

Study on the impact of venture capital on enterprise
resilience

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Declaration/Statements page

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Abstract

In today's rapidly changing, complex and uncertain environment, with frequent "black swan" and "gray rhino" incidents, businesses are facing increasing challenges. VUCA (Variability, Uncertainty, Complexity, ambiguity) has become a dominant theme in the global economic, social, and political landscape. Corporate resilience - the ability of companies to respond to crises, recover, and surpass - is particularly critical in this context. In recent years, there is more and more research on enterprise resilience in academic circles, but the researches on how venture capital can improve enterprise resilience are relatively limited. Therefore, this study explores how venture capital can enhance enterprise resilience through various mechanisms, especially the path for smes to enhance viability and competitiveness in complex environments.

This study firstly analyzes the role of venture capital in enterprise resilience from a theoretical perspective, pointing out that venture capital can not only provide financial support, but also improve the strategic resilience of enterprises through management consulting, planning guidance and resource integration. At the same time, it will also provide capital support for enterprises, including but not limited to social capital, intellectual capital, reputation capital to improve corporate resilience.

Through literature review and theoretical model construction, this paper discusses the influence of different latitude of venture capital on rebound resilience and improvement ability of enterprises. In the empirical research part, this paper designed a questionnaire, collected a total of 176 enterprises valid data, through data analysis and regression analysis of the impact of various dimensions of venture capital on enterprise resilience. The study found that financial support, strategic support and capital support from venture capital played a significant role in enhancing corporate resilience.

Finally, this paper provides relevant suggestions from different levels such as the

government, enterprises and venture capital institutions to better improve the resilience of enterprises, so that enterprises can develop stably in the face of external shocks.

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Chapter 1: Introduction

1.1 Research background

In today's rapidly changing, complex and uncertain environment, we are facing more and more challenges, with the occurrence of "black swans" events (It mainly refers to those unexpected events that are difficult to foresee, but the potential risks are extremely high) (Nassim Nicholas Taleb, 2007). And "gray rhinos" events (It's a metaphor for the social crises that happen with high probability and great influence) (Michele Wucker, 2016). The state of VUCA (volatility, uncertainty, complexity, ambiguity) has become the dominant theme of the global economic, social, and political landscape. The changes brought about by the VUCA environment provide enterprises with opportunities for innovation, but also hidden risks and crises (Indiarti, E.D. and Lantu, D.C., 2022). The intensification of global changes and the deep integration of politics, economy, society, culture and other fields make the influence of emergencies continue to expand. For example, the frequent occurrence of natural disasters and public safety events has brought unpredictable shocks and challenges to enterprises.

In this complex and volatile environment, a company's resilience is critical in determining whether it strengthens itself and integrates resources to meet market challenges, or stumbles in a crisis and ultimately fails (Ingram et al., 2023).

Taking the US subprime crisis as an example, different countries and enterprises responded in different ways. Companies in some countries have been able to reduce their losses effectively, while companies in others face long-term negative effects due to inadequate resilience. Similarly, the frequent occurrence of Sino-US trade frictions and the increase of tariffs have brought

great challenges to China's high-end manufacturing industry (Liu and Deng, 2024). In particular, the "ZTE incident" and "Huawei incident" have pushed this contradiction to a climax. However, ZTE and Huawei successfully weathered the crisis through social support and proactive coping strategies. On the contrary, some high-end manufacturing enterprises have not been spared, suffered heavy losses in trade frictions, and even went bankrupt.

In the context of VUCA, "black swan" and "gray rhino" incidents occur frequently, and the survival and development of enterprises are facing increasingly severe tests. In order to cope with the turbulence of the competitive environment and the unpredictability of demand, and avoid the predicament of decline or even bankruptcy, enterprises must have the ability to effectively cope with the crisis and recover quickly from it. This capability is called organizational resilience (Gallopini, 2006). Enterprise resilience refers to the ability of enterprises to cope with and adapt to crises. The more resilient you are, the more quickly you can identify opportunities and challenges in a new environment, improving your ability to respond and recover (Hynes et al. 2020). Therefore, how to improve the resilience of smes in the VUCA era has become the focus of attention.

Enterprise resilience, as an interdisciplinary research field, originated from Meyer's first introduction of the concept of resilience into the field of management. Since then, scholars have conducted in-depth discussions on corporate resilience from different perspectives, such as strategic management (Sabatino, 2016), organizational structure (Tsiapa and Batsiolas, 2019), and manager cognition (Williams et al., 2017). Existing studies have shown that resource integration ability plays an important role in improving the resilience of enterprises in coping with crises.

These resources include tangible resources (such as production

equipment, financial status, personnel team, etc.) and intangible resources (such as information networks, cultural reputation, technical means, etc.). When a crisis comes, enterprises can effectively predict risks, adjust strategies, and enhance internal communication and external cooperation by integrating superior resources, so as to enhance the resilience of enterprises. Enterprise resilience can not only help enterprises reduce losses caused by crises, but also transform crises into opportunities and achieve leapfrog development (Duchek, 2020).

Although the academic debate on corporate resilience continues to heat up, existing research still has certain limitations. For example, the research context is limited, theoretical deduction is more than empirical analysis, and the research results are obviously fragmented (Xie et al., 2023). Especially in the discussion of the formation path of enterprise resilience, scholars have not reached a consensus. However, there is no doubt that corporate resilience plays a key role in enhancing a company's competitive advantage and responding to sudden crises.

In this context, the research on how to improve the ability of enterprises to resist risks and enhance resilience has become a hot topic. In particular, Venture Capital (VC), as a key financial tool to support the development of innovative enterprises, has attracted widespread attention due to its potential role in enhancing corporate resilience (Kato, 2024). Venture capital not only provides financial support for high-risk and high-return entrepreneurial enterprises, but also empowers enterprises through management consulting, strategic guidance and resource integration (Norrby, C. and Åslund, S. ,2021). Therefore, venture capital can not only provide a capital buffer for enterprises, but also give strong support to enterprises in terms of management level, innovation ability and market resilience, and enhance their resilience.

Venture capital influences enterprise resilience through several key mechanisms. First, financial resilience is strengthened as venture capital provides essential financial support to businesses, enabling them to navigate market volatility and crises. Access to sufficient capital is vital for ensuring business continuity and growth (Cooiman,2022).

Second, operational flexibility is enhanced by integrating external management expertise and technical support, allowing businesses to streamline internal processes and improve efficiency (Lerner and Nanda, 2020).

Third, strategic resilience is fostered as venture capitalists often engage in shaping the company's long-term strategic planning, enabling firms to adapt more effectively in uncertain environments. Lastly, innovation resilience is bolstered as venture capital prioritizes innovation-driven companies, promoting competitiveness through technological and product advancements, thus helping businesses sustain competitive advantages during crises (Yi, Rui, et al., 2023).

While the majority of existing research primarily explores venture capital's impact on firm growth and performance, there is a notable gap in the systematic analysis of its role in enhancing corporate resilience. This study aims to bridge this gap by investigating how venture capital strengthens firm resilience across multiple dimensions. It also examines the differentiated effects of various aspects of venture capital on resilience.

The research seeks to provide a solid theoretical framework and actionable insights for policymakers and business leaders, enabling firms to navigate uncertainty more effectively and sustain their long-term competitive advantage.

1.2 Research significance

From a theoretical point of view, this paper aims to fill in the gaps in existing research. Despite extensive academic research on the relationship between venture capital and firm growth and performance, relatively little systematic research has been conducted on how venture capital enhances firm resilience, especially the impact of different levels (such as finance, operations, strategy, innovation) on firms' ability to cope with crises. Enterprise resilience is a key capability that cannot be ignored in the VUCA(Variability, Uncertainty, Complexity, Ambiguity) environment. However, the discussion of its formation mechanism is still incomplete.

Therefore, combining the two important themes of venture capital and enterprise resiliency, this paper explores the specific path of venture capital to enhance enterprise resiliency, and expands the application of enterprise resiliency theory in the context of venture capital. At the same time, this study also distinguishes and analyzes the impact of different dimensions of venture capital on enterprise resilience, providing a new theoretical framework and perspective for future related research.

In practical terms, this study has important guiding significance for enterprise management practice. In the context of the rapidly changing global economic and political environment and frequent crises, how to improve the ability of enterprises to cope with uncertainties and emergencies has become the key to their long-term development.

This paper deeply discusses how venture capital can improve the resilience and resilience of enterprises in crisis by providing capital, management support, strategic guidance and resource integration, and provides clear practical guidance for enterprise managers. Through the

introduction of venture capital, enterprises can not only obtain financial support, but also obtain value-added services in strategy and management from investors, so as to enhance the resilience of enterprises and improve their survival and competitiveness in complex environments.

In addition, this paper also discusses the role of different types of venture capital in different situations, which provides specific reference for enterprises to choose partners, and helps them to choose appropriate investment strategies according to their own development stage and market demand.

Additionally this study also has some implications for policy makers. Under the current background of economic globalization and regionalization, the government can draw on the research results of this paper to promote the healthy development of venture capital and provide diversified support for the growth of smes by formulating more targeted policies in the process of encouraging innovation and supporting the development of smes. This not only contributes to the resilience of businesses, but also enhances the stability and sustainability of the economy, thereby driving innovation and progress in society as a whole.

In general, this study not only enriches the knowledge system in the field of venture capital and enterprise resilience in theory, but also provides a useful reference for enterprise managers and policy makers in practice, which helps enterprises to enhance their ability to cope with crises in a rapidly changing environment and achieve long-term stable and sustainable development.

1.3 Research content

The problems studied in this paper are put forward for the important and difficult problem of enterprise resilience in China and the actual situation of

venture capital investment supporting the development of entrepreneurial enterprises.

This paper intends to use a combination of questionnaire and empirical research to theoretically analyze, demonstrate and reveal the mechanism and effect of venture capital on the resilience of invested enterprises, and provide quantitative evidence, so as to clarify people's understanding of the role of venture capital in the resilience and improvement ability of enterprises when they receive external shocks. It provides guidance for venture capital enterprises' investment strategies and post-investment management strategies, as well as the activities of venture capital enterprises in financing and coping with risk shocks, and provides decision-making reference for relevant government departments, securities investment fund industry association, venture capital industry association, etc.

The specific problems to be solved include:

1. What is the support input of venture capital to the invested venture enterprise?
2. How to divide and measure the structural dimension of venture capital variables?
3. How enterprise resilience is defined and measured?
4. What are the respective impacts of each dimension of venture capital on enterprise resilience, and whether all have positive impacts?

