

WILL VENTURE CAPITAL BE MORE PATIENT THAN BANK WITH FIRM INNOVATION: BASED ON THE CONTINGENT ANALYSIS BETWEEN NON-FINANCIAL VALUE-ADDED SERVICES

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Abstract

Venture capital and bank are different financing channels for innovation. The selection between them depends on start-ups' considerations about holding all of the shares and enjoying non-financial value-added services. It is only when venture capital can provide non-financial value-added services that such institutions are the best choice for new ventures to get support from, and venture capitalists are now more patient than bank with firms' technological innovation. Otherwise, if entrepreneurs take the point of view that holding all of the shares is very important, the opposite results will come into being, and bank becomes the more popular financing channel for innovation. Based on the comparison of British-American and German-Japanese experience in financing innovation, along with taking China's economic development background into account, proposals concerning determinants of financing channels for innovation including geographical distance, government policies, and social networks are put forward to create a better environment for firms' financing practice of innovation.

Keywords: Venture capital; Bank; Non-financial Value-added services; Equity integrity.

1. INTRODUCTION

Technological innovation can create business opportunities, and start-ups will follow. However, the innovation activities of new enterprises are often accompanied by high capital investment and unpredictable risks. This discouraged individual shareholders, and venture capital firms emerged, most commonly in Britain and America. Unlike individual shareholders, these institutions were set up by venture capitalists as limited partnerships, able to wait five to seven years or more before making a profit on their venture capital investments. If a startup can successfully launch new products in the market and generate significant revenue, it will have the opportunity to conduct an initial public offering. Venture capital firms then withdraw capital from the firm, earning a return on capital appreciation. However, venture capital is not the only financing channel for new enterprises. In contrast, from the innovative practices of German and Japanese enterprises, the mode of taking banking institutions as the main body of investment is generally welcomed. The model focuses on developing new technology, rather than looking at whether it can make a profit from investing in start-ups. This is related to the pressure exerted by the rapid diffusion of technology on enterprises to maintain their competitive advantages through innovation. External knowledge sources have gradually become an important influencing factor of innovation.^[1] to provide financing facilities for external innovation projects and cultivate potential technology seeds is one of the ways for German and Japanese national investors to further realize the economic

revitalization through science and technology.

By comparing the investment of different countries in enterprise innovation, it can be found that British and American countries have formed a venture-led approach and pay attention to the investment profit. In order to ensure that the investment profits are not damaged, venture capital institutions will provide a variety of non-capital value-added services to new enterprises and closely monitor them. Venture capital more often ACTS as a kind of equity capital, which needs to rely on the growth of enterprises to obtain returns. German and Japanese countries mainly rely on banking institutions as financing channels, attach importance to the absorption and integration of new technologies, in order to share the later profits. Considering the integration and improvement of future innovation, banking institutions are extremely cautious in choosing investment projects, and sometimes entrepreneurs need to provide collateral^[2] as their guarantee for moral hazard, adverse selection and other risks. But once the loan contract is signed, the bank has less interference in the business practice of the new enterprise.

Obviously, the contract between Banks and entrepreneurs is a kind of market credit contract, which is obviously different from the cooperation contract between venture capitalists and entrepreneurs, so there are obvious differences in the governance of the contract. In practice, there are obvious differences between Britain and America and Germany and Japan in the choice of investment projects and the management after investment. However, from the perspective of innovation performance, its innovation activities have achieved considerable results. Then, how such results come into being, what are the determinants of innovative financing channels for new enterprises, and what are the

implications for China's innovative financing channels, are exactly the problems and original intention of this paper. The structure of this paper is as follows: the second part is related literature review, the third part is the theoretical analysis framework, the fourth part is the country analysis of innovative financing channels, and the last part is the research conclusion and practical enlightenment to Chinese enterprises' innovation.

2. LITERATURE REVIEW

2.1 Concept of Venture Investment

The growth of high-tech industry is inseparable from a large amount of capital investment, financing channels become a key factor affecting technological innovation. The experience of enterprise innovation in developed countries shows that venture capital is an important link to promote the development and growth of high-tech industry. Venture capital refers to the investment activities in the start-up stage of a newly high-tech oriented enterprise, in which professional financiers provide financial support and participate in the operation and management of the enterprise in order to obtain huge returns. According to the survey, about 90% of American high-tech enterprises have developed by relying on the financing mode of venture capital. The purpose of venture capital institutions to invest in new enterprises is not to hold shares for a long time, but to exit at an appropriate time and realize the return on capital appreciation. As an important force to promote technological innovation and industrial upgrading, venture capital institutions are universal in Britain and America. It plays a dual role of equity investment and management support, and can solve the problem of insufficient resources faced by new enterprises in the process of technological innovation. Venture capitalists tend to make good investment decisions in areas they know well, by keeping an eye on technology and market developments. In making decisions, financial expertise enables them to structure transactions and design appropriate incentive and compensation systems for them^[3]

