An Empirical Analysis of Private Equity Investment Affecting Enterprise Value

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Abstract

The lack of long-term and stable financial support for SMEs is the fundamental reason why enterprises cannot develop for a long time. At present, the situation of financing difficulties for SMEs is becoming more and more serious. Private equity (PE) investment has emerged as an important financing method. Private equity investment, while broadening the financing channels of SME capital markets, brings advanced management experience to enterprises, which helps enterprises to develop rapidly and effectively. According to the statistics of the Zero2IPO Research Center, the active investment institutions in China's equity market have grown from more than 200 in 2000 to more than 14,000 in 2018, with a total asset under management over RMB 9 trillion. Great progress has been realized in the scale and development of the industry. In addition, with the launch of the GEM in 2009, PE investment industry met new opportunities of development and became popular. At present, the development of China's PE investment business is still at an early stage. Neither relevant policies, laws and regulations nor supporting mechanisms are mature enough. Therefore, researches on China's PE investment business needs to be carried out. In this context, more and more scholars are beginning to focus on the field of PE investment.

This paper focuses on whether PE investments can fundamentally increase the enterprise value. The basic theory is sorted out to serve as the theoretical basis for this study. Through a systematic analysis, this paper draws out 4paths of PE investment affecting enterprises, which are the influence on technological innovation, corporate governance activities, dividend distribution decision and earnings management, respectively. And through empirical analysis, it finds the empirical basis of the impact of PE investment on enterprise value, and investigates how PE investments affect enterprise value based on the difference in investment characteristics such as investment duration and whether the investment is joint or not. This paper conducts an empirical test by selecting the listed companies of the Shenzhen Stock Exchange GEM in 2015-2018 as sample. The results show that the investment of PE firm will significantly increase the value of the target enterprise.

This paper makes a detailed analysis of sample data. The conclusion of the study is that private equity investment will have a significant impact on the value of target enterprises. Private equity investment plays an important role in the modern governance structure of small and medium-sized enterprises in China This paper enriches the existing literature and provides constructive suggestions for the health development of the PE investment market.

Key words: PE Investment; Enterprise Value; Investment Term

Contents

Chapter 1 Introduction

1.1 Background and significance of the topic

Since the reform and opening up in the 1980s, the socialist market economic system has been established and realized continuously development and improvement, and has made remarkable achievements. Especially since the 21st century, China's economy has continued to grow. Among them, SMEs, as an important part of the development of the contemporary national economy, developed rapidly with the Chinese economy, made huge contribution and established a diversified and prosperous economy. Therefore, for both developed and developing countries, SMEs play an irreplaceable role in the market with their absolute advantages in amount.

The development of SMEs is inseparable from the financial support. Having sufficient financial support is an important basis for the establishment and development of start-ups. According to Zhang (2014), in the early stage of development, SMEs must have good financial support or enjoy good financing environment and path. However, Zhang (2014) also points out that SMEs faces financing difficulties in recent years. In the process of the development of SMEs, the development of China's financial market is relatively lagging behind. Cabined financing channels and insufficient funds have always been the primary factor that plagued the development and expansion of SMEs. The shortage of long-term funds has led to insufficient development and low technological level of products, so that the products are less competitive and have low market influence. At the meantime, small businesses have lower ability of anti-risks, and even worse coping with economic depression and financial deterioration. Therefore, there will always be a large number of SMEs closing every year, while a large number of SMEs will be established at the same time. By the end of 2018, China has 30 million SMEs, accounting for 99% of the total number of enterprises in China, about 60% of China's GDP, 50% of taxation and 80% of employment. According to statistics, we found that the tax burden of SMEs is extremely heavy, and there are 18 government departments charging 69 categories of administrative fees on SMEs. It makes the SMEs overwhelmed.

The lack of long-term and stable funding sources for SMEs is the fundamental reason why enterprises cannot develop for a long time. Specifically, enterprises can only use limited financing methods. Generally speaking, the current financing methods mainly include internal financing and external financing. Among them, external financing includes three methods: bank financing, commercial financing, and private lending. These methods have both advantages and disadvantages in the development of SMEs. Wang Zijing (2016) reaches the conclusion that for the internal financing of the enterprise, in the initial stage of development, since the entrepreneur's own capital are limited, in general, the speed of internal financing cannot meet the need of development and expansion of the enterprise. Without external funds, there will be a lack of leverage in the development of the company, so the company cannot achieve rapid development. The second way is bank credit. For SMEs, poor market competitiveness and weak anti-risk ability are the reasons that restrict their access to bank loans. Banks are always more willing to lend loans to relatively better, stronger and larger corporate customers to reduce their non-performing loan ratio. The third type of commercial credit financing is mainly generated from the purchase, sales and other activities of the enterprise. Once the enterprise faces with crisis, the business activities of the enterprise cannot operate normally, which will affect the financing ability of the enterprise in the purchase and sale activities and cannot obtain sustained financing. As for private lending, although it is more accessible for SMEs, however, higher costs, limited funds and instability have always troubled SMEs.

Based on the above analysis, we can know that the financing needs of SMEs, which in the stage of rapid development are difficult to satisfy only by relying on the traditional financing system of enterprises. Therefore, for the development of enterprises, how to obtain long-term and stable sources of funds is the crucial problem, so the concept of Private Equity (PE) emerged. As early as the 1940s, private equity firms began to originate in the United States. The very first private equity firm is the American Research and Development Corporation (ARD). Since then, private equity has begun to take shape. With the development of the market, the financing needs of all stages of the enterprise are increasing, and PE investment companies have more attention and development, from the initial funding for emerging start-ups to all stages of investment. The company provides financial support. In 1976, Jerome Kohlberg, Henry Kravis and George Roberts founded the world's first PE investment fund, Kohlberg-Kravis, or known as KKR. Since then, PE investment has become popular in western countries. In western developed countries, development of PE investment has been relatively mature, and the total investment amount per year is stable at about 4%-5% of the country's total GDP, which is already influential. Compared with the traditional investment model, the significance of PE investment for SMEs lies in not only bringing financial support to enterprises, but also bringing advanced management experience, promoting a rapid development, and improving the efficiency of capital utilization for the whole society. Therefore, in western countries, PE investment has become an increasingly important form of financing.

The development of PE investment in China first appeared in the 1990s. At that time, the establishment of China's earliest private equity fund, the Industrial Development Fund, marked the beginning of China's PE investment industry. Until June 2004, China's formalized PE investment case landed, and the famous US private equity fund, New Bridge Capital, invested in Shenzhen Development Bank. At that time, most of the shares of Shenzhen Development Bank were in the hands of the Shenzhen Municipal Government. Therefore, Xinqiao Capital purchased a 17.9% stake in Shenzhen Development Bank from the government. The completion of this transaction marks the official start of China's PE investment business, and PE investment institutions have begun to slowly play in the country. A series of initiatives, such as the split share reform in 2005 and the launch of the GEM in 2009, have spurred more enthusiasm for participants in domestic private equity investors. Since then, the domestic PE investment business has begun to flourish. According to the latest data released by the fund industry association, as of December 2018, there were as many as 14,000 private equity ventures and equity investment institutions in China. At present, China's equity investment market is mainly dominated by RMB funds. The total asset of funds managed on the Chinese equity investment market has approached10 trillion yuan, and the quantity of registered private equity funds has reached 145,000. While the activity of the equity investment market continues to heat up, competition among institutions has also intensified. In terms of fundraising, at the end of 2018, a total number of 3,637 new funds were raised, with a total AUM of more than 1.33 trillion yuan. In terms of investment, the number of cases involving equity investment in the year 2018 was 10,021, and the total investment amount was as high as 1.08 trillion yuan. In the year 2018, the number of fund withdrawal cases was2,657, of which 996 were by IPO, accounting for 37.5% of the total number of exits. In terms of quantity, in 2018, the number of equity investments in IT, Internet, biotechnology/healthcare was the highest, at 2180, 1783 and 1340 respectively; in terms of amount, finance, internet, IT are the three industries ranked highest by investment amount.

The development of China's capital market is still immature, still in the primary stage, and the channels for enterprises to raise funds in the capital market are blocked and are subject to various factors. Especially for SMEs, due to their poor anti-risk ability and weak strength, their financing is even more difficult. In response to this situation, with reference to the US Nasdaq market, since 1999, the Shenzhen Stock Exchange has begun to set up the GEM. By October 2009, China's GEM was officially listed. The official launch of the GEM provides a more effective financing channel for SMEs, and also provides an important way for the exit of PE investment. Since then, more and more capital has been invested to PE investments. PE investment can also be involved in the management and operation of enterprises while expanding financing channels for SMEs. It can guide the management of the enterprise with advanced management concepts or directly affect the management of the enterprise. After the company matures, through the IPO, mergers and acquisitions, etc., PE institutions can also obtain income and withdraw. Therefore, vigorously developing PE investment is of great significance to improving the financing difficulties of current SMEs, and can also provide new ideas for the adjustment of industrial structure.

PE investment is an emerging financial instrument, an important supplement to the capital market, and conducive to the long-term stable development of China's capital market. Especially in the case of the severe financing situation of SMEs today, PE investment has made an indelible contribution to the adjustment of China's economic structure. Then, for enterprises, after accepting PE investment, will it have an impact on their own enterprise value? Does it necessarily have a positive impact? This problem requires us to test. The theoretical community has already explained this. Financial intermediation theory defines PE investment as a new type of financial intermediation, which plays an important role in improving the financial strength and the management efficiency of the invested enterprise. PE investment institutions and invested companies achieve a win-win situation.

However, in the practice of industry development, we should not only focus on the positive impact of the rapid development of the PE investment industry. The uneven qualifications of industry practitioners and the lack of industry regulation have contributed to the disorder of the industry and are hidden dangers to the future development. If we do not pay attention to these hidden dangers, they will not only adversely affect the long-term stable development of the industry, but also affect the development of the entire capital market, which will ultimately affect the stability of the financial market and the entire society. Therefore, research on PE investment also needs to conduct in-depth research on the development characteristics of PE investment, helping us understand the inherent growth law of PE investment, and then guide a healthy and orderly development of PE investment.

In view of the above analysis, we can see that the research on PE investment is important in both theoretical and practical aspects. Whether it is at the company level, institutional level or government level, it is fully aware of the importance of PE investment. Especially for start-up companies, the involvement of PE investment has a more significant meaning in optimizing the company's operation and management. However, compared with foreign countries, China's private equity market has a relatively late start, and the research progress in this field is still far behind the foreign countries. The research results of foreign scholars show that PE investment can not only solve the financing problem of SMEs, but also, to a certain extent, can directly improve the operational efficiency of the target company by directly intervening in the governance and management activities of the target company, and further improve the enterprise competitiveness. For China, which is still in the initial stage of PE investment development, it is worthwhile to study whether it can be used correctly and how it is correctly guided. This is especially important for the growth of the company or the development of the national economy.

In general, PE investment is more preferred for high-tech companies with high-risk and high-profit, and the GEM market is an emerging market that simultaneously meets the private sector investment needs. Therefore, the research on the relationship between PE investment and GEM listed companies is of great significance. At present, full and in-depth research has been done by foreign scholars, which includes the impact of PE investment on enterprises, the impact on business performance before public issuance, or the impact on IPO underpricing rate in the public offering process, or on long-term business performance and market performance after the company's listing. Although in general, the conclusions support that PE investment will have a positive impact on enterprise value and business performance, but there are also conclusions that hold the opposite opinion, so it is not possible to reach a consensus. At the same time, due to the different environments in China, it is even more difficult to apply this result directly to the Chinese market. The development of China's PE investment business is still at an early stage. Whether it is from policies, laws and regulations to supporting mechanisms, it is still not perfect and complete. Therefore, research on China's PE investment business needs to be carried out.

As for the research on the impact of PE investment on enterprise value, there are a large number of scholars in China and their research is aimed at China's small and medium-sized board market. However, since the launch of the GEM in 2009, we have found that studying the GEM market is more valuable than the SME market. Chen Jianbo (2019) points out that China’s capital market is still insufficient and financing efficiency is low, especially for SMEs. Chen Jianbo (2019) also indicates that the launch of GEM promotes financing efficiency by improving the multi-layered stock market structure of China. Due to time constraints, the domestic scholars' previous research on PE investment is limited because the GEM has just been launched in a few years. Our research is still at the early stage, the development of the GEM is not stable enough, and the research results cannot explain the actual situation. Therefore, based on the previous studies, this paper systematically and deeply analyzes and explores the impact of PE investment on enterprise value, and helps by distinguishing the investment term and whether it is a joint investor as a feature of PE investment institutions. We have a deeper understanding of the path and mechanism by which PE investments affect enterprise value. The research results of this paper have certain reference significance for the development of China's PE investment industry.

1.2 Summary of research reference

1.2.1 Definition of PE investment

Private equity investment (PE) refers to the use of funds to non-public investors to invest in non-listed companies. With the rapid development of the global PE investment industry, its definition and boundaries are constantly updated and extended. In Europe, the concept of PE investment and venture capital (VC) is not separated clearly. The concept of PE investment includes both PE investment and VC investment. Among them, venture capital refers to equity investment in enterprises in the early stage of enterprise development. In general, the risk is greater and the cost is lower. Once access success, the rate of return is staggering. Therefore, the European Private Equity and Venture Capital

Association (EPEVCA) defines PE investment as: investing in the seed, development and maturity of the enterprise, obtaining a certain equity of the non-listed company, directly participating in the operation and management of the invested company. In addition, the use of the unique advantage of private investment can also provide channel and financial support for the follow-up financing and development of the target company. The US Venture Capital Association (NVCA) has expanded the definition of PE investment. In addition to the usual PE investment, they believe that whether it is venture capital or mezzanine investment, as long as it is an investment in a non-listed enterprise project, it belong to the PE investment business.

In China, research scholars have defined PE investment from different perspectives in view of the different states of China's primary market development. Sheng Lijun (2003) believes that PE investment is the investment in the growth stage of non-listed enterprises. The ultimate goal of the investment is to finally sell the equity of the target company and realize high investment income. He believes that the definition of PE investment needs to be divided into two categories. One is PE investment, and the other is VC investment. Compared with VC investment, PE investment is marked by the development of more mature enterprises. Wu Xiaoling (2007) believes that PE investment is an industry investment fund that provides funds for enterprises with advanced technology in the industry for industrial development.