1.4 Structure Overview

The main research content of this paper is divided into two modules. One is theoretical analysis module. According to the research theme, the relevant literature is reviewed and reviewed. Explore the concept and connotation of variables such as venture capital and enterprise resilience based on literature

data; Based on the theory and practice of venture capital and enterprise resilience, venture capital is divided into three dimensions: financial support, strategic support and capital support. Enterprise resilience is divided into enterprise rebound recovery ability and enterprise improvement ability. Analyze and explain the effect of venture capital on enterprise resilience, including the relationship between venture capital and enterprise rebound recovery ability, and venture capital on enterprise recovery and improvement ability. The second is the empirical research module.

The overall framework of empirical research is proposed, and the empirical process is designed and explained in detail, including how to set the empirical model, how to define and measure relevant variables, how to select samples, how to collect and process data, etc. Based on the research data, the research conclusions are drawn, and then combined with the actual discussion, the countermeasures and suggestions are put forward with pertinence and operability. Finally, the shortcomings of this study are pointed out, and the direction of future research is prospected.

This paper is divided into five chapters, the structure of the paper is as follows:

Chapter One, introduction. This paper introduces the background of the topic, the research theme and the problem to be solved, and points out the theoretical and practical significance; The main research contents and research methods are introduced. Put forward the research framework and clarify the research thinking.

Chapter Two, literature review. It includes: review of related research on venture capital, explain its connotation and divide the latitude; The relevant literature review of enterprise resilience explains the meaning of enterprise resilience and the division of measurement latitude. Literature review and

impact analysis of venture capital and its relationship with enterprise resilience, hypothesis analysis, and theoretical model.

Chapter three, empirical research design. This paper introduces the setting of empirical model, measurement method of variables and questionnaire design, sample selection and data collection, data analysis method, etc.

Chapter four, data analysis and hypothesis testing. Including descriptive statistical analysis of data, questionnaire reliability and validity test, correlation analysis, regression analysis and so on. Check whether each research hypothesis is supported by the survey data.

Chapter Five, research conclusion and discussion. This paper states the research conclusions, points out the innovation points of this research, and puts forward policy suggestions for relevant government departments, securities investment fund industry Association, innovation investment industry association, venture capital enterprises, etc. Finally, the limitations of this paper are pointed out and the research prospects are made.

Chaper 2: literature Review

2.1 Basic concept and connotation

2.1.1 Venture capital

Venture capital is not only a kind of investment activity, but also a special operating mechanism. This mechanism combines the two basic elements of technology and finance (Wang et al., 2023). Venture capital can be viewed as a form of financial intermediation. Similar to banks, venture capital funds raise money from investors and then make equity investments in portfolio companies (Muhammad Zubair Khan and Zafir Ullah Khan, 2022). In general, venture capital funds tend to be organized as limited partnerships, in which the venture capitalist acts as the general partner of the fund and the investor acts as the limited partner. If all goes well, the venture capitalist eventually sells his or her stake in the receiving company, returns the money to the limited partners, and then looks for a new company to start a similar investment process all over again (Lerner and Nanda, 2020).

Venture capital is usually invested by government agencies, large enterprises, professional institutions and professionals in the financial field in enterprises, which have large development space and competitive potential, and can grow rapidly in a short period of time. They not only provide funding to SMEs with high growth potential, especially technology companies, but also provide professional management support and value-added services to help companies grow rapidly (Zouaghi, F. and Lafuente, E., 2023). Venture capital institutions use their professional knowledge, skills and management methods to promote the rapid growth and value-added of the invested enterprises, and at the same time provide necessary guidance and guidance to the invested enterprises (Lerner and Nanda, 2020).

Subsequently, at the appropriate mature time, through the public listing of enterprises, mergers and acquisitions or equity transfer, the investment funds are recovered to achieve the return of venture capital (European Investment Bank, 2019). . From the above definition, it can be seen that when deconstructing venture capital, it is necessary to distinguish and effectively integrate its "economic function" and "management function" for the invested enterprise, so as to combine such tangible and intangible resources to maintain the stable growth and development of the enterprise.

Research shows that one of the main roles of venture capital is to provide much-needed capital to a business, especially in its early stages of development (Wijbenga et al., 2007). pointed out that venture capital ensures the capital flow of enterprises by injecting capital into enterprises and playing a supervisory and managerial role in corporate governance. According to the research of (Wu Xiaohui et al., 2008), venture capital can bring capital appreciation potential to enterprises in terms of capital support and improve their market competitiveness. In the process of capital injection, venture capital institutions not only consider the capital needs of enterprises, but also adopt the phased investment model to control risks and ensure the maximum return on investment (Tan and Wang, 2016).

In addition to financial support, venture capital institutions also provide value-added services to enterprises through strategic support. Venture capital institutions usually introduce upstream and downstream partners, legal experts and help optimize human resource policies for enterprises, so as to improve the management efficiency of enterprises (Long Yong and Chang Qinghua, 2008). Research shows that the participation of venture capital in the board of directors can help enterprises make more forward-looking strategic decisions (McCahery and Vermeulen, 2006).

The strategic support of venture capital is not only management participation in the daily operation of enterprises, but also reflected in helping enterprises adjust their business models and optimize resource allocation to achieve faster technology commercialization process (C. Wang et al., 2022). In addition, social capital and reputation capital are important intangible supports of venture capital. Through their extensive social network and good market reputation, venture capital institutions can bring important resources and information to the invested enterprises (Yi et al., 2023). The introduction of social capital helps enterprises gain more market opportunities, raw materials and supply chain advantages.

Reputation capital helps the invested enterprise to establish a good corporate image in the market and improve its financing ability and cooperation opportunities (Mohtsham Saeed and Arshad, 2012). Reputation capital is a kind of hidden resource investment, which can greatly improve the market competitiveness and trust of enterprises (Du et al., 2020).

Based on the above literature summary and analysis, this paper divides the variables of venture capital into three structural dimensions: financial support, strategic support and capital support. Among them, financial support refers to the funds provided by venture capital to the invested enterprises, and strategic support refers to a series of regulations and monitoring carried out by venture capital to ensure the security of funds. Capital support refers to the intellectual capital, social capital and reputation capital invested by venture capital institutions in order to form the synergistic effect between the two sides and increase the equity value of the invested enterprise as much as possible.

2.1.2 Enterprise Resilience

Resilience as a concept originated in the field of ecology and is defined as

the ability of a system to absorb change while continuing to develop in its original state under the influence of disturbances and changing conditions (Andersson et al., 2020). The range of disciplines of resilience in the natural and social sciences reflects its strengths in applications, but also shows that resilience has different meanings in different disciplines.

For example, in engineering, resilience refers to a structure's ability to withstand significant environmental disturbances, while in psychology, resilience means an individual's ability to cope with, adapt to, and recover from adversity. In the management and business research literature, the concept of resilience is often associated with the survival of a business in the face of unexpected change, with recent research suggesting that the concepts of recovery time, capacity and cost must also be considered (saad et al., 2021).

In scientific research, the concept construction and concrete practice of resilience are generated and developed in different research fields. In 1973, Holling first introduced the term "resilience" into ecological research and distinguished resilience from stability (Mayar et al., 2022). In fact, the word has a much longer history. It originates from Latin "resilio" and refers to the ability of individuals or social systems to effectively relieve, adapt and recover under internal and external pressure or environmental changes, or even surpass the original level (Steinmann, 2022). In an increasingly competitive environment, the word "resilience" has attracted a lot of attention from the management community. Meyer (1982) first introduced the concept of resilience into management, believing that enterprise resilience refers to the ability of an enterprise to restore order in the face of market chaos (Santoro et al., 2020).

In the early stage, Mallak (1998) researched that enterprise resilience refers to the ability of an enterprise to meet customer needs and maintain certain efficiency despite changes in the economic environment (Khalil

Dindarian, 2023). Moreover, it is a unique cognitive behavior that enables an enterprise to better understand the current situation. It is convenient for enterprises to formulate countermeasures (Lengnick-Hall and Beck, 2005).

Of course, enterprise planning needs to make dynamic adjustment with the changing environment, and this dynamic adjustment ability is called enterprise resilience (Hamel and Valikangas, 2003) . Vogus and Sutcliffe (2007) believe that enterprise resilience is the ability to help enterprises recover to normal conditions in crisis events. The ability to give early warning before environmental changes and ensure the survival of enterprises during changes is also the resilience of enterprises (Chen, 2016). Ma et al. (2018) defined enterprise resilience as the ability to ensure the survival and recovery of enterprises in the event of sudden and catastrophic events (Sahebjamnia et al. 2018).

It is believed that enterprises are resilient in any crisis event when they can still keep the key business uninterrupted. McCarthy et al. (2017) regard it as an evolutionary process in which enterprises adjust enterprise configuration to cope with external changes. Ishak and Williams (2018) also agree with this view, arguing that enterprise resilience runs through the behavioral dynamic processes of management, integration and construction.

A resilient enterprise is a trait that enables the enterprise to adapt to this environment and provide a potential framework for the enterprise to revitalize and maintain a positive state when responding to various crises and challenges (Yong Wang and Juan Cai, 2019) . Zhang Xiue and Teng Xinyu (2021) defined enterprise resilience as the ability to proactively perceive before a crisis, develop innovative measures during a crisis, accept risks, and develop against the trend.

Enterprise resilience is a complex concept that emphasizes not only the

ability to plan ahead and predict changes in the environment (Do et al., 2022), but also the ability to overcome crises and respond quickly to adverse events (Miranda et al., 2022). Emphasis is placed on both the resilience to survive adversity and recover as before (Desjar-dine et al., 2020) and the counter-superpower of using new knowledge to outperform opponents in adversity (Irina, 2022).

At present, the academic community has interpreted enterprise resilience based on different perspectives and viewpoints, and basically formed three concepts: rebound (recovery), reverse (improvement) and rebound + reverse : In terms of rebound, enterprise resilience mainly focuses on the potential ability of enterprises to predict, prevent and adjust to environmental shocks (Miha et al., 2020); In terms of rebound, corporate resilience puts more emphasis on a firm's ability to quickly learn from adverse events and thus surpass its previous operating state (Dai et al., 2016).

Existing studies have pointed out that enterprise resilience is the ability of continuous learning and rapid recovery that enterprises must possess in order to gain greater competitive advantages in turbulent environments (Lv Wendong et al., 2019). This shows that enterprise resilience requires not only the ability to rebound and recover, but also a clear direction to learn and improve to achieve reverse.

Combined with the above analysis, this paper agrees with the third view, holding that enterprise resilience not only includes rebound, but also includes reverse overtaking, both of which reveal different capabilities of resilience, and are unified in the overall logic of enterprise resilience. Rebound belongs to the low-order ability of resilience, which aims to maintain the survival and recovery of enterprises through dynamic adjustment to maintain the basic structure and

function, and achieve the purpose of "living"; The reverse is the high-level ability of toughness, intended to achieve enterprise growth and development through risk identification and opportunity utilization, to achieve the purpose of "live well" or even "live long".The relationship of venture capital and enterprise resilience.

