

Study on the Influence of PE Shareholding on the Profit of GEM Listed Enterprises

Kunpeng Li*

Faculty of Arts and Social Sciences, Simon Fraser University, Vancouver V5A1S6, Canada

Abstract

This paper takes 91 companies listed on the GEM from 2014 to 30 April 2015 as the research object. The financial data of the firms as of 31 December 2022 are obtained from the REXIS database to analyze whether PEs play the role of certification and monitoring and whether there are adverse selection and grandstanding hypotheses in China's GEM market. Through empirical analysis, it is concluded that there is no significant difference in earnings between listed companies with and without PE background, that is, there is no adverse selection, certification effect and monitoring effect in the GEM market. Then, this paper extracts PE reputation and PE holding time as PE characteristics, studies the impact of these two on corporate profitability, and concludes that ROE is higher for firms supported by PE with good reputations. PE with long investment periods and high participation in corporate governance have higher ROE of invested enterprises.

Keywords

PE Shareholding, GEM, Company Profit.

1. Introduction

Private Equity (PE) refers to private equity investment, through the private placement form to raise funds, equity investment in unlisted enterprises, to promote the growth of the value of unlisted enterprises, and ultimately through the listing, mergers and acquisitions, management buybacks, equity swaps and other ways to sell their holdings to cash out of a kind of investment behavior [1]. Venture Capital (VC) refers to a kind of equity capital invested by professional investors in emerging, rapidly developing enterprises with great competitive potential [2]. Although PE and VC are different in terms of concept, investment concept, investment scale, investment stage and investment characteristics, they both make equity investments in the form of private placement and pursue long-term capital appreciation. Therefore, this paper does not distinguish between PE and VC and includes VC in the PE category.

A large number of foreign studies have confirmed that PE can discover the hidden value of the invested enterprise through a more professional evaluation system and provide funds for the invested enterprise. More importantly, PE can provide "value-added services" for the enterprise by making use of its professional advantages and resource advantages. PE can also intervene in the operation and management of the enterprise, supervise the operation of the invested enterprise, and participate in the discussion of important decisions of the company, to improve the operation structure of the company and enhance the management level of the company. That is to say, PE participation can better promote the development of enterprises and improve their business performance. However, scholars focus on developed countries and mature markets. GEM market and PE institutions compared with foreign countries, there are some obvious differences. GEM is a different type of securities market from the Main-Board Market, designed to provide financing and growth space for entrepreneurial enterprises that cannot be listed on the Main-Board Market for the time being. On 30 October 2009, GEM was

officially listed. Since its listing, GEM has frequently seen listed companies fall below their issue price. Therefore, for GEM enterprises, PE participation on the listed business performance of the invested enterprises, earnings will have what impact, is the research content of this paper.

2. Literature Review

From the 1990s to the present, research on private equity has focused on the value-added services of private equity, the impact of private equity on IPO price suppression, and the impact of private equity on business performance. Based on different market data and economic environments, the studies have come up with different conclusions. One point of view is that private equity investment has a positive effect on investee companies, and the participation of institutions can provide capital and value-added services to investee companies, thus enabling the companies to have better business performance. On the other hand, another view is that private equity investment has a negative effect on investee companies, and they believe that some immature PE organizations, due to their lack of experience and visibility, are more inclined to allow investee companies to go public as soon as possible, which will further lead to poor performance of the investee companies after they go public.

Researchers who believe that PE holdings have a positive impact on the invested enterprises have proposed the certification effect and the monitoring effect. The certification model was proposed by Megginson and Weiss in 1991. They believed that due to the obvious information asymmetry between the issuer and investors of the company, external investors could not fully and truly understand the true situation of the enterprise. PE holds seats on the board of directors of the invested company and participates in the management of the company, just like the internal personnel of the company, who know more about the invested company. As the certification of the issuing company, investors will regard PE holdings as a signal that the company has high quality. Since investors have realized that the involvement of PE has reduced the risk of buying stocks, they do not need excessive issuance underpricing as compensation. In addition, to maintain their reputation, PE institutions will also convey the true information of the company to the market. That is to say, the participation of PE can reduce the information asymmetry of the enterprise, which is reflected in a lower issuance underpricing rate, attract more reputable underwriters and accounting firms, and reduce issuance costs [3]. The monitoring effect refers to the supervision model proposed by Barry and improved by Jain and Kini in 1995. The model believes that PE can not only continuously supervise and control the opportunistic behavior of agents in its invested enterprises through stage financing and becoming a member of the board of directors [4]. PE can also realize supervision over enterprises by screening investment plans, approving decisions and appointments, replacing incompetent managers, and evaluating business performance. PE can participate in the company's management through active communication, teaching management experience, and assisting in recruiting managers.