Through the above analysis, we can see that different experts, scholars or institutions have made their own interpretations of the definition of PE investment from their respective perspectives. Generally speaking, the broader scope of PE investment is broader, similar to the definition of the United States; and the narrow sense of PE investment is the equity investment of non-listed companies that are already in the mature stage.

The listed company data in the GEM is the sample source of the empirical research in this paper. After the statistics on the prospectus of the GEM listed companies, most of the equity investment in the GEM companies is concentrated in the middle and late stage of enterprise development. However, some funds have been involved in the early stages. Meanwhile, in the market practice, the dividing line between PE and VC is gradually blurred. Therefore, using broad definitions to understand PE investments is more comprehensive.

1.2.2 Method of enterprise evaluation

The concept of enterprise value has been popular in the United States since the 1960s, and has been studied and sought after by the theoretical and practical circles, since it has very important research significance. At present, world-famous investment banks such as Goldman Sachs are based on the relevant indicators of enterprise value as an important basis for evaluating companies and their stocks. In China, with the establishment and continuous development and improvement of the socialist market economic system after the reform and opening up, the concept of enterprise value has begun to sprout and gradually infiltrate into the consciousness of management and investors, and has become an important indicator affecting the comprehensive evaluation of enterprises. However, different scholars hold different views on the measurement of enterprise value, and they have not formed a unified conclusion.

In the 60 years of research in academia, many methods have been developed to measure the value of enterprises. Different methods have their own pros and cons.

The first most commonly used variable to measure business value is the Tobin Q value. Tobin Q equals the company's market value / the company's asset replacement cost. Among them, after the company's stock market value and bond value are summed up, the company's market value data can be obtained, and the book value of the company's total assets can be regarded as the company's asset replacement value. The corporate value considered by Tobin Q is a more comprehensive corporate value, not just from the perspective of shareholders, and is therefore a more comprehensive definition of company value. However, due to the insufficiency and maturity of China's existing capital market, the stock price does not accurately reflect the company's market value, so the use of this data may lack accuracy.

This is followed by the return on equity (ROE), which is equal to the ratio of net profit to average shareholder equity, reflecting the return on funds invested by the company's shareholders. High ROE of the enterprise indicates that the company has high efficiency in using its own funds, and vice versa. As a static indicator, it cannot contain the value of the company's future development.

There is also a commonly used measure of price-to-book ratio（P/B ratio）. The P/B ratio is mainly used in the analysis of stock investment, which is the ratio of stock price per share to net assets per share. Compared with the P/E ratio, the P/B ratio is not strong enough; and because the development of China's securities market is not complete and the stock price fluctuates greatly, it cannot accurately reflect the value of the company, so the admissibility is not strong.

In summary, each variable that replaces the value of the company has its own focus. When the angle of your research changes, the variables you need to select will also change. This paper needs to measure the value of the enterprise as a whole, so the Tobin Q value is chosen as the proxy variable of the company value studied in this paper.

1.2.3 The impact of PE investment on enterprise value

1. A Literature Review of PE investment Affecting Enterprise value

Since PE investment generally has a long investment period, the investment funds will be used for a longer period of time, which is beneficial to the long-term effective relief of the financing difficulties of enterprises. At the same time, PE investment often brings new and advanced management ideas to the founders or management of the company, match the interests of the company with the interests of private equity investors, focus on tapping the long-term value of the company. Therefore, the participation of PE investment can promote the efficiency of business management, improve the market share of the company, enhance the market competitiveness, and further elevate the value of the enterprise.

A large number of literature research conclusions support this view. Through empirical research, Magginson and Weiss (1991) found that listed companies with PE investment have lower IPO underpricing rates and underwriter fees, which indicates that PE investment can help companies effectively reduce operating expenses and increase corporate funds. Simultaneously, they studied the holdings of the company's equity by the private equity institutions after listing. It is found that, in general, PE investment institutions will not immediately sell their shares after the listing of the company, but continue to hold the shares. And through the management to enhance the enterprise value and the equity value. Jain and Kini (1995) divided the sample into PE-shareholding and non-PE-shareholding. By comparing their book-to-market ratio and price-earnings ratio, it was found that the positive effect of PE investment on listed companies generally existed before the listing. And as time goes by, the effect on book-to-market ratio and the price-earnings ratio of PE to the company will become less obvious. Brav and Gompers (1997) also found evidence of positive effects. He found through research that companies with private equity participation will have significantly higher returns to shareholders in the five years after listing than those without. The study by Cao and Lerner (2006) also supports this view, proving that PE investment does create value for the invested company. By studying the stock price changes of 526 relisted listed companies from 1981 to 2003, they found that companies that were leveraged and re-listed after PE investment had higher stock price yields than the entire stock market.

Domestic scholars have also made corresponding research on the impact of PE investment on enterprise value, and have reached the conclusion of support. Chen Xiangyong (2000) and Gong Yue (2012) analyzed the impact of PE investment on enterprises from the perspective of PE investment affecting corporate governance, and concluded that PE investment will have a positive effect on enterprises. Zhu Jing (2011) empirically demonstrated that PE investment has a positive impact on the company's operating performance and enterprise value. Liang Jianmin and Wu Jiang (2012) made a distinction between the characteristics of PE investment, selected GEM as the research object, studied the impact of PE investment on business performance and enterprise value. They found that PE holdings would indeed has a positive impact on the business performance after the company was listed. At the same time, the study found that the impact of PE with state-owned background on the company's operating performance is higher than the impact of ordinary institutions. Li Jiujin (2015) used the IPO companies in the A-share market from 2008 to 2012 as a sample to study the impact of PE investment characteristics on the value of invested companies, and enriched the theoretical support of the impact of PE investment on enterprise value.

At the same time, other scholars found different conclusions in the research process. The study by Hong Kong scholar Wong (2004) also focuses on the abnormal performance of companies with PE investment, and concludes that there is no significant difference in the performance of PE investment shares: the promotion brought by PE investment is not true in the study of listed companies in Hong Kong. Similarly, the findings of the Singapore Equity Exchange have reached similar conclusions. Wang K. Clement and Lu Q (2003) empirically analyze 164 listed companies in the Singapore stock market, with PE investment as the standard. The total sample is divided into two categories, and the differences in the performance of the stock market are studied. The results are astounding: enterprises with PE investment perform worse than stocks with no PE investment. Hou Jianren, Li Qiang, and Zeng Yong (2009) empirically tested the impact of PE investment on firm performance from three perspectives of return on investment, profitability and growth, and reached similar conclusions with Wang et al. (2003). In other words, the participation of PE investment has no positive effect on the performance of the target company; on the contrary, the investment performance and profitability of PE investment companies are worse than those without PE investment.

From the combing of the above documents, we can learn that the current academic research on the value of PE investment in enterprises is still controversial, and no consistent conclusions and opinions have been reached. Therefore, exploring the research work of the impact of PE investment on enterprise value in China is very necessary for further deepening the understanding of China's private equity industry and enriching the theoretical basis of PE investment affecting enterprise value.

2. The path of PE investment affecting enterprise value

Through a systematic review and analysis of the literature, we summarize the four paths that PE investment can affect the value of the enterprise: corporate governance path, technological innovation path, earnings management path and dividend distribution path.

First, from the perspective of influencing corporate governance, PE investment can further influence enterprise value by affecting corporate governance. The research of this topic can be explained in two aspects. On the one hand, Macmillian et al. (1985), Gompers (1995), Wong-sunwai (2008) and other scholars believe that PE investment will be through the placement of directors to the invested companies or through the intervention of the shareholders' meeting, in order to manage the invested companies and reduce management behaviors with a view to improving the company's governance structure. The results of empirical research confirm this point. Katz (2009), Givoly et al. (2010) found the regulatory effect of PE investment participation on target companies. Through empirical research, they found that companies with PE investment manipulate compared with those without PE investment, there are fewer maneuverability accrual project, more authentic accounting information, and more mature corporate governance.

The incentive effect is another way of influence besides regulation. The participation of PE investment has an incentive effect on the salary of corporate executives. In general, companies with PE investments will be more tied to the salary of their executives. Baker and Gompers (1999) locked the research target into the CEO salary of listed companies. Comparing the differences in the salary of CEOs with or without PE investment, it was concluded that private equity participation would have a negative impact on CEO salary. Impact, because companies that typically participate in PE investments will be encouraged by CEOs through other non-salary compensation arrangements. Hellmann and Puri (2002) conducted research by issuing questionnaires and found that companies with private equity participation had twice as many executive equity incentive ratios as private equity investors.

Jensen and Meck-ling (1976) and Fama and Jensen (1983) argue that by analyzing the theory of contract, and proposed that the existence of agency costs due to the separation of ownership and control will result in unnecessary waste of enterprise resources, it also reduce the value of the business. In order to increase the enterprise value, it is necessary to reduce the agency cost, which requires effective supervision and incentive arrangements for the enterprise.

The second path is the path of technological innovation, that is, PE investment increases the value of the enterprise by affecting the technological innovation of the enterprise. As early as 1988, Florida and Kenney proposed that because of the complex background of PE investment, through continuous investment and extension, a huge and diverse social network has been formed. The docking and complementarity of resources can effectively help the investment. Enterprises realize technological innovation, which in turn brings convenience to enterprises. Kor-tum and Lerner (2000) through empirical research from 1983 to 1992 show that enterprises with PE investment have 3.1 times the input-output ratio of technological innovation than the average enterprise, and the technology innovation of PE investment to enterprises. There is a significant positive effect. The study by Tykvova (2000), Ueda and Hirukawa (2003, 2006) also reached similar conclusions. Hellman and Puri (2012) found that the participation of PE investment has a significant negative effect on the industrialization time of new products. That is to say, with the participation of PE investment, the time for industrialization of new products will be shortened, which shows that PE investment can effectively promote the research and development of innovative products. Keuschnigg (2014) believes that the experience and strength of venture capitalists will greatly improve the technological innovation rate of the invested companies.

There are not many studies on the path of PE investment on the technological innovation of invested enterprises in China. Yang Zhuqing (2012) used the SFA model to measure the technological innovation efficiency of China's GEM listed companies, analyzed the factors affecting the efficiency of its technological innovation, and finally found that the company's size, ownership concentration and corporate governance level has a significant impact on the rate of technological innovation.

The third path is the earnings management path. Jain and Kini (1995), Morsfield, and Tan (2003) have shown through empirical research that listed companies, whether or not they have PE investment, will experience a decline in operating performance after the IPO. However, compared with companies that do not have PE investment, the performance of PE investment companies will decline even after the listing. This shows that in general, companies will package and whitewash their performance before listing, but companies with PE investment will have a lower level of performance. According to Compers and Lerner (2006), in addition to providing the necessary financial support for the development of PE investment institutions, PE investment institutions can also provide post-investment management such as development planning and personnel support. From this perspective, in order to maintain the stability of corporate performance, after accepting PE investment, the degree of earnings management will be suppressed to some extent. Jain and Kini (2005) found that among the companies listed on the North American securities market, the business performance and management level of PE investment companies will be significantly higher than those without PE investment. At the same time, some scholars believe that PE investment has a restraining effect on corporate earnings management. Morsfield and Tan (2006) found through empirical research that in the year of IPO, the participation of PE investment in the target company's earnings management level was negatively affected. The study by Chou and Gomola (2014) found that after the participation of PE investment, the level of IPO earnings management of enterprises is higher, indicating that PE investment participates in the earnings management behavior of enterprises to a certain extent. Suo Lingling and Yang Kezhi (2011) based on the data and information of listed companies in the GEM, when the IPO is discovered, the degree of corporate earnings management will not be significantly reduced due to the PE investment. Hu Zhiying, Zhou Lu et al. (2012) found that enterprises involved in venture capital will have moral hazard problems. Specifically, enterprises with risk investment backgrounds have a profit recovery level in the year before and after the IPO.

Through the combing and categorization of the above documents, we can know that the current research on the impact of PE investment on corporate earnings management still exist enormous differences. At the same time, because the market environment has been changing all the time, the quality of practitioners is also different. Therefore, whether the impact of PE investment on corporate earnings management is positive or negative is difficult to define.

The fourth path is the dividend distribution path. The MM theorem believes that dividend policy is not related to company value. However, in general, when a listed company issues dividends, it usually sends an optimistic and positive signal to investors, which causes external investors to change their expectations and judgments on the target company, thereby changing the value of the company (Miller and Rock, 1985). Xiang Qun (2010) found that the deeper the involvement of PE investment in enterprises, the better the stock price performance of the invested companies after listing. In order to achieve high returns, PE investment will use various ways to increase the motive of the target company's stock price. Therefore, it will be more inclined to let the company adopt the method of dividend distribution to raise the expectations of external investors, thus raising the stock price.

1.3 Research ideas and content

From the perspective of theoretical analysis and empirical research, this paper aims to answer whether PE investment will have an impact on enterprise value, and whether the impact of private equity of different investment characteristics on enterprise value will be different. This paper intends to analyze the problem based on the idea of "propose a problem - theoretical analysis - empirical test - conclusions and recommendations".

According to this idea, the research content of this paper is divided into six chapters:

The first chapter is the introduction. First, introduce the research background and significance of this paper are expounded. Then sort out and analyze the related domestic and foreign literatures. Finally, the research ideas and innovations of this paper are expounded.

The second chapter is the theoretical part of this paper, including the relevant theories of PE investment and the related theories that PE investment affects the value path of enterprises.

The third chapter is a simple combing of China's PE investment, from the development process to the development status.

The fourth chapter is a general theoretical analysis of the role of PE investment in enterprise value and its impact path.

The fifth chapter is mainly the empirical analysis of the impact of PE investment on enterprise value. This paper selects the data of listed companies in GEM 2015-2018 as the research sample and research interval, and empirically studies whether PE investment will affect the value of enterprises, and analyze whether the different investment characteristics of private placement will have different impact on enterprise value.

The sixth chapter is the conclusions and recommendations of this paper. It summarizes the results of the previous research and puts forward feasible policy recommendations.

1.4 Innovations

The innovations of this paper are mainly reflected in the following aspects:

1. Enrich the existing literature research results. In this paper, the enterprise value is taken as the research variable, which is different from the previous business performance or business risk as the explanatory variable, and has made new contributions to the research of this topic.

2. Since the GEM was launched in October 2009, the stability of the pre-use data is not sufficient. Therefore, this paper selects the data from 2015 to 2018, and the research results are more accurate, which can more directly reflect the impact of PE investment on enterprise value, and it has more reference value.

