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Abstract

This paper explores rent-seeking behavior in a heavily regulated equity-financing market. Using manually-collected information about ownership changes from China's IPO application filings, we find that over a third of firms receive late-stage private equity investment and subsequently halve rejection rates for IPO applications, compared to firms without PE investment. The PE investors help firms pass the regulatory barriers, especially for those with weaker quality, and are rewarded with 9.5 times return over a 14 month period for an average deal. Further tests rule out possible alternative explanations for extraordinary PE returns, such as financing, selection/certification, and managerial involvement.

Key words: Rent seeking; Private equity; Initial public offering;

JEL: G3; K4

1. Introduction

Rent-seeking has been of interest to researchers for decades. Although it is easy to speculate about the existence of rent-seeking, it remains challenging to measure and quantify the costs and benefits to parties involved. Thus, compared with substantial theoretical studies, empirical evidence on this topic remains scarce. Only a limited number of empirical studies have been conducted, and these mostly provide indirect evidence. For example, Krueger (1974) uses the market prices of import licenses to estimate the rent obtained by setting import quotas. Djankov et al. (2002) adopt entry-regulation intensity as a proxy for potential rents.

China's heavily-regulated equity financing market provides a potential testing ground, as market participants have strong incentives to successfully navigate regulatory barriers. Due to governmental restrictions, companies that plan to go public are required to fulfill a range of explicit and implicit financial and operational criteria set by the China Securities Regulatory Commission (CSRC). Many suspect that applicant companies engage in activities to establish relationships with regulators to help obtain IPO approval. However in practice, these activities are hard to track, as they are necessarily conducted "under the table". In fact, the unobservable nature of such activities poses a challenge for empirical researchers attempting to measure any rent-seeking behaviors. In this study, our research design takes advantage of a recent regulatory requirement for applicants to disclose the details of late-stage changes of equity ownership. We try to uncover rent-seeking activities by examining the link between late-stage ownership changes and the outcome of IPO applications.

We use a sample of Chinese firms that filed applications for IPO approval in the Growth

Enterprise Market (GEM), the Chinese version of NASDAQ for small growth companies. We find a significant percentage of those firms sold equity ownership to private equity (PE) investors at a significant discount to subsequent IPO prices, when preparing for IPO applications.

Firms with late-stage PE investment experience rejection rates for IPO applications that are only half as high as firms without such investment. This effect is stronger for lower quality firms, as measured by growth rate and profit margin. The late-stage PE investors earn lucrative profits from their investments. We use hand-collected transaction-level data to estimate the profit and rate of return extracted by this group: For an average deal, a PE investor earns a rate of return over 9.5 times and a net profit of RMB 201 million within a 14 month period. The profit of PE investors is about three times investor banking fees.

We consider the link between the significant reduction of the IPO rejection rate and the abnormally high profits gained by PE investors as the evidence for rent-seeking. Using their network and connections, PE investors provide assistance to firms to pass the regulatory barriers for IPO approval, and they earn a considerable profit in return.

Besides rent-seeking, there are several possible alternative explanations for the link between late-stage PE investment and the lower IPO rejection rate. The possible alternatives are: (1) *financing* as late-stage PE provides bridge-loan financing to firms in need of liquidity; (2) *selection/certification* as PE investors are able to select better firms and certify the value of IPO firms to other market participants, including regulators; and (3) *managerial involvement* as PE investors use their industry and operational expertise to improve IPO firms' competency and thus reduce the rejection rate. We conduct a variety of tests to rule out each

of these alternative explanations.

This study contributes to the empirical literature on rent-seeking by identifying opportunistic behavior in a heavily-regulated financing market, and estimating the benefits and costs to the parties involved. This paper also suggests an alternative function of PE investors: using connections and influence to help portfolio companies not only build up business but also navigate through regulatory barriers. The findings from this study add to the current intense policy debate in China on whether to revamp the IPO review system. The associated rent-seeking and corruption is one major argument for overhauling the existing system. This paper provides legislators with the evidence to quantify a certain aspect of rent-seeking behavior in the IPO process.