2.2 Development of Venture Capital

Venture capital originated in the United States, developed relatively rapidly in Europe and the United States, and is spreading to developing countries. Research from the perspective of institution shows that the high-tech industry of silicon valley plays a leading role in the venture capital of Indian software industry^[4] venture capital activities are not only influenced by technology and capital, but also depend on local government policies to a large extent,^[4-5] especially the perfection of laws and regulations and tax policies. By comparing the venture capital in the United States and Canada, it is found that the legal system will significantly affect the form and management of venture capital, especially the withdrawal mechanism of venture capital^[6] in China, some scholars put forward the view that "system is more important than technology", believing that only appropriate institutional arrangements can ensure the success of venture capital;^[7] some scholars proposed to amend the company law to create

conditions for the development of venture capital at the legislative level.^[8]

As venture capital gradually matures, joint venture capital network, namely venture capital syndicate, begins to form. This is an organizational form that can realize the complementary integration of capital, professional talents and management experience, which helps to reduce investment risks. Some joint venture capital networks are self-organized, and two or more venture capital institutions agree to invest in potential investment projects after their respective evaluation, thus forming a venture capital syndicate. There is also a joint venture capital network in which a venture capital institution ACTS as the main venture capital institution,^[9] which invites other venture capital institutions to jointly form a venture capital syndicate^[10] for the latter, the main venture capital institutions tend to have the largest share of investment,^[9] also need to spend more time to manage the invested projects,^[11] and take charge of the coordination among the venture capital institutions. Research shows that the reputation of venture capital institutions will affect their investment behavior, including joint investment tendency,^[12] and the syndicated investment can bring better performance to venture investors.^[13]

2.3 Comparison of Innovation Financing Channels: Venture Capital and Bank

Like venture capital institutions, banking institutions can also provide financial support for the technological innovation activities of start-ups. However, the analytical logic of venture capital does not apply to banking institutions. The core value of high-tech enterprises in the initial stage is human resources and knowledge capital, and intangible assets account for a high proportion. Due to the lack of fixed assets that can be mortgaged, their financial support from banking institutions was even lower than that in 1977. At that time, the risk investment increased by nearly 100 times than that in 1977^[2] this kind of investment activity not only makes up the capital gap, but also has problems such as asymmetric information and lack of clear market prospect of products. Therefore, Banks usually require enterprises to provide collateral when investing. Venture capital can not only help enterprises overcome credit constraints, but also help many enterprises to establish and grow.^[14] however, some studies have found that German and Japanese Banks are an important financing channel for new enterprises to carry out technological innovation^[15] new enterprises keep close contact with Banks, and German Banks can provide all-round financial services for enterprises. In Japan, almost every business has a big bank behind it. Banking institutions own a large amount of creditor's rights of new enterprises, and the two are long-term stable cooperative relations. These greatly reduce the degree of information asymmetry and are significantly different from the situation of venture capital. Although a vibrant securities market is a necessary condition for the boom in venture capital, it is not enough because innovative companies are reluctant to make their research and development information and findings public for initial public offerings.

Through literature review, we can find that there is no

consistent conclusion on the research on innovative financing channels of new enterprises. Venture capital and bank have their own advantages and disadvantages. Venture capital should not be viewed simply as an alternative to bank financing, and vice versa. The two financing channels have different mechanisms and play different roles in technological innovation. The analysis shows that when the innovative financing channels are mainly built on the basis of equity diversification and flow of venture capital, venture investors pay attention to post-investment management and monitoring. Venture capital institutions often provide non-capital value-added services when they own part of the equity of a new enterprise, but because these services are not statutory and the efforts of the entrepreneurs cannot be verified, it is easy to have the problem of potential double moral hazard. When the innovative financing channels are mainly bank institutions, the long-term debt financing can promote the development of strategic technology. Access to financing facilities from Banks can not only solve the problem of insufficient capital faced by new enterprises in innovation, but also ensure that entrepreneurs have complete equity, but also hinder their use of non-capital value-added services. From the perspective of information asymmetry, adverse selection occurs when entrepreneurs have private information about risk projects without sharing it with banking institutions. When entrepreneurial entrepreneurs negotiate for venture capital, venture capital institutions will find private information related to venture projects, and even have the ability to gain control of projects after giving entrepreneurs certain compensation.[2] in terms of corporate governance, compared with venture capital institutions, banking institutions are relatively passive investors. Obviously, the choice of innovative financing channels needs to be balanced between equity integrity and non-capital value-added services. Therefore, the choice of venture capital and bank financing modes needs contingency analysis, and which one is more patient in enterprise technological innovation depends on some contingency factors of the new enterprise. This paper proposes a contingency analysis framework based on non-capital appreciation and equity integrity.

