combined with capital mismatch and enterprise risk resistance and innovation ability. Based on GEM enterprises, after verifying whether digital inclusive finance is conducive to enterprise innovation input or innovation output and increase enterprise risk resistance ability, indirect influence ways are further explored. Verify whether digital financial inclusion can indirectly promote firms' innovation capacity and enhance their resilience to risks through improved capital allocation.

On the basis of collecting and collating the Peking University Digital Inclusion Finance Development Index, measuring the capital mismatch coefficient and the financial data of enterprises in the Growth enterprise Market, this paper makes a theoretical analysis and empirical test on the transmission mechanism of digital inclusion finance, which alleviates capital mismatch, stimulates enterprise innovation and improves enterprise anti-risk ability. The innovations are as follows. Firstly, few existing literatures have explored the relationship between digital financial inclusion, enterprise risk resistance and enterprise innovation, especially small and medium-sized enterprises. In this paper, digital financial inclusion, capital mismatch, enterprise innovation and enterprise risk resistance are simultaneously incorporated into the intermediary effect model, and digital financial inclusion, institutional environment, enterprise innovation and enterprise risk resistance are simultaneously incorporated into the regulatory effect model. This paper not only explores the influence of digital inclusive finance on enterprise risk resistance and innovation, but also explores the role of capital mismatch and institutional environment in the influence of digital inclusive finance on enterprise development. Secondly, this paper uses enterprise panel data to analyze the micro effects of capital mismatch, enterprise risk resistance and innovation ability brought by the development of digital inclusive finance in China, and makes a detailed analysis on the corresponding path mechanism, and finally puts forward policy suggestions, which has strong applicability and originality. Thirdly, based on the research perspective, this paper explores the impact mechanism and path of digital inclusive finance from the meaning of digital innovation and inclusive finance itself to improve capital misallocation to further promote the development of enterprises, and tries to find that the development of digital inclusive finance contributes an important role in improving resource misallocation. At the same time, it will further explore the regulation effect of digital inclusive finance on enterprises under different institutional environments. This paper attempts to draw conclusions through empirical analysis and put forward relevant suggestions, which has strong applicability and originality.

Theoretical Analysis and Research Hypothesis

2.1 The Impact of Digital Financial Inclusion on Enterprise Innovation Capability

The positive promoting effect of financial innovation development on enterprise innovation has been proved by many literatures (Brown, 2009; Xie Weimin, 2011). However, in the traditional financial service model, financial resources mismatch is common, and financial institutions pay more attention to the assets available for mortgage of enterprises, while ignoring technology and innovation ability, which makes it difficult for small and medium-sized enterprises with fewer fixed assets but greater growth potential to obtain financing, thus hindering the R&D input and innovation output of enterprises. Digital inclusive finance emerged as The Times required. Advanced technologies such as big data, artificial intelligence and blockchain were used to comprehensively comb and analyze various financial service subjects, form an ecological map of the science and technology industry, expand the coverage of financial services, thus lowering the entry threshold of the credit market, improving the quality of financial services, and helping enterprises to obtain innovative funds (Huang, 2018). And promote enterprise innovation.

The development of digital inclusive finance can promote enterprise innovation by reducing the information asymmetry between financial institutions and enterprises and easing the financing constraints of enterprises. Xie et al. (2018) first studied the innovation-driven role of digital inclusive finance from the perspective of regional entrepreneurship, and the results showed that digital inclusive finance significantly increased the number of new enterprises in the region. Tang Song et al. (2020) used the data of A-share listed companies to study and find that digital inclusive finance has A positive driving effect on enterprise technological innovation, and can effectively correct the attribute mismatch, domain mismatch and stage mismatch existing in traditional finance, so as to effectively alleviate the problems of difficult and expensive financing for enterprises. Wang Jiayu et al. (2020) also confirmed that digital financial inclusion can promote corporate innovation by easing corporate financing constraints, and has a stronger incentive effect on innovation for small and medium-sized enterprises and private enterprises. And from the three dimensions of digital inclusive finance coverage breadth, depth of use and digital support, it is found that there are positive effects. As for the research on smes' innovation, Jia Junsheng and Liu Yuting (2021) analyzed the data of listed companies on smes and GEM, and concluded that the development of digital finance has a significant promoting effect on enterprise innovation, and mainly affects non-state-owned enterprises and high-tech enterprises. All of the above illustrate the role of digital finance in reducing the information asymmetry in market behavior, so as to provide external investors with better access to investment decision-making basis for enterprises, help high-quality smes obtain credit support, and ultimately promote the innovation and development of enterprises. Based on this, the following hypothesis H1 is proposed in this paper.

H1: *Digital inclusive finance has a positive impact on enterprises' innovation capability.*

2.2 The Impact of Digital Financial Inclusion on Enterprise Resilience

Jorion (2005) believes that risk is the measurable uncertainty of the loss of things, including two aspects: the essence of risk is a kind of uncertainty, which can be measured in the uncertain facts; The result of risk is a loss, and the probability distribution of this outcome can be measured.

Digital inclusive finance, by means of information technology of "Internet +" big data, enhances the feasibility of enterprises to obtain financial services and solves the current financing problems