The rest of the paper proceeds as follows: in Section 2, we present the institutional context and the literature; in Section 3, we describe our sample and discuss the measures and the proxies we use; in Section 4, we analyze the empirical findings; in Section 5 and 6, we test alternative explanations and conduct robustness checks; and Section 7 summarizes the paper.

2. Institutional Background and Literature

A. Literature on rent-seeking

The concept of “rent-seeking” was developed by Tullock (1967) and coined by Krueger (1974) in her analysis of the social losses caused by competition for import-quota rents. She shows that those who engage in rent-seeking invest heavily to promote wealth redistribution rather than wealth production. For example, when competing for larger import quotas, allocated in proportion to capacity, companies tend to develop excess capacity, which causes

social losses. As Krueger (1974) observes, rents are created whenever the government imposes restrictions on economic activities. In turn, the presence of rents leads to rent-seeking.

At country level, Murphy, Shleifer, and Vishney (1993) argue that rent-seeking inhibits economic growth because (1) companies tend to invest more in rent-seeking than in productive activity, and (2) compared with productive activity, rent-seeking is a greater deterrent to innovation. Djankov et al. (2002) examine entry regulations for start-up firms and their economic and social consequences in 85 countries. They find that heavier regulation of entry is associated with greater corruption and a larger unofficial economy, but not with higher-quality public or private goods. As a result, the rents created by setting entry regulations mainly accrue to the regulator.

At firm level, rent-seeking gives rise to moral hazards and corporate-governance issues, and may lead to inefficient business decision-making and a decline in firm value. Kornai (1980) describes the “soft-budget” phenomenon observed among state-owned enterprises (SOEs), which are bailed out by the government whenever they enter into financial distress, as it is unacceptable for an SOE to go bankrupt. The government’s bailout guarantee creates a rent that is eventually obtained by SOE managers willing to make imprudent and self-serving business decisions. Scharfstein and Stein (2000) suggest that the inefficiency of internal capital markets is due to rent-seeking by managers of weaker divisions within firms. As a result, weaker divisions are subsidized by stronger divisions, destroying value for the whole conglomerate. Edlin and Stiglitz (1995) present a model in which managers entrench themselves in their roles by making acquisitions which require the personal information of

the incumbent manager to realize synergies. The rent, namely the reduced competition for the incumbent manager's position, is created by increasing the information asymmetry of the investment.

Despite numerous theoretical advances on this topic (for example, Dunfee et al. 2001, Boatright 2009, and Li 2009), direct empirical evidence on rent-seeking is limited and often indirect, such as a case studies (Nielsen 2003 and McGee 2008) or surveys (Collins et al 2009, and Wu 2009). This study is one of the first attempts to explore it directly in the equity-financing market.

B. Institutional background of China's IPO market

Originally, the Chinese capital market was designed by the government mainly as a vehicle for the reform and recapitalization of SOEs (state-owned enterprises), in the hope that going public will provide China's SOEs with both a modern corporate governance system and much-needed funding. However, due to the huge scale of financing required by SOEs, the Chinese government is always concerned that if the timing and pace of new listings are not properly controlled, the market may become unstable and chaotic. Incumbent politicians also have strong incentives to maximize influence and control over economic activities for private benefit (Dinc and Gupta, 2011). In the case of IPOs, the government has chosen to impose restrictions on the number of IPOs to balance the growth and control of the Chinese stock market (Piotroski and Zhang, 2014).