Chapter 2 Theoretical Analysis of PE Investment Affecting Enterprise Value

2.1 Related theories of PE investment

2.1.1 Contract theory and organizational form of PE investment

According to modern contract theory, the essence of an enterprise is a collection of contractual relationships between various production factor owners and their customers. Because the contractual relationship between the operator and the owner and the company is inconsistent, the goals are also inconsistent, which will arise contradictions and conflicts. In order to reduce this conflict and the resulting agency costs, it is particularly important to design effective incentives and constraints mechanism. The well-known principal-agent theory, cost-transaction theory and incomplete contract theory together make up the contract theory. The definition of the essence of the enterprise is explained by the transaction cost theory. Since the market transaction has expense, the transaction cost is also existed inside the enterprise. When the transaction cost of the enterprise is higher, they will prefer carrying out more internal transactions, which would lead to an increasing scope of the company. The boundaries of an enterprise depend on the trade-off between market transaction costs and the internal transaction costs, and thus reach a state of equilibrium. The principal-agent theory, also known as the complete contract theory, emerged in the context of the development of large-scale production. When socialized large-scale production begins to prevail, there will be differences in the division of labor between positions and personnel, and thus “professionals” will be produced in one aspect. This is the agent in the principal-agent theory, and the agent accepts the commission of the principal to carry out specialized operations. However, in this principal-agent relationship, since the agent can directly access the most comprehensive first-hand information, and the principal can only obtain information or observe signals indirectly from the agent, there exist obvious information asymmetry. At the meantime, because the source of interests of the principal and the agent are different, there are different interest objectives, which will inevitably lead to conflicts between the two parties. Therefore, there is a problem of adverse selection and moral hazard. In order to solve this problem caused by information asymmetry and inconsistent interests, the best solution is to design an optimal contract and give the agent a certain incentive. The theory of incomplete contract is based on the theory of bounded rationality, imperfect information and the uncertainty of transactional matters. As a result, the cost of clarifying all special powers is too high, and thus the theory of incomplete contracts is produced. In the event of a special situation, coordination is required through negotiation.

PE investment is a contractual relationship, including the fund provider, the project investor and the project, among which constitute a contract. When the three parties' rights and responsibilities in the contract change, the different organizational forms of PE investment arise. There are three types of corporate fund, contract fund and limited partnership fund.

1. Corporate fund. The corporate fund is the product of the initial stage of development of PE investment. It is the same as other companies' organizational forms and requires the legal person with independent subject qualification. Generally, the PE investment fund is the main body. The company's shareholders were constituted by funders and follows the company law which clearly defined the number of shareholders. At the same time, in accordance with the company law on the responsibility of all parties has limited liability to the PE investment fund by the amount of capital contribution.

2. Contract fund. As it implies, it refers to a PE investment fund with the participation of a trust company. PE investment institution and trust company complete each other to start up a private equity fund. The trust company is responsible for the custody and settlement, while PE investment institution is responsible for the management of invested projects, and each of them has their own duties and directors.

3. Limited partnership fund. This is the most common way of organizing private equity funds. Unlike general corporate systems, limited partnerships have special designs and arrangements. In a PE investment fund, the investor exists as a limited partner(LP), and the manager of the PE investment fund is a general partner(GP). LP’s liability for the company’s debt is limited to the amount of capital contribution, and GP bears unlimited liability. This arrangement can effectively restrain and motivate the behavior of fund managers by arranging the unequal powers and obligations, funding and responsibilities. At the same time, the problem of double taxation can be avoided.

Table 2.1 Comparison of private equity fund organization methods

FUND TYPE	CORPORATE FUND	CONTRACTUAL FUND	LIMITED PARTNERSHIP FUND
LEGAL BASIS	CORPORATE LAW	TRUST LAW	PARTNERSHIP ACT
FUND MANAGER	FUND MANAGEMENT COMPANY	TRUSTEE	GENERAL PARTNER
CONTRIBUTORS STRUCTURE	JOINTLY FUNDED	INVSETORS	GENERAL PARTNER PROPORTION: 1% LIMITED PARTNER PROPORTION: 99%
INVESTMENT PROFIT DISTRIBUTION	FUND MANAGEMENT COMPANY CHARGES ADMINISTRATIVE FEES AND FUND NET INCOME COMMISSION	INVESTORS GET THE FUND CAPITAL APPRECIATION INCOME; FUND MANAGERS GET THE AGREED PROPORTION OF MANAGEMENT FEES	THE GENERAL PARTNER RECEIVES AN ANNUAL MANAGEMENT FEE OF 1%-3% OF THE NET ASSETS AND 20% OF FULL NET INCOME
INVESTMENT PAYBACK	EQUITY SHARE TRANSFER ONLY BY EXCHANGE NOT BY RECLAIM	PAYBACK AFTER THE FUND DURATION	PAYBACK AFTER THE FUND DURATION

2.1.2 Principal-agent theory of PE investment

In the 1930s, Berle and Means (1932) proposed the Principal-agent Theory in his book "Modern Company and Private Property", which laid the theoretical cornerstone of corporate governance. Principal-agent theory is one of the most deeply studied and widely used theories in contract theory. The core is that in the development process of modern enterprises, the separation of ownership and management rights creates a conflict of interest between the owners and operators. This conflict of interest stems from the goal of the business owner to maximize the company's profits, and the operator's goal is to maximize personal interests, so this idea will be reflected in the action during the business management.

In the process of operation and operation of the PE investment fund, three main entities are involved, namely the funder, the PE investment institution manager and the target enterprise. Among them, the funder provides funding for PE investment, and PE investment provides financial support for the development of the target company. Through these two layers of funding, a two-tier principal-agent relationship has emerged. The funder entrusts the PE investment fund to manage its funds, which leads to the first-level principal-agent relationship of the theory. In this level of principal-agent relationship, the investor is the principal and the PE investment institution is the agent. In the process of investing in PE investment projects, the PE investment institution becomes the principal. At this time, the target enterprise is the agent. This is the second-level principal-agent relationship. Specifically, in the entire process of PE investment, the PE investment institution plays the dual role of acting as an agent and a principal.

In the principal-agent relationship, because of the information asymmetry, interested parties with more information will have more profit. In terms of corporate governance, the information about the company owned by the company's shareholders and management is asymmetric. The management has the information advantage because it owns the company's management rights and directly participates in the daily operation and management activities. However, due to the surrender of the management right, the shareholder only has limited understanding of the daily operation. Generally, only through the management's performance report and the financial report at the end of the period can shareholders grasp the business situation, which leads to an information disadvantage. The long-standing existence of information asymmetry will directly lead to the problems of “moral hazard” and “reverse selection” and cause market failure.

Therefore, how the client designs the optimal incentive mechanism for the agent to reduce the information asymmetry and the agency cost, so as to achieve the win-win situation between the two parties has become the most concerned issue in the research and practical circles.

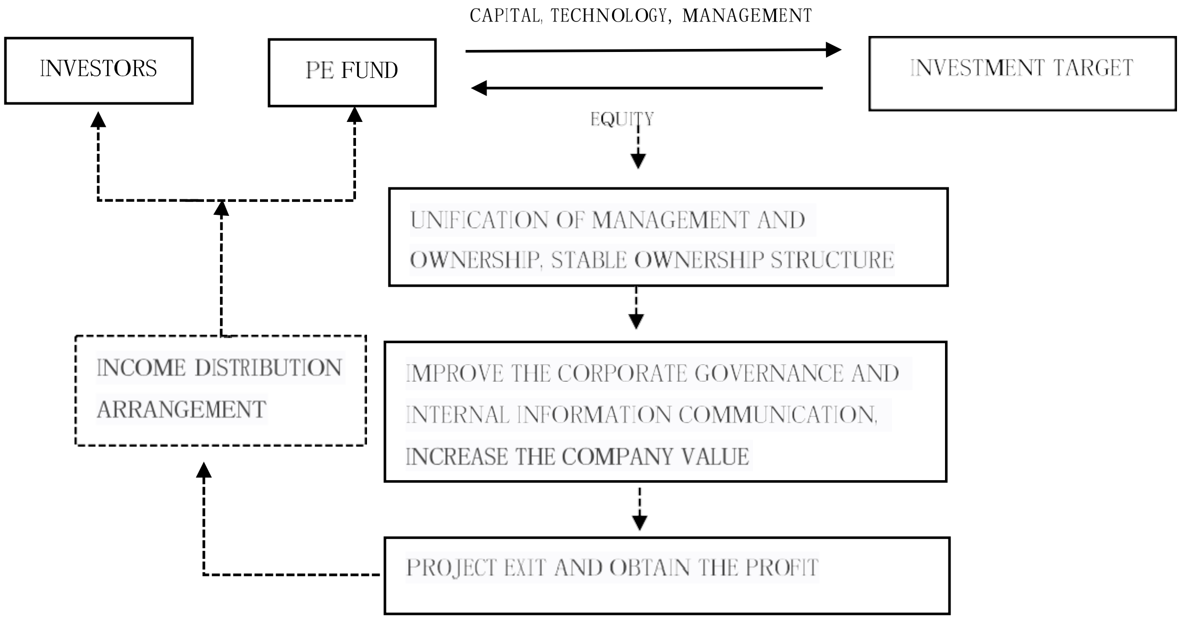

Figure 2.1 Principal-agent relationship in PE investment

From the foregoing description, we already know that the arrangement of the partnership organization has already guaranteed the rights and benefits of the funders to a certain extent, so that the management of the PE investment institutions and the funders tend to be consistent, but the second level of principal-agent relationship is relatively more complicated. Generally speaking, before a PE investment institution invests in a target company, it is necessary to fully comprehend the target company through detailed due diligence procedures, henceforth to ensure that institution understand and recognize the target company’s governance and profitability. However, in practice, due to information asymmetry, PE investment institutions often do not accurately understand the information of the target company. Therefore, it is necessary to adopt special terms and arrangements, such as valuation adjustment mechanism（VAM）, repurchase and other arrangements. As far as possible, we hope that the target company's management and investors' interests will be consistent, so as to prevent some self-interested behaviors of the target company.

2.1.3 Signal transmission theory of PE investment

Classical economic theory assumes that information is perfect, that is, for all parties who provide and use information, they can get unbiased, authentic and complete information. However, many scholars have found in later research that information exists as a scarce resource in the market, and that interested parties with more information will achieve more profit. Information is one of the key factors in modern economic behavior decision-making process. When economic agents make a decision, the scientific nature of decision-making is directly proportional to the amount of information they have. However, the acquisition of information is costly, which will cause economic entities different in the tendency to obtain information. Some will be more inclined to pay a high price to get information, while others will choose to get less information in order to save money. This will lead to the phenomenon of information asymmetry between different subjects in the market. Signal transmission theory is an effective way to solve the problem of adverse selection.

The study of adverse selection was carried out from the old car market, and Akerlof (1970) analyzed the old car market based on information asymmetry. He believes that in the old car trading market, the buyer and the seller's the information of the old car is asymmetric. The seller has an understanding of the real situation of the vehicle, and the buyer only has an average one about the market. Therefore, when the buyer makes a purchase, they are only willing to pay the average market price even it is a good car. This will cause good cars exiting the vehicle trading market due to the undervalued price, which results in the lack existence of vehicles with good quality. And when consumers gradually realize this phenomenon, they will no longer buy any goods, since the rest are with bad quality. In the end, the buyer will choose another market and the old one will eventually disappear.

In order to solve this problem, the primary is to ensure that the buyer can know as much as possible about the seller's product information. The theory of signal transmission is simply about how information is passed from the seller to the buyer. Only when the seller of quality goods can pass the product information to the buyer at a lower cost, both parties can profit from the transmission of such signals, thereby eliminating the phenomenon of information asymmetry.

This idea can be extended to the business management activities of enterprises. Due to the different degrees of contact with enterprises, there is also an asymmetry in the information between internal management and external investors. In order to transmit information, the company's management will pass on positive signals about the company's profitability to investors through financial reports and dividends, thus affecting investors' decision-making. In the theoretical world, the interpretation of the company's dividend-matching policy often uses signal transmission theory. The beginning of this research stems from the research of Lintner (1956). He has theoretically analyzed the company's dividend distribution from various angles and empirically tested whether the theory is valid. Specifically, through the comparative analysis of the dividend distribution and company characteristics of 600 listed companies in the United States, a regression model is established, and it is found that the scale of the enterprise is directly proportional to the stability of the dividend payment. There is a lag between the company's choice of increasing dividends and the company's performance increase. Only when the company's income level is long-term and stable, the management will increase the distribution of dividends. There is also a lag between the company's choice of reducing dividends with performance reduction. In the current period of corporate profit reduction, the management will not immediately reduce the distribution of dividends, but will first maintain a stable distribution. Accordingly, Lintner believes that the company's dividend distribution policy is an independent policy that is related to the company's long-term development plan and is not tied to other short-term decisions.

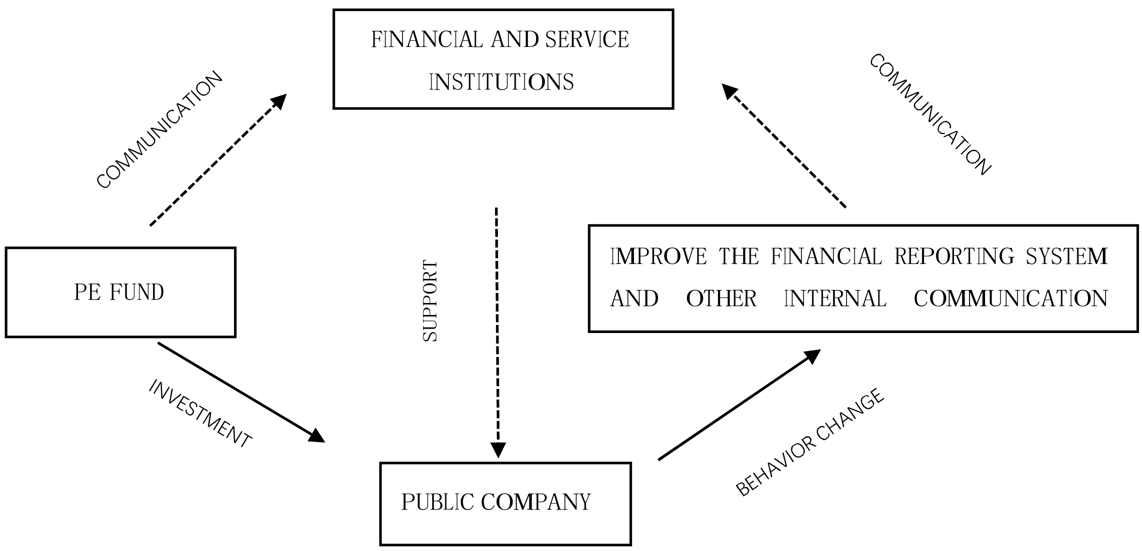

Figure 2.2 The signal transmission process of the impact of PE investment on listed companies

Signal transmission theory provides new ideas for PE investment to influence the value of target companies. The participation of PE investment will change the direction and intensity of corporate signal transmission, which will have a subsequent impact on the company's value. Specifically, as early as the target company is invested, the participation of PE investment conveys a positive signal to the market that is beneficial, which means, it is recognized the company with certain growth potential and investment value. This kind of signal will attract continued attention of other investors, which will help raising the enterprise value. In addition, enterprises with PE investment participation in management will increase their exposure, and the information will be more transparent. With the rationalization of capital structure, optimization of shareholding structure, standardization of business operations and other signals, the higher market acceptance of target enterprises will be achieved.