In terms of IPO underpricing rate, Brophy, Barry selected IPO companies in different countries in different years to do empirical research, which showed that IPO companies with PE institutions' participation had a lower underpricing rate, confirming the certification and monitoring effect of PE institutions. Brophy (1988) used the data listed between 1977 and 1983. Through sample comparison, he found that compared with the IPO without PE institutions' participation, the enterprises with PE institutions' participation had a shorter time from establishment to listing, and the underpricing rate and underwriting fees of IPO were lower. IPO companies with PE institutions' participation meant better company quality. Barry used the data from 1978 to 1987 for empirical research and found that the proportion of equity held and the time spent on the board of directors were negatively correlated with the IPO underpricing rate [5]. Gompers (1996) proposed that experienced PE institutions spent longer

time on the board of the invested companies and held more shares, and the companies they supported had a lower underpricing rate in IPO [6]. Wang used the data from the Singapore stock market in 1991 to verify the certification effect and concluded that the IPO underpricing rate of enterprises with PE institutions' participation was lower, and the stock price was more stable [7]. Brav and Gompers studied the relationship between PE participation and the operating performance of IPO companies. The study found that the average rate of return of enterprises with PE institutions' participation five years after IPO was twice that of enterprises without PE institutions' participation. Their research results also show that, after five years of IPO, 13.3% of the companies without PE institutions participated in the delisting, while only 7.5% of the companies with PE institutions participated. These studies confirm that venture investors play an important role in the certification process of enterprises [8]. PE investors actively intervene in the management of enterprises, so they have a relatively full grasp of enterprise information, which plays a part in eliminating information asymmetry and improving enterprise performance. As for the business performance of enterprises, Jain and Kini confirmed that the regulatory effect is highly positively correlated with the business performance after listing [9]. Xia Rui took the companies listed in Small and Medium Enterprise Board from 2004 to 2009 as samples and used the multiple regression analysis method to verify that the experience and shareholding ratio of VC/PE institutions are positively correlated with the business performance of VC/PE-supported enterprises [10]. Balboa took the enterprises invested in Spain from 1993 to 1999 as the research object and found that the sales growth rate and employee growth rate of the enterprises supported by PE were significantly higher than those of the non-PE supported enterprises [11]. Lei Jing, Lu Xiaowei and Zhao Yulin found that VC/PE had a significant positive impact on the performance of growth high-tech enterprises by establishing a linear regression model, which can improve the core competitiveness of enterprises and quickly enhance their strength [12]. Sahlman studied the phenomenon of PE institutions intervening in the daily management of the invested enterprises and joining their board of directors. It is also found that the performance of enterprises with PE involvement is better [13]. That is to say, PE plays a positive role in the performance and growth of enterprises by helping enterprises with follow-up financing, joining the management team, assisting enterprises in formulating and revising strategies, and providing value-added services for invested enterprises.

However, due to the grandstanding hypotheses and adverse selection effect, the operating performance of PE-owned firms may also be lower than that of non-PE-owned firms. The grandstanding hypothesis refers to the fact that to improve the company's visibility, newly established PE institutions have a strong motivation to name, which will make the investee enterprises go public as soon as possible, which is specifically manifested as a short investment period, higher issuance underpricing rate, less participation in corporate governance, and fewer stocks held [14]. The adverse selection model proposed by Amit argues that due to the pressure on PE investors to recycle and increase the value of their capital, PE will actively promote the IPO of immature firms and increase the cost of corporate finance [15]. In addition, due to the information asymmetry between PE institutions and invested enterprises, PE institutions cannot obtain the real value of the enterprise, so PE will be more inclined to use the average level of the market to price the proposed investment enterprise. In this case, the cost of equity financing for a high-quality enterprise will be higher than the cost of internal financing or debt financing, so a high-quality enterprise will not choose to invest with a PE institution. Low-quality firms will choose to cooperate with PE firms. That is to say, under the influence of adverse selection, the enterprises invested by PE firms are riskier and have poorer operating performance after listing.