In practice, the CSRC's Public Offering Review Committee (PORC) controls the IPO approval process. First, an applicant company must satisfy a range of explicit and implicit

requirements before it is eligible to apply to the committee for IPO approval. These requirements cover different criteria, such as accounting performance, financial conditions, industry representation, and corporate governance. Typically, a private IPO candidate is expected to have reached a certain size,¹ earn profits in three consecutive years, and demonstrate growth potential. Other key criteria used by the review committee include the firm's industry affiliation and geographic location. Depending on the macroeconomic and political considerations of the central government, the CSRC may block IPO approval for some² while fast-tracking the applications of others.³

A company submits its application to the PORC, comprised of 35 members, 5 of which are government officers from the CSRC and 20 of which are practitioners from accounting and law firms. Each member serves a one-year, renewable term, with a maximum tenure of three years. Most members work full-time for the CSRC and the remaining members are called when needed.

For every IPO application, the PORC assigns seven members to review the case. The committee examines a wide range of criteria for the application, such as financial performance and growth potential, shareholder structure, and the planned use of IPO proceeds. It is in the best interests of the company to have its application reviewed and approved as quickly as possible, not only because of the time value of the IPO proceeds, but

¹ Size requirement varies according to the different exchanges.

² Due to the central government's efforts to burst the real-estate bubble, the CSRC has not approved any applications from firms in the real-estate sector since 2009. IPO approval is also restricted for restaurant businesses, because the regulator judges that their sales figures are not reliable. To encourage consolidation in the banking sector, IPO approval for medium-size banks has also been halted.

³ Immediately after the Great Sichuan Earthquake of 2008, Shang Fulin, then the Chairman of CSRC, announced the opening of a "green channel" and the acceleration of IPO and seasonal-issuance approvals for firms from the earthquake-affected region (source: <http://finance.sina.com.cn/stock/y/20080606/00104953668.shtml>).

also because of the potential risk of periodical suspensions of IPO markets by the CSRC. As shown in Figure 1, there have been three major IPO suspensions in the last ten years: from June 2005 to May 2006, due to national reform of non-tradable shares of listed state-owned companies; from December 2008 to May 2009, due to the 2008 global financial crisis; and from November 2012 to January of 2014, due to multiple years of underperformance of stock markets. If an applicant misses the IPO window, it must then wait for an unforeseeable length of time, as the CSRC normally do not provide clear timetables for the end of these IPO suspensions.

(Insert Figure 1 about here)

Due to the unpredictable access to the IPO market and the high IPO P/E ratios enjoyed by qualifying companies, the CSRC's IPO approval is a valuable public resource with scarce supply. As a consequence, the market competition for IPO approval is intense, and applicant firms often devote significant resources to establish close relationships with the government agencies to gain any advantage (Liu and Lu, 2007). For example, one CNBC report observes "a single CSRC official who plays a role in an application review can demand an illegal payoff in the 300,000-500,000 RMB range per IPO."⁴

There is widespread suspicion from the public and media that the key purpose of these late-stage PE investors is to help the companies to obtain IPO approval through PE investors' government ties, and that low share purchase prices are the reward for providing such a service. From the perspective of a PE investor, the high IPO valuation of an IPO-approved portfolio company brings windfall profits. Therefore, PE investors are willing to utilize all

⁴ CNBC, Mar 5th 2013, "Road to IPOs in China Remains Long and Murky"

available resources, including their relationships with the government, to facilitate the application process. Networking with key personnel in the CSRC enables PE investors to provide their portfolio companies with procedural advantages, such as moving up in the queue of IPO applicants or obtaining more prompt feedback on how to polish the application documents.⁵

At an open forum for entrepreneurs in 2012, Mr. Yan, from the Softbank Asia Infrastructure Fund, regarded as a pioneer of the Chinese PE industry, publicly accused local Chinese PE investors of using a corrupt business model. According to Mr. Yan, “over 90% of Chinese PE funds are using rent-seeking as their business model. They hire princelings and make money through their privilege of redistributing social wealth.”⁶

In this study, we explore systematically whether a link indeed exists between the outcome of IPO applications and the involvement late-stage PE investors.