2.2 Path analysis of PE investment affecting company value

The whole process of PE investment is simply to invest capital into the target company, participate in or supervise the operation and management, regulate the behavior and development path, and finally make the target company listed or merged or transferred the shares, in order to achieve high returns and appreciation. Lengthen the process of PE investment, from the fundraising of PE investment institutions to the investment, management and exit method, will have influence on the target company more or less. Consequently, it will generate positive or negative impact on enterprise value. Therefore, we need to explore the specific impact and mechanism of PE investment on the target company in different process stages.

From the perspective of different process stages, during the initial screening process, the investment decision of the PE investment institution will put forward certain requirements and make certain guidance for the innovation degree of the target enterprise, henceforth influence the enterprise value by influencing the technological innovation. In the post-investment management stage of the project, the PE investment institution will directly participate in the business decision-making and corporate governance activities, which will directly affect the corporate governance behavior. When the target company makes a decision on whether to distribute dividends, PE investment will directly add its own consideration to the company's decision-making. Whether to distribute dividends and how many dividends will be distributed will be more or less affected by PE investment. In the process of exiting and liquidating, in order to maximize the return, PE investment institutions will pay more attention to the earnings management behavior of the target company, and then affect the value of the enterprise by affecting the earnings management behavior, so as to achieve a higher return.

The specific impact mechanism of PE investment on company value is shown in

Figure 2.3.

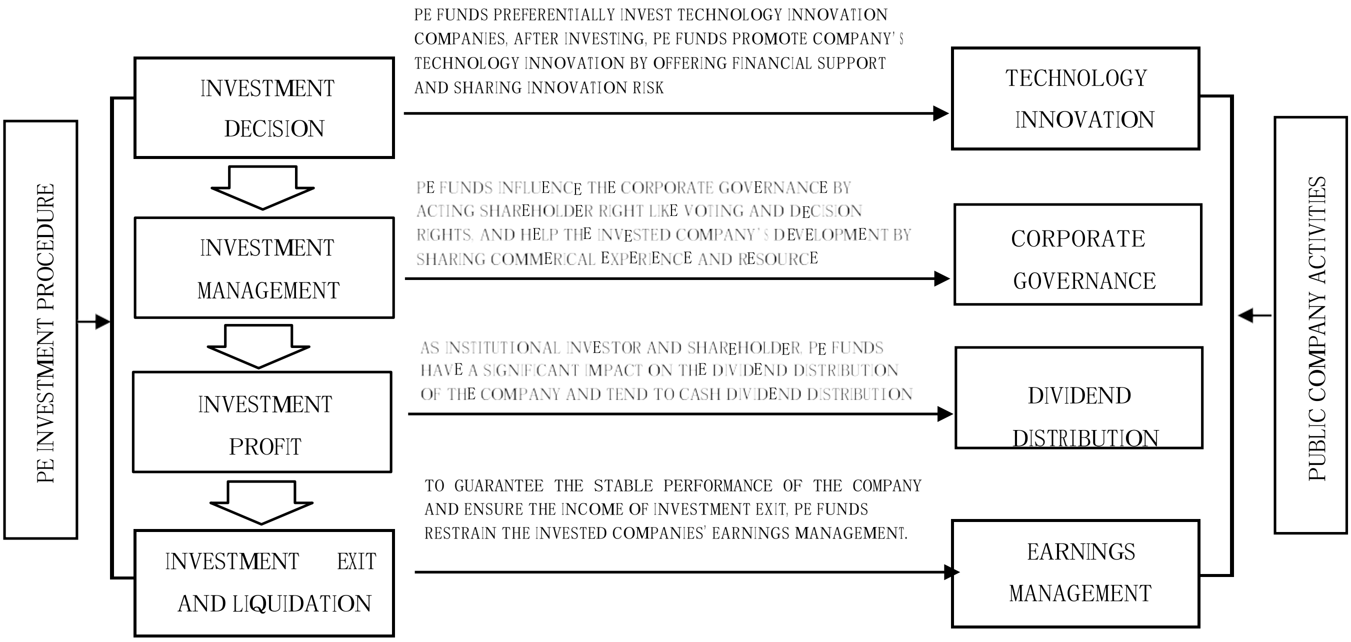

Figure 2.3 Relationship between PE investment and listed company behavior

The establishment of a PE investment fund requires a series of relatively cumbersome processes, which can be divided into four phases: capital raising, investment decision-making, investment management, and investment exit. In different stages of the PE investment, also as in different stages of development of the company, PE investment has different concerns for the company, which different priorities will bring different impacts to the company. This paper takes the four stages of PE investment as the analysis, which starts from the process of PE investment operation, and discusses the impact of different stages of PE investment on the target enterprise.

In general, managers of private equity funds consider the number of limited partners when raising funds. The fewer funders, the fewer the fund managers need to face and be responsible for. However, fewer funders mean that the amount of capital required by each investor will increase. In the case of risk and return, the funder will generally choose to diversify. Simultaneously, the investment of such funds is also invested in batches, instead of investing in all funds at one time.

In the fundraising phase, the PE investment fund only contacts its funders and has little relevance to the target company, so it does not directly affect the target company. However, it is worth noting that the industry background and growth prospects of the target companies as reserve projects are one of the important factors affecting private equity investors.

2.2.1 PE investment decision and technological innovation of listed companies

The investment decision-making process of PE investment mainly includes three stages: searching, evaluation and investment decision. In the search phase, in general, the project manager will collect items through relationship and searching based on the investment scope, industry preferences and growth stages of the fund. After the project has passed the preliminary screening stage, more detailed and professional due diligence and value assessment will be carried out on the alternative projects. This includes comprehensive assessment of the company's financial risks, legal risks, comprehensive strength of the company, future development prospects, and financial forecasts. At the meantime, according to the results of the due diligence, the project valuation, investment amount and investment method are determined. Subsequently, the contract negotiation will be carried out in line with the expectations of both parties. The various institutional requirements for the target enterprise will be reflected in the investment agreement. After the two parties reach an agreement, the contracting process will be carried out.

In the decision-making process of PE investment, whether to invest or not, an important consideration is the innovation ability of the enterprise. PE investment generally prefers innovative industries with innovative and growth-oriented industries. The most important competitive advantage of such enterprises is technology innovation. In order to obtain PE investment, the target company will also do its best to increase investment in technological innovation. Therefore, we can see that PE investment is actually screening and guiding the technology-based enterprises in the market. At the same time, the involvement of PE investment will also start from its own professional, combined with its investment background, to inject new vitality into the enterprise.

2.2.2 PE investment management and corporate governance of listed companies

The proportion of PE investment is generally not too large and will generally be controlled within 20%. However, in order to achieve effective restraint and supervision of the target company, in the investment stage, a series of arrangements will be made to send the senior executives to the board of directors of the target company, through the one-vote veto of the shareholders' meeting and the board of directors, phased investment, valuation adjustment mechanism(VAM) and other ways to participate in and supervise the management of the target company.

In general, because the background of PE investment is relatively more complex, it generally has more experience in the management of the company. Therefore, after investing in the target company, PE investment can often provide guidance to the target company on the development path planning. At the same time, in order to lock in the stability of the management, when the PE investment enters, the enterprise will be required to motivate the management through the equity option, or sign the relevant agreement that does not allow the VP to leave. In addition, the general PE investment institutions' capital increase of the target enterprises is also carried out in stages. After the first phase of capital investment, if the business performance indicators of the enterprises meet the requirements of PE investment, then the time will be as agreed. The node inputs the second phase of funds and other funds that follow. Through this incentive and restraint mechanism, the agency cost between the PE investment and the target enterprise can be effectively reduced, thereby enhancing the value of the enterprise.

In the actual development process, PE investment has gradually become a new way of corporate governance. Through this investment relationship and clause design, it is expected to form a special governance structure between PE investment and target enterprises. By directly participating in business management, exercising one-vote veto, controlling follow-up investment and other various ways to influence the behavior of the target company's management and even all company employees, and establishing within the target company through the design of the terms and agreement constraints. Effective incentives and restraint mechanisms have enabled the company's executives, employees, shareholders and other stakeholders to achieve consistent goals, thereby improving the management efficiency of the company and increasing the value of the company.

2.2.3 PE investment income and dividend distribution of listed companies

For investors in PE investment, the investment income of the target company is mainly derived from the value added of equity value realized when the project exits, and not the dividend distribution obtained during the investment period. In the principal-agent relationship, the information is asymmetrical and the manager of the enterprise owns all the information of the company. What the investor knows is the signal transmitted to it by the enterprise manager, or the observed ones. In order to absorb subsequent investment, the company will give positive signals to outside investors by issuing dividends to guide external investors to enter or invest in existing investors. Therefore, when an actual company makes a profit distribution decision, PE investment will have an important impact on it. PE investments make a trade-off between the long-term gains of holding companies and the short-term gains of dividend distribution. On the one hand, PE investment prefers higher yields when exiting projects; on the other hand, it hopes to transfer information to the market through short-term dividend distribution to attract subsequent investment. On the other hand, it can also impose a certain degree of control on management. Therefore, whether or not dividends are distributed and the proportion of distribution is necessary is an investor's judgment and trade-off.

2.2.4 PE investment exits liquidation and earnings management of listed companies

In general, PE investment in the holding of the target company's shares is expected to obtain the highest possible return on investment when the project exits. The most ideal way to exit is the IPO. At the same time, there are mergers and acquisitions, transfers, repurchases, bankruptcies, etc. The IPO exit method has the highest requirements for enterprises. Meanwhile, there are problems such as high standardization cost, high expense, long IPO period and so on. The duration of PE investment in a limited partnership is limited, generally 7-10 years, and can be extended for up to 3 years. When the PE investment expires, the fund manager needs to conduct a new round of fundraising, and the success of the new round of fundraising depends largely on the historical performance of the fund manager. Therefore, the better the historical performance of the fund manager, the higher the reputation, the easier it is to raise funds. In order to achieve a higher return on investment and short-term goals ， to communicate positive signals and increase its reputation, for the managers of private equity funds, he will encourage the surplus of the company to a certain extent in the process of end of PE investment, project liquidation and refinancing. The short-term profit target is in conflict with the long-term goal of PE investment. Long-term manipulation of corporate profits through earnings management behavior will also have a negative impact on the long-term development of the company. Therefore, PE investment will also inhibit the company's earnings management behavior. Whether to manage the earnings of the company's earnings, how to determine the degree of corporate earnings management, this also needs to be judged and weighed.

Chapter 3 Analysis on The Development of PE Investment in China

3.1 The development of PE investment in China

The development of PE investment in China first appeared in the 1990s. At that time, the establishment of China's earliest private equity fund, the Industrial Development Fund, marked the beginning of China's PE investment industry. Until June 2004, China's formalized PE investment case really landed. The completion of this transaction marks the official start of China's PE investment business, and PE investment institutions have begun to play their part in China. Up to now, PE investment has been developed in China for nearly 30 years. With the successful launch of the GEM in the past 30 years, China's PE investment market has gradually embarked on the right track and began to develop in a healthy and orderly state. After combing, we can see that the development of China's PE investment industry has experienced the following stages:

1. Exploration phase, which refers to the 1980s to the mid-1990s. At this time, there were only a few PE investment institutions in the market, and the investment targets were generally state-owned enterprises. Then overseas PE investment institutions entered China and played a role as a pioneer to expand the market. After entering the 1990s, with a massive influx of overseas PE investment institutions into China, they focus on those domestic superb companies and try to guide their development. However, at this time, the government regulation was strict and the capital market was poorly circulated, resulting in failure in PE investment at this stage. And the development of private equity funds has also failed.

2. The initial phase of development. This phase begins from the late 1990s to 2005, which is an important phase in the normal development of China's PE investment industry. At this stage, the construction of relevant policies, laws and regulations in China began to gradually start up, though it is still dominated by foreign institutions, including the well-known IDG capital, Sequoia Capital and so on. The very first PE investment project in China came into being in June 2004, New Bridge Capital invested in Shenzhen Development Bank. At the same time, some excellent domestic investment companies

such as Shenzhen Venture Capital began to emerge, and excellent standards began to emerge, such as Shanda Group, Ctrip, and Alibaba.

3. Rapid development phase. This phase is roughly around 2005-2011, and relevant laws have been introduced, providing guarantees for all participants in the industry, so the market could begin to develop in an orderly and healthy way. During this period, many important changes have taken place. For example, the split-share reform occurred in April 2005, the equity of listed companies began to be fully circulated, and the exit mechanism of the secondary market began to gradually improve. This is evident for the promotion of PE investment institutions. The launch of the GEM in October 2009 and the restart of the IPO are also known as important milestones in China's PE investment industry. The continuous improvement of PE investment exit channels has made the industry profitable. The projects that have been withdrawn through the IPO of the GEM have huge revenues. Therefore, the “national investment” boom has been set off for a time.