3. A CONTINGENCY ANALYSIS FRAMEWORK BASED ON NON-CAPITAL APPRECIATION AND EQUITY INTEGRITY

Venture capital was once considered to be the most suitable innovative financing channel for high-tech enterprises^[16] this is because venture investors can not only solve the problem of insufficient capital, but also provide professional advice and convenience for new enterprises to further contact suppliers and consumers, so that they can focus on technology development. Research shows that when selecting investment projects, venture capital institutions will evaluate nearby start-ups in a centralized manner, showing the characteristics of geographical agglomeration^[17] research on semiconductor, communication and biomedical industries shows that the geographical clustering intensity of venture capital will also show heterogeneity

with different industry types^[18] that is to say, venture capital is a kind of spatial decision-making behavior, and geographical distance is one of the determinants of innovative financing channels for new enterprises.

For Israel and China Taiwan's venture capital industry research shows that lack of government support of Israel in the American Jewish network to its played a huge role in promoting the development of venture capital, and the government support is the indispensable condition for the development of risk investment, China Taiwan because it does not closely linked with the us financial elite^[4] taking the Internet in California as an example, research shows that the interdependence of venture investors and Internet entrepreneurs in silicon valley creates an invisible knowledge network, which is maintained by the local social capital, making it win the competition with Internet clusters in New England and other regions^[19] therefore, it can be seen that both government policies and social networks are decisive factors for new enterprises to innovate financing channels. Government policy here includes the legal system and tax policy that go with venture capital. The more perfect the intellectual property protection system is, the more inclined the entrepreneurs are to seek venture capital from venture capital institutions.^[2]

Considering that banking institutions can also provide financial support for the technological innovation of new enterprises, it is obviously unwise to choose venture capital as the innovative financing channel if venture capital institutions fail to bring non-capital value-added services to new enterprises. This is because venture capital usually dilutes the equity owned by the entrepreneur, and only if the intellectual property can be fully protected can the introduction of venture capital not lead to the disclosure of research and development results. Similarly, the social network will also have a certain impact on the financing facilities for new enterprises from the banking institutions. By giving play to the role of trust mechanism related to social capital, it can improve the behavior expectation of banking institutions for new enterprises and promote the two sides to reach financing agreement. Therefore, it is necessary to take equity integrity and non-capital value-added services into consideration when analyzing whether new enterprises choose venture capital institutions as innovative financing channels or bank institutions as innovative financing channels. Otherwise, it is not comprehensive to only study the determinants of innovative financing channels. The non-capital value-added services provided by venture capital institutions are multi-faceted and can assist new venture enterprises to solve the difficulties in the actual operation process. Research shows that most venture capital institutions will make use of their resource advantages to seek appropriate partners for new enterprises in production, marketing, technology transfer, follow-up financing, etc.^[11] to clarify their strategic positioning. Other studies have shown that in order to reduce the degree of information asymmetry, venture investors will use non-capital value-added services as a means of monitoring new enterprises.^[20]

Considering the influence of geographical distance, government policies, social relations network, equity

integrity and non-capital value-added services on the choice of innovative financing channels for new enterprises, the theoretical framework for determining

innovative financing channels for new enterprises can be proposed, as shown in Fig 1.