3. Sample Construction

We chose to study the IPO applications for the Growth Enterprise Market (GEM) of China. One important reason is that GEM applicants are smaller and younger than applicants at the main exchanges (Shanghai and Shenzhen) employed in prior studies. Whereas the main exchange applicant firms are large, mainly state-owned and well-connected with government, GEM applicants are entrepreneurial firms owned privately and many do not have strong connection with government. These firms are better suited for the purpose of investigating the rent-seeking effort of companies and late-stage investors.

⁵ Source: <http://stock.sohu.com/20120329/n339205589.shtml> (Chinese).

⁶ Source: <http://finance.ifeng.com/news/special/2012yabuli/20120205/5535042.shtml> (Chinese).

Our sample consists of all the companies that filed applications for IPO approval on the GEM between the October 2009 founding of this market and December 2011. 330 companies filed for listing applications during this period.

To file for an IPO application to the CSRC, every company is required to provide a prospectus containing a report of the company's ownership structure since its establishment, a detailed business description, and financial statements for the past three years. We downloaded prospectuses from the WIND database, and hand-coded according to categories such as shareholders' names and identities, the amount of time shareholders invested in the company, the share purchase price, the number of shares, and the shareholding percentages.

We define a late-stage PE investor as a private equity investor that acquires shares in an applicant company for the first time during the two-year period preceding the official review for the IPO approval. In our sample, about one third of firms (119 out of 330) received late-stage PE investment. From an applicant company perspective, all the preparation work for the IPO starts at least two years prior to the IPO. CRSC requires that all applicant companies go through "pre-listing tutoring" for at least one year. The tutoring is usually conducted by the leading investment banker, to help companies comply with all the IPO requirements. Once the tutoring period is over, it normally takes at least a further 6 months between the formal IPO application submission and the official review.

From a PE investor's perspective, a two-year timetable is also a short time period. PE investors (both buyout funds and VC funds) typically hold shares in their portfolio companies for at least 4–5 years before they exit (Sahlman, 1990; Kaplan and Strömberg, 2009). Based on a sample of US VC-backed IPOs, Hsu (2013) shows that investors' incubation period,

which runs from the date of their initial investment to the IPO date, averages 4.4 years. Such a sharp contrast in investment horizon leads to the suspicion that most Chinese PE investors follow an opportunistic strategy focused on rent-seeking.

In this study, the two-year period is used as a natural cut-off point to capture the bulk part of this opportunistic behavior. We also tried different cut-off points, such as 18 months and 12 months, and our results are robust. We use a dummy variable equal to 1 if a sample company has at least one late-stage PE investor, and 0 otherwise. In addition to PE investors, other types of investors can also make late-stage investment in an applicant company. Those investors are categorized in the IPO prospectuses into three groups: Executives, including senior employees, who are managers of the applicant firm; Brokers, investment bankers involved in the IPO application; And individual investors. We also collect information about the presence of those investors.

As publicly stated by the CSRC, certain key criteria are used to evaluate each applicant company. They include growth potential and profitability. For our study, we collect the relevant financial variables from the sample companies' prospectuses, including: (1) the revenue for the year before review; (2) the growth of profit for the three years prior to the review; and (3) the profit margin measured by the return on sales for the year preceding the review. We also compile information about the IPOs from the WIND database for firms that gained approval, namely: the IPO price/earnings ratio, and the share price at the close of the first post-IPO trading day.

The details of the variables are defined in the Appendix.

4. Late-stage Investors and the Outcome of IPO Applications

A. Descriptive statistics

Panel A of Table 1 presents the sample distribution by year. In 2009, the year in which the GEM started, 68 firms made IPO applications, followed by 160 in 2010, and 101 in 2011. Of 330 total applicants, 281 passed the application review and 49 failed, giving a rejection rate of 15%. The rejection rate was highest in 2011 (21%) and lowest in 2010 (12%).

(Insert Table 1 about here)

In the last two rows of Panel A, we partition the sample by the presence of late-stage PE investment. More than one third of applicant companies (119 out of 330) received late-stage PE investment and they have a significantly lower rejection rate (10%) compared to those without late-stage PE investment (18%) (p -value = 0.000). The presence of late-stage PE investment is positively linked with the likelihood of successfully navigating the IPO review.