of enterprises. Due to their weak ability to resist risks, smes at the end of the supply chain have been greatly impacted by the COVID-19 epidemic, facing great financial pressure and survival pressure. Bernard (2004) found that traditional finance is often unable to provide loans for small and medium-sized enterprises due to high risk or information asymmetry and other factors, nor can it alleviate or relieve the financing problems of small and medium-sized enterprises, which brings potential business risks to the development of enterprises. The ways in which digital inclusive finance affects enterprises' capital investment are as follows: First, digital inclusive finance helps speed up the approval process and reduce enterprises' financing costs (Zhang and Yang, 2019). The study of Huang Rui et al. (2020) shows that digital inclusive finance uses advanced information technology processing means, relies on online trading platforms and digital technologies to speed up the approval process, effectively reduces the information cost and transaction cost of enterprises, provides better financing support, and increases the risk resistance ability of enterprises. Second, digital inclusive finance can help reduce the information asymmetry between financial service providers and enterprises and improve the financing efficiency of enterprises. Laeven and Levine (2010) pointed out that digital inclusive finance uses big data and other digital technologies to establish information monitoring and processing systems and risk control systems, carry out more accurate risk assessment on enterprises, and provide investors with more information about enterprise investment and financing decisions. It reduces the service cost of financial institutions and the time cost of credit applicants, shortens the time to obtain financial services, improves the anti-risk ability of enterprises, and provides an effective guarantee for the risk management of enterprises. Third, digital financial inclusion helps broaden financing channels for enterprises (Bo, 2021). At present, it is difficult for enterprises to maintain normal operation if they simply rely on internal funds. External financing has threshold effect and crowding out effect, which leads to the unsatisfied long-term financing needs of technological innovation activities. Digital inclusive finance has the advantages of low cost, fast speed and wide coverage. It can lower the cost and threshold of financial services, solve the financing problem that some enterprises are excluded from the traditional financial system, so as to increase the channels and costs for enterprises to obtain funds, and stimulate their capital vitality and risk management motivation. Based on this, the following hypothesis 2 is proposed in this paper

H2: *Digital inclusive finance has a positive impact on enterprises' ability to resist risks.*

2.3 The Mediating Role of Capital Misallocation

Capital misallocation can be understood as a non-ideal capital allocation level, that is, the actual return of capital deviates from its marginal output (Hsieh, 2009). When the market mechanism is defective, the level of production factors in the whole economy cannot achieve optimal allocation, that is, factor prices in the market deviate from their opportunity costs (Lau, Yotopoulos, 1971). Digital inclusive finance relies on the Internet, big data, artificial intelligence, cloud computing, blockchain and other digital technologies, and integrates with traditional financial services, which can effectively reduce the financial friction caused by information asymmetry and incomplete contract, and then improve the degree of regional resource mismatch by reducing the financing cost of the real economy, promoting the establishment of enterprises and the play of entrepreneurial talent.

The literature shows that the efficiency of capital allocation will affect the innovation of enterprises. The allocation of funds largely depends on bank credit, and the establishment and development of enterprises and technological progress are all decided by banks (Hermes& Lensink,2003). The high operating efficiency of financial markets greatly promotes technological progress (Fuente & Martin,1996; Gorodnichenko & Schnitzer,2011). A good

financial system can ensure a relatively high allocation efficiency of capital (Xue Qing and Chang Jianxin, 2013). Capital misallocation will affect the timing of technology introduction and thus the innovation activities of enterprises. Capital misallocation is caused to a large extent by the government's preferential policies, which will guide the capital flow, but this policy guidance is likely to be inconsistent with the actual production and operation conditions of enterprises. Guiding the capital flow to enterprises is likely to make enterprises introduce more advanced equipment and technology prematurely and carry out innovative activities. Resulting in misallocation of resources (Guner et al,2008). Government-led policies favoring state-owned enterprises will contribute to worsening capital misallocation (Lu Xiaodong, 2008). Moreover, the more the government intervenes, the less efficient the allocation of funds will be and the obstruction of technological innovation (Xue Qing and Chang Jianxin, 2013). Many scholars have also found that capital mismatch has a positive impact on technological progress, that is, capital mismatch can promote technological progress, and enterprises with easy access to funds are more motivated to introduce technology and carry out innovative activities (Liang Bang and Zhang Jianhua, 2019). In addition, the vigorous development of digital inclusive finance can promote competition among banks and improve the financial system, which can alleviate financial mismatch to a certain extent and improve the ability of enterprises to innovate. Based on this, the following research hypothesis H3 is proposed in this paper.

H3: *Capital mismatching has an intermediary effect between digital financial inclusion and enterprise innovation capability*

In addition, capital misallocation will squeeze enterprises' innovation investment funds through rent-seeking activities, thus affecting their anti-risk ability. The excess profit generated by rent-seeking activities makes enterprises more inclined to invest in rent-seeking activities, and the excess income attracts more resources to non-productive rent-seeking activities, thus squeezing the entity investment activities such as enterprise innovation and research and development activities, thus reducing the sustainable development power of the economy (Connolly et al., 1986). It affects the long-term development of small and medium-sized enterprises and increases enterprise risks. Huang Yiping (2018) The development of digital finance supported by information technology can increase the financing scale and reduce capital mismatch by reducing enterprise financing costs. Peterson (2017) once proposed that high industry entry threshold would weaken market competition and intensify resource mismatch. Therefore, properly lowering the industry entry threshold can achieve market-oriented free competition and efficient allocation of resources. Han Jian and Zheng Qiuling (2014) believe that inefficient enterprises will be naturally eliminated by the market due to the reduction of government intervention, and at the same time, new enterprises can enter quickly to improve resource mismatch. Xiu Guoyi et al. (2019) found that economies of scale formed by industrial agglomeration could optimize the labor structure and lower the capital threshold, thus improving the efficiency of resource allocation to some extent. Li Jianjun (2019) In the era of digital economy, the inclusion of digital finance enables various entrepreneurial entities to obtain financial services conveniently and efficiently, and digital finance benefits more entrepreneurial entities. The development of digital finance can provide necessary financing support for those who are eager for venture capital, and stimulate their entrepreneurial activities which have been inhibited due to the constraints of venture capital. At the same time, Li Xinze (2018), in the context of the rapid development of digital economy, on the one hand, digital finance can lower the cost of risk assessment for enterprises; on the other hand, digital finance enables enterprises to have more financing channels and broader sources of funds, which helps solve the problem of financing difficulties for enterprises, so as to reduce the mismatch of

resources to a certain extent, and thus reduce the operational risks of enterprises. Based on this, this paper proposes the following research hypothesis H4.