Zhang Feng took China's small and medium-sized enterprises board as the research object and found that the IPO underpricing rate of enterprises with PE participation was higher than that

of non-PE participation enterprises using comparison and multiple regression analysis [16]. Tan Yi, Lu Haitian and Gaosheng used the paired empirical research method to conduct a comparative test on samples of listed companies on China's small and medium-sized enterprises board in terms of IPO underpricing, listing costs and R&D investment, and found that PE institutions had no significant positive impact on the participating companies [17]. Ba Shusong's research confirmed that the IPO underpricing of China's small and medium-sized enterprises board and GEM enterprises supported by PE institutions were higher than non-PE institutions, and there was no significant difference in long-term performance. Rosa compared Australian PE backed companies and non-PE backed companies and found no significant difference in earnings within two years of listing. Franzke compared the business performance and IPO market performance of 108 non-PE backed companies and 58 PE backed companies listed in Germany from 1997 to 2000, and found that the pre-listing sales revenue and profitability of PE backed companies were significantly lower than that of non-PE backed companies [18]. Wang took 164 companies listed in Singapore as an example and found that companies with PE had worse business performance after IPO, and whether they had PE support had no significant impact on their short-term and long-term market performance [19]. Jia Ning and Li Dan selected companies listed on the small and medium-sized enterprises board from 2004 to 2008 for research, and found that there was no significant difference between the business performance and stock market performance of enterprises with PE support and enterprises without PE support during the lock-in period, but the performance of PE support enterprises declined significantly after the lifting of the ban. And the return rate of stock investment is lower [20].

To sum up, due to the differences in the approval system of GEM and the economic environment, the certification and monitoring effect of PE institutions has not been reflected. Therefore, it is necessary to explore the relationship between PE and firm performance in the GEM.

3. Empirical Research

3.1. Putting Forward Hypotheses

Based on the literature research, this paper will study the relationship between PE shareholding and corporate profits. Hypothesis 1: This paper holds that due to the grandstanding hypotheses and adverse selection effect, the profitability of GEM listed companies with PE background is low. In addition, this paper divides the characteristics of PE into the reputation of PE and the holding time of PE, and discusses the impact of PE with different characteristics on the profits of the enterprises it supports. PE with a good reputation has more mature project experience, professional investment team, project resources, and can provide more value-added services for enterprises. The longer the PE shareholding means that the more stable the cooperative relationship with the enterprise, the deeper the understanding of the enterprise, the more real and comprehensive the information obtained, and the more involved in the management of the enterprise, thus eliminating information asymmetry, grandstanding hypotheses and adverse selection effect. Therefore, this paper proposes Hypothesis 2: Firms backed by PEs with better reputations have stronger corporate profitability. Hypothesis 3: The longer the PE's shareholding, the stronger the corporate profitability.

3.2. Data and Variable Selection

This paper takes 91 enterprises listed on GEM from 2014 to April 30, 2015 as the research object. The deadline to obtain the company's listing and issuance indicators, its listing and issuance situation and financial data from the Rex database is December 31, 2022. According to the prospectus, if there is a private equity investment institution among the shareholders

holding more than 5% before the IPO, it is considered to have private equity investment support, and the rest are considered to have no private equity investment firm support. The sample was divided into PE investment support and no PE investment support. Of these, 51 companies have PE support and 40 companies do not have PE support.

In this paper, return on equity (ROE) is selected as the explained variable to measure the profitability of enterprises. The explanatory variables are PE background variables: if there are PE institutions among the shareholders holding more than 5% of the enterprise, the value is 1; otherwise, it is 0. PE characteristic variable: PT, the period of private equity shareholding, less than one year is calculated by one year. PR, the reputation of private equity institutions, if it is in the top 30 of "Zero2IPO-2012 China Venture Capital and Private Equity Annual Ranking", it takes the value of 1, otherwise, it is 0. The financial control variables are the total asset growth rate and asset-liability ratio of the enterprise respectively. These indicators have a great impact on ROE and are important indicators to measure the business performance and profit of enterprises.

3.3. Data Analysis

3.3.1. Analysis of the Relationship between PE Background and Corporate Profits

This paper uses SPSS to analyze the relationship between PE background and corporate earnings. First, a descriptive analysis is carried out. As shown in Table 1, the ROE and total assets growth rate of GEM-listed enterprises without PE background are slightly higher than those listed enterprises with PE background. The Asset-liability ratio of GEM-listed enterprises with a PE background is slightly higher than that of GEM-listed enterprises without a PE background, but the numerical difference is small. Secondly, this paper conducted an independent sample T-test, and the T-test results were not significant (as shown in Table 2). (5% significance level), that is, there is no significant difference between the two groups of samples in terms of profits after listing, and the presence or absence of PE investment has no significant impact on the performance of enterprises after listing. It does not support the certification effect and monitoring effect and adverse selection effect. In other words, this conclusion proves that there is no adverse selection effect on GEM and rejects hypothesis 1.