Panel B of Table 1 presents the sample distribution by industry. Among all the applicant firms, 32% are from the information-technology industry, consistent with the originally designed purpose of the GEM. Industrial companies, predominantly manufacturers, make up the second largest group. The consumer-staples industry has the lowest rejection rate, at 9% (1 out of 11). Columns 4 and 5 show that the presence of late-stage PE investors is the highest in the consumer-discretionary industry, at 50% (12 out of 24), and the lowest in the consumer-staples industry, at 9% (1 out of 11). In all the regressions conducted later in the paper, we include industry fixed effect to account for the potential preference of regulators for certain industries.

Panel C of Table 1 presents characteristics of the IPOs and the returns to PE investors. In

the IPO applicant sample, 119 firms receive investments from 227 different PE investors within the two years preceding the IPO. 89% of invested companies gained approval. For an average approved IPO deal, the average IPO price is RMB 34 per share, and the applicant company raises RMB 650 million (a little over USD 100 million), of which investment bankers collect about 8.3% in fees.

Of all the identified pre-IPO PE investors, none of them are major global PE funds, such as Blackstone and KKR, despite that global PE funds have strong reputations, professional skills and have been doing business in China for years. In fact, we do not observe any international funds involved in these pre-IPO deals. Of the 227 PE funds identified, 44% are state-controlled; the remaining funds are privately-owned. The average registered capital is RMB 248 million, about USD 40 million. The PE investors hold an average ownership stake of 11% of applicant firms following late-stage investment.

The second part of Panel C provides the summary statistics on the profits and the costs of the PE investment. On average, a late-stage PE investor bought about 10% of company shares for RMB 33 million around 14 month (414 days) prior to a firm's IPO. If we assume 0% return for invested companies that failed to gain approval for IPOs, then for every deal, the expected profit for PE investors is RMB 163 million and the expected return up to the IPO listing time is 950%. Given that the average investment period is 414 days, the annualized average return is 727%.

The magnitude of the return received by PE investors in such a short time frame is striking. Prior studies of the performance of PE show that PE funds typically earn a return rate close to the market index, such as the Standard and Poor's 500 Index. For example,

Kaplan and Schoar (2005) record an average return of 12% –14% over the period 1980–2001 in the US. Other studies find similar results (Phalippou and Gottschalg, 2009; Driessen et al., 2012; Harris et al., 2014).

If we compare the PE profit with the capital raised by the company, the average ratio of PE profit to total proceeds is 28%, which is about three times the fee paid to the underwriting investment bank. Why are companies willing to give up substantial equity to late-stage PE investors? What benefit can IPO applicant companies potentially gain from this type of transaction?

B. Late-stage investors and the outcome of IPO applications

We then explore the differences between the group of companies that passed the IPO review and those that failed. Table 2 compares the characteristics of the two groups. A significantly higher percentage of companies (38%) in the “pass” group received late-stage PE investment than in the “fail” group (24%) (p -value =0.07). Meanwhile, for the other types of late-stage investors, such as individuals, executives, and brokers, the differences between the “pass” and “fail” groups are not significant. The average shareholding percentages obtained by PE investors in both the “pass” and the “fail” groups, at 4.22% and 4.02% respectively, are much greater than the holdings of other late-stage investors.

(Insert Table 2 about here)

For all the firms approved for IPO in the sample, the average share price, at the close of the first post-IPO trading day, is RMB31.7. Of all the late-stage investors, brokers paid the highest share price (an average of RMB 5.8) when they made the pre-IPO investment, PE

investors paid the second-highest price (RMB 4.9 per share), and executives paid the lowest average price (RMB 2.4). The average deal prices for the “pass” group are higher than the prices for the “fail” group, but the differences are not statistically significant.