2.2 Theoretical analysis and hypothesis

As a compound and multi-functional equity capital, venture capital not only provides financial support for enterprises, but also actively participates in corporate governance and improves the management level of enterprises through supervision and control. At the same time, venture capital helps enterprises enhance resilience through a series of capital investments, making them better able to cope with internal and external shocks. As a result, venture capital can have a combined impact on a company's resilience from multiple perspectives.

In order to effectively identify and integrate the financial support and governance behavior of venture capital to enterprises, this paper combined theory and practice to analyze the financial support, risk control support, intellectual capital support, social capital support and reputation capital support of venture capital in enterprise resilience construction. According to the characteristics of these supports, they can be summarized into three structural dimensions: financial support, strategic support and capital support. Next, this paper will analyze in detail the impact of venture capital on enterprise resilience from the above dimensions:

2.2.1 Analysis of the impact of venture capital on the rebound recovery ability of enterprises.

(1) Analysis of the impact of financial support on the rebound

recovery ability of enterprises.

Venture capital investment helps to enhance the resilience of enterprises, so that they can recover and rebuild faster in the face of external shocks and crises. Venture capital can provide enterprises with funds, which can occur not only at the beginning of cooperation, but also after cooperation, which can greatly improve the liquidity of enterprise funds. In addition, before making the first capital investment, venture capital institutions usually go through multiple links such as project contact, preliminary judgment, due diligence, investment decision, etc., and judge the future risks and potential returns of enterprises through rich industry experience, assessment of enterprise resources and growth. In addition, with the support of venture capital, enterprises are better able to face market fluctuations, economic cycle changes and other uncertainties, enhancing their resilience.

Capital investment not only provides direct financial support for enterprises to help them through the period of financial stress, but also creates more resource conditions for enterprises to cope with external shocks. When an enterprise encounters operational difficulties or the external environment deteriorates, venture capital institutions may help the enterprise alleviate the crisis and enhance its rebound ability through additional capital investment. The follow-up investment of venture capital institutions, especially when enterprises are facing operational difficulties, can help enterprises to stabilize their operations and prevent the risk of business failure caused by capital rupture. Such financial support can be seen as an important contributor to the resilience of venture capital.

Schumpeter (1912) pointed out that capital is the bridge between entrepreneurs and the market, and the injection of capital from venture capital is a key component of this bridge. In practice, when an enterprise is hit by an external shock, rapid recovery often requires funds to repair and rebuild

production facilities, stabilize employees, and restore marketing channels. With its open risk attitude and active capital operation strategy, venture capital can provide timely financial support when enterprises are under pressure to help them quickly resume production and operation.

Moore (1994) proposed that high-tech enterprises often face financing constraints, especially in the early stage, and the entry of venture capital can alleviate this problem. The research of Zhang Yilin et al. (2016) shows that the financial support received by innovative enterprises through venture capital not only helps them survive the crisis period, but also enhances their ability to cope with uncertainties, making them better able to rebound and recover.

The follow-up capital injection of venture capital, especially when the enterprise fails to achieve the expected performance, can play a role of "timely supply" to help the enterprise maintain basic operations in the face of difficulties and survive the crisis. The continuous support of such funds ensures that enterprises will not lose their chances of survival due to lack of funds in the face of challenges, and improves their resilience in difficult times. Therefore, the research hypothesis is proposed:

H1a: Financial support positively affects on the rebound recovery ability of enterprises.

(2) Analysis of the impact of strategic support on the rebound recovery ability of enterprises.

Haro-de-Rosario et al. (2015) showed that the monitoring of venture capital on investee enterprises had a positive impact on firm performance, which provided important enlightenment for us to analyze the impact of strategic participation on the rebound resilience of enterprises. The strategic support of venture capital to enterprises stems from the basic attributes of

venture capital, namely the equity capital nature, long-term nature and profit-driven nature of venture capital, which determine the management and supervision needs of venture capital institutions for enterprises.

As equity capital, venture capital obtains the equity of the enterprise through capital injection, enjoys the legal ownership of the enterprise, and exercises supervision and control power through participation in corporate governance, so as to effectively control the business risks of the enterprise.

The strategic support of venture capital aims to reduce operational risks through management and supervision, improve the enterprise's crisis response ability and rebound resilience. When enterprises encounter market fluctuations or operating difficulties, they often face serious survival challenges because of information asymmetry, poor management and other reasons. On the other hand, venture capital institutions have strong motivation to monitor the operation of enterprises and reduce potential losses through strategic participation, based on their motivation to pursue profits and their concern for capital security. This kind of monitoring not only helps enterprises to find problems and adjust strategies in time, but also ensures that enterprises make more rational and scientific decisions in crises by supervising the management behavior of enterprises and reducing agency problems.

Venture capital in the implementation of strategy, participation in corporate governance can help enterprises enhance the ability to cope with crises, and thus enhance their resilience. Strategy implementation measures can be effective in the following two aspects: First, through the "strategic support function" to enhance the enterprise's crisis response ability. Reverte et al. (2016) pointed out that the goal of venture capital is to achieve return on investment, so it will promote the invested enterprises to optimize market strategy and pay attention to market demand and operation efficiency. When

an enterprise is faced with external crisis, strategic layout can prompt it to adjust its market strategy more quickly, strengthen its competitive position in the market, and help it to resume operation and rebuild its market advantage in the short term. The second is to improve the stability and standardization of internal management through the "governance optimization function".

Strategic supervision and management can reduce agency problems caused by information asymmetry, standardize the behavior of corporate executives, and ensure that the key decisions of enterprises in crisis are more scientific and efficient, thus improving the anti-risk ability and recovery speed of enterprises.

Research by Carvalho et al. (2016) shows that a firm's market strategic orientation is closely related to its resilience in a crisis. The risk control measures of venture capital not only help enterprises maintain strategic agility in the crisis, but also improve the internal governance structure of enterprises and optimize the allocation of resources, so that enterprises can quickly resume production and operation in difficulties. The enhanced market orientation and optimized governance brought about by strategic support can help enterprises respond more effectively in the face of crises and improve their resilience.

Based on the above analysis, strategic support plays an active role in the rebound recovery ability of enterprises by giving play to the "strategy implementation function" and "governance optimization function", and helps enterprises to quickly adjust and resume operations in the face of crisis. Therefore, the research hypothesis is proposed:

H1b: Strategic support positively affects the rebound recovery ability of enterprises.

(3) Analysis of the impact of capital support on the rebound recovery ability of enterprises.

The value-added input of venture capital to enterprises includes intellectual capital, social capital and reputation capital. The impact of these three types of capital on the resilience of enterprises is as follows:

The first is the impact of intellectual capital support on the resilience of enterprises. Venture capital helps companies bounce back in a crisis by providing intellectual capital, especially management consulting and talent acquisition. Due to the dynamic changes of the environment and the disadvantages of new entrants, most enterprises often lack management experience and the ability to cope with crises.

However, the management experience and professional ability accumulated by venture capitalists in the industry can provide intellectual support for enterprises' crisis management. Through regular strategic consulting, venture capitalists help companies make better decisions in resource allocation, crisis response, and operational adjustments (Proksch et al., 2016). This support helps companies adjust their strategies more quickly in a crisis, thus accelerating their resilience.

At the same time, venture capital institutions help companies bring in key talent and strengthen their resilience in times of crisis by strengthening the capabilities of management teams (Bustamante et al., 2021). Outstanding talents can not only optimize daily operations, but also quickly find effective solutions in the face of emergencies, ensuring that the company can resume operations as soon as possible and regain its competitive advantage. Through the investment of intellectual capital, venture capital makes companies more agile and resilient to external shocks.

Second, the impact of social capital support on the resilience of enterprises. In times of crisis, social capital provides companies with critical external resources and information to help them better respond to market changes. Venture capital institutions often have a wide network of relationships and rich information resources in the industry. These social capital enable enterprises to quickly obtain information about market changes in the face of crisis, predict potential risks in advance and take actions (Jeong et al., 2020).

Social capital also brings more external support to enterprises, such as the support of external stakeholders such as customers, suppliers, and government departments, so that enterprises can use external resources to recover operations faster in a crisis. By sharing relationships and information resources, venture capital helps companies build a strong external support network that enhances their resilience in a crisis.

Finally, the impact of reputation capital investment on the resilience of enterprises. Reputation capital provides a reputation endorsement for enterprises in the crisis, and enhances the trust and credit rating of enterprises in the market. Venture capital institutions with high reputation often provide "endorsement effect" for the invested enterprises through their own reputation (Woo, 2020), that is, in times of crisis, enterprises can rely on the reputation of venture capital institutions to obtain more trust and support from the market.

A good market reputation not only helps companies gain continued support from customers and partners in times of crisis, but also attracts more financing opportunities and resources to help companies recover quickly. Reputation capital enhances the credibility and market image of the enterprise in the crisis, so that the enterprise can maintain a higher market position in the

crisis, and then recover the operation more quickly.

Based on the above analysis, it can be seen that capital support plays a positive role in the resilience of enterprises through "intellectual support function", "social capital support function" and "reputation endorsement function". Therefore, the research hypothesis is proposed:

H1c: Capital support positively affects the rebound recovery ability of enterprises.

2.2.2 The Impact of venture capital on the enterprise's ability to achieve Bounce forward

(1)Analysis of the influence of financial support on achieve Bounce forward ability of enterprises

Financial support not only plays a key role in alleviating the financial pressure of enterprises, but also can comprehensively enhance the improvement ability of enterprises. The injection of capital can provide enterprises with more innovative resources, technology development capabilities and market expansion opportunities, helping enterprises to surpass their rivals in the competition and achieve a higher level of development.

First, financial support to enhance the technological innovation capability of enterprises. Adequate financial support provides enterprises with the resources needed for research and development and technological innovation. Enterprises can increase investment in research and development, purchase advanced equipment and technology, and promote the development of new products and new processes (Lerner, Josh, and Ramana Nanda, 2020).

At the same time, well-funded enterprises are better able to attract top research and development personnel and technical experts, further strengthening their technological strength. In addition, companies' investment in innovation can form technological barriers that allow them to maintain a leading position in the market. After obtaining funds, enterprises have more flexibility to withstand the uncertainty and risk in the innovation process, so as to promote their reverse improvement ability in technological innovation.

Second, financial support to enhance the market competitiveness of enterprises. The increase in capital investment enables companies to invest more resources in market expansion, brand building and customer service. Enterprises can rapidly expand their market share by increasing their marketing budget and implementing larger scale marketing activities. Cash-rich companies can also make strategic mergers and acquisitions to expand business areas or enter new markets, thereby enhancing market competitiveness (Xian et al., 2023). In addition, financial support can help enterprises to be more flexible in dealing with competitors, enhance market share, and implement differentiated competitive strategies to stand out in the homogenized competition.