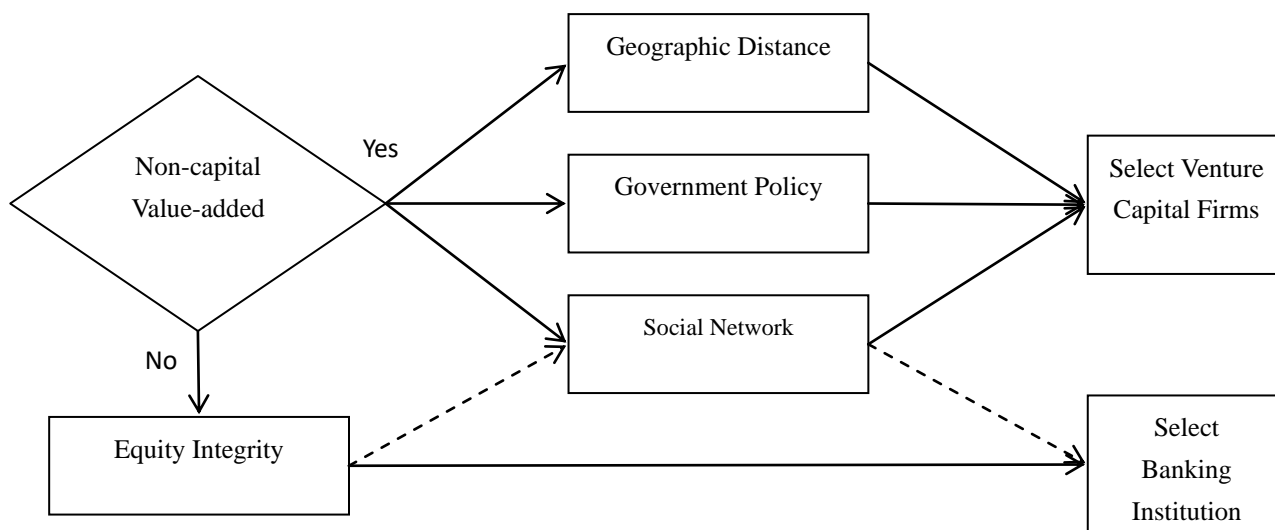


Fig 1. Determines the contingency analysis framework of innovative financing channels for new enterprises

Based on the above analysis framework, we may also pay more attention to the selection of financing channels based on innovative types. The classification of innovation can be generally divided into two types, one is ability - destroying innovation, the other is ability - enhancing innovation^[21] from the perspective of the risk level faced by innovation, it is obvious that the risk of disruptive innovation is higher, so entrepreneurs will choose the venture investment method that can promote the success of the project in this case, because non-capital value-added services can reduce the risk for disruptive innovation. In this case, both parties need to negotiate on the integrity of the equity to ensure that both parties' knowledge can be well protected. For the capability enhancement innovation with less risk, the better way should be bank financing, which has advantages in maintaining the integrity of equity.

4. REGIONAL ANALYSIS OF INNOVATIVE FINANCING CHANNELS

Due to the impact of information asymmetry and transaction cost on risk projects with potential positive benefits in reality, the choice of innovative financing channels for new enterprises is subject to multiple constraints. According to the actual situation of entrepreneurs and venture projects, some are suitable for obtaining various resources in the form of venture capital, some are suitable for obtaining financing facilities from banking institutions, and some are different in different countries.

Looking back on the development of venture capital in recent years, it can be seen that the scale of global venture capital increased from 28.4 billion us dollars in 2005 to 40.6 billion us dollars in 2008, with a growth

rate of over 40%. In 2009, the amount of global venture capital investment fell due to the recession, to 27.8 billion us dollars. In 2010, it rose back to \$33.8 billion. As a major source of venture capital, the United States has accounted for about 80 percent of global venture capital in recent years. The comparison between the global venture capital scale and the us venture capital scale is shown in Table 1. For American start-ups, venture capital institutions play an important role as major providers of capital support and non-capital value-added services. At present, the United States has formed a venture capital center dominated by New York, California, Massachusetts and other regions, which reflects the geographical proximity of venture capital. From the perspective of government policies, the United States encourages the development of science and technology at the legislative level, attaches importance to research and development investment, and creates a favorable environment for venture capital investment. It is embodied in a series of preferential policies for venture capital, including tax preferential policies, credit guarantee policies and financing incentive policies. Experience in the United States shows that the limited partnership is the best form of venture capital institutions. It can effectively solve the principal-agent problem between limited partners and general partners by designing incentive and constraint mechanism through limited partnership contract. In the social network, opportunistic behavior is inhibited which further reduces the uncertainty of entrepreneurs and improves the possibility of venture capital for venture projects. At the same time, developed and efficient capital market, coupled with perfect financial audit system and strict information disclosure system, also provides conditions for the rational allocation of social resources.

Table 1. Comparison of Global/US venture capital scale

Year	Global Size(\$100 million)	US Size(\$100 million)	US venture capital proportion(%)
2005	284	242	85.2
2006	354	297	83.9
2007	399	322	80.7
2008	406	313	77.1
2009	278	224	80.6
2010	338	264	78.1

Source: Compiled from the 2012 Science and Engineering Indicators, published every 2 years by the National Science Foundation Board.

