Research on Influencing Factors of Investment Exit and Return based on Panel Data of GEM Listed Companies

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Abstract: The results show that the investment cycle, the initial investment amount, the initial investment equity ratio and the industry in which the invested project is located have significant influence on the return on investment. At the same time, it is found that China's entrepreneurial enterprises have the characteristics of changing from increasing the input of traditional factors (labor and capital) to improving technical efficiency. It further deepens the research on the relationship between entrepreneurial performance and factor input of enterprises in emerging economic markets, and at the same time provides a reference for enterprises in the entrepreneurial period to allocate reasonable factor input. In areas with serious local protection, enterprises over-invest more, especially in state-owned enterprises. But invest less abroad, and this tendency of non-state-owned enterprises is more obvious. The foreign investment of state-owned enterprises helps to enhance the competitive advantage of enterprises, but the foreign investment of non-state-owned enterprises plays the opposite role. Protect the intellectual property rights of enterprises, broaden the financing channels for R&D activities, reasonably increase the R&D investment of enterprises, optimize the R&D personnel structure and improve the R&D efficiency of enterprises, so as to provide theoretical guidance for the R&D activities of enterprises listed on GEM.

1. Introduction

After the reform and opening up, China has changed from a planned economy to a socialist market economy with Chinese characteristics. Private enterprises and joint-stock companies have been established one after another. They are the "backbone" of China's economic development [1]. In the four links of "financing, investment, management and withdrawal" of venture capital, the exit link is the most critical. The original intention of local governments to implement local protectionist policies is to "escort" the development of local enterprises, expecting local enterprises to thrive and grow stronger under the "protection" of the government [2]. Entrepreneurial performance is a process in which entrepreneurs optimize and integrate their own resources or make efforts to create greater economic or social value. Entrepreneurial performance reflects the ability of enterprises to optimize and integrate resources [3]. Reasonable optimization and integration of factor resources can get twice the result with half the effort in the entrepreneurial period. The research on the relationship between factor investment and entrepreneurial performance of entrepreneurial enterprises is of great significance for in-depth exploration of innovation and entrepreneurship in line with China's situation [4].

Many countries have elevated technological innovation and technological progress to national strategies, vigorously develop science and technology, and increase investment in research and development costs [5]. In the fierce competition environment, R&D investment and related allocation decisions play a decisive role in the survival of modern enterprises, the main body of China's innovation system. GEM listed companies are the main body of the GEM market, and at the same time, enterprise growth is a comprehensive index that enterprise stakeholders focus on. Therefore, taking GEM listed companies as the background to study enterprise growth has attracted the attention of many scholars [6]. Based on the research conclusions, this paper analyzes the reasons for the differences between the research conclusions and assumptions, and puts forward relevant policy suggestions: improve the quality of current assets, reasonably hold current assets, be reasonable and cautious in fixed asset investment, establish a perfect investment approval system,

establish relevant accountability system, improve the practicability of intangible assets and give full play to the competitive advantages of intangible assets .

2. GEM listed companies and their asset structure analysis

2.1. Overview of Growth Enterprise Market

This paper analyzes the overall situation of venture capital's withdrawal return in China, and understands the operation mechanism of venture capital. Then, this paper makes an analysis and discussion from the perspective of theoretical analysis, aiming at finding out the factors that affect the return rate of venture capital, and then putting forward relevant assumptions [7]. Research shows that among the factors affecting the return rate of venture capital projects, the most typical ones include the information asymmetry between investors and financiers, the lack of liquidity of venture capital projects, the long investment cycle, which makes it impossible for investment funds to diversify risks, and high commercial risks in the early life cycle of enterprises [8]. Statistics show that with the continuous maturity of my country's ChiNext market, up to now, there are 400 ChiNext listed companies on the Shenzhen Stock Exchange, accounting for 24.80% of the total listed companies on the Shenzhen Stock Exchange. The formulation of any institutional rules and policies has certain economic consequences. In some cases, the institution will promote economic efficiency by affecting the behavior of micro-organizations; but in some cases, the economic consequences are completely contrary to the purpose of institutional rule formulation. The scale effect may work as the labor scale of the enterprise expands, but when the critical point is reached, the scale effect will decrease [9]. Since the establishment of the ChiNext market in recent years, the number of listed companies has increased by more than 10 times from the initial 28 listed companies to the current 400 listed companies (see Table 1), and the total share capital of listed companies has increased from 3.46 billion shares in 2009. Increased to the current 106.3 billion shares.