Third, financial support promotes talent attraction and management optimization of enterprises. Financial support can not only improve the salary competitiveness of enterprises, but also optimize the talent management system of enterprises. With financial support, companies can provide employees with more attractive compensation, benefits and development opportunities to attract and retain talented people. At the same time, enterprises can optimize the internal management process through financial support, improve the management efficiency and the work enthusiasm of employees, and enhance the organizational resilience and improvement ability

of enterprises.

Fourth, financial support to promote sustainable development of enterprises. In today's market, the sustainable development ability of enterprises has also become an important part of their competitiveness. Financial support can enable enterprises to have enough resources to invest in green production, sustainable development and social responsibility projects, enhance the social image and reputation of enterprises, and thus form long-term competitive advantages. This kind of forward-looking investment can help enterprises gain a firm foothold in the market, and maintain a leading position, and further promote the improvement ability of enterprises. Based on the above analysis, the research hypothesis is proposed:

H2a: Financial support has a positive impact on achieve Bounce forward ability of enterprises.

(2)Analysis of the influence of strategic support on achieve Bounce forward ability of enterprises.

The improvement ability of an enterprise means that after experiencing difficulties or challenges, the enterprise can not only recover to the original level, but also achieve higher performance through improvement. This ability often stems from the adaptability of enterprises in the crisis and the effective use of strategic resources. As an important factor for enterprises to obtain external resources and direction guidance, strategic support plays a key role in improving enterprises' ability to reverse and improve.

First of all, strategic support can help enterprises adjust their market strategies and resource allocation in difficult situations, so as to quickly adapt to changes in the external environment. For example, through strategic partnerships, external consulting and technology introduction, companies are

able to be more flexible and forward-looking in responding to market uncertainties. Strategic support can not only provide additional resources for enterprises, but also provide guidance for enterprises to make major decisions, so that they can respond more effectively to sudden challenges, and achieve innovation and breakthroughs on this basis.

Second, strategic support can enhance the capacity building of enterprises in key areas and help enterprises better manage their internal resources and external relationships. Through strategic cooperation, technology transfer and market development, enterprises can enhance their core competitiveness in the face of challenges, achieve the optimal allocation and utilization of resources, and promote the enterprise to not only recover after the crisis, but also achieve improvement and development beyond expectations. Based on this, the following hypothesis is proposed:

H2b: Strategic support has a positive impact on achieve Bounce forward ability of enterprises.

(3)Analysis of the influence of capital support on achieve Bounce forward ability of enterprises.

Capital support has a positive impact on the improvement ability of enterprises, mainly through the value-added investment of intellectual capital, social capital and reputation capital to enhance the operation and management ability, innovation ability and market position of enterprises. Venture capital not only provides intellectual capital support such as management consulting services and recruitment of professionals for invested enterprises (Li & Zhang, 2007), but also enhances the social capital of enterprises through its rich social network, thus promoting the operation management and technology commercialization performance of enterprises (Gompers & Lerner, 1999; Chen Si et al., 2017). In addition, the addition of

venture capital improves the reputation capital of enterprises, enables them to gain more trust and recognition in the market, attracts external resources and cooperation opportunities, and further enhances the competitiveness and improvement ability of enterprises in uncertain market environment (Steinle et al., 2002; Ma Hongjia et al., 2010; Guo Wenyu et al., 2020).

In terms of intellectual capital support, venture capital improves the operation and management ability of enterprises by providing management consultation, recruiting professionals and helping to make strategic plans (Li & Zhang, 2007), thus helping enterprises to achieve standardized management in production, operation, finance and marketing. Enhance market response ability and innovation potential (Zhou & Wu, 2010; Gompers & Lerner, 1999).

In terms of social capital support, venture capital brings more information and knowledge resources to enterprises through its extensive social network, enhances resource integration and information sharing capabilities of enterprises in operation and management (Steinle et al., 2002), and promotes technology commercialization and innovation capabilities (Chen Si et al., 2017). And improve the adaptability and response speed of enterprises in uncertain markets (Ma Hongjia et al., 2010).

In terms of reputation capital support, the addition of venture capital improves the market reputation and credibility of enterprises, and enables enterprises to gain more trust and recognition in the industry, thus making it easier to attract external funds, talents and cooperation opportunities (Guo Wenyu et al., 2020). By enhancing the reputational capital of enterprises, enterprises can obtain more resources support in the market competition and further enhance their anti-excess improvement ability. Based on this, the following hypothesis is proposed:

H2c: Capital support has a positive impact on achieve Bounce forward ability of enterprises.

Based on the above analysis, the researcher constructed a hypothetical model, as shown in Figure 1 below:

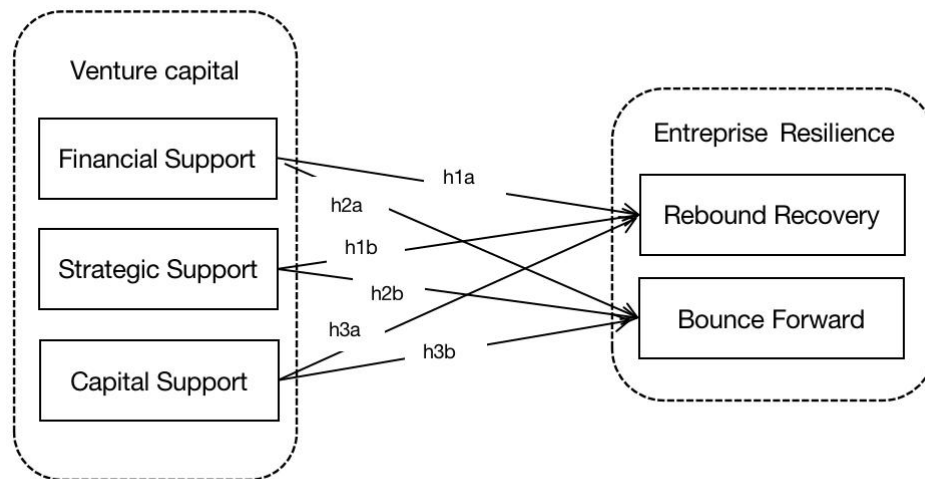


Figure 1: The Impact Relationship Model of Venture Capital on Enterprise Resilience

This chapter has examined some of the academic research relating to venture capital on entrepreneurship resilience. The next chapter will focus on the research methodology.

Chapter 3: Methodology

This chapter examines the research methodology for the paper.

3.1 Variable measurement and questionnaire design

(1) Independent variable

The independent variable of this paper is venture capital (VC). In management research, if we measure venture capital only through explicit indicators such as investment amount and shareholding ratio, it has certain objectivity, but ignores the heterogeneity of venture capital and its differences in governance. Therefore, in order to improve the comprehensiveness and accuracy of variable measurement, it is necessary to deeply explore the complexity of venture capital. Representative measurement methods are derived from studies by Long Yong et al. (2008), Mei Qiang et al. (2012), Wijbenja et al. (2007) and Dong Jing et al. (2017).

Long Yong et al. (2008) designed a 4-item Likert scale to measure venture capital variables when studying the impact of entrepreneurial ability on venture capital financing. Although this method comprehensively considers the "capital + value-added service" attribute of venture capital, it has reference value, but its item design has obvious shortcomings. For example, subjects are asked to subjectively answer the two questions of "venture capital holds more than 10% of the company's equity" and "venture capital holds seats on the company's board of directors". Obviously, these questions can only give objective answers of "yes" or "no", which is not suitable for Likert scale presentation.

When studying the impact of entrepreneurial ability and innovation types on corporate financing methods, Mei Qiang et al. (2012) designed a Likert

scale with four items, including "holding a certain proportion of total equity (usually no less than 10%)", "generally providing value-added services", "affecting executive recruitment" and "investment representatives usually have veto power". Compared with the design of Long Yong et al. (2008), this method is somewhat improved, but the coverage of the governance attributes of venture capital is still not comprehensive enough, and the expression of value-added services is too general. However, this scale provides an important reference for subsequent scholars' quantitative research on venture capital.

Wijbenja et al. (2007) divided "governance behavior of venture capital" into two structural dimensions of "value protection" and "value creation", and developed Likert scale for measurement. Zheng Xiaobo et al. (2012) also used this method for reference. However, this method only focuses on the governance behavior of venture capital in the invested enterprise, and does not involve capital investment, social capital and reputation capital, so it is not fully suitable for the research needs of this paper.

Dong Jing et al. (2017) included value-added services and supervision and control for enterprises into the management content provided by venture capital, and coded and counted them by combining financial database and public data of listed companies. Although the method has some accuracy problems due to the limited availability of data, it fully considers the management behavior of venture capital to the invested enterprises, and has certain reference significance for the research of this paper. However, since the research object of this paper is unlisted enterprises and there is a lack of public operation, shareholder and financing data, it is impossible to directly adopt the coding counting method of Dong Jing et al. (2017) for listed companies.

On the basis of comprehensively referring to the measurement methods

of venture capital in the above literatures, this paper combines the research practice and focuses on the topic of the relationship between venture capital and enterprise resilience. Venture Capital (abbreviated as VC) is divided into three structural dimensions: financial support (abbreviated as FS), strategic support (abbreviated as SS) and capital support (abbreviated as CS). The corresponding Rickett scale is developed following the scale development steps proposed by Wu Chao. (2020).

Table 3-1: Venture capital scale

Variable name	Latitude of variable	Measuring volume item
Venture capital	Financial support (FS)	Q5 This venture capital investment was actively sought in our company for the sake of development
		Q6 This venture capital investment was made at a time when our company was very short of funds
		Q7 The capital provided by this venture was a good way to ease our company's financing needs at the time
	Strategic support (SS)	Q8 The venture capital institution essentially supervises and manages our company and controls the operation of the enterprise
		Q9 The venture capital institution provides terms such as investment strategy for our company's future performance
		Q10 This venture capital institution has a seat on our board of directors, supervisory board or management and participates in corporate governance
	Capital support (CS)	Q11 The venture capital institution recommended or helped recruit key professionals for our company to make up for the company's lack of human resource

		Q12 The venture capital firm brings extensive contacts and valuable information to our company
		Q13 The venture capital institution provides our company with professional management consulting services, which can solve emergencies

(2) Dependent variable

Enterprise resilience adopts the scale developed by Ping and Jiazhe. (2021) which is divided into two dimensions: rebound recovery and reverse improvement. Liquidity is key for businesses to stay afloat in a crisis and respond flexibly to changes. Maintaining capital liquidity in times of crisis is an important way to enhance corporate resilience. He pointed out that a high degree of capital liquidity allows enterprises to quickly make internal adjustments and external resource integration in the face of a crisis. Xu et al. (2024) found that enterprises with sufficient liquidity showed stronger viability in times of financial crisis and market turbulence. These companies are not only able to pay employees and suppliers in a timely manner, but also seize market opportunities, through mergers and acquisitions or business expansion to achieve corner overtaking.