Table 1. Descriptive statistical analysis of PE and ROE

variable	PE Sample	Non-PE samples
	Average value	Average value
ROE	7.0212	7.3041
Total assets growth rate	5.4389	5.9851
Asset liability ratio	19.8567	17.1274

Table 2. Independent samples t-test for PE and ROE

Financial Indicators	Levene of the variance equation		T-test for mean equation						
	F	Sig	t	df	Sig (both side)	Mean difference	Standard Error	95% confidence interval for the difference	
ROE	1.379	.316	-.134	180	.910	-.09012	.83139	-1.81543	1.76914
				134	.910	-.09012	.83139	-1.81615	1.77023
Total assets growth rate	.873	.489	-.157	180	.855	-.12712	.59138	-1.37812	1.99471
				96	.855	-.12712	.59138	-1.37756	1.99873
Asset-liability ratio	2.34	.201	-.518	180	.512	-.80976	1.54981	-4.76891	3.14886
				104	.512	-.80976	1.54981	-4.76856	3.14975

3.3.2. Correlation Analysis between PE Reputation and Corporate Earnings

This paper uses the Pearson Correlation Test to verify the relationship between PE reputation and corporate profits, and the results are shown in Table 3. The reputation of PE is correlated with the ROE, Total assets growth rate and asset-liability ratio of GEM-listed enterprises, and the reputation of PE is positively correlated with the ROE and Total assets growth rate of GEM-listed enterprises. The better the reputation of PE, the higher the ROE and Total assets growth rate of the invested enterprises after listing. The better the reputation of PE, the lower the asset-liability ratio of the companies it invests in after listing. This shows that there is a grandstanding hypothesis in the GEM market.

Table 3. Correlation analysis between PR and corporate earnings

	PR	ROE	Total assets growth rate	Asset liability ratio
PR	1			
ROE	0.315 **	1		
Total assets growth rate	0.668 **	0.899**	1	
Asset-liability ratio	-0.309**	-0.498**	-0.792**	1

**Correlation is significant at the 0.01 level (2-tailed)

3.3.3. The Relationship between PE Holding Time and Corporate Earnings

This paper uses Pearson Correlation Test to verify the relationship between PE holding time and corporate earnings, and the results are shown in Table 4. The holding time of PE is correlated with the ROE and Total assets growth rate of GEM-listed enterprises, and the holding time of PE is positively correlated with the ROE and Total assets growth rate of GEM-listed enterprises. The longer the holding time of PE, the higher the ROE and Total assets growth rate of the invested enterprises after listing. This also shows that the longer the PE holding time, the more understanding of the enterprise, and PE institutions through the provision of value-added services to improve the management of the invested enterprises. However, there is no correlation between the length of PE holdings and the Asset-liability ratio of the companies they invest in after listing. This also confirms the grandstanding hypothesis.

Table 4. The relationship between PT and corporate earnings

	PT	ROE	Total assets growth rate	Asset liability ratio
PT	1			
ROE	0.715 **	1		
Total assets growth rate	0.578 **	0.899**	1	
Asset- liability ratio	0.198	-0.498**	-0.792**	1

**Correlation is significant at the 0.01 level (2-tailed)

4. Conclusion

This paper takes 91 enterprises listed on the GEM from 2014 to April 30, 2015 as the research object, using the ROE as the explained variable, PE background and characteristics as explanatory variables, the total asset growth rate of the enterprise and the asset-liability ratio