Table 1. Summary of the scale of the ChiNext market over the years

Year	2016	2017	2018	2019	2020	October 2021
Company quantity	36	153	281	355	355	400
Total share capital	34.6	175.1	399.5	600.9	761.6	1063
Circulation share capital	6.5	50.4	142.2	242.1	430.1	681
Total market Capitalisation	1610.1	7229.6	7433.8	8731.2	15092	22667
Circulation market value	299	1967.8	2504.1	3335.3	8118.8	13682.6

Managers should comprehensively consider various factors and choose the asset structure suitable for the sound development of their own enterprises. Based on the classification of different industries into high-tech and non-high-tech industries, this paper studies the impact of intangible assets on enterprise value in different industries. Analysis by consulting relevant data ,it is found that the proportion of intangible assets in the total assets of enterprises is positively correlated with enterprise value, and it is also found that the proportion of intangible assets has a more significant impact on high-tech enterprises than that of non-high-tech enterprises. Various economic resources of enterprises are closely related to each other, so the relationship between various economic resources should be considered when optimizing the asset structure of enterprises. Other indicators of the GEM market have also risen sharply, which fully reflects the rapid expansion of the scale of China's GEM market, plays an increasingly important role in China's multi-level capital market, and has made great contributions to the development of China's high-tech enterprises.

2.2. Impact of initial investment on return on investment

A larger initial investment amount will occupy more funds of the venture capital institution, which will make the investment project occupy a greater weight in all investment projects of the venture capital institution, and the risk will also be greater for the venture capital institution.When comparing the experience of venture capitalists, the working time is a representative measure.

Generally speaking, the longer the working time, the more investment projects venture capitalists have invested or contacted, the more experience they have accumulated in screening investment projects, formulating investment terms and participating in project management after investment, and the more they will master the development trend of the industry and relevant professional knowledge. These experiences and knowledge will help venture capital institutions to obtain higher investment returns when investing in new projects. If the registered place of venture capital institutions is also located in the first-tier developed cities, they can tap the surrounding project resources to the maximum extent.

The appellation of gem in China has experienced changes from high-tech board, second trading system to gem. Different appellations reflect the different positioning of gem in different periods. Most of the enterprises listed on the main board are in the mature stage, with relatively stable business activities, clear market position and development space. They can open up a new market by virtue of technological breakthroughs in related fields, or subvert the original pattern of the industry and become a new leader. Most of the companies listed on the Growth Enterprise Market belong to emerging industries in the growth stage. They have been established for a short time, their business models are unstable, and their scale is relatively small. In addition, affected by various factors such as competitors and macroeconomics, the uncertain risks is higher.Entrepreneurial organization form is very important. Only an enterprise organization form that can adapt to a country's economic system and investment habits can give full play to the operational efficiency of enterprises and promote the development of venture capital market. The capital sources of venture capital should also include internal financing, bank small and micro loans, private loans and government investment. Therefore, venture capital should be included in venture investment, which is a kind of investment mode of venture capital. See Table 2.

Table 2. Classification of venture capital sources

Venture capital investment			
Small and micro bank loans	Credit loan	Indirect investment	External financing
	Mortgage		
	Discount loan		
(VC/PE)	Risk investment	Direct investment	
	Angel investment		
Private investment	Non governmental cooperative organizations		
	Property rights trading market		
Government investment	Government guidance fund		
Internal financing	Free capital investment	Endogenous financing	

3. An Empirical Study on the Impact of Asset Structure of GEM Listed Companies on Growth

3.1. Measurement method

This paper comprehensively evaluates the growth potential and development space of enterprises from four aspects: expansibility, volatility, sustainability and dynamics. The factors that determine the growth of GEM listed companies include financial status, human capital, technological innovation ability, market and social relationship ability. The main purpose of comprehensive evaluation is to explain most of the variation in the original data with fewer variables. This paper converts the eight indicators into independent or irrelevant variables. It is found that the relationship between independent variables and control variables is weak, and multicollinearity has little effect.This paper adopts the comprehensive index method to evaluate the growth of enterprises. We should comprehensively evaluate the growth potential and development space of enterprises from four aspects: expansion, volatility, persistence and dynamics. The factors that determine the growth of companies listed on GEM include financial status, human capital, technological innovation ability, market and social relationship ability. However, some non-financial indicators are generally

sent for qualitative analysis rather than quantitative analysis, resulting in poor objectivity, and these indicators are not easy to obtain, resulting in less operability. The main purpose of principal component analysis is to use fewer variables to explain most of the variation in the original data, and to convert the eight indicators in this paper into variables that are independent or unrelated to each other. The relationship between independent variables and control variables is weak, and multicollinearity has little effect. Since Pearson correlation can only study the relationship between variables, the following regression analysis will further study the effect of enterprise R&D intensity and solvency impact on the current period. .

Generally speaking, it is satisfactory that the cumulative contribution rate of the principal component of Geng is more than 80% ~ 85%, so it can be determined how many principal components need to be extracted. When dealing with the index of intangible assets ratio, this paper considers that the growth of GEM listed companies, and the land use right, mining right and breeding right in intangible assets cannot represent the innovation ability and development potential of GEM listed companies, so it is deducted from intangible assets when calculating the intangible assets ratio.At the same time, development expenditure is the R&D capital invested by GEM listed companies in their production process, which represents the R&D level of the enterprise and the development potential brought to the enterprise by transforming it into intangible assets in the future, so it should be taken into account.