Lengnick-Hall et al. (2011) proposed that the turnover rate of employees is a sensitive index for enterprises to cope with crises. Lower employee turnover often means stability within a company and helps to recover quickly after a crisis because companies don't need to spend a lot of time and resources rehiring and training new employees. Many studies have shown that companies with low employee turnover are better able to cope with external shocks by relying on an experienced and well-coordinated workforce. For example, Luthans et al. (2007) found that enterprises with strong organizational resilience can maintain a low employee turnover rate during the financial crisis, thus enhancing the overall rebound ability.

In his theory on dynamic capability, Teece et al. (1997) pointed out that market adaptability is the key for enterprises to survive in complex and dynamic environments. Companies that can quickly sense market changes and adjust accordingly usually have a strong ability to rebound. Manyika et al. (2018) found that enterprises that can flexibly cope with market fluctuations, especially those with innovative technologies and rapid response mechanisms, recover significantly faster after a crisis than those lacking market adaptability. Based on this, this paper uses an enterprise's capital liquidity, employee turnover rate and adaptability to market and technological fluctuations to measure resilience.

Schumpeter (1934) proposed in his Theory of Economic Development that firms can destroy the old market structure and create new opportunities for economic growth through innovation. This process of "creative destruction" can help companies stand out from the competition and become market leaders. Teece et al. (2009) further pointed out in its dynamic capability theory that enterprises with strong innovation capability can occupy a dominant position in a rapidly changing market by continuously integrating, constructing and reorganizing internal and external resources.

In his book Competitive Strategy, Porter (1980) proposed that in order to gain advantages in market competition, enterprises need to carry out strategic layout from three aspects: cost leadership, differentiation and centralization. Those enterprises that can effectively adjust their competitive strategies often achieve corner overtaking in the market crisis. The resource-based theory of Barney (1991) also points out that the market competitiveness of enterprises comes from their unique resources and capabilities, which can continuously bring competitive advantages to enterprises. Especially when the external environment changes, competitive enterprises are more likely to outperform their rivals.

Kotler (2003) proposed that through market expansion strategies, enterprises can find new growth points in crises or market changes and achieve rapid increase in market share. Market expansion activities can help companies increase revenue streams and reduce the risk of a single market or product. Dunning (1993) also pointed out in his compromise theory of international production that enterprises can obtain more resources and market shares in the global competition through the expansion and diversification of transnational markets, so as to achieve the effect of surpassing and countersurpassing their competitors.

The innovation capacity, market competitiveness and expanded market activities of firms reflect the potential of firms not only to recover after the crisis, but also to achieve higher growth through innovation, competitive advantage and market expansion. These indicators can comprehensively measure the improvement ability of enterprises and help enterprises gain long-term competitive advantages in complex and uncertain environments.

Table 3-2: Enterprise resilience scale

Variable name	Latitude of variable	Measuring volume item
Enterprise resilience	rebound recovery	Q14 Improved the capital liquidity of enterprises
		Q15 The employee turnover rate change
		Q16 Companies to demonstrate greater resilience in responding to market and technological change
	Bounce forward	Q17 Improved the innovation ability of enterprises
		Q18 The enterprise's market competitiveness increase
		Q19 The enterprise expanded its marking activities

(3) Control variable

It is generally believed that factors such as enterprise age, industry, scale and region have a certain impact on enterprise development. Dong Baobao (2014) introduced three control variables, such as enterprise size (staff size), industry (whether it is a technology-based enterprise) and enterprise age, when studying the relationship between venture capital, firm performance and firm entrepreneurial ability. The control variables introduced by Dong Jing et al. (2017) when studying the management mode of venture capital on entrepreneurial enterprises include enterprise age, region (whether it is located in the eastern region), industry (whether it belongs to high-tech industry), etc. With reference to the above literature, this paper takes the age of establishment, industry and scale of the enterprise as the control variables.

The control variables and specific measurement methods are: the years of establishment of the enterprise (classified according to a certain age range); Industry of the enterprise (categorical variable, 1 for high-tech industry, 0 for other industries); Scale (the scale of enterprise personnel, classified according to a certain number of people).

3.2 Sample selection and data collection

In this paper, a questionnaire survey was used to collect data in order to test the hypothesis of the impact of venture capital on firm resilience. In order to ensure the representativeness of the data and the validity of the survey, questionnaires were distributed and collected mainly through the survey channels of MBA/EMBA students, the snowball method and online platforms such as Juanxing.

This method has a wide distribution of respondents, which ensures that

the sample has a certain representativeness. At the same time, this paper will take the following three key measures to improve the scientific and reliability of the research:

1. The subjects of this survey include enterprise managers and key employees, because they have a relatively comprehensive and in-depth understanding of the enterprise's ability to cope with crisis, environmental adaptability and business operation.

2. Only in this way can the impact of venture capital on the resilience of enterprises be effectively verified. Therefore, in the questionnaire design, the option of whether enterprises accept venture capital is included, and enterprises that do not accept venture capital are screened out.

3. Filter and eliminate sample data with logical errors, incomplete information, and identical answers.

This study adopts quantitative research method and survey method as the main data collection strategy to obtain the data of enterprise resilience and venture capital. According to the onion model of Saunders' (2009) research, this study adopts positivism philosophical standpoint and conducts objective measurement and verification of large samples through quantitative questionnaire survey. After collecting sample data, this paper will test the impact of venture capital on enterprise resilience through empirical analysis to verify the assumptions made in the second part. The data will be regression analyzed by SPSS 26.0 and Excel to ensure the reliability and validity of the research results.

Chapter 4: Data analysis

This paper mainly through MBA, EMBA teachers and students survey channels, snowball method to questionnaire magnitude network platform. A total of 201 questionnaires were recovered, excluding 25 questionnaires from enterprises that did not accept venture capital, and 176 effective questionnaires were obtained, with an effective recovery rate of 88%. This paper will conduct data analysis based on the collected results of the questionnaire.

4.1 Descriptive statistical analysis

The basic information of the sample in terms of enterprise age, enterprise size and industry category is as follows: the enterprise age includes 0 ~ 3 years (24.43%), 4~10 years (44.89%), 11~15 years (17.05%), 16 ~ 20 years (8.52%), and more than 20 years (34.10%); The size of enterprises included 30 employees or less (34.1%), 30 to 100 employees (33.52%), 100 to 300 employees (21.02%), more than 300 employees (11.36%), and more than 300 employees (11.36%); Industry types include biotechnology (15.91%), Manufacturing industry (29.55%), Computer class (22.73%), Wholesale and retail (17.61%), Services (health, tourism, advertising, etc.) (9.10%), and others (5.1%).

Table 4-1 Descriptive statistical analysis of sample basic characteristics

Sample basic information	Selection parameter	amount	Specific gravity
Enterprise age	3 years or less	43	24.43%
	4-10 years	79	44.89%
	11-15 years	30	17.05%
	16-20 years	15	8.52%
	More than 20 years (> 20 years)	9	5.11%
Enterprise size	30 people or less	60	34.10%
	30-100 people	59	33.52%
	100-300 people	37	21.02%
	More than 300 people	20	11.36%
Industry type	biotechnology	28	15.91%
	Manufacturing industry	52	29.55%
	Computer class	40	22.73%
	Wholesale and retail	31	17.61%
	Services (health, tourism, advertising, etc.)	16	9.10%
	other	9	5.10%

Based on the data obtained from the above basic information, this paper also establishes the bar charts (figure 2-4), so that the basic situation of the studied enterprise can be more clearly observed.