4. Adjustment and recovery phase. This phase lasts from 2011 to 2015. Because of the artificially high valuations in the previous stage and emergence of bubble in the investment market, slowed down the investment process. Since it is often agreed to anti-dilution clauses during investment in order to lock in the valuation, so as to avoid lower valuation of subsequent investors, the investment institutions began to be more cautious. In 2012, China's PE investment market showed a significant downward trend. During the period from October 2012 to January 2014, China's IPO continued to be suspended. Meanwhile, the IPO window of the US stock market was closed, the two exit channels were blocked. Superb companies have chosen to go public in Hong Kong. China's economic growth has also slowed down, making the PE investment market even worse. After the IPO was restarted in 2014, the PE investment industry gradually began to improve. Major institutions began to invest rationally, and the supervision efforts gradually became stricter, which lead to a healthier and more steady development of the industry.

5. The outbreak phase. This phase begins from 2015 up to the present and is also a relatively mature one in the history of PE industry. During this time, institutions emerged in an endless stream, inter-institutional competition began to intensify, investment teams became more specialized and began to attract a large number of professional and technical personnel to participate. Exit channels were more mature, rich and diversified. Foreign GP set up RMB funds in China， while domestic GP also set up US dollar fund to compete

on the same platform. With rapid development in the industry, funds, resources, etc., which have a strong influence on the brand and the fittest survived.

3.2 The development status of PE investment in China

Statistics from the Zero2IPO Research Center show that China's PE investment market has a brilliant performance in 2017. The number of newly raised funds reached 3,574, the number in 2016 was less than 2,800, which increased by 30.5%. In 2017, the amount of funds raised by the newly raised fund exceeded 1.8 trillion yuan, compared with 1.2 trillion yuan in 2016, an increase of 46.6%. In 2017, there were 10,144 PE investment cases, the growth was 11.2%; the total investment amounted to 1.2 trillion yuan, a year-on-year increase of 62.6%. This shows that the 2017 annual equity investment is mainly based on large-scale projects.

With the continuous development and growth of the PE investment industry, the status in the national economy is increasingly important, and the acceptance of PE investment by enterprises is also increasing. As a result, the proportion of total PE investment in GDP is also surging. In 2016, the total PE investment accounted for only about 1% of GDP, and in 2017 it increased to 1.5%. From the analysis of the exit of equity investment in 2017, the number of cases of China's equity investment funds exited has also increased significantly, with a total number of 3,409 exit cases. Among them, the most popular among investors is the withdrawal through the IPO channel. The number of exit cases in this channel reached 1,069, accounting for 31.4%, an increase of 94.0%.

From 2000 to 2015, the number of new private equity fund managers has been increasing. After 2015, the growth rate has begun to slow down, but the stock is increasing.

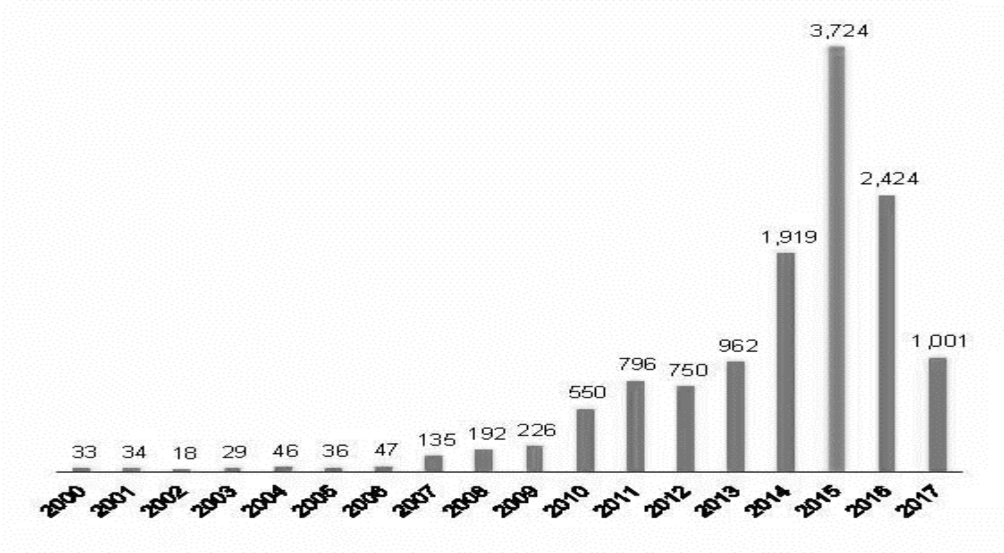

Figure 3.1 2000-2017 Fund Industry Association registered the establishment of private equity fund managers

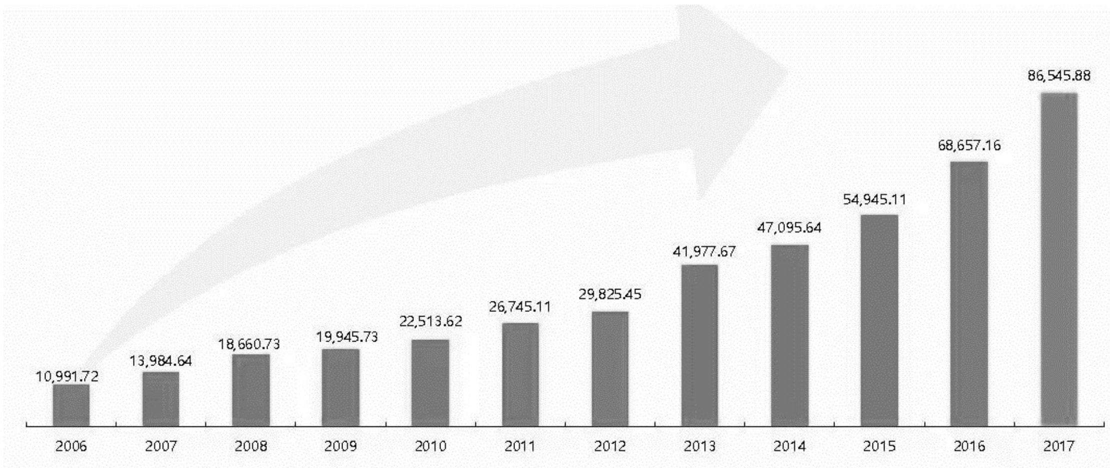

Figure 3.2 Capital Management of China's Equity Investment Market in 2006-2017 (RMB: 100 million)

Judging from the capital management of China's private equity industry, in 2006-2017, the amount of funds is increasing, and it is growing steadily. The compound growth rate is 12% per year, and the growth rate in 2017 is 26%. At of the end of 2017, the capital management of China's equity investment market reached nearly 8.7 trillion yuan.

In 2017, both in terms of quantity and amount, the fundraising of China's equity investment market was more optimistic. Compared with the previous year, the amount increased by 30.5% and the number increased by 46.6%.

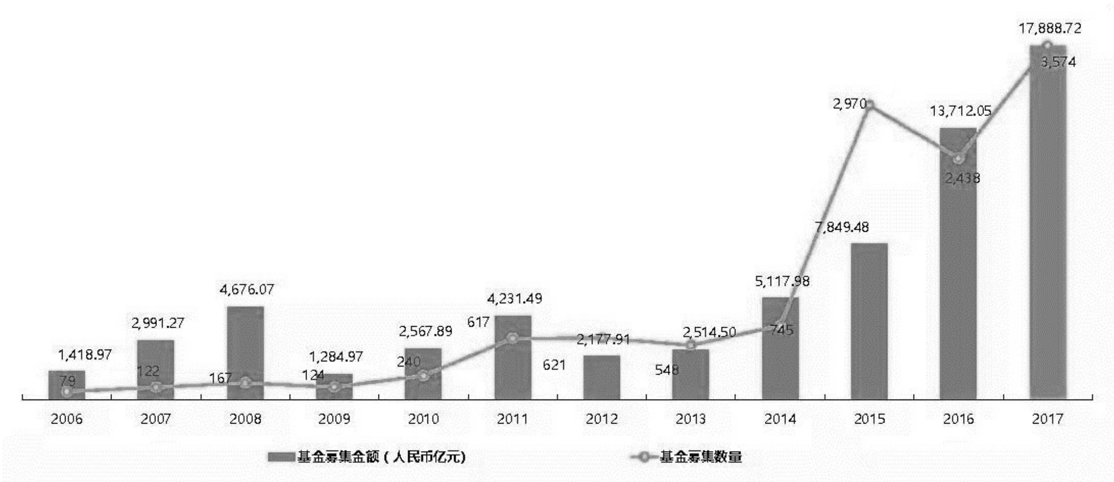

Figure 3.3 2006-2017 China Equity Investment Market Fund Raising (RMB 100 million)

According to different types of distribution, it can be seen that the fund distribution is mainly based on growth funds among the raised funds. In the listing process, lowered listing supervision and accelerated listing process, the growth fund based on the investment in the middle and late period is more favored by investors, both in terms of quantity and amount, far exceeding other types of funds.

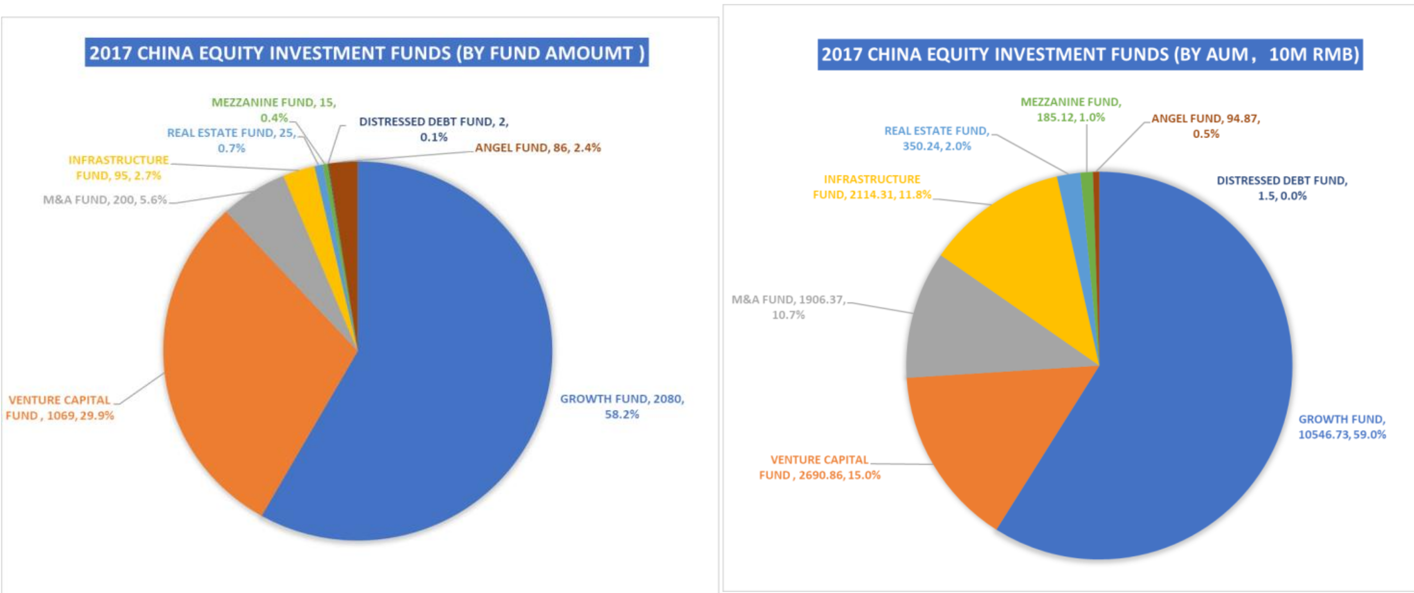

Figure 3.4 Distribution of China's equity investment funds in 2006-2017 (RMB 100 million)

Chapter 4 Path Analysis of PE Investment Affecting Enterprise Value

4.1 PE investment affects technological innovation of enterprises

As an emerging investment method, PE investment can be seen as an institutional arrangement to promote social technological innovation. PE investment institutions gather social idle capital to screen out companies with high-tech, high-innovation and high-growth investments in the market to help companies incubate promising projects and push them into the market for commercial operation， enhance he technical nature of society and compensate for the shortcomings of the existing government support.

For enterprises, the development and maintenance of a new technology requires a large amount of continuous financial support. For the start-up high-tech enterprises, it is very difficult to obtain long-term and stable financial support under the current market situation. If in the process of research and development, the problem of capital chain breakage will bring serious consequences. That is to say, for enterprises, they face enormous risks, including R&D risks and financial risks, and market risks after the launch of products or technologies. PE investment is a product that comes with this kind of risk. For PE investment, since the company can get huge profits after listing, he must also bear such high returns and high risk. In addition to providing stable financial support to enterprises, PE investment can also provide other support to enterprises, enrich and expand the development ideas of enterprises, and complete the blind spots and shortcomings of enterprises. At the meantime, through the supervision and rational distribution of funds, it can also reduce the unnecessary costs of enterprises and increase the profits of enterprises.

From the perspective of PE investment, although it directly faces high-tech enterprises with high risk factors, a portfolio can be formed through decentralized investment, which is effective by combining the hedging mechanism of project risks, to reduce the non-systematic risks and lower the investment risk of the entire portfolio as much as possible. At the same time, the source of funds for PE investment is not a public investor with a high risk aversion coefficient. It is generally an institutional investor with stronger risk-taking ability and stronger support for the innovation activities of the final investment enterprise. The process of PE investment in the inspection, review, analysis and decision-making of the target company is a process of screening enterprise risks and eliminating technical disadvantaged enterprises. Only truly enterprises with technical content and technological innovation significance can be favored by PE investment, get their financial support and survive. And finally realize the mature operation of the enterprise and the successful launch of technology. It can be seen that high-tech start-ups are an important target of PE investment, and PE investment is also essential in the development of excellent high-tech entrepreneurs. The mutual benefit and interaction between the two promotes the pace of social technological innovation.

4.2 PE investment affects corporate governance

Compared with other enterprises, companies with PE investment can avoid the problem of inefficient operation and management of enterprises caused by diversified shares, and can avoid the one-sidedness of large shareholders' decisions caused by a single big one. As a shareholder, PE investment shares the results of business operations. Therefore, the business performance of the company and the income from PE investment are consistent. When PE investment enters the enterprise, it has sufficient motivation and enthusiasm to participate in the management of the enterprise, and because of its professionalism in business management, it is more likely to be trusted by the management of the enterprise. When companies face major decisions, PE investments are often accompanied by companies to develop strategic plans to optimize corporate governance structures. In general, the impact of PE investment on corporate governance mainly reflects the following four major aspects of optimizing the shareholding structure, standardizing the board of directors' system, establishing incentive and restraint mechanisms and exerting reputational advantages.