Although the development of venture capital in the United States is becoming mature, and quickly spread to the United Kingdom, but in Germany and Japan, there is another institutional environment. Innovation financing in Germany and Japan mainly relies on the developed banking system, and venture capital or other similar equity-for-capital phenomenon is rare, although venture capital institutions have more abundant skills than banking institutions to obtain accurate information about start-ups. For example, KfW plays an important role in financing small and medium-sized innovative enterprises. In order to ensure the smooth progress of the risk project according to the plan, in order to obtain profits to repay the principal and interest, the banking institutions will only choose to provide financing facilities after full feasibility studies. At this time, social network can provide certain help for entrepreneurs and play a role of trust guarantee in the signing of financing agreement. However, since the information asymmetry still cannot be eliminated, if the bank considers that the new enterprise is a high-risk type, it will ask for more compensation than the venture capital institution wants. If a bank considers a start-up to be a low-risk type, it will demand less compensation than venture capital firms would like. Based on the analysis logic that risk is proportional to return, the result is that large risk projects tend to choose venture capital institutions as innovative financing channels, and small and medium-sized risk projects tend to choose banking institutions as innovative financing channels. Therefore, in Germany and Japan, a large number of new enterprises take banking institutions as the main innovative financing channels, and the scale and risk of risk projects will affect the choice of innovative financing channels for new enterprises.

5. CONCLUSIONS AND IMPLICATIONS FOR CHINA'S INNOVATIVE FINANCING CHANNELS

This paper focuses on the determinants of two innovative financing channels for high-tech enterprises and their development in Britain, America, Germany and Japan. Venture capital can not only solve the problem of insufficient capital, but also provide non-capital value-added services, including business network resources and improving development strategies, for new enterprises, so that they can focus on technological innovation in the subsequent development. As the price of venture capital investment, new ventures need to sign agreements on the rights and obligations of both parties with venture capital institutions. Venture investors can get huge returns by divestment through public listing,

merger and acquisition, share buyback and other means. In fact, venture capitalists are not necessarily more patient with corporate technology innovation than Banks are. If venture capital institutions are unable to provide non-capital value-added services for start-ups, or if equity integrity is considered important by entrepreneurs, it is appropriate to choose banking institutions as innovative financing channels. Banks can finance start-ups without requiring a seat on the board. The results show that the choice of innovative financing channels should be made between equity integrity and non-capital value-added services. In addition, geographical distance, government policies, social network and other factors will affect the choice of venture capital for new venture enterprises, among which social network can also provide help for new venture enterprises to obtain financing from Banks. After comparing the innovative financing channels of enterprises in Britain, America and Germany and Japan, it is found that the policy environment plays a crucial role in the development of venture capital, especially the system supporting venture capital at the legislative level. Experience in the United States confirms the effectiveness of limited partnerships in terms of the organization of venture capital institutions. In contrast, German and Japanese countries have formed innovative financing channels with banking institutions as the main body of investment. This is because Germany and Japan have developed banking systems, and their focus on developing long-term stable partnerships may even be more patient than venture capital in corporate technology innovation. This approach enables banking institutions to place special emphasis on the prior assessment of risky projects and to obtain corresponding compensation according to the scale and risk.

For the innovative financing channels of enterprises, venture capital and Banks have their own advantages, but they also have some shortcomings. The choice of innovative financing channels for new enterprises in different countries is not only influenced by the legal system, capital market and economic conditions, but also restricted by entrepreneurs and venture projects. In this paper, along with the consideration of equity integrity and non-capital value-added services, it is believed that non-capital value-added services are the motivation for new enterprises to choose venture capital as the innovative financing channel, and only at this time can venture capital be more patient than Banks in enterprise technological innovation. At present, China's capital market still has a high standard for enterprises to be listed, and venture capital largely depends on the successful exit, so only a few high-quality venture

projects can obtain venture capital, and most small and medium-sized enterprises tend to choose Banks as innovative financing channels. Based on the experience of innovative financing of enterprises in Britain, America, Germany and Japan as well as the background of China's economic development, the following Suggestions are put forward to improve the practice of innovative financing of enterprises in China. Optimize the organization form of venture capital institutions and enrich the capital sources of venture capital; Broaden the exit way of venture capital and improve the efficiency of venture capital; We will strengthen social networks, establish external oversight mechanisms, and form regional centers for venture capital investment.

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