H4: *Capital mismatching has an intermediary effect between digital financial inclusion and firms' ability to resist risks.*

2.4 Regulatory Role of Institutional Environment

The influence of market system environment on enterprise innovation is an external factor that cannot be ignored. Institutional environment plays an important role in the choice of innovative growth path. However, our country has a wide geographical area, and there are great differences in culture, economy, politics and laws among provinces and regions, which makes the improvement degree of system environment also show obvious regional differences, especially the credit evaluation and credit information protection environment, the legal environment of intellectual property, etc. It will affect the promotion and application of digital inclusive finance credit financing technology and the protection of innovative achievements, and significantly influence the development of digital inclusive finance and enterprise innovation activities (Allen,2006). Lederman and Maloney (2003) found that the more sound and complete the system related to intellectual property, the more significant positive impact it has on R&D intensity. In regions with better institutional environment, the development of digital inclusive finance will be relatively smooth. The synchronization and standardization of relevant systems can reduce the market risks of digital inclusive finance, reduce the doubts of enterprises in using digital inclusive finance channels for financing, and protect the legitimate rights and interests of digital inclusive financial institutions and enterprises, which is not only conducive to the all-round expansion of digital inclusive financial services. It is also conducive to providing better financial services for enterprises and meeting their financial needs (Zhong Teng, 2017). Relatively sound and stable institutional environment can promote the innovation of smes and improve the availability of financing for innovative projects.

With the continuous economic growth, our socialist market economic system has been gradually established and improved. The overall quality of system environment in all regions and provinces is constantly improving. Marketization process is an important comprehensive index to measure institutional environment (Fan Gang, 2017). Based on our system background and empirical data, the research on the relationship between environmental regulation and enterprise innovation has not reached a consistent conclusion. Some studies support the "Porter effect" hypothesis. For example, Jie Maohua et al. (2014) studied Chinese enterprises and found that the implementation of institutional environmental regulations can help promote enterprises' R&D and innovation input. However, some scholars have found that the influence of institutional environmental regulation on enterprise technological innovation is not always valid, but there are certain constraints. For example, Zhang Cheng et al. (2011) found that there is a U-shaped relationship between institutional environmental regulation and production technology progress in central and eastern China, while in western China, the relationship between environmental regulation and production technology is not statistically significant. Fuxin Jiang et al. (2013) studied the panel data of the manufacturing industry in Jiangsu Province, China, and found that the relationship between institutional environmental regulation and enterprise innovation presented a U-shaped feature of first decreasing and then increasing, and environmental regulation not only directly affected enterprise innovation through compliance costs, but also indirectly affected innovation behavior through overseas investment and scale effect. Based on this, hypothesis H5 is proposed in this paper.

H5: *The institutional environment has a positive moderating effect on the relationship between digital inclusive finance and enterprise innovation ability.*

According to the marketization Index of China by Provinces (2018) compiled by Wang Xiaolu et al., there are still big differences in institutional environment such as economic development and marketization degree among different regions in China. According to existing literature, regional institutional environment will lead to the impact of digital inclusion finance on corporate financing. In regions with a high degree of marketization, digital inclusion finance will have a greater impact on corporate financing (Yu Ping and Dou Junxia, 2020), which can motivate enterprises to improve their risk management ability. This is mainly because in regions with better institutional environment, higher degree of marketization, developed intermediary organizations and legal environment to maintain the market provide a good development environment for the development of digital inclusive finance, conducive to the conclusion of financing contracts and the reduction of financial transaction costs (Yu Desheng, 2022). On the contrary, in regions with poor institutional environment, an underdeveloped degree of marketization is not conducive to the development of digital inclusive finance, and weak intellectual property protection discourages enterprises' enthusiasm for innovation. In conclusion, the development of digital finance corrects the problems of mismatch and inefficiency in traditional finance, effectively fills the gap in the development of traditional finance, effectively alleviates the problem of "difficult and expensive financing" of enterprises, and drives enterprises to deleverage and improve financial stability, which helps enterprises to improve their ability to resist risks. Based on this, hypothesis H6 is proposed in this paper.

H6: *The institutional environment has a positive moderating effect on the relationship between digital inclusive finance and enterprises' anti-risk ability.*

Research Design

3.1 Definition and Measurement of Research Variables

Digital Inclusion Finance (DIFI): It is difficult to form a unified standard on how to measure the development level of digital inclusion finance. In cooperation with Ant Financial Services, Peking University Digital Finance Research Center independently compiled a set of "Peking University Digital Inclusion Finance Index". Relying on Ant Financial's massive data, the index can serve as a reference indicator for the development level of digital inclusive finance. This paper refers to the digital financial inclusion index used by Tang Song et al. (2020), and matches this index with the data of sample enterprises according to the location of the company. Peking University Digital Financial Inclusion Index Project is a set of digital financial inclusion economic index covering 2011-2020 independently researched and developed by Peking University Digital Finance Center annually.

Enterprise risk resistance: this paper refers to Feng Ye (2019) and Wang Wei (2020) using ROE (Return on Equity) weighted return on equity. That is, the percentage ratio of the company's after-tax profit divided by the average net asset is used to measure the enterprise's anti-risk ability. This index more fairly reflects the impact of the change of the company's net asset on the net profit and the return level of shareholders' equity in the whole time period, and is used to measure the efficiency of the company's use of its own capital. The higher the ratio, the stronger the enterprise's anti-risk ability. The formula of net return on capital can be expressed as:

Return on equity = net profit/average net asset

Enterprise innovation ability: An enterprise is a contract composed of factor resources, and its development depends on innovation, which measures the ability of an enterprise to obtain and integrate resources. Therefore, this paper is based on the perspective of enterprise innovation

process, referring to (Ni Zhiliang 2019; Zhang Hui, 2016) transform enterprise innovation ability into enterprise innovation input as a standard to measure enterprise innovation ability.

Capital mismatch (Capi): This paper uses the methods of Chen Yongwei and Hu Weiming (2011) for reference to measure capital mismatch.

Institutional environment (Ie): Referring to Tang Jiali and Tang Qingquan (2010), Yu Minggui and Pan Hongbo (2008) and other practices, this paper uses relevant indicators in the market index system of Chinese regions compiled by Fan Gang et al. (2010), which is widely used at present, to measure regional institutional characteristics. In the selection of specific indexes, the overall marketization index represents the marketization degree of each region. The higher the marketization degree of the region, the more perfect the development of institutional environment.