1. Optimize the shareholding structure

The problem of excessive concentration of equity is widespread among listed companies in China. Due to the existence of the principal-agent relationship, the interests of the operators and the owners are inconsistent, so the business management activities of the operators of the enterprises require the shareholders to conduct effective supervision. However, if the company's equity is highly fragmented, the cost and benefits of supervision and management will be different for each shareholder. The cost of supervision will be borne by itself, but the benefits of supervision will be shared by all shareholders. Therefore, in this case, shareholders will lose the incentive to supervise the company, and then the binding force on the operators will also decline. From this perspective, high concentration of equity will solve this phenomenon, which lack of shareholder supervision. But if the concentration of corporate equity is too high, new problems show up. Specifically, when the shareholding ratio of the major shareholder of the enterprise is too high, there will be a situation in which the major shareholder invades the interests of the minority shareholder, triggering a new agency problem. The majority shareholder is very aware of the company's business situation because of its absolute control over the company. It is very likely to use the information asymmetry between the minority shareholders and the company to understand their differences. Therefore, monopoly of major shareholders is also one of the factors that restrict the healthy development of Chinese enterprises.

The emergence of PE investment can optimize the ownership structure of enterprises. Generally speaking, PE investment accounts for 5%-20% of the range. The purpose and method of investment enterprises is to directly participate in the business management decision of the enterprise. All aspects of the enterprise are optimized to enhance enterprise value. Although 5%-20% of the shares cannot control the enterprise, but through the placement of directors, design one-vote veto, etc., to ensure that PE investment can actively participate in the business management decision-making, and play an important role in it. This is equivalent to hiring external consultants to provide advice and reference for all aspects of business development. It’s conducive to forming a restrictive relationship with the actual controllers of the enterprise, which can avoid the lack of supervision caused by the dispersion of equity, and also can avoid the monopoly of major shareholders.

2.Standardize the board system

The board of directors is the company's authority. Whether it is the establishment of the company's business objectives, the planning of the development strategy, the appointment and dismissal of senior management personnel, or the profit distribution, financial management and other matters related to the daily operation of the company, it needs to be handled through the board of directors. After PE investment is involved in the company, the usual practice is to send a member to the board of directors. Since then, PE investment has begun to affect the board of directors of the target company, including improving the structure of the board of directors and building a good board culture.

The internal directors and the external directors jointly form the board of directors of the company. Among them, the internal directors are the internal executives who play an important role in the operation and management of the enterprise; the external directors are third parties outside the company, and the directors assigned by the PE investment are external directors. In the board of directors, the higher the proportion of external directors, the stronger the decision-making effectiveness. Because the external directors are relatively independent of the existence of interest groups within the company, they will make their own judgments and decisions more objectively, since there may be mutual interest between the internal directors and the company's executives. Therefore, as a PE investment, entering the board of directors of the target company to supervise and manage the internal decision-making can effectively avoid the current situation of interest gathering within the enterprise and optimize the board structure of the company.

From the perspective of board governance, an efficient board requires not only a transparent board structure, but also a good governance culture. The entry of PE investment will bring a good atmosphere. Its professionalism and enthusiasm will affect the attitudes and behaviors of other members of the board of directors. The formation of a good atmosphere will naturally improve the efficiency of corporate governance.

3.Establish incentive and restraint mechanisms

In order to stabilize the management, when PE investment enters the enterprise, it will require the enterprise to encourage the management through the equity option, so as to promote the interests of the management and the interests of the shareholders as much as possible, and encourage the management striving to maximize the value of the enterprise, that is, to maximize its own interests. The usual method is to design equity options, specifically by setting up a limited partnership as an employee stock ownership plan platform, giving or selling the company's shares at a low price to employees who have made important contributions and played an important role. After listing, employees can realize the appreciation of their value by selling the shares of the shareholding platform.

The so-called constraint mechanism refers to the management of enterprise value by regulating and constraining the PE investment. The specific performance is as follows:

setting a veto power for one vote, strictly restricting some irregularities of the enterprise; controlling the issuance of subsequent investment, only when the enterprise meets the business objectives of certain conditions, releases the follow-up funds, etc. These means can encourage corporate management to be more cautious about the use of funds, thereby increasing the efficiency of capital use and increasing the value of the company.

4. Take advantage of the reputation mechanism

On the one hand, according to the theory of signal transmission and the theory of reputation mechanism, since PE investment institutions are relatively professional in finding projects, enterprises with PE investment participation are generally more easily recognized by the market. Whether it is from the perspective of subsequent capital increase or share conversion, or from the perspective of mergers and acquisitions, IPO, companies that have obtained PE investment tend to achieve better performance and are more favored by the market. At the same time, due to the favor of PE investment, the reputation and popularity of the company will be greatly improved. Therefore, the social attention received will be higher, the transparency of enterprises will be stronger, and the enterprises will be urged to develop more standardizedly.

On the other hand, after the participation of PE investment, the target enterprise is equivalent to having the endorsement of the private equity. The development path of the enterprise has been broadened, and the availability of resources has been improved, so that the enterprise will arrive a higher level in both strategic planning and social status.

4.3 PE investment affects corporate dividend distribution

The whole process of PE investment is simply to inject funds into the target company, provide financial support, optimize the ownership structure and governance structure, and participate in or supervise the operation and management. The standardized company's behavior and development ultimately led to listing or merger or resale of shares, thereby achieving high returns and appreciation of PE investment.

In general, the operation of a private equity fund includes four major processes: financing, investment, management, and exit, which include a two-tiered agency relationship. The first level of principal-agent relationship arises from the financing activities between the managers and funders of private equity funds. The funders of private equity funds invest in the fund in order to obtain the increase of funds value. And because of the reputation mechanism, managers of private equity funds need to consider providing investors with maximum profit distribution when operating private equity funds. In the second-level entrusted agency relationship, when the PE investment fund invests in the target company, it will pay attention to the profitability of the target company. The private equity fund not only hopes to obtain the capital gain earned after IPO, but also to obtain dividend of the follow-up development. Therefore, there will be incentives for the distribution of dividends during the holding period of the underlying company to maximize its benefits.

The dividend distribution behavior of listed companies will be directly affected by the dividend distribution preference of institutional investors. PE investment institutions, as shareholders of listed companies, will inevitably have an important impact on their dividend distribution policies. Due to the profit-seeking nature of PE investment funds, they are more inclined to pay more dividends to enterprises, thus benefiting from it.

4.4 PE investment affects corporate earnings management

There are many ways and motivations for a company's manipulative earnings management, but no matter which one, it will affect the short-term profitability. In the long run, real earnings management behavior will hurt the company's value. Thus, the degree of earnings management is inversely proportional to the long-term value of the company. For PE investment institutions, because they can better understand the internal real situation of the enterprise compared with the investment institutions in the secondary market, they can have a greater impact on the earnings management behavior of the enterprise in two ways: positive and negative.

The positive impact is mainly that PE investment can inhibit the earnings management behavior of enterprises to a certain extent. In order to achieve higher performance and profitability, PE investment will require companies to reduce the damage to the company's value. On the other hand, in order to achieve exit method, which is IPO, to meet the financial requirements of the GEM listing, PE investment may require the company increasing the earnings management behavior, and then whitewashing the performance. After the IPO is reached, the exit will be realized. Specifically, it will increase or reduce the company's earnings management, which needs to be determined through checks and balances between the company and PE investment.

Chapter 5 An Empirical Analysis of PE Investment Affecting Enterprise Value

5.1 Research hypothesis

PE investment is an emerging financial instrument and an important supplement to the capital market, it is also conducive to the long-term stable development of China's capital market. Especially in the case of the severe financing situation of SMEs today, PE investment has made an indelible contribution to the adjustment of China's economic structure. Then, for enterprises, after accepting PE investment, will it have an impact on their own enterprise value? Does it necessarily have a positive impact? This problem is urgently needed for us to test.

From a macro perspective, PE investment exists as a way to optimize the efficiency of social resource allocation. The institutional managers of PE investment raise idle capital from the funders and invest them in high-quality target enterprises that really need funds. The social capital flows from the owners into the hands of the producers, which can effectively improve the production capacity of the society and optimize the efficiency of the allocation of social resources, and create new value for society. From a micro perspective, private equity can provide favorable financial support for enterprises, optimize the ownership structure of enterprises, standardize the operation and management, and furthermore improve the operational efficiency, and at the same time achieve the enhancement of enterprise value.

On the other hand, according to the theory of signal transmission theory and reputation mechanism, since PE investment institutions are relatively professional in finding projects, enterprises with PE investment participation are generally more easily recognized by the market. Whether it is from the perspective of subsequent capital increase or share conversion, or from the perspective of mergers and acquisitions, IPO, companies that have obtained PE investment tend to achieve better performance and are more favored by the market. At the same time, PE investment institutions with business operation experience will deeply understand the market and can increase the valuation of enterprises through a series of actions such as packaging and negotiation, in order to obtain the best investment income.

We can not only analyze the value of the company from the perspective of PE investment companies, but also analyze it from the perspective of accepting investment and accepting strict terms. The choice between enterprise and PE investment is two-ways. On the one hand, only when there is sufficient confidence in its own strength and future development prospects, and it is determined that the participation of PE investment can bring more costs than the burden to the enterprise itself. On the other hand, when companies choose investment institutions, they will also choose investment institutions with more synergy and higher reputation. In view of the above analysis, in theory, companies with PE investment participation have more confidence in their management, and there should be a significant increase in value compared to those without PE investment.

Based on the above analysis, this paper proposes the following assumptions:

Hypothesis 1: The participation of PE investment will significantly increase enterprise value.

Generally speaking, when PE investment enters the enterprise, it will plan and design all aspects of the enterprise. Usually, such constraints will be agreed in the terms of the investment agreement, including requirements for the business performance of the enterprise, listing commitment and repurchase, and phased investment funds and so on. Usually, after the first phase of capital investment, if the company's operating performance indicators achieve the requirements of PE investment, then the second phase of funds and subsequent funds will be invested according to the previously agreed time; if the subsequent business performance is not achieved, the request will suspend subsequent capital investment and even trigger the repurchase clause. Therefore, we can see that in order to reduce risks and protect the security of funders' funds, PE investment requirements for enterprises are still more stringent. The longer the investment period of PE investment, the more profound the impact of PE investment on the company. From the initial stage of enterprise development, it is involved in the company's operation and governance activities. It can evade many risks, unnecessary detours and unnecessary expenses for the company, and thus has a positive effect on the development of all aspects of the company. Based on the above analysis, this paper proposes the following assumptions:

Hypothesis 2: The longer the term of PE investment, the higher the value of the company.

For high-quality enterprises, because the managers of the company only manage and manage one company, their management experience is insufficient. In the process of development and exploration of the enterprise, there will be many detours, improper management and even bankruptcy. When such a promising high-quality enterprise is invested by a PE investment institution, it will bring about a full range of changes. First is that PE investment institutions can bring rich experience in business operation and management to the target company, especially the failure experience, to avoid repeating the same mistakes. At the same time, the financial support of PE investment institutions has also effectively improved the capital structure of the target companies, resulting in a lower proportion of target companies' claims. At a time when financing costs remain high, it will significantly reduce the financial burden of enterprises and increase the profitability of enterprises. Secondly, since PE investment institutions generally gather investment targets in their own familiar and confident industries, through the investment of upstream and downstream targets in the whole industry, an industry synergy effect will be generated, which can help enterprises to open up and down and reduce external transaction costs, which in turn increase the value of the company.

In practice, excellent targets often attract many investors. Therefore, there are a large number of joint ventures between PE investment institutions, and the construction of a common social network to connect different participants. As a result, each investment entity plays its own advantages to help the company develop, which in turn helps the target company to obtain a variety of resources, increase the operational diversity of the enterprise and the availability of resources, thereby enhance the value of the enterprise. Based on the above analysis, we can draw the following assumptions:

Hypothesis 3: The greater the number of private equity participation, the higher the value of the business.

5.2 Data source and processing

Companies listed on the Growth Enterprise Market are in the growth stage with high potential of revenue growth. They are more likely to accept advice and ideas from PE investors, which means that PE can have a positive impact on the company's operating performance and enterprise value. Thus, this paper takes the listed companies on the Growth Enterprise Market of Shenzhen Stock Exchange as the research object. From

January 1, 2015 to December 31, 2018, the paper analyzes whether the participation of PE investment will have a positive impact on the value of the enterprise. At the same time, in order to verify hypothesis 2 and hypothesis 3, this paper also distinguishes the characteristics of PE investment, the specific distinction is the length of the investment period and the number of joint investment. Among them, the data of the GEM listed companies comes from the wind financial database, and the specific characteristics are derived from the prospectus published when the company IPO. In this paper, the financial industry and companies with missing and abnormal data were excluded. The final sample number was 317, of which 161were private equity investors and 156 were private equity investors. Company's financial data is non-public before IPO and after IPO, due to the entry of mutual funds and other market investors, the companies enterprise value can be affected by new entrants, which means the influence is beyond PE investors. Moreover, PE investors might exit after IPO due to the duration of the fund. Therefore, for the sake of comparability, this paper do not use panel data and the data sample is confined to the date of the public listing.