as control variables, using descriptive statistics, Independent samples T test and Pearson Correlation Analysis to conclude that there is no significant difference in the performance of enterprises with or without PE participation after listing, that is to say, PE participation does not improve the performance of the invested enterprises after listing, which neither supports the certification and monitoring effect nor supports the adverse selection effect. However, PE with a good reputation has a positive effect on the profitability of enterprises. The longer PE shareholding, the better the profitability of the invested enterprises. That is to say, there is a grandstanding hypothesis in the entrepreneurial market. The cooperation between invested enterprises and PE institutions is a process of mutual competition. Therefore, enterprises should carefully and reasonably choose investment institutions, and investigate whether PE institutions have long-term strategic vision, can provide value-added services for enterprises, and can promote the long-term development of enterprises, rather than just taking short-term yield as the criterion. In addition, compared with mature PE institutions abroad, China's PE investment time is significantly shorter, and there is a phenomenon of eagerness for quick success and instant benefit, and most PE institutions only bring financial support for the invested enterprises, and cannot provide better value-added services for the invested enterprises. This also shows that the investment management level of China's PE institutions is low, so the effect of PE investment is not obvious, and the performance of the invested enterprises is not good. Therefore, PE institutions should change their investment concepts, pay attention to the technological innovation, business model and corporate governance structure of the invested enterprises, provide more support and services for enterprises, and look at investment projects from a long-term perspective. In this way, the positive role of PE is maximized, the performance level of the invested enterprises is improved, and the PE institutions can not only obtain huge capital gains, but also obtain a good reputation, and promote the sustainable development of PE institutions and enterprises.

References

- [1] Sahlman W A.1990. The structure and governance of venture capital organizations .Journal of Financial Economics,27(2):473-521.
- [2] Wong C.2004. Venture Capitalists Underperform in HK IPO market, working paper, City University of Hong Kong.
- [3] Megginson W.L. & Weiss K. A. Venture Capitalist Certification in Initial Public Offerings. The Journal of Finance, 1991, 46(3):879-903.
- [4] Barry et al.. The Role of Venture Capital in The Creation Of Public Companies. Journal of Financial Economics, 1990, 27:447-471.
- [5] Barry C B, Muscarella C J, Peavy J W.1990. The role of venture capital in the creation of public companies. Journal of Financial Economics, 27(2): 447-471.
- [6] Gompers P, Lerner J.2011. Ownership and Control in Entrepreneurial Firms: An Examination of Convertible Securities in Venture Capital Investments. Working Paper. Harvard University, Cambridge,MA.1997 OECD.
- [7] Wang et al. Effects of venture capitalists participation in listed companies. Journal of Banking & Finance, 2003(27): 2015-2034.
- [8] Brav A. 8. Gompers P. A. Myth or Reality? The Long- Run Under Perform of initial Public Offerings :Evidence from Venture and Non venture Capital .Backed Companies.The Journal of Finance,1997, 52(5):1791-1821
- [9] Jain B, Kini O.1995. Venture capitalist participation and the post-issue operating performance of IPO firms. Managerial and Decision Economics, 16(6):593-606.
- [10] Xia Rui. Research on the impact of venture capital on business performance. Nanjing University of Finance and Economics.2010

- [11] Balboa M, Marti J, Zieling N. Does venture capital really improve portfolio companies growth? Evidence from growth companies in Continental Europe. European Financial Management Association Conference Proceedings, Madrid Conference, 2006
- [12] Lei Jing, Lv Xiaowei, Zhao Yulin, The Impact of Private Equity Investment on the Performance of Growing Hi-tech Enterprises: An Empirical Study Based on SME Listed Companies. Journal of Wuhan University of Technology (Social Science Edition), 2012, (4): 515-518
- [13] Sahlman W A. 1990. The structure and governance of venture capital organizations. Journal of Financial Economics, 27(2): 473-521.
- [14] Gompers P. A. Grandstanding in the Venture Capital Industry. Journal of Financial Economics, 1996(42): 133-156
- [15] Amit et al.. Entrepreneurial Ability, Venture Investment, and Risk Sharing. Management Science, 1990, 36(10): 1232-1245.
- [16] Zhang Feng. 2009. Empirical study on the impact of venture capital on IPO of small and medium-sized Enterprise board. Journal of Financing Research, 5: 11-19
- [17] Tan Yi, Lu Haitian, Gao Sheng, The impact of venture Capital Participation on Listed companies on small and medium-sized Enterprise board. Securities Market Review, 2009, (5): 26-33.
- [18] Franzke, S. A. Underpricing of venture-backed and non venture-backed IPOs: Germany's Neuer Markt. Emerald Group Publishing Limited, 2004
- [19] Wang, C. K, Wang, K, & Lu, Q. Effects of venture capitalists' participation in listed companies. Journal of Banking & Finance, 2003, 27(10): 2015-2034
- [20] Jia Ning, Li Dan. The impact of venture capital management on corporate performance. Nankai Management Review, 2011, (1): 96-106