Since enterprises are affected by various factors, this paper draws on previous empirical studies of enterprises' risk resistance and innovation, and selects variables that may have significant influence as control variables, so as to ensure the accuracy of the empirical results in this paper. In this paper, enterprise Size (Size), enterprise Age (Age), enterprise profit rate (pro), enterprise Growth (Growth), government subsidy (Sub), shareholding structure (sto), regional economic development level (lngdp) and opening-up degree (Trade) are selected as control variables:

Enterprise size (size): Existing studies are inconsistent on the effect of enterprise size on enterprise innovation, but it is a recognized fact that enterprise size is a key factor. In this paper, the total assets of listed companies are taken as the index to measure enterprise size, and enterprise size is included in the control variable of this paper.

Enterprise age: Jiang Fuxin (2013) believes that both young enterprises and old enterprises have their own advantages. The former may have stronger willingness to innovate, while the latter is more capable and experienced. Therefore, the influence of enterprise age on enterprise innovation deserves further study.

Corporate profit rate (pro): corporate innovation requires a large amount of capital investment, and high profit rate can ensure the smooth progress of R&D activities; However, enterprises with high profit margins may also lose their passion for innovation. In this paper, the operating net interest rate of listed companies is used to measure the profitability of enterprises, and the influence of profit margin on enterprise innovation is studied.

Ownership structure (sto): Ownership structure plays a great role in the development direction of enterprises, and ownership structure has an impact on the innovation input of enterprises. Therefore, ownership structure is included into the control variable in this paper, and ownership concentration (shareholding ratio of the largest shareholder) is used as the measurement index of enterprise ownership structure.

Government subsidy (Sub): Government subsidy is an important factor affecting enterprise innovation input (Xie Weimin et al., 2009). On the one hand, government subsidy is an important source of capital for enterprise innovation investment. On the other hand, government subsidies can enhance the investment confidence of external investors and promote their investment, so as to alleviate the external financing constraints faced by enterprises in innovation investment. Based on the practice of Li Huidong et al. (2013), this paper uses the ratio between government subsidies and total assets at the end of the period to measure.

Business growth (Grow), which takes the growth rate of operating revenue as a measure. High-growth enterprises usually have great growth potential and need to constantly expand scale,

improve profitability and focus on enterprise innovation. However, rapid growth will face greater financial pressure, which may not be conducive to the promotion of innovative projects. The impact of growth on firm innovation is also uncertain.

At the level of economic development (LnGDP), the higher level of regional economic development not only creates infrastructure environment and favorable financing environment for enterprise innovation, but also brings the gathering of innovative enterprises with better economic development status, thus generating a larger competition effect of technological innovation and driving enterprise innovation. In this paper, the natural logarithm of GDP per capita is used to measure. To control the influence of regional economic development level on enterprise innovation.

The degree of openness to the outside world (Trade) is an important factor affecting enterprises' access to capital. The more active market capital is, the lower the cost of capital will be for enterprises. In this paper, the ratio of total import and export volume to regional GDP is used to measure the degree of openness to the outside world.

3.2 Model Design

In order to analyze the impact of digital financial inclusion on enterprise innovation ability and anti-risk ability, the following fixed-effect panel models are established respectively:

$$RD_{it} = \alpha_0 + \alpha_1 Index_{jt} + \beta x_{ijt} + \mu_j + \theta_t + \varepsilon_{it} \quad (1)$$

$$ROE_{it} = \alpha_0 + \alpha_1 Index_{jt} + \beta x_{ijt} + \mu_j + \theta_t + \varepsilon_{it} \quad (2)$$

RD represents enterprise innovation ability, and ROE represents enterprise risk resistance ability.The subscript i represents the enterprise, the subscript t represents the time, Index represents the core explanatory variable digital inclusive finance, j represents the province, x_{ijt} represents the control variable, μ_j represents the fixed effect of the control region, θ_t represents the fixed effect of the control time, ε_{it} represents the random interference item, which follows the normal distribution and is not correlated with the explanatory variable.

In order to verify the reliability of the benchmark regression conclusion, this paper uses alternative variables and one stage lag for robustness test. In this paper, the total number of patent applications of enterprises is added to logarithm as the dependent variable to replace R&D investment of enterprises. With reference to the evaluation index system of enterprise risk tolerance established by Pan Yan (2013), Instead of the asset-liability ratio as a robustness test, the ratio of total liabilities and total assets of an enterprise is defined as the asset-liability ratio. Instead, ROE is used as an indicator of the enterprise's anti-risk ability to conduct robustness test. The following robust model is established:

$$lnPatents_{it} = \alpha_0 + \alpha_1 Index_{jt} + \beta x_{ijt} + \mu_j + \theta_t + \varepsilon_{it} \quad (3)$$

$$Lev_{it} = \alpha_0 + \alpha_1 Index_{it} + \beta x_{ijt} + \mu_j + \theta_t + \varepsilon_{it} \quad (4)$$

At the same time, considering that the popularization and implementation of digital financial inclusion policies take a certain period of time, and there may be a lag in the improvement of enterprises' innovation input and anti-risk ability, this paper takes the digital financial inclusion index with a lag period for regression, that is, considering the influence of the previous period's digital financial inclusion level on enterprises' innovation input and anti-risk ability in the current period, and establishes the following model:

$$RD_{it} = \alpha_0 + \alpha_1 Index_{jt-1} + \beta x_{ijt} + \mu_j + \theta_t + \varepsilon_{it} \quad (5)$$

$$ROE_{it} = \alpha_0 + \alpha_1 Index_{jt-1} + \beta x_{ijt} + \mu_j + \theta_t + \varepsilon_{it} \quad (6)$$

In order to test the regulatory effect of institutional environment, the following model is established:

$$RD_{it} = \alpha_0 + \alpha_1 Index_{jt} + \alpha_2 Index_{jt} * Ie + Ie + \beta x_{ijt} + \mu_j + \theta_t + \varepsilon_{it} \quad (7)$$

$$ROE_{it} = \alpha_0 + \alpha_1 Index_{jt} + \alpha_2 Index_{jt} * Ie + Ie + \beta x_{ijt} + \mu_j + \theta_t + \varepsilon_{it} \quad (8)$$

In the above equation, is the regulating variable, expressed by the Fan Gang marketization index. If it is significant, there is a regulating effect.