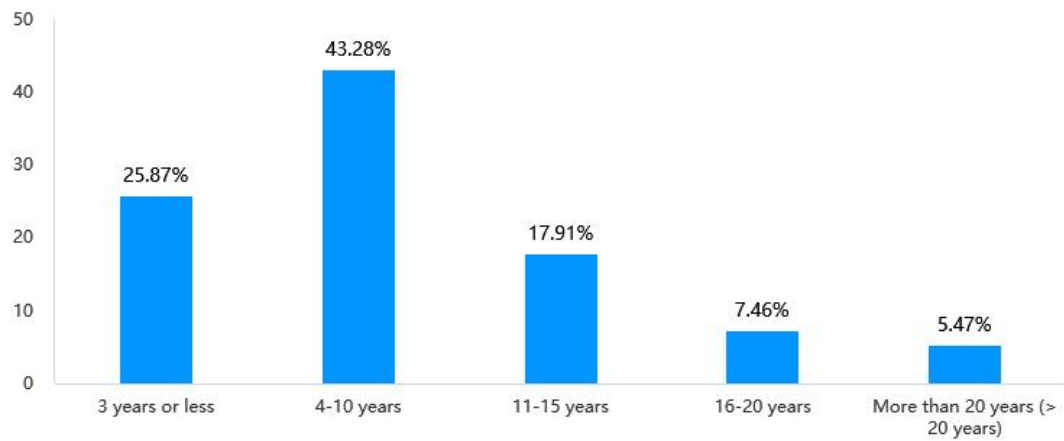


Figure 2: Age distribution of enterprises

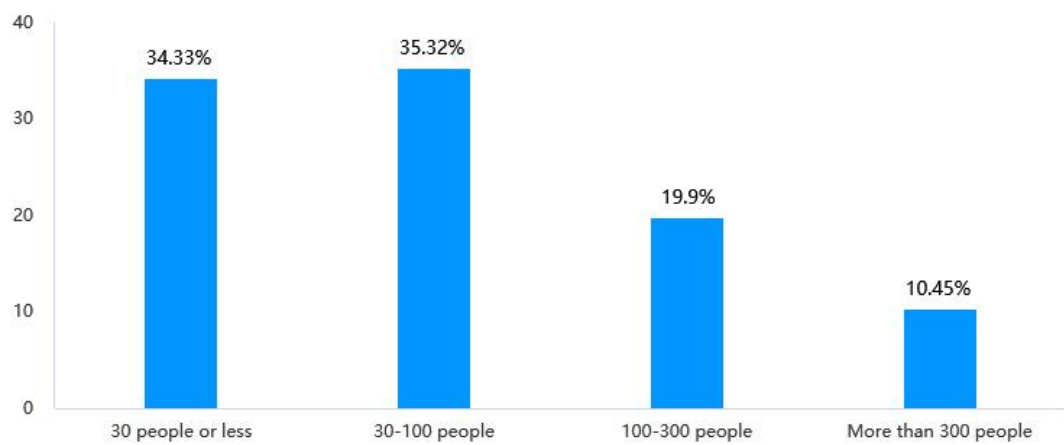


Figure 3: The distribution of enterprise personnel size

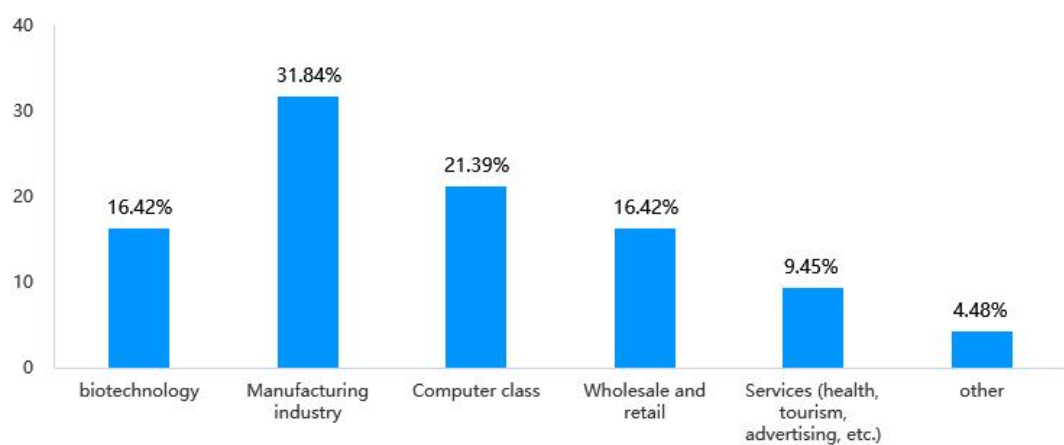


Figure 4: The distribution of enterprise industry type

4.2 Reliability and validity test

4.2.1 Reliability test

There are five latent variables in this paper: financial support, strategic support, capital support, enterprise rebound recovery ability and enterprise bounce forward ability. The calculation results of Cronbach's α value and CITC value of latent variable with SPSS26.0 are shown in Table 4-2. Cronbach's α coefficient of the 5 latent variables of financial support, strategic support, capital support, enterprise rebound resilience, and enterprise bounce forward ability are all greater than 0.8, and CITC value is greater than the critical value of 0.4 generally recognized by the academic community. In addition, for the α coefficient of the deleted item, after any measurement item of the above 5 latent variables is deleted, The reliability coefficient does not increase significantly, so the statement item should not be deleted. It can be seen from the above that the five latent variables of financial support, strategic support, capital support, enterprise rebound recovery ability and enterprise bounce forward ability have good reliability.

Table 4-2 Reliability test results

Latent variable	Explicit variable (symbol)	Corrected item Total Correlation (CITC)	The term has been deleted for the α coefficient	Cronbach's α coefficient
Financial support (FS)	FS1	0.670	0.751	0.818
	FS2	0.675	0.744	
	FS3	0.667	0.753	
Strategic support (SS)	SS1	0.615	0.742	0.794
	SS2	0.674	0.679	
	SS3	0.621	0.736	
Capital support (CS)	CS1	0.621	0.768	0.806
	CS2	0.692	0.695	
	CS3	0.648	0.740	
rebound recovery (RR)	RR1	0.735	0.791	0.855
	RR2	0.710	0.816	
	RR3	0.739	0.788	
Bounce forward (BF)	LI1	0.636	0.798	0.823
	LI2	0.698	0.737	
	LI3	0.703	0.731	

4.2.2 Validity test

Validity refers to the degree to which a measuring tool accurately measures what is being measured. In this paper, the measurement of each latent variable is made by reference or direct application of more authoritative literature at home and abroad, and the process of item design, screening, combination and determination of expression is carried out under the guidance

of senior researchers. Therefore, the measurement scale of each latent variable in this paper has high content validity. The following factor analysis method is used to test the structural validity of each latent variable scale, which is divided into two steps: exploratory factor analysis and confirmatory factor analysis.

(1) Exploratory factor analysis

The KMO value and Bartlett sphere test value of each variable are calculated, and the sizes of these two values are used to judge whether they are suitable for further factor analysis. The structural validity test includes the aggregation validity test and the discriminative validity test. The aggregate validity is reflected by variable factor load and explanatory variance. The discriminative validity of the questionnaire is judged by the correlation coefficient between each item in the rotated component matrix and the corresponding variable.

1. Exploratory factor analysis of venture capital variables

KMO values and Bartlett test values of the venture capital scale are shown in Table 4-3. The KMO value is 0.789, greater than 0.7, and the Bartlett spheroid test value is 0.000, less than 0.05, indicating that it is suitable for further factor analysis.

Table 4-3 KMO and Bartlett test results of venture capital variables

KMO and Bartlett tests		
KMO value		0.789
Bartlett sphericity test	Approximate chi-square	583.820
	<i>df</i>	36
	<i>p</i> value	0.000

Factor analysis was carried out on the venture capital scale, and the results were shown in Table 4-4. The variance explanation rate of the three factors (after rotation) is 24.398%, 24.133% and 23.954%, respectively. The cumulative variance explanation rate after rotation is 72.485%, which is greater than 50%, which means that the information of the research item can be effectively extracted. In other words, the above questions have made a good explanation of the composition of the variables of venture capital. At the same time, the factor load of the three common factors corresponding to the measurement items is greater than 0.7, indicating that the scale has good aggregation validity. FS1, FS2 and FS3 constitute a common factor, SS1, SS2 and SS3 constitute a common factor, and CS1, CS2 and CS3 constitute a common factor, which is consistent with the expectation in the design stage of this scale, corresponding to the preset three structural dimension names respectively. That is, factor 1, factor 2 and factor 3 are named financial support, strategic support and capital support respectively, indicating that the scale has good discriminative validity.

Table 4-4 Variate factor loading and explanatory variance analysis of venture capital

Validity analysis results				
Variable name	Factor Loading (FL)			h ²
	Factor 1	Factor 2	Factor 3	
FS1	0.859			0.752
FS2	0.827			0.739
FS3	0.811			0.733
SS1			0.783	0.677

Validity analysis results				
Variable name	Factor Loading (FL)			h ²
	Factor 1	Factor 2	Factor 3	
SS2			0.856	0.762
SS3			0.806	0.686
CS1		0.795		0.677
CS2		0.867		0.776
CS3		0.819		0.721
Eigenvalues (Before Rotation)	3.660	1.498	1.365	-
Variance Explained % (Before Rotation)	40.667%	16.649%	15.169%	-
Cumulative Variance Explained % (Before Rotation)	40.667%	57.316%	72.485%	-
Eigenvalues (After Rotation)	2.196	2.172	2.156	-
Variance Explained % (After Rotation)	24.398%	24.133%	23.954%	-
Cumulative Variance Explained % (After Rotation)	24.398%	48.531%	72.485%	-

2. Exploratory factor analysis of enterprise resilience variables

KMO values and Bartlett test values of the enterprise resilience scale are shown in Table 4-5. The KMO value is 0.779, greater than 0.7, and the Bartlett spheroid test value is 0.000, less than 0.05, indicating that it is suitable for further factor analysis.

Table 4-5 KMO and Bartlett test results of enterprise resilience variables

KMO and Bartlett tests	
KMO value	0.779

KMO and Bartlett tests		
Bartlett sphericity test	Approximate chi-square	457.418
	<i>df</i>	15
	<i>p</i> value	0.000

Factor analysis was carried out on the enterprise resilience scale, and the results were shown in Table 4-6. The variance explanation rate of the two factors (after rotation) is 39.041% and 36.895%, respectively. The cumulative variance explanation rate after rotation is 75.935%, which is greater than 50%, which means that the information of the research item can be effectively extracted. In other words, the above questions have made a good explanation of the composition of the variables of enterprise resilience.

At the same time, the factor load of the three common factors corresponding to the measurement items is greater than 0.8, indicating that the scale has good aggregation validity. RR1, RR2 and RR3 constitute a common factor, LI1, LI2 and LI3 constitute a common factor, which is consistent with the expectation in the design stage of this scale, corresponding to the preset two structural dimension names respectively. That is, factor 1 and factor 2 are named rebound recovery and Bounce forward respectively, indicating that the scale has good discriminative validity.

Table 4-6 Variate factor loading and explanatory variance analysis of enterprise resilience

Validity analysis results			
Variable name	Factor Loading (FL)		h ²
	Factor 1	Factor 2	

Validity analysis results			
Variable name	Factor Loading (FL)		h^2
	Factor 1	Factor 2	
RR1	0.889		0.799
RR2	0.838		0.753
RR3	0.868		0.787
BF1		0.817	0.693
BF2		0.856	0.762
BF3		0.850	0.762
Eigenvalues (Before Rotation)	3.158	1.398	-
Variance Explained % (Before Rotation)	52.637%	23.298%	-
Cumulative Variance Explained % (Before Rotation)	52.637%	75.935%	-
Eigenvalues (After Rotation)	2.342	2.214	-
Variance Explained % (After Rotation)	39.041%	36.895%	-
Cumulative Variance Explained % (After Rotation)	39.041%	75.935%	-

(2) Confirmatory factor analysis

AMOS26.0 software was used to further confirm the aggregate validity and discriminative validity of each variable. The fitting results of the measurement models for each variable are shown in Table 4-7. χ^2 value was 74.905, df of freedom was 80, $\chi^2/df=0.936 < 3$; RMSEA = 0.000 < 0.1; CFI = 1.005 > 0.9; NFI = 0.937 > 0.9; NNFI = 1.006 > 0.9. And all path coefficients

are p<0.001; It was statistically significant at 0.001 level. The fitting results of the measurement model of each variable are good, and the measurement model is verified. The AVE value and CR value corresponding to each factor are all greater than 0.5 and 0.7, indicating that the aggregation validity of the analytical data is good.

Table 4-7 Confirmatory factor analysis results

Latent variable	Explicit variable (symbol)	R	CR	AVE
Financial support (FS)	FS1	0.761	0.818	0.600
	FS2	0.781		
	FS3	0.782		
Strategic support (SS)	SS1	0.729	0.796	0.565
	SS2	0.730		
	SS3	0.794		
Capital support (CS)	CS1	0.723	0.808	0.585
	CS2	0.764		
	CS3	0.805		
rebound recovery (RR)	RR1	0.812	0.856	0.665
	RR2	0.835		
	RR3	0.799		
Bounce forward (BF)	BF1	0.729	0.826	0.613
	BF2	0.822		
	BF3	0.795		
Degree of fitting	χ^2 值 74.905, df=80, χ^2 /df=0.936; RMSEA=0.000; CFI=1.005; NFI=0.937; NNFI=1.006			

Table 4-8 lists the verification results of discriminative validity among variables (factors). The AVE square root value of each variable (factor) is greater than the correlation coefficient between the factor and other factors, indicating that it has good discriminative validity.

Table 4-8 Distinguish validity test results

	FS	SS	CS	RR	BF
Financial support (FS)	0.775				
Strategic support (SS)	0.372	0.752			
Capital support (CS)	0.318	0.350	0.765		
rebound recovery (RR)	0.329	0.332	0.365	0.816	
Bounce forward (BF)	0.462	0.391	0.339	0.388	0.783

Note: The diagonal braced value is the square root of the AVE value of each variable. The remaining values are correlation coefficients.