Table 5.1 Data Sample

Company Name	Stock Code	Company Name	Stock Code	Company Name	Stock Code	Company Name	Stock Code
五洋停车	300420.SZ	万里马	300591.SZ	美联新材	300586.SZ	长川科技	300604.SZ
浩丰科技	300419.SZ	通合科技	300491.SZ	三德科技	300515.SZ	盛弘股份	300693.SZ
蓝思科技	300433.SZ	博济医药	300404.SZ	朗新科技	300682.SZ	佩蒂股份	300673.SZ
金科文化	300459.SZ	杭州高新	300478.SZ	扬帆新材	300637.SZ	雷迪克	300652.SZ
鹏辉能源	300438.SZ	三鑫医疗	300453.SZ	天能重工	300569.SZ	太龙照明	300650.SZ
中文在线	300364.SZ	高伟达	300465.SZ	富满电子	300671.SZ	世名科技	300522.SZ
乐凯新材	300446.SZ	金雷股份	300443.SZ	同益股份	300538.SZ	苏奥传感	300507.SZ
华自科技	300490.SZ	万孚生物	300482.SZ	科创信息	300730.SZ	欣锐科技	300745.SZ
全志科技	300458.SZ	高澜股份	300499.SZ	友讯达	300514.SZ	正丹股份	300641.SZ
先导智能	300450.SZ	赛微电子	300456.SZ	利安隆	300596.SZ	盛讯达	300518.SZ
维业股份	300621.SZ	雪榕生物	300511.SZ	飞荣达	300602.SZ	海特生物	300683.SZ
弘信电子	300657.SZ	熙菱信息	300588.SZ	中达安	300635.SZ	普利制药	300630.SZ
创业慧康	300451.SZ	陇神戎发	300534.SZ	金陵体育	300651.SZ	百邦科技	300736.SZ
赢合科技	300457.SZ	神思电子	300479.SZ	科大国创	300520.SZ	会畅通讯	300578.SZ
幸福蓝海	300528.SZ	厚普股份	300471.SZ	吉大通信	300597.SZ	天地数码	300743.SZ
信息发展	300469.SZ	康斯特	300445.SZ	天铁股份	300587.SZ	阿石创	300706.SZ
苏试试验	300416.SZ	中潜股份	300526.SZ	数字认证	300579.SZ	超频三	300647.SZ
红相股份	300427.SZ	科蓝软件	300663.SZ	迅游科技	300467.SZ	星云股份	300648.SZ
恒通科技	300374.SZ	丝路视觉	300556.SZ	顶固集创	300749.SZ	大烨智能	300670.SZ
国科微	300672.SZ	思特奇	300608.SZ	新光药业	300519.SZ	威唐工业	300707.SZ

富祥药业	300497.SZ	浩云科技	300448.SZ	奥联电子	300585.SZ	安达维尔	300719.SZ
聚灿光电	300708.SZ	中科信息	300678.SZ	蠡湖股份	300694.SZ	创源文化	300703.SZ
光力科技	300480.SZ	正元智慧	300645.SZ	寒锐钴业	300618.SZ	温氏股份	300498.SZ
华瑞股份	300626.SZ	强力新材	300429.SZ	晨化股份	300610.SZ	尚品宅配	300616.SZ
胜宏科技	300476.SZ	世纪天鸿	300654.SZ	华宝股份	300741.SZ	久之洋	300516.SZ
惠伦晶体	300460.SZ	恒锋工具	300488.SZ	和仁科技	300550.SZ	彩讯股份	300634.SZ
伊之密	300415.SZ	汉嘉设计	300746.SZ	广信材料	300537.SZ	中孚信息	300659.SZ
康拓红外	300455.SZ	川金诺	300505.SZ	川环科技	300547.SZ	三雄极光	300625.SZ
电工合金	300697.SZ	农尚环境	300536.SZ	博创科技	300548.SZ	必创科技	300667.SZ
星徽精密	300464.SZ	新雷能	300593.SZ	金太阳	300606.SZ	欣天科技	300615.SZ
沃施股份	300483.SZ	深冷股份	300540.SZ	达威股份	300535.SZ	一品红	300723.SZ
富临精工	300432.SZ	中科创达	300496.SZ	金力永磁	300748.SZ	华测导航	300627.SZ
中环环保	300692.SZ	中富通	300560.SZ	优德精密	300549.SZ	天邑股份	300504.SZ
中泰股份	300435.SZ	今天国际	300532.SZ	华信新材	300717.SZ	明阳电路	300739.SZ
赛摩智能	300466.SZ	中密控股	300470.SZ	朗科智能	300543.SZ	汇金科技	300561.SZ
诚益通	300430.SZ	怡达股份	300721.SZ	英飞特	300582.SZ	正海生物	300653.SZ
东杰智能	300486.SZ	万集科技	300552.SZ	乐心医疗	300562.SZ	光弘科技	300735.SZ
美尚生态	300495.SZ	万马科技	300698.SZ	雄帝科技	300546.SZ	双一科技	300690.SZ
聚隆科技	300475.SZ	隆盛科技	300680.SZ	科锐国际	300662.SZ	江苏雷利	300660.SZ
唐德影视	300426.SZ	恒实科技	300513.SZ	永福股份	300712.SZ	药石科技	300725.SZ
鲍斯股份	300441.SZ	科信技术	300565.SZ	优博讯	300531.SZ	德艺文创	300640.SZ
清水源	300437.SZ	名家汇	300506.SZ	万隆光电	300710.SZ	冰川网络	300533.SZ
江龙船艇	300589.SZ	先进数通	300541.SZ	润禾材料	300727.SZ	广和通	300638.SZ
华大基因	300676.SZ	雄塑科技	300599.SZ	中亚股份	300512.SZ	迈瑞医疗	300760.SZ
中飞股份	300489.SZ	古鳌科技	300551.SZ	达志科技	300530.SZ	宣亚国际	300612.SZ
新晨科技	300542.SZ	美康生物	300439.SZ	海川智能	300720.SZ	凯伦股份	300715.SZ
横河模具	300539.SZ	中旗股份	300575.SZ	英科医疗	300677.SZ	越博动力	300742.SZ
蓝晓科技	300487.SZ	南京聚隆	300644.SZ	启迪设计	300500.SZ	延江股份	300658.SZ
力星股份	300421.SZ	神宇股份	300563.SZ	博士眼镜	300622.SZ	赛托生物	300583.SZ
鹏鹞环保	300664.SZ	天孚通信	300394.SZ	杭州园林	300649.SZ	维宏股份	300508.SZ
双杰电气	300444.SZ	迈克生物	300463.SZ	星源材质	300568.SZ	科顺股份	300737.SZ
康泰生物	300601.SZ	中石科技	300684.SZ	路通视信	300555.SZ	欧普康视	300595.SZ
建科院	300675.SZ	安车检测	300572.SZ	金银河	300619.SZ	太辰光	300570.SZ
华铭智能	300462.SZ	江丰电子	300666.SZ	爱司凯	300521.SZ	圣邦股份	300661.SZ
华图ft鼎	300492.SZ	飞鹿股份	300665.SZ	万通智控	300643.SZ	捷捷微电	300623.SZ
华凯创意	300592.SZ	贝斯特	300580.SZ	安靠智电	300617.SZ	捷佳伟创	300724.SZ
中船应急	300527.SZ	四方精创	300468.SZ	蓝海华腾	300484.SZ	万兴科技	300624.SZ
濮阳惠成	300481.SZ	新余国科	300722.SZ	中ft金马	300756.SZ	光库科技	300620.SZ
久吾高科	300631.SZ	宇信科技	300674.SZ	景嘉微	300474.SZ	深信服	300454.SZ
新美星	300509.SZ	赛升药业	300485.SZ	长盛轴承	300718.SZ	爱乐达	300696.SZ
昊志机电	300503.SZ	恒锋信息	300605.SZ	广哈通信	300711.SZ	科创新源	300731.SZ
ft河药辅	300452.SZ	理工光科	300557.SZ	凯普生物	300639.SZ	贝达药业	300558.SZ
中光防雷	300414.SZ	开立医疗	300633.SZ	同和药业	300636.SZ	民德电子	300656.SZ

全信股份	300447.SZ	天宇股份	300702.SZ	三超新材	300554.SZ	健帆生物	300529.SZ
德尔股份	300473.SZ	光威复材	300699.SZ	创业黑马	300688.SZ	森霸传感	300701.SZ
普丽盛	300442.SZ	诚迈科技	300598.SZ	澄天伟业	300689.SZ	赛意信息	300687.SZ
田中精机	300461.SZ	立昂技术	300603.SZ	晨曦航空	300581.SZ	宏达电子	300726.SZ
航新科技	300424.SZ	西菱动力	300733.SZ	英搏尔	300681.SZ	隆利科技	300752.SZ
昆仑万维	300418.SZ	金冠股份	300510.SZ	联得装备	300545.SZ	杰恩设计	300668.SZ
新元科技	300472.SZ	容大感光	300576.SZ	开润股份	300577.SZ	兆丰股份	300695.SZ
运达科技	300440.SZ	光莆股份	300632.SZ	汇纳科技	300609.SZ	爱朋医疗	300753.SZ
晶瑞股份	300655.SZ	瑞特股份	300600.SZ	九典制药	300705.SZ	精研科技	300709.SZ
新劲刚	300629.SZ	盛天网络	300494.SZ	海顺新材	300501.SZ	英可瑞	300713.SZ
激智科技	300566.SZ	辰安科技	300523.SZ	岱勒新材	300700.SZ	电连技术	300679.SZ
鲁亿通	300423.SZ	广生堂	300436.SZ	乐歌股份	300729.SZ	宁德时代	300750.SZ
海波重科	300517.SZ	国立科技	300716.SZ	艾德生物	300685.SZ	透景生命	300642.SZ
金石亚药	300434.SZ	美力科技	300611.SZ	沪宁股份	300669.SZ	移为通信	300590.SZ
南华仪器	300417.SZ	智动力	300686.SZ	拓斯达	300607.SZ		
芒果超媒	300413.SZ	联合光电	300691.SZ	平治信息	300571.SZ		
四通新材	300428.SZ	新易盛	300502.SZ	集智股份	300553.SZ		

5.3 Variable selection

5.3.1 Variable definitions

1. Explained variable

This paper uses the Tobin Q value to measure the value of the enterprise, which not only reflects the financial situation of the enterprise, but also comprehensively reflects the business operation of the enterprise. The specific calculation formula is:

Tobin Q (TQ)= the company's market value / the company's asset replacement cost

2. Explanatory variables

Based on the previous assumptions, this paper explores the impact of PE investment participation, investment horizons, and the number of joint investors on enterprise value. The specific explanatory variables are as follows:

(1) PE: a dummy variable that measures whether the enterprise is involved by the PE. If there is one, it is 1, otherwise it is 0;

(2) Period: A variable that measures the duration of an investment. The calculation method is the days that the enterprise experiences between the first PE investment and the enterprise IPO;

(3) Number: A variable that measures the number of investors in a PE investment

joint venture. How many variables are invested together?

3. Control variables

Referring to previous scholars' research, this paper controls the following variables to ensure that certain features of the sample are controlled, making the regression more meaningful. The definition of each control variable is as follows;

(1) Size: The size of the asset, measured by the logarithm of the market value of the enterprise.

(2) Lev: Asset-liability ratio, the ratio of total liabilities to total assets.

(3) Sop: Concentration of equity, which is the shareholding ratio of the largest shareholder.

5.3.2 Variable descriptive statistics

Table 5.2 Variable descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
TQ	317	4.357873	2.356993	1.129973	15.37805
PE	317	.5078864	.5007282	0	1
Number	317	2.205047	4.27151	0	41
Period	317	830.2776	1073.624	0	4793
Size	317	2.976491	.718606	1.904158	7.603461
Lev	317	.2509708	.1350648	.031878	.692724
Rgr	317	.1875697	.2684484	-.4519162	1.874883
Sop	317	.3317688	.1253121	.0415	.8118
Margin	317	43.05632	17.64761	9.4753	96.1
EXP	317	.807571	.3948314	0	1

From the data in the table, the average value of the PE variable is 0.5078, which indicates that 50.78% of the listed companies in the range have accepted the investment of the PE institution; from the investment period, the average from the entry to the final exit is 2.3 years; most companies have more than one PE investment institution to participate in the investment, and joint investment between private equity institutions is frequent, with an average of 2.2.

5.4 Model construction and empirical test

5.4.1 Model building

In this paper, the OLS test model is used for regression. Based on the previous assumptions, this paper establishes the following model:

$$\text{Tobin Q} = \alpha + \beta_1 PE + \beta_2 Size + \beta_3 Lev + \beta_4 Sop + \varepsilon \qquad (1)$$

Used to test whether PE participation has a positive impact on firm value, and if it can have a positive impact, the β_1 should be significantly positive.

By the same token, we construct the following model to examine the impact of investment horizons and the number of joint investment institutions on firm value:

$$\text{Tobin Q} = \alpha + \beta_1 Period + \beta_2 Size + \beta_3 Lev + \beta_4 Sop + \varepsilon \qquad (2)$$

$$\text{Tobin Q}=\alpha+\beta_1\text{Number}+\beta_2\text{Size}+\beta_3\text{Lev}+\beta_4\text{Sop}+\varepsilon \qquad (3)$$

5.4.2 Model checking

From the regression results, the R-squares of the regression results of the three models are around 0.3, indicating that the fit of the three models is good. Among them, in the model (1) of whether PE investment will affect the value of the enterprise, the explanatory variable is the dummy variable PE, that is, whether there is PE investment participation, the regression coefficient of the variable is0.8404411, and it can be seen from the P value. The coefficient is significant at the 1% significance level, which indicates that the participation of PE investment does increase the value of the enterprise significantly, assuming that 1 is established; in the model of whether the length of the PE investment will affect the value of the enterprise (2) The investment period of Period's coefficient is 0.0003001, and the P value is 0.008, which is less than 0.01, indicating that the coefficient is significant at the 1% significance level. That is to say, the longer the PE investment fund invests in the enterprise, the higher the value of the enterprise. Hypothesis 2 is also established; in the model (3) that explores whether the number of co-investors in PE investment will have an impact on enterprise value, the coefficient of the number of joint investors is 0.095167, and the P value is less than 0.01, indicating that the coefficient is 1%. The level of significance is significant, which indicates that the more the number of co-investors, the higher the value of the firm, and the hypothesis is verified.

Table 5.3 Regression result

Explained variable: Tobin Q			
	模型（1）	模型（2）	模型（3）
C	2.0222***	2.2537***	2.7351***
	（0.001）	（0.000）	（0.000）
PE	0.8404***		
	（0.000）		
Period		0.0003***	
		（0.008）	
Number			0.0951***
			（0.001）
Size	1.1776***	1.1656***	1.0687***
	（0.000）	（0.000）	（0.000）
Lev	-4.1188***	-4.3022***	-4.8247***
	（0.000）	（0.000）	（0.000）
Sop	-1.6966*	-1.6121*	-1.6802*
	（0.070）	（0.090）	（0.074）
Adjusted R2	0.2350	0.2216	0.2304

Note *, **, *** represent significant levels of significance at 10%, 5%, and 1%, respectively.