In order to further empirically test the impact of digital financial inclusion on enterprises' innovation ability and anti-risk ability, this paper establishes the following intermediary effect model:

$$Capi_{it} = \gamma_0 + \gamma_1 Index_{jt} + x_{ij,t} + \mu_i + \theta_t + \varepsilon_{it} \quad (9)$$

$$RD_{it} = \delta_0 + \theta Capi_{it} + \delta_1 Index_{jt} + \beta x_{ijt} + \mu_i + \theta_t + \varepsilon_{it} \quad (10)$$

$$ROE_{it} = \delta_0 + \theta Capi_{it} + \delta_1 Index_{jt} + \beta x_{ijt} + \mu_i + \theta_t + \varepsilon_{it} \quad (11)$$

In the above equation, Capi is the mediating variable, indicating capital mismatch. If both and are significant and <, there is a partial mediating effect, which is the direct effect, and * is the mediating effect.

3.3 Data Sources

This paper takes GEM listed enterprises from 2011 to 2020 as the research object. The financial data and enterprise innovation and R&D input data of GEM enterprises from 2011 to 2020 are all from CSMAR database, Wind database and CCER database. The index of digital financial inclusion was taken from the Peking University Digital Financial Inclusion Index (2011-2020) report released by the Digital Finance Research Center of Peking University, while other data came from the past years, China Statistical Yearbook, China Statistical Yearbook of Science and Technology, and China Economic and social Big Data Research Platform. The data are processed as follows: (1) In order to ensure the consistency and integrity of the required financial data, only enterprises that have disclosed financial data for at least 3 years from 2011 to 2020 are selected; (2) In order to avoid the influence of outliers and corporate financial characteristics, financial enterprises are excluded; (3) Excluding sample enterprises whose R&D expenditure data is not disclosed; In addition, in order to avoid the influence of extreme data values on empirical results, the main continuous variables at the enterprise level were treated with a two-sided 1% tail reduction. After the above steps, a total of 1095 sample enterprises were selected in this paper.

Research Results

4.1 Descriptive Statistical Analysis

Descriptive statistical analysis is a systematic method and statistical technique used to sort out descriptive and explanatory data. Table 1 is descriptive statistics of the main variables. From the explained variables, there is a large difference in innovation input among GEM enterprises, with a maximum value of 0.12, a minimum value of 0.03 and an average value of 0.06. For the anti-risk ability of enterprises, the average anti-risk ability of each enterprise is 0.08, the maximum value is 0.15, and the minimum value is 0.02. The logarithm of the digital financial inclusion index has an average value of 5.61 and a variance of 0.26, indicating that there is a certain gap in the degree of digital financial inclusion among enterprises, indicating that there are still small and medium-sized enterprises with a low level of digital financial inclusion development. In the state of unbalanced development of digital inclusive finance among enterprises, it is more conducive to study the influence of digital inclusive finance development

on innovation of small and medium-sized enterprises. From the perspective of control variables, the standard deviation of per capita GDP of the region where the sample enterprises are located is large, which indicates that the regional development potential of the sample enterprises is different. In the statistics of other variables, the maximum and minimum values have no obvious outliers, so regression analysis can be carried out.

Table 1: Descriptive Statistics of Variables.

Variable	Mean	SD	Min	Max
RD	0.06	0.03	0.03	0.12
ROE	0.08	0.05	0.02	0.15
lnindex	5.61	0.26	5.20	5.91
Size	21.27	0.61	20.49	22.18
FirmAge	2.74	0.23	2.40	3.04
ROA	0.06	0.03	0.01	0.11
Top1	0.30	0.09	0.17	0.44
Growth	0.18	0.20	-0.09	0.50
Trade	0.56	0.27	0.14	0.95
lnGDP	11.28	0.30	10.84	11.68
Sub	0.01	0.00	0.00	0.02

4.2 Benchmark Regression Analysis

Regression test was conducted according to equation (1) and (2) established in this paper, and the results were shown in Table 2. Model1 shows the impact of digital inclusion finance on the R&D level of enterprises. The regression coefficient of digital inclusion finance is 0.0139, and it passes the significance test at the 1% level, indicating that the higher the degree of digital inclusion finance, the more conducive to promote enterprises to increase R&D investment. Model2 shows the impact of digital inclusive finance on the enterprise's anti-risk ability. The regression coefficient of digital inclusive finance is 0.0081 and p value is 0.000, which is significantly positive at the 1% level, indicating that the higher the level of digital inclusive finance, the better the enterprise's anti-risk ability. This conclusion verifies the hypotheses H1 and H2 in this paper.

Table 2: Results of Baseline Regression.

	Model1	Model2
	RD	ROE
lnindex	0.0139***	0.0081***
	(4.5949)	(3.9202)
Size	-0.0060***	0.0073***
	(-5.6980)	(10.0871)
FirmAge	-0.0094***	-0.0031
	(-3.3754)	(-1.6337)
ROA	0.0334***	1.6100***
	(-2.9058)	(203.8254)
Top1	-0.0512***	0.0109**
	(-7.6371)	(2.3662)
Growth	-0.0133***	0.0074***
	(-6.0189)	(4.8745)
Trade	0.0300***	-0.0039*
	(9.0506)	(-1.7278)
lnGDP	-0.0043	-0.0033
	(-1.2155)	(-1.3499)
Sub	2.5270***	-0.2377***
	(24.3187)	(-3.3295)
_cons	0.1809***	-0.1695***
	(5.1639)	(-7.0401)
N	4528	4528
R^2	0.188	0.915
adj. R^2	0.185	0.912
F	115.09	5486.59

Note: *, ** And *** Denote Significance at the Significance Level Of 10%, 5% And 1%, Respectively.