4.3 Regression analysis and hypothesis testing

4.3.1 Correlation analysis

The Pearson coefficient is a widely used metric for assessing the degree of correlation between variables. In this study, Pearson correlation analysis was employed to examine the relationships between variables. A correlation coefficient between 0.8 and 1 signifies a strong correlation between variables. If the coefficient is between 0.6 and 0.8, the variables are also considered to be highly correlated. A coefficient in the range of 0.4 to 0.6 indicates a moderate correlation, while a value between 0.2 and 0.4 suggests a weak correlation. When the correlation coefficient falls between 0.0 and 0.2, the variables are either very weakly correlated or exhibit no correlation at all. The correlation matrix for the variables in this research is presented in Table 4-10:

Table 4-10 Results of Pearson correlation analysis of variables

	AGE	SIZE	INDU	FS	SS	CS	RR	BF
AGE	1							
SIZE	0.036	1						
INDU	-0.077	0.118	1					
FS	0.009	-0.068	-0.005	1				
SS	-0.053	-0.017	.160*	.371**	1			
CS	0.047	0.001	-0.009	.317**	.346*	1		
RR	0.04	0.115	0.005	.299**	.358*	.339*	1	
BF	-0.058	-0.008	0.059	.461**	.390*	.337*	.377*	1

Note: * indicates $p < 0.05$, ** indicates $p < 0.01$. AGE, SIZE, INDU, FS, SS, CS, RR, and BF respectively represent enterprise age, personnel size, industry category, financial support, strategic support, capital support, rebound and recover ability and Bounce forward ability.

As shown in the table above, financial support is significantly positively correlated with rebound recovery ability and Bounce forward ability, strategic support is significantly positively correlated with rebound recovery ability and Bounce forward ability, and capital support is significantly correlated with rebound recovery ability and Bounce forward ability, both at the level of 1%.

4.3.2 Regression analysis

(1) Regression analysis of venture capital and enterprise rebound and recover ability

Venture capital variables and control variables regression enterprise rebound and recover ability, as shown in Table 4-11:

Table 4-11 Regression analysis results of venture capital and enterpriserebound and recover ability (n=176)

Variables	Coefficients (B)	Standard Error	t-value	p-value	VIF
Constant (Intercept)	0.98	0.398	2.463	0.015*	
FS	0.154	0.076	2.036	0.043*	1.225
SS	0.258	0.083	3.111	0.002**	1.291
CS	0.212	0.078	2.74	0.007**	1.201
AGE	0.031	0.064	0.493	0.623	1.014
SIZE	0.133	0.069	1.938	0.054	1.022
INDU	-0.032	0.051	-0.631	0.529	1.055
R ²	0.218				
Adjusted R ²	0.190				
F	7.820				

D-W value	1.947
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Note: * indicates $p < 0.05$, ** indicates $p < 0.01$

As shown in the table, FS, SS, CS, AGE, SIZE, and INDU are used as independent variables, while RR serves as the dependent variable in the linear regression analysis. The model successfully passes the F test, and all VIF values are below 5, indicating the absence of multicollinearity. Additionally, the D-W statistic is close to 2, suggesting that the model does not suffer from autocorrelation. The regression coefficients for FS, SS, and CS are positive and statistically significant, with FS having a p-value of less than 0.05 and SS and CS both having p-values of less than 0.01. This implies that FS, SS, and CS each have a significant positive effect on RR, thus confirming hypotheses H1a, H1b, and H1c.

(2) Regression analysis of venture capital and enterprise Bounce forward ability

Venture capital variables and control variables regression enterprise Bounce forward ability, as shown in Table 4-12:

Table 4-12 Regression analysis results of venture capital and enterprise Bounce forward ability (n=176)

Variables	Coefficients (B)	Standard Error	t-value	p-value	VIF
Constant (Intercept)	0.962	0.388	2.479	0.014*	-
FS	0.346	0.074	4.681	0.000**	1.225
SS	0.222	0.081	2.745	0.007**	1.291
CS	0.173	0.076	2.296	0.023*	1.201

AGE	-0.054	0.062	-0.872	0.384	1.014
SIZE	0.018	0.067	0.271	0.787	1.022
INDU	0.017	0.049	0.352	0.726	1.055
R ²	0.293				
Adjusted R ²	0.268				
F	11.616				
D-W value	1.885				

Note: * indicates $p < 0.05$, ** indicates $p < 0.01$

The table indicates that FS, SS, CS, AGE, SIZE, and INDU are used as independent variables, with BF as the dependent variable in the linear regression analysis. The model passes the F test, and all VIF values are below 5, confirming the absence of multicollinearity. Additionally, the D-W value is close to 2, suggesting no issues with autocorrelation. The regression coefficients for FS, SS, and CS are positive and statistically significant, with FS having a p-value below 0.05, while SS and CS have p-values below 0.01. This demonstrates that FS, SS, and CS each exert a significant positive influence on BF, thus validating hypotheses H2a, H2b, and H2c.

Chapter 5: Conclusion

5.1 Conclusions

The empirical analysis results of this paper are shown in Table 5-1:

Table 5-1 Summary of research hypothesis testing results

Research hypothesis	Whether the positive correlation hypothesis holds
H1a: Financial support positively affects on the rebound recovery ability of enterprises.	Yes
H1b: Strategic support positively affects the rebound recovery ability of enterprises.	Yes
H1c: Capital support positively affects the rebound recovery ability of enterprises	Yes
H2a: Financial support has a positive impact on achieve Bounce forward ability of enterprises.	Yes
H2b: Strategic support has a positive impact on achieve Bounce forward ability of enterprises.	Yes
H2c: Capital support has a positive impact on achieve Bounce forward ability of enterprises.	Yes

The basic conclusion of this paper is that each structural dimension of venture capital (i.e., financial support, strategic support and capital support) has a positive impact on the resilience of invested enterprises (rebound recovery ability and rebound improvement ability).

According to the results of data analysis, venture capital has the

characteristics of multi-function and compound. Besides providing direct financial support to enterprises, venture capital also participates in the governance and supervision of enterprises, and invests intellectual capital, social capital and reputation capital to provide all-round support to enterprises. Venture capital can effectively improve the resilience of enterprises, because the addition of venture capital effectively improves the liquidity of funds, reduces the turnover rate of employees, improves the reaction ability of enterprises to face market fluctuations, etc. When enterprises receive external shocks, it can effectively help enterprises resist risks and help enterprises recover their business conditions.

In addition, the participation of venture capital can effectively improve the innovation ability of enterprises, increase the scope of enterprise project development activities, improve the competitiveness of enterprises, etc. It can not only help enterprises resist risks and resume operation, but also help enterprises achieve reverse and expand market competitiveness.

According to the results, the government, venture capital institutions and practitioners, science and technology startups and relevant industry organizations should more clearly recognize the positive impact of venture capital on the resilience of invested enterprises (enterprises' resilience and resilience in the event of external shocks), and pay more attention to it.

The government should actively formulate policies and take measures to create better conditions and a better atmosphere for the development of the venture capital market. On the one hand, venture capital industry institutions and practitioners should further build up industry confidence, and more deeply realize the importance of their own capacity building. In addition to paying attention to the scale of capital management and the ability to invest in capital, they should also pay attention to the ability and quality of participating in the

governance of the invested company and carrying out supervision and control. Efforts should be made to improve the ability to integrate social network resources and provide specialized value-added services, and strive to form a better reputation and greater influence in the financial market, and play a better role in the resistance of the invested enterprises to risks. The majority of entrepreneurial enterprises should have a deeper understanding of venture capital, an innovative scientific and technological financial means, and adopt a more active, open and pragmatic attitude toward venture capital.

At the same time, they should also pay attention to the comprehensive application of technological innovation monopoly mechanisms such as patents, trade secrets, lead time and complementary assets. In order to make resource acquisition ability and operation management ability better improve enterprise resilience.

5.2 Recommendations

According to the research conclusions, in view of the current research status of enterprise resilience, combined with the current situation of China's venture capital industry and the actual development of enterprises, in the process of enterprise development, due to financing difficulties, poor capital liquidity, insufficient innovation ability, small market competitiveness and other problems.

As for the problems existing in the practice of venture capital industry to varying degrees, such as "pure financial investment", fund company registration and filing difficulties, fund fundraising difficulties, project withdrawal difficulties, "LP GP", scarcity of high-quality targets, short fund duration, delayed investment stage, low industry awareness, low industry confidence, and low level of professional development of the industry, Put forward policies

and countermeasures and suggestions to relevant government departments, various venture capital enterprises (including government-guided funds, market-based parent funds, venture capital fund management companies, etc.) and enterprise practitioners, as follows:

(1) The government and relevant organizations should attach importance to the role of venture capital for the healthy growth of enterprises and optimize the development environment of venture capital industry.

First, optimize the development of the venture capital industry.

Government guidance fund optimization, through fiscal capital guidance, tax incentives and other measures to attract private capital participation, to solve the financing difficulties of science and technology enterprises.

Facilitate the registration and management of venture capital funds, simplify the process of fund registration, enhance government departments' understanding of the venture capital industry, and avoid cumbersome approvals and obstacles to fund establishment; Increasing the sources of private equity funds, promoting banks, insurance and other funds to enter the venture capital field, and easing the fundraising problem can effectively alleviate the financial pressure on enterprises and improve the resilience of enterprises.

Second, guide the concept of technology investment and value investment. Policies guide science and technology investment, and regulators encourage venture capital institutions to "invest in the early stage, invest in small and medium, and invest in technology" by optimizing the system, so as to create a more favorable financing and growth environment for science and technology enterprises.

The function of the industry association is enhanced, and the securities fund Industry Association should strengthen the code of conduct for industry participants, reduce transaction costs, maintain market order, and provide a more convenient operating environment for the industry. Industry associations play the role of industry self-discipline, improve the social awareness of the venture capital industry, strengthen the mutual trust and cooperation of industry participants, improve the professional level of the industry, the professional level of the industry and the improvement of value concept, can bring better intelligent capital, social capital and other resources to enterprises, and effectively improve the resilience of enterprises.

Third, expand the exit channels of venture capital projects.

Implement the IPO registration system, deepen the layered management of listed enterprises on the New Third Board, and promote high-quality listed enterprises to be listed on the board in accordance with laws and regulations. At the same time, we should strive to promote the stable and healthy operation of the capital market, appropriately relax the restrictions and approval of listed companies' mergers and acquisitions, and provide the venture capital industry with broader and higher quality project exit channels. Ease the "barrier lake" problem of venture capital projects. The optimization of exit channels can enhance the activity of venture capital enterprises, and more and more venture capital institutions enter the market, which greatly gives many enterprises the opportunity to raise funds and enhances the resilience of enterprises.