3.2. The Design of the Variables of the Comprehensive Index of Enterprise Competitive Advantage

According to the above theoretical analysis of competitive advantage, we have designed market share (MS) and operating efficiency (OE) to measure two manifestations of competitive advantage of enterprises: the relative position in the industry and the use efficiency of resources. The market share used to construct the enterprise competitive advantage index is the sum of the main business income of listed companies divided by the sales income of national industrial enterprises above Designated Size in their industry. First, total assets, main business costs, sales expenses, financial expenses, management expenses, and number of employees are selected as input indicators, and main business income and net profit are selected as output indicators; since the DEA method cannot directly handle negative numbers. However, because companies generally invest abroad in the form of setting up subordinate enterprises, the proportion of subordinate enterprises in different places in the total number of subordinate enterprises can better reflect the tendency of enterprises to invest across provinces.

The number and registered address of subordinate enterprises established by the company are obtained according to the "situation of related parties" in the annual report of the current year publicly disclosed by the company.The diminishing returns to scale of Chinese enterprises may be due to the unreasonable allocation of factor investment of start-ups, or the fact that start-ups have achieved market monopoly due to their destructive innovation. Under the background of knowledge economy, enterprises should optimize the factor allocation structure and improve the factor input efficiency.At the same time, the geographical proximity also provides convenience for venture capital institutions to conduct due diligence, effectively monitor and guide invested companies. Therefore, this paper predicts that the registered location of venture capital institutions will also have an impact on the rate of return of investment projects. It is because venture capital participates in the production management and operation of venture projects that we can obtain the internal information of the project and eliminate the asymmetry of information, thus reducing the cost and improving the return of venture capital.Therefore, the entrepreneurial projects most eager to obtain funds in the market are likely to be those projects or enterprises with large risk of default, and even some enterprises use fake high technology to defraud the state's venture capital support funds, which are the manifestations of adverse selection of venture capital.

4. Conclusion

According to the capital source of start-up enterprises, this paper divides the capital source into

internal financing and external financing, subdivides the two sources, and then discusses the characteristics of various financing channels from the four points of capital availability, capital attribute, capital entering the enterprise and capital investment. Gem has become an important channel for venture capital projects to exit. The healthy and sustainable development of gem is of great significance to the development of venture capital industry. In the follow-up research, with the gradual increase in the number of stocks listed on the ChiNext and New Third Board, the research samples can be further enriched. The study found that the factor input of my country's entrepreneurial enterprises is changing in the direction of market experience, management, technology and other resource coordination capabilities. By regulating enterprise management and increasing investment in technology research and development to improve core competitiveness, and thus improve enterprise performance.As the GEM market has not been established in China for a long time, the number of listed companies is not large. If the samples that do not conform to the research are excluded, the number of remaining listed companies will be even smaller. Therefore, in the empirical research, we can't study the growth of enterprises in different industries, just like the main board listed companies. There is no significant correlation between the location of start-up enterprises, the number of venture capital institutions, the financial risk of start-up enterprises and the rate of return.

References

[1] Deng Tailai. The rate of return of venture capital and its influencing factors [J]. Caixun, 2018(5): 1.

[2] Zhang Xingwei. Research on the Impact of Venture Capital Exit on Enterprise Performance——Based on the Data of Listed Companies on my country's Growth Enterprise Market [J]. China Market, 2018(28):3.

[3] Zhang Shuanxing, Fang Xiaojun, Li Jing. Research on the Influence of R&D Investment on Growth of GEM Listed Companies——Based on the Moderating Effect of Ownership Structure [J]. Science and Technology Management Research, 2017,037(008):143-149.

[4] Li Jinglu. Research on the impact of company size on R&D investment: evidence from the GEM from 2010 to 2014 [J]. 2021(2015-6): 89-97.

[5] Li Huiqing. Research on the Influencing Factors of Commercial Credit Financing of Small and Micro Enterprises under Internet Finance [J]. Market Forum, 2017(3):4.

[6] Xia Shuqin, Ma Xiaojuan. Analysis of the Influence of Private Equity Investment on Business Performance - Panel Data from 429 Companies Listed on the Growth Enterprise Market [J]. Modern Business, 2021(36):3.

[7] Tang Zhixiang. Research on the Impact of Private Equity Investment on Enterprise Operational Performance: Empirical Evidence Based on the Data of GEM Listed Companies [J]. Times Finance, 2019(14): 2.

[8] Hu Zhijun. Research on the Influence of Government Subsidies on the Innovation Output of Small and Medium-sized Enterprises——Based on the Experience Data of GEM Listed Companies [J]. Rural Economy and Technology, 2018, 29(14): 3.

[9] Meng Tingyu, Zhu Jiaming. Research on Financial Performance Evaluation of GEM Listed Companies Based on Factor Analysis [J]. Journal of Anhui University of Science and Technology, 2018, 32(2): 5.