4.3 Robustness Test

The number of patent applications and the ratio of assets and liabilities of enterprises are also common indicators used to measure the innovation ability and risk resistance ability of enterprises in current academic circles. In this paper, the total number of patent applications of enterprises is added to logarithm as the dependent variable to replace the R&D investment of enterprises. In this paper, the enterprise risk tolerance evaluation index system established by Pan Yan (2013) is referred to. The author takes the asset-liability ratio as the robustness test instead of defining the ratio of total liabilities and total assets as the asset-liability ratio instead of ROE as the index of the enterprise's anti-risk ability to carry out the robustness test. The regression results are shown in Table 3. The results show that when the number of corporate patent applications and corporate asset-liability ratio are respectively returned as explained variables, the coefficient of digital financial inclusion is still significantly positive at 1%. It shows that the results of this paper have good robustness.

Table 3: Robustness Test (1).

	Model3	**Model4**
	lnPatents	Lev
lnindex	0.9657***	0.0766***
	(4.1892)	(9.4541)
Size	0.7748***	0.0776***
	(15.7733)	(27.3738)
FirmAge	-0.3358***	-0.0023
	(-2.7080)	(-0.3039)
ROA	-0.7664	-0.8038***
	(-1.2981)	(-26.0568)
Top1	0.7188***	0.0976***
	(2.6026)	(5.4307)
Growth	-0.0531	0.0710***
	(-0.4249)	(11.9353)
Trade	0.4055**	-0.0277***
	(2.5517)	(-3.1206)
lnGDP	-0.6793***	-0.0141
	(-3.7267)	(-1.4783)
Sub	26.9195***	0.2639
	(5.6710)	(0.9462)
_cons	-10.7724***	-1.6002***
	(-6.3841)	(-17.0188)
R^2	0.328	0.337
adj. R^2	0.320	0.335
F	39.93	254.15

Note: *, ** And *** Denote Significance at the Significance Level of 10%, 5% and 1%, Respectively

There may still be endogenous interference in identifying the impact of the development of digital financial inclusion on smes' innovation. On the one hand, due to the effect of reverse causality, the place where enterprise innovation and development are better can promote the development of regional digital inclusive finance. On the other hand, missing variables of unobservable factors can lead to bias. Considering that it takes a certain period of time for the popularization and implementation of digital financial inclusion policies, there may be a lag in

the improvement of enterprises' innovation input and anti-risk ability. In this paper, the digital financial inclusion index takes a lag period and carries out a regression, that is, the influence of the digital financial inclusion level in the previous period on enterprises' innovation input and anti-risk ability in the current period is considered. The regression results are shown in Table 4. The digital inclusion financial level with a lag of one period can still positively affect the R&D investment and anti-risk ability of enterprises, and its influence coefficients are 0.0114 and 0.0045 respectively, and both pass the significance test at the 5% level, indicating that the benchmark regression results of this paper are still robust.

Table 4: Robustness Test (2).

	Model5	**Model6**
	RD	ROE
lnindex	0.0114***	0.0045**
	(4.2694)	(2.4221)
Size	-0.0063***	0.0075***
	(-5.8557)	(10.0353)
FirmAge	-0.0085***	-0.0035*
	(-2.9501)	(-1.7208)
ROA	-0.0333***	1.6133***
	(-2.8910)	(200.8235)
Top1	-0.0497***	0.0103**
	(-7.2612)	(2.1650)
Growth	-0.0135***	0.0075***
	(-6.0287)	(4.8324)
Trade	0.0314***	-0.0035
	(8.9377)	(-1.4221)
lnGDP	-0.0049	-0.0023
	(-1.3553)	(-0.9121)
Sub	2.5328***	-0.2251***
	(24.1420)	(-3.0768)
_cons	0.2041***	-0.1626***
	(5.4767)	(-6.2551)
R^2	0.190	0.919
adj. R^2	0.186	0.917
F	111.89	5319.93

Note: *, ** And *** Denote Significance at the Significance Level of 10%, 5% and 1%, Respectively.

4.4 Adjustment Effect

In order to further study how external institutional environment influences digital inclusion finance on R&D investment and risk taking of enterprises, this part introduces market index as a moderating variable, and tests the moderating effect according to equations (7) and (8).

The results are shown in Table 5. When the explained variable is R&D input, the coefficient of the interaction term (lnindex_market) of market index and explanatory variable (lnindex) is 0.001, and the p value is 0.000, which passes the significance test at the 1% level. At this time, the coefficient of digital inclusive finance is 0.0124. The p value was 0.002, which was significant at the 1% level. This indicates that the more complete the degree of marketization, the more obvious the role of institutional environment regulation in promoting enterprise innovation input, and a stable institutional environment can reduce the market risks of digital

financial inclusion, accelerate the development of digital finance, help enterprises expand financing channels, and strengthen the positive role of digital financial inclusion in enterprise research and development. The result proves that H5 in this paper is valid.

When the explained variable is the enterprise's anti-risk ability, the coefficient of the interaction term (lnindex_market) of market index and explanatory variable (lnindex) is 0.0003, and the p value is 0.200, which is only significant at the 10% level. At this time, the coefficient of digital inclusive finance is 0.065. p value is 0.000, which is significant at the 1% level. In contrast, the degree of marketization has a weak positive moderating effect on digital financial inclusion and enterprises' anti-risk ability. This shows that although the market system plays a certain role in protecting the intellectual property rights of enterprises and the development of digital finance, the current system is still in an immature stage. There are also other inherent risks such as industrial competition effect and excessive government intervention in marketization. In the early stage of the system reform, there are still many regulations worth further improvement. In order to better protect the digital inclusive finance to enhance the anti-risk ability of enterprises. The result proves that H6 in this paper is valid.

Table 5: Results of Adjustment Effect.