Fourth, establish an enterprise resilience evaluation system. The government should promote the establishment of an enterprise resilience assessment system, including enterprises' emergency response capabilities, capital liquidity, and strategic adjustment capabilities. By assessing the results, the government can more precisely formulate supportive policies to help companies improve their resilience.

Fifth, strengthen the enterprise personnel training plan. In order to enhance the resilience of enterprises, the government should increase investment in the training of technical and management personnel. For example, it offers strategic planning training for business executives, and technology innovation and digital transformation training programs for technologists. Ensure that enterprises have sufficient talent reserves in the face of crisis and quickly adapt to market changes.

(2) Venture capital institutions should fully enhance the professionalism, ability and reputation of the venture capital industry to better help enterprises develop and grow.

First, venture capital institutions attach importance to specialized investment. Venture capital institutions should recognize the high professionalism of the venture capital industry, avoid the phenomenon of "LP GP", trust and support professional fund management institutions, prevent excessive equity participation and management participation in fund management institutions, and especially prevent interference in fund management decisions. According to the actual situation of the industry, government investment and financing platforms in economically underdeveloped areas need to pay special attention to preventing problems such as "closing the door to do venture capital" and "blindly entering the market", and must pay attention to carrying out close cooperation with professional venture capital institutions and senior investors with certain development foundation and experience; Adhere to the long-term investment concept, investors should reasonably set the duration of the fund, understand the growth cycle of science and technology enterprises, and support scientific and technological innovation with a long-term vision. The instability of venture capital institutions will greatly affect the resilience of invested enterprises and may cause irreversible damage.

Second, venture capital institutions should enhance their capabilities and expertise. To improve the ability of management input, venture capital enterprises should attach importance to value-added services for start-ups, reduce the situation of simple financial investment, and strengthen the support for technology commercialization of invested enterprises. Cultivate industry expertise and reputation: Investment institutions should focus on subdivided areas, accumulate industry resources and expertise, improve support for the development of science and technology enterprises, and establish a good reputation in the market. Venture capital institutions with industry expertise and reputation can greatly improve the market competitiveness of invested enterprises and enhance enterprise resilience.

Third, venture capital institutions should improve their ability to manage investment. Venture capital enterprises should emphasize high-quality development, abandon the extensive development path, rationally look at the "80%" trend of the industry, reduce the number of institutional personnel, the scale of management funds, the number of investment projects and other "virtual" indicators, and pay more attention to value-added service capabilities, resource integration capabilities, investment project market performance, investment project exit and other "established" indicators. At the same time, it is necessary to recognize some negative effects that may be brought about by supervision and control of entrepreneurial enterprises, and reasonably determine the intensity of risk control. In order to better provide strategic support to help enterprises resist risks.

(3) Enterprises should rationally understand the characteristics and functions of venture capital, rationally choose financing methods and obtain financing support.

First, enterprises should raise funds rationally and choose appropriate financing methods. To clearly understand equity financing, we should fully understand the relationship between the cost of equity financing (including explicit cost and implicit cost) and income according to the characteristics of the region and industry, as well as our own resources, capabilities, development stage and other factors, and determine whether to adopt equity financing on the basis of rational analysis and comprehensive measurement.

Moreover, in the two-way choice with venture capital, we should not only pay attention to the financial strength of venture capital institutions, the rationality of investment plans and the intensity of risk control, but also pay special attention to the industry expertise of venture capital institutions and whether they can provide valuable intellectual capital, social capital and reputation capital. Determine whether its entry can bring significant positive impact on the business development. Enterprises should pay attention to prevent the disorderly expansion of venture capital, and give full play to the positive incentive role of venture capital on enterprise resilience within a reasonable range.

Second, cultivate enterprise technology exclusivity and attract venture capital investment. While conducting research and development and improving technological capabilities, enterprises should pay particular attention to the self-protection of technological interests and the acquisition of complementary assets, specifically from the aspects of patent application, protection of technical secrets, resource integration, etc., to create favorable conditions for transforming technological achievements into their own commercial interests. Enterprises with high growth can be better favored by venture capital.

Enterprises should enhance the ability of scientific and technological innovation and scientific research, and cultivate the continuous innovation of enterprises. In addition, strengthen the accumulation of human capital, establish effective communication with the personnel of venture capital enterprises, realize information sharing and interactive communication, and give full play to the advantages of resource integration of both sides, avoid various problems caused by information asymmetry, and enhance the response force of enterprises in the face of shocks.

5.3 Research limitations

Although this paper in theoretical model construction, normative analysis, variable measurement, questionnaire design, sample selection, research, development and data processing, we should try our best to make the research scientific and normative. However, due to the objective difficulty of the research content and the limitations brought by time, energy, knowledge and funds, this paper inevitably has some limitations, mainly as follows:

(1) Limitation of variable measure

Although the latitude division and measurement methods of venture capital and enterprise resilience variables are quoted in existing authoritative literatures in this paper, the accuracy and rationality of the measurement are difficult to reach a very ideal level as a latent variable in management research.

Based on existing literatures and following the general principles and procedures of Likert scale development, this paper designed the scale to measure the variables of venture capital and enterprise resilience, and tested the reliability and validity. Although it is scientific, due to the limited literature

and incomplete understanding of the information implied by the latent variables of venture capital, etc. It may lead to some imperfections in the designed scale.

(2) The limitation of sample quality

First of all, the sample size is not large enough, and it cannot be random sampling survey, which affects the representativeness of the sample. Due to the text.

In the empirical research design, we screened whether the samples had accepted venture capital. In addition, due to the limited time, energy, funds and network, the formal research only collected 176 valid samples, which was not large enough and could not realize random sampling. Second, data collected through questionnaires often lacks accuracy.

The data used in this paper are all from the questionnaire survey, which belongs to the primary data, and the distortion and inaccurate information reflected by the questionnaire is difficult to avoid completely. Secondly, the formation of enterprise resilience is a dynamic process, and this paper only collects the operating conditions of enterprises during this period, which has certain limitations. The limitation of sample quality affects the accuracy of empirical analysis.

(3) Limitations in selection of control variables

In order to make the empirical research conducted in this paper more able to reflect and explain reality, this paper only takes industry, enterprise age and personnel size as control variables, but there may also be other important variables that affect the empirical results of the relationship between variables, such as the entry time of venture capital, ownership attributes of venture capital institutions, and industry expertise of venture capital institutions.

5.4 Future research prospect

In the future, further research on the relationship between venture capital and enterprise resilience can be deepened or improved from the following aspects:

(1) Improvement of research methods

One is to improve the empirical method. For example, try to collect panel data to study the impact of venture capital on the resilience of investee firms. The conceptual model is simplified appropriately, and the interaction between several variables is considered. The structural equation model method is used to verify the validity of the research hypothesis and the conceptual model.

Second, optimize variable measurement. It is mainly to put forward more scientific and effective methods to measure variables such as venture capital and enterprise resilience. For example, more objective data are used to reflect the support intensity of venture capital to the invested enterprises by integrating the amount of capital invested in venture capital, the rounds of investment and the amount of capital invested in all kinds of capital except capital.

Based on the research results of the relevant literature, this paper considers that rebound recovery and reverse improvement are two important elements of organizational toughness, and determines the table of enterprise toughness with reference to the relevant literature. However, enterprise resilience is a dynamic concept in development, with contextual and multi-dimensional characteristics. Future studies can develop a localized scale of organizational resilience based on specific cultural contexts in China, and measure enterprise resilience by integrating a series of business operation data.

Third, we will improve the quality of research. Invest more time, manpower, material and financial resources to carry out a wider range of research,

More specific guidance was given to the process of filling in the questionnaire to obtain more available samples and improve the accuracy of the survey data.

(2) Deepening of the research content

First, on the basis of the completed research content of this paper, further mining and deepening are carried out to explore new intermediary variables,

Adjust the variables to further reveal the mechanism of the impact of venture capital on the resilience of invested enterprises.

The second is to analyze and measure the multiple dimensions of enterprise resilience, not only rebound recovery and countersurge improve the preparation for these risks, but also increase the ability of enterprises to prevent risks. With regard to venture capital, we can study the role of factors such as the timing of venture capital entry, ownership attributes of venture capital institutions (government background, enterprise background or independent background), human capital of venture capital institutions, joint investment, entrepreneurial experience, and functional experience of entrepreneurs in the relationship between venture capital and enterprise resilience.

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Appendix

Survey Questionnaire

Basic Information

1.The number of years since the establishment of your business is:

- ☐3 years or less
- ☐4-10 years
- ☐11-15 years
- ☐16-20 years
- ☐More than 20 years (> 20 years)

2.The size of your business is:

- ☐30 people or less
- ☐30-100 people
- ☐100-300 people
- ☐More than 300 people

3.The industry of you business is:

- ☐biotechnology
- ☐Manufacturing industry
- ☐Computer class
- ☐Wholesale and retail
- ☐Services (health, tourism, advertising, etc.)
- ☐other

4.Has your company ever received venture capital?

☐Yes

☐No

Here are the questions related to venture capital: Each question has five options: 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), and 5 (strongly agree). Please select the appropriate option according to your opinion.

5. After venture capital entered, is it actively sought by your company for the sake of development?

☐1

☐2

☐3

☐4

☐5

6. Is this venture capital given at a time when your company is very short of funds?

☐1

☐2

☐3

☐4

☐5

7. Did the funding from this venture capital provide a good deal of relief for your company's financing needs at the time?

☐1

○2

○3

○4

○5

8. After the venture capital joined, it often implemented supervision and management of the company and mastered the operation of the enterprise.

○1

○2

○3

○4

○5

9. The venture capital will adopt a phased investment strategy based on the future performance of your company.

○1

○2

○3

○4

○5

10. This venture capital has a seat on the board of directors, supervisory board or management of your company and participates in corporate governance.

○1

○2

○3

○4

○5

11. The venture capital recommended or helped recruit key professionals for your company.

- 1
- 2
- 3
- 4
- 5

12. The venture capital firm brings extensive contacts and valuable information to your company.

- 1
- 2
- 3
- 4
- 5

13. The venture capital institution provided professional management consulting services for your company.

- 1
- 2
- 3
- 4
- 5

Here are the questions related to corporate resilience: Each question has five options: 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), and 5 (strongly agree). Please select the appropriate option according to your

opinion.

14. Has venture capital improved the capital liquidity of enterprises?

- 1
- 2
- 3
- 4
- 5

15. Does the employee turnover rate change after venture capital enters the enterprise?

- 1
- 2
- 3
- 4
- 5

16. In the face of market fluctuations, enterprises can quickly adjust their business strategies.

- 1
- 2
- 3
- 4
- 5

17. Has the entry of venture capital improves the innovation ability of enterprises?

- 1

○2

○3

○4

○5

18. After venture capital enters, does the enterprise's market competitiveness increase?

○1

○2

○3

○4

○5

19. After venture capital entered, the company expanded its marketing activities?

○1

○2

○3

○4

○5