Table 5.4 Model (1)

Source	SS	df	MS
Model	429.548519	4	107.38713
Residual	1325.96334	312	4.2498825
Total	1755.51186	316	5.55541728

Number of obs	=	317
F(4, 312)	=	25.27
Prob > F	=	0.0000
R-squared	=	0.2447
Adj R-squared	=	0.2350
Root MSE	=	2.0615

TQ	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
PE	.8404411	.2350414	3.58	0.000	.3779744	1.302908
Size	1.177679	.1624693	7.25	0.000	.858005	1.497353
Lev	-4.118808	.8658138	-4.76	0.000	-5.82238	-2.415236
Sop	-1.69665	.932904	-1.82	0.070	-3.532229	.1389286
_cons	2.022269	.6302485	3.21	0.001	.7821948	3.262344

Table 5. 5 Model 2

Source	SS	df	MS			
Model	406.35144	4	101.58786	Number of obs	=	317
Residual	1349.16042	312	4.32423212	F(4, 312)	=	23.49
				Prob > F	=	0.0000
Total	1755.51186	316	5.55541728	R-squared	=	0.2315
				Adj R-squared	=	0.2216
				Root MSE	=	2.0795

TQ	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Period	.0003001	.0001118	2.68	0.008	.0000801	.0005201
Size	1.165643	.1652024	7.06	0.000	.8405911	1.490695
Lev	-4.302222	.8700371	-4.94	0.000	-6.014104	-2.590341
Sop	-1.612114	.9485828	-1.70	0.090	-3.478542	.2543141
_cons	2.253782	.6283443	3.59	0.000	1.017454	3.49011

Table 5.6 Model 3

Source	SS	df	MS			
Model	421.57877	4	105.394693	Number of obs	=	317
Residual	1333.93309	312	4.27542657	F(4, 312)	=	24.65
				Prob > F	=	0.0000
Total	1755.51186	316	5.55541728	R-squared	=	0.2401
				Adj R-squared	=	0.2304
				Root MSE	=	2.0677

TQ	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Number	.095167	.0288979	3.29	0.001	.0383076	.1520264
Size	1.068784	.1700038	6.29	0.000	.7342848	1.403282
Lev	-4.824741	.8703551	-5.54	0.000	-6.537249	-3.112234
Sop	-1.680273	.9369417	-1.79	0.074	-3.523796	.1632503
_cons	2.735132	.6256827	4.37	0.000	1.504041	3.966223

5.4.3 Reverse causality problem and instrumental variable approach

Due to the constraints of OLS model, the model above may have reverse causality and other endogeneity problems. The model results may have an ambiguous interpretation: one explanation is that PE improves the company's enterprise value, and therefore TQ is higher. Another interpretation could be that PE tends to invest in companies with higher TQ. Because this paper uses non-panel data, we attempt to adopt the IV approach to treat reserve causality.

In theory, the following variables can be used to predict the likelihood of PE investment in a company:

1. Gross margin: PE tends to invest in companies with high gross margins, because these companies are likely to have higher value-add and more advanced technologies, which give them stronger bargaining power and better position on the

chain. However, this variable might be correlated with Tobin-Q ;

2. Owner's prior relevant work experience: PE investors place high importance on the business owner's work experience. Those who have relevant industry experience prior to starting the business are preferred by investors. However, it is likely that this variable is correlated with Tobin-Q ;

3. Relative firm size (PE fund size / firm valuation): theoretically, small PE firms might not invest in large firms or be less likely to do so. However, PE firms in China do not usually disclose their sizes, and therefore the fund size data is unattainable;

4. PE restricted industry: in some countries, there are certain industries that PE firms are not allowed to invest. But in China, all industries are open for PE investment;

5. Geographic distances of target firm from Shenzhen, Shanghai, or Beijing (most PE funds are located in these three citities): Theoretically, geographic distance may influence decision-making of PE investors. For instance, PE funds in Shanghai are less likely to invest in a company located in Tibet. In practice, on the one hand, some entrepreneurs tend to register their companies in remote regions because of tax benefits, while they may run their business in prosperous areas such as Bejing and Shanghai. On the other hand, PE funds may set up sub-funds or offices in different cities. Taking the famous Sequoia Fund as example, in addition to its Shanghai, Beijing and Shenzhen offices, it also establishes offices or sub-funds in Jingzhou（Hubei）, Chengdu(Sichuan), Xiamen(Fujian), Hangzhou(Zhejiang), Guangzhou(Guangdong) and so on.

In a nutshell, although we tried to address the endogeneity issue with the IV approach, we are unable to identify a proper instrumental variable due to the lack of data restriction. Therefore, we do not rule out the possibility that PE funds might invest in firms with higher Tobin-Q.

Chapter 6 Conclusion and Suggestion

6.1 Conclusion

In the past 30 years, the PE investment industry has developed rapidly and has improved and supplemented the shortage of China's capital market. At the same time, the introduction of social capital into the development of SMEs, especially the development of high-tech and innovative enterprises, is conducive to improving the efficiency of China's social development and optimizing the allocation of China's social resources. In this context, this paper analyzes the relationship between PE investment and enterprise value from role to path, from theory to empirical analysis. Through analysis, this paper finds that PE investment will have an impact on the value of the target enterprise at different stages of the development of the target enterprise. In the empirical study, this paper explores the impact of different investment periods and joint investment on the value of enterprises by distinguishing the characteristics of different private equity institutions. The data of the listed companies of the Shenzhen Stock Exchange GEM 2015-2018 are taken as samples. Regression analysis yielded the following conclusions:

(1) The participation of PE investment institutions can effectively enhance the enterprise value of target companies.

The introduction of PE investment institutions would not only meet the needs of their own development for capital, but also can provide follow-up services including industry resource integration, sales channel expansion and capital market refinancing, which is conducive to enterprise development. At the meantime, equity investment can also play a certification and supervision function for the target company, furthermore, it can increase the value of the enterprise. The empirical results show that the effect of PE investment participation on the value of the firm is significant.

(2) The longer the investment period of the PE investment institution, the better the increase in the value of the enterprise

If PE investment enters the enterprise in the early stage of enterprise growth, it can better guide the enterprise to better development, help to gain a deeper understanding of the development of the enterprise. Not only actively participate in corporate governance, but also provide guidance and suggestions during the operation process, with time and ability to improve all aspects of business operations, and thus enhance the enterprise value.

(3) The greater the number of institutions for private equity joint investment, the stronger effect on enterprise value

The overall synergy brought about by joint investment is far greater than the benefits brought by individual entities. Since joint investment generally forms a social network with common interests, the target enterprises in the network center will obtain various resources and information needed for their development from different investors, and the value increase of the enterprise will be more significant.

In the end, it should be mentioned that the model constructed in this paper might have endogeneity problem, that is, PE might pick firms with higher Tobin-Q values for investment. Although we attempted to solve the problem with instrumental variable, the possibility of endogeneity still might exist.

6.2 Policy suggestion

The development of PE investment in China is only a short period of 30 years, but in practice, we can find out that PE investment plays a decisive role in China's economic development, especially for the development of SMEs. Therefore, both target companies, private equity firms, and governments are fully aware of the importance of PE investments. Especially for start-up companies, the involvement of PE investment has a more significant meaning in optimizing the company's operation and management. The development of China's PE investment business is still at an early stage, and it is not yet sound enough, from policies to laws and regulations to supporting mechanisms. Therefore, combined with the research results of the article, this paper proposes the following policy recommendations:

(1) Optimize the market environment and improve the exit mechanism

In order to fully play the important complementary role of PE investment in the capital market deficiencies, it is urgent that the government should provide a healthier and more stable market environment, to guarantee the development of the PE investment industry. Specifically, the government should vigorously promote the establishment of government investment guidance funds at all levels and play its true effectiveness, and encourage quality projects to actively engage private equity institutions to obtain investment. At the same time, in order to control market risks, it is necessary to establish a perfect exit mechanism. Most of the ways in which China's current PE investment exits are achieved through IPOs, and the exit method is relatively simple. Moreover, the GEM's examination and approval system has changed to the registration system. The profit indicator is still an important condition for measuring whether a company can be listed. In addition to that, it is necessary to comprehensively examine all aspects of the company's indicators, such as accounting information quality, corporate companies. The governance and operation situation has changed the single and rude development mode in the past, and promoted the overall and stable development of enterprises.

(2) Raise the threshold for the establishment of PE investment institutions

At present, the development of China's PE investment industry is incomplete, the market is mixed up, and the supervision is not efficient enough. For SMEs, their ability to select and identify institutions is not strong. If an improper investment institution is chosen, it will often miss the best timing of the enterprise, which may even cause bankruptcy. At present, some investment institutions have insufficient ability to identify projects, blindly raise the valuation of enterprises, resulting in disordered market order; and insufficient control of the project, failing to help enterprises develop and increase value after the completion of investment. Therefore, the source of PE investment institutions should be strictly restricted in terms of access to the industry, and institutions that do not have professional competence and background should not be established or revoked. Thereby, the existing investment institutions in the society are really doing practical things, really can help the development of the enterprise, and avoid the waste of social resources.

(3) Play the role of intermediary service agencies

In China, the development of intermediary services related to PE investment is still lagging behind, and there are only a few consulting companies that can provide private equity-related services. In addition to bridging the investment institutions with the companies that need to invest in them, many types of intermediary service agencies, such as institutions, fund custody, asset evaluation, and risk measurement, need to be established. Only when these services are well-established and be in place can PE investment institutions operate more securely and efficiently, which greatly reduces the investment risk. Therefore, China urgently needs to liberalize the access restrictions of intermediaries in the PE investment industry, and encourages multiple entities including securities companies, banks, appraisers, accounting firms, and law firms to actively carry out PE investments, and improve the quality and efficiency of PE investment in China.

References

[1] Black B S, Gilson R J. Venture capital and the structure of capital markets: banks versus stock markets1[J]. Journal of financial economics, 1998, 47(3): 243-277.

[2] Florida R L, Kenney M. Venture capital, high technology and regional development[J]. Regional Studies, 1988, 22(1): 33-48.

[3] Gompers P A. Grandstanding in the venture capital industry[J]. Journal of Financial economics, 1996, 42(1): 133-156.

[4] Gompers P, Lerner J. An analysis of compensation in the US venture capital partnership1[J]. Journal of Financial Economics, 1999, 51(1): 3-44.

[5] Hellmann T, Puri M. Venture capital and the professionalization of start‐up firms: Empirical evidence[J]. The journal of finance, 2002, 57(1): 169-197.

[6] Jain B A, Kini O. Venture capitalist participation and the post‐issue operating performance of IPO firms[J]. Managerial and decision economics, 1995, 16(6): 593-606.

[7] Kut C, Pramborg B, Smolarski J. Managing financial risk and uncertainty: The case of venture capital and buy‐out funds[J]. Global business and organizational excellence, 2007, 26(2): 53-64.

[8] Miller M H, Modigliani F. Dividend policy, growth, and the valuation of shares[J]. the Journal of Business, 1961, 34(4): 411-433.

[9] Morsfield S G, Tan C E L. Do venture capitalists influence the decision to manage earnings in initial public offerings?[J]. The Accounting Review, 2006, 81(5): 1119-1150.

[10] Rozeff M S. Growth, beta and agency costs as determinants of dividend payout ratios[J]. Journal of financial Research, 1982, 5(3): 249-259.

[11] Sahlman W A. The structure and governance of venture-capital organizations[J]. Journal of financial economics, 1990, 27(2): 473-521.

[12] Tang M C, Chyi Y L. Legal environments, venture capital, and total factor productivity growth of Taiwanese industry[J]. Contemporary Economic Policy, 2008, 26(3): 468-481.

[13] 宫悦. 私募股权基金对我国中小板上市公司价值影响的实证研究[J]. 财会研究, 2012 (2): 48-50.

[14] 贺玮. 私募股权投资对创业板上市公司行为的影响研究[D]. 湖南大学, 2015.

[15] 胡妍,阮坚.私募股权影响企业绩效的传导路径——基于现金持有、研发投入的视角实证[J].金融经济学研究,2017,32(05):107-116.

[16] 雷菁, 吕晓蔚, 赵玉林. 私募股权投资对称长型高新企业绩效的影响——基于中小板上市公司的实证研究[J]. 武汉理工大学学报: 社会科学版, 2012, 25(4): 515-518.

[17] 吕霞. 我国中小企业私募股权融资问题浅析[J].金融经济,2017(16):22-24.

[18] 毛国娟. 中小企业私募股权对盈余管理影响的研究[D]. 成都: 西南财经大学, 2011.

[19] 宋杰. 私募股权融资和中小企业价值提升[J]. 现代商贸工业, 2010, 22(7): 166-167.
[20] 汤安琪. 私募股权投资对企业经营业绩的影响——基于我国创业板上市公司的实证研究[J]. ft东大学, 2017: 1-z.
[21] 田佳敏. 浅析中国私募股权基金的现状与发展[J]. 现代商业, 2015 (20): 166-167.
[22] 王会娟, 张然. 私募股权投资与被投资企业高管薪酬契约——基于公司治理视角的研究[J]. 管理世界, 2012 (9): 156-167.
[23] 王婷婷. 私募股权投资对上市公司企业价值影响的实证研究[D]. ft东大学, 2016.
[24] 温跃宇. 浅析私募融资对中小企业价值的影响[J]. 中国物价, 2014 (12): 60-63.
[25] 徐新阳. 私募股权投资对企业上市后经营绩效的影响——基于江浙两省中小企业板制造业上市公司的实证分析[J]. 财经论丛, 2011 (6): 65-71.
[26] 许杨杨. 私募股权基金对中国中小企业成长的积极影响分析[J]. 中国商界, 2009 (4): 65.
[27] 袁浩博. 我国私募股权投资基金行业问题分析[J]. 商, 2014 (7): 294-294.
[28] 袁立, 张新梅. 私募股权投资与上市公司股价相关性探讨[J]. 财政监督, 2011, 14: 37-38.
[29] 张永明,潘攀,邓超.私募股权融资能否缓解中小企业的投资不足[J].金融经济学研究,2018,33(03):80-92.
[30] 郑心学.中小企业引入私募股权投资基金的必要性探讨[J].全国流通经济,2017(36):75-76.
[31] 朱静. 私募股权投资与公司价值相关性的实证研究——来自中小板上市公司的经验证据[J]. 财务与金融, 2011 (2): 20-24.
[32] 王子菁. 融资约束、共享金融与小微企业成长性研究[D]. ft东大学, 2017
[33] 张雪梅. 中国中小企业融资难的制度性缺陷研究[D]. 辽宁大学, 2014
[34] 陈建波. 资本市场对中小企业融资效率研究[D]. 中共中央党校, 2019