	Model7	**Model8**
	RD	ROE
lnindex	0.0124***	0.0065***
	(0.0044)	(0.0023)
lnindex_market	0.0010***	0.0003*
	(0.0003)	(0.0002)
market	-0.0110***	-0.0000
	(0.0020)	(0.0011)
Size	-0.0047***	0.0080***
	(0.0007)	(0.0004)
FirmAge	-0.0066***	0.0008
	(0.0020)	(0.0011)
ROA	-0.0114	1.2673***
	(0.0134)	(0.0071)
Top1	-0.0317***	0.0115***
	(0.0045)	(0.0024)
Growth	-0.0118***	0.0160***
	(0.0022)	(0.0012)
Trade	0.0277***	-0.0034***
	(0.0022)	(0.0012)
lnGDP	-0.0060**	-0.0044***
	(0.0025)	(0.0013)
Sub	2.4846***	-0.0469
	(0.0875)	(0.0461)
_cons	0.2148***	-0.1733***
	(0.0366)	(0.0193)
N	4528	4528
R^2	0.240	0.902
adj. R^2	0.232	0.901
F	125.53	3761.33

Note: *, ** And *** Denote Significance at the Significance Level of 10%, 5% and 1%, Respectively.

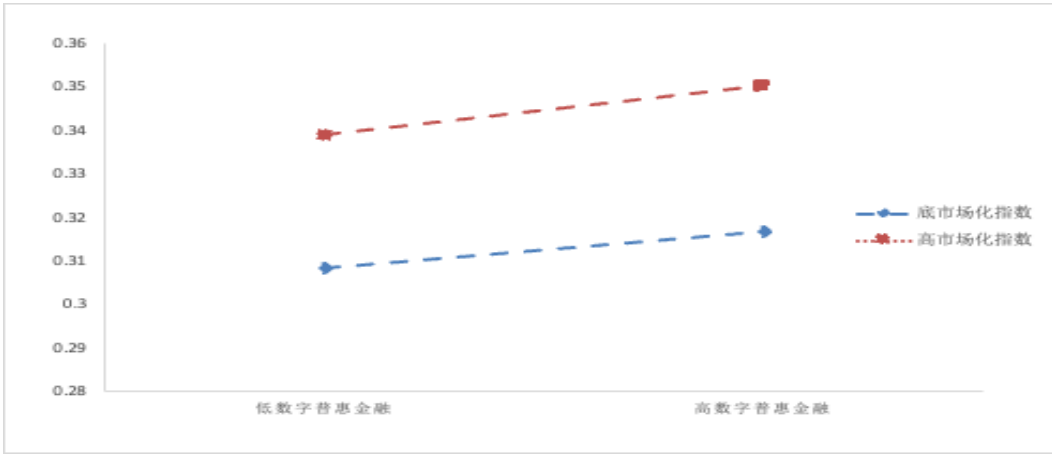

Fig 1: Regulation Action Diagram.

In order to further explore the regulating effect of marketization index on digital financial inclusion index and innovation ability, this study draws the regulating effect model diagram. When the marketization index of the regulating variable is higher, the digital financial inclusion index will be higher and the innovation ability will be higher. Therefore, the marketization index has a significant regulating effect on the digital financial inclusion index and innovation ability.

4.7 Analysis of Mediating Effect

The theoretical hypothesis of this paper analyzes that digital inclusive finance can improve capital misallocation by improving the efficiency of financial markets, thus promoting the innovation level of enterprises. In order to verify this conduction mechanism, equations (9) and (10) were further tested for mediating effect. The regression results are shown in Table 6.

As can be seen from the regression results, when the digital financial inclusion index is the explanatory variable and capital mismatch is the explained variable, the coefficient of lnindex 0.1304 ($P<0.01$) is significantly positive, indicating that the enhancement of digital financial inclusion has not alleviated the problem of capital mismatch. Possible reasons include, first, the volatility of digital financial inclusion. Digital finance enables fast and automated transactions, which can lead to rapid changes in cash flow patterns, making it harder for companies to match inflows and outflows in real time. Secondly, the lack of a sound supervision system. With the rapid development of digital inclusive finance, the corresponding regulatory system has a certain lag, resulting in the lack of mature regulation and standards in the industry, which exacerbates capital misallocation. In addition, the unforeseen consequences of complex financial technology. The use of complex financial techniques in digital finance may have unpredictable consequences, resulting in capital mismatches, such as errors resulting from algorithmic trading. Finally, digital financial inclusion can vary regionally. Due to the differences in various resource endowments among regions, regions with different levels of economic development have different feedback on digital financial inclusion.

In order to ensure the accuracy and robustness of the research conclusions and further discover the statistical efficacy of the intermediary effect, the bootstrap method was selected to conduct the intermediary test and repeated sampling 5000 times. According to the data in Table 6, the regression coefficient between the degree of digital financial inclusion and capital mismatch was 0.1304 ($P<0.01$). The regression coefficient of capital mismatch and innovation input was

significantly -0.003 (P<0.01), and the regression coefficient of digital financial inclusion and innovation input was 0.0112 (P<0.01). Therefore, capital mismatch has an indirect intermediary effect between digital financial inclusion and enterprise innovation ability. Moreover, capital misallocation has a masking effect of 3.6% in digital financial inclusion and R&D investment. This indicates that although the improvement of digital inclusion finance may exacerbate capital misallocation, the positive impact of digital inclusion finance on R&D investment of enterprises will eventually cover up some negative effects of capital mismatching. The possible reason is that the digital financial policy has the risk of information asymmetry, thus distorting the flow of production factors. In addition, the government intervention in the early stage of policy reform caused a lot of credit resources to be occupied by the state-owned sector with low efficiency, which may still lead to the phenomenon of capital mismatch. However, such problems do not have a great restraining impact on enterprises' R&D investment. Digital inclusive benefits cover an extremely wide range, lowering the financing threshold for enterprises and providing digital technology support. These benefits to some extent weaken the resistance of enterprises' R&D investment caused by capital mismatching. This indicates that the research hypothesis H3 is valid.

Table 6: Results of Mediating Effect (1).

	RD	**Abstauk**	**RD**
lnindex	0.0109***	0.1304***	0.0112***
	(0.0030)	(0.0292)	(0.0030)
abstauk			-0.0030**
			(0.0018)
Size	-0.0061***	0.0147	-0.0059***
	(0.0009)	(0.0099)	(0.0009)
FirmAge	-0.0067***	0.0002	-0.0067***
	(0.0024)	(0.0266)	(0.0024)
ROA	-0.0407***	-0.2793**	-0.0406***
	(0.0138)	(0.1485)	(0.0142)
Top1	-0.0434***	0.1091*	-0.0431***
	(0.0056)	(0.0613)	(0.0056)
Growth	-0.0126***	-0.0738***	-0.0129***
	(0.0023)	(0.0254)	(0.0023)
Trade	0.0241***	-0.1465***	0.0243***
	(0.0029)	(0.0323)	(0.0030)
lnGDP	-0.0003	0.3710***	0.0010
	(0.0030)	(0.0321)	(0.0030)
Sub	2.6252***	0.7770	2.6270***
	(0.0965)	(1.0395)	(0.0965)
_cons	0.1337***	-4.4611***	0.1205***
	(0.0296)	(0.3217)	(0.0302)
N	4528	4528	4528
R^2	0.160	0.019	0.161
adj. R^2	0.158	0.017	0.159
F	96.75	9.96	87.31
Total effect		0.0109	
Direct effect		0.0112	
Indirect effect		-0.0004	
The proportion of masking effect		3.6%	

Note: *, ** And *** Denote Significance at the Significance Level of 10%, 5% and 1%, Respectively.

Similarly, capital mismatch is used as an intermediary variable to test the anti-risk ability of digital financial inclusion on enterprises, and equations (9) and (11) are returned. The regression results are shown in Table 7. When the firm's anti-risk ability is taken as the explained variable, capital mismatch variable has a negative effect on the firm's anti-risk ability, and the coefficient of digital inclusion finance still has a positive effect on the firm's R&D investment at the level of 1%. According to bootstrap test, the regression coefficient between digital financial inclusion degree and capital mismatch is 0.1304 (P<0.01), and the regression coefficient between capital mismatch and enterprise risk resistance is significantly -0.0013 (P<0.05). The regression coefficient of digital financial inclusion degree and enterprise risk resilience is 0.009 (P<0.001). Therefore, capital mismatching has an indirect intermediary effect between digital financial inclusion and enterprise innovation ability, and capital misallocation has a masking effect of 2.2% in digital financial inclusion and enterprise risk taking. The positive impact of digital inclusion finance on corporate risk taking will weaken some corporate risks caused by capital misallocation. It shows that digital inclusive finance has a great contribution to reducing the information asymmetry between financial service providers and enterprises, increasing the financing channels of enterprises and stimulating capital vitality, and thus improving the risk resistance level of enterprises.

Table 7: Results of Mediating Effect (2).

	ROE	**abstauk**	**ROE**
lnindex	0.0089***	0.1304***	0.0090***
	(0.0013)	(0.0292)	(0.0011)
abstauk			-0.0013*
			(0.0007)
Size	0.0083***	0.0147	0.0082***
	(0.0004)	(0.0099)	(0.0004)
FirmAge	-0.0005	0.0008	-0.0001
	(0.0012)	(0.0266)	(0.0012)
ROA	1.4055***	-0.2793**	1.4051***
	(0.0066)	(0.1495)	(0.0066)
Top1	0.0140***	0.1081*	0.0143***
	(0.00334)	(0.0613)	(0.0029)
Growth	0.0126***	-0.0738***	0.0125***
	(0.0011)	(0.0254)	(0.0011)
Trade	-0.0003	-0.1465***	-0.0005
	(0.0013)	(0.0303)	(0.0013)
lnGDP	-0.0041***	0.3710***	-0.0040***
	(0.0014)	(0.0325)	(0.0014)
Sub	-0.1013**	0.7456	-0.1162**
	0.0083***	0.0157	0.0083***
_cons	-0.1890***	-4.4611***	-0.1957***
	(0.0141)	(0.3221)	(0.0144)
N	4528	4528	4528
R2	0.930	0.019	0.830
adj. R2	0.930	0.017	0.829
F	2481.16	9.96	2232.60
Total effect		0.0089	
Direct effect		-0.0002	
Indirect effect		0.009	
The proportion of masking effect		2.2%	

Note: *, ** And *** Denote Significance at the Significance Level of 10%, 5% and 1%, Respectively.

Conclusion

5.1 Conclusions

Based on the sample data of GEM listed companies from 2011 to 2020 and the city-level data of Peking University's digital inclusion finance, this paper constructs an econometric model and adopts a fixed-effect panel model to conduct benchmark regression and robustness test on the impact of digital inclusion finance on enterprise's innovation ability and risk-resistance ability in turn, and constructs a market-based index adjustment effect model. And the intermediary effect model of capital mismatch to further empirically study the influence of the development of digital inclusive finance on smes' innovation input and risk resistance. Based on the above research results, this paper draws the following conclusions.

Digital inclusive finance has a positive and significant impact on the improvement of enterprises' innovation ability and the enhancement of enterprises' anti-risk ability. Moreover, digital inclusive finance can improve capital mismatch through the improvement of financial market efficiency, thus promoting enterprises' innovation level and anti-risk ability. In addition, as the degree of marketization becomes more and more perfect, digital inclusive finance plays a more significant role in promoting enterprises' innovation input, but has a weak positive regulating effect on enterprises' anti-risk ability.

5.2 Study Limitations

Although a large number of empirical studies are conducted in this study, there are still many deficiencies to be improved.

(1) In terms of research objects. Constrained by the availability of data. Only enterprises that disclose financial data from 2011 to 2020 are selected, and sample enterprises whose R&D expenditure data are not disclosed are excluded. In the following research, the longitudinal and horizontal selection of data should be expanded as far as possible to obtain more comprehensive and complete data and enhance the reliability of research conclusions.

(2) In sample measurement. In the existing literature, there is no unified standard for measuring the development level of digital inclusive finance. In the calculation of capital misallocation, the relative distortion coefficient of price is used instead of the complicated absolute distortion coefficient. Therefore, we can learn from other methods to measure the development level of digital inclusive finance in the future, and make a breakthrough in the calculation of capital mismatch.

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