All applicant firms must satisfy a series of size and performance requirements before initiating their IPO applications with the CSRC. Consequently all companies, pass or fail, have decent growth and profit margins. There is no statistically significant difference in the growth rate of profit or profit margin between the “pass” and “fail” groups. Revenue is the one metric that has more variations across companies. We find that “pass” group companies tends to have higher revenue, on average RMB 562 million, compared with RMB 311 million for the “fail” group (p-value =0.00).

Does late-stage investment affect the outcome of IPO reviews? We then run logit regressions with the dependent variable as the dummy variable for the outcome of the IPO review, which equals 1 if a company fails the review and 0 if it passes the review. The explanatory variables are late-stage investment by the different types of investors. For example, “Late-stage Investment by PE” is a dummy variable that equals 1 if the firm has late-stage PE investors among its shareholders. For all the tests, we control for industry fixed effects and year fixed effects, as the CSRC tends to have preferences to support certain industries, and is influenced by the macro-economy and market conditions over time.

(Insert Table 3 about here)

The first four columns of Table 3 show the effect of late-stage investors on the outcome of IPO applications. Of the four different types of investors, the presence of late-stage PE investors is significantly linked to a lower likelihood of rejection. In terms of economic

significance, the margin effect test for logit regression shows that the rejection rate of an applicant company decreases by a half from 18% to 9% when the company has a late-stage PE investor. The other three types of late-stage investors do not have any significant effect on the outcome of IPO applications. The margin estimate shows that the rejection rates among firms with and without late-stage investment by executives are 13% and 15%, by brokers are 21% and 14%, and by individuals are 14% and 15%, respectively. As shown in column 5, the results still hold when the dummy variables for all types of late-stage investor are added together in the regression as explanatory variables. Only the coefficient of late-stage PE investment is negative, indicating a lower rejection rate, and statistically significant; and it also has the largest magnitude.

In column 6, we add additional controls for firm characteristics: profit margin, profit growth rate over the past three years, and revenue (in natural log form). To account for governance quality, we also add the Herfindahl Index measured by the sum of the squares of the holding percentages of the five largest shareholders. The coefficients of those control variables have the expected signs: Firms with higher profit margin, stronger growth and more revenue are less likely to be rejected for IPO. However, only the coefficient for the growth of profit is statistically significant. Again the coefficient of late-stage investment by PE is still significant and negative, and the magnitude of the effect is similar to the other specifications.

For a Chinese firm applying to be listed in the GEM, decreasing the rejection rate from 18% to 9% is significant. Failing to obtain a timely IPO approval poses a serious problem to the growth of the firm. If rejected, the applicant will have to start the process all over again, and the outcome will still be uncertain. More importantly, as the CSRC can, at its discretion,

suspend the IPO market for uncertain durations, there can be prolonged periods when no firm can raise capital from the IPO market. The alternative financing options in China are limited: China's bond market is underdeveloped, and inaccessible to small growth companies in our sample. Bank financing is also not a long-term alternative to equity financing for growth firms, due to China's banking system operating mainly to serve large SOE firms (Ayyagari et al., 2013; Boyreau-Debray and Wei, 2005). For our sample of GEM applicants, short-term loans account for 79% of total bank loans, which indicates the difficulty of long-term financial planning for those growth firms.

In addition, securing IPO approval also opens doors to future rounds of seasoned equity offerings (SEOs), which is more flexible in timing and subject to significantly less regulatory scrutiny. The SEO market provides a major source of financing and continues to function even when the IPO market is suspended by the CRSC. In the sample period from 2009 to 2011, the SEO market raised 50% more capital than the IPO market.⁷ The real option of additional future equity financing makes securing timely IPO approval even more valuable, and provides an even stronger incentive to engage in rent-seeking.

C. Quality of applicant firms and the Effect of Late-stage PE

The previous section shows that firms with late-stage PE investment have half the rejection rate of other applicants. In this section, we explore whether firm quality moderates the effect of PE involvement. The rent-seeking hypothesis suggests that weaker firms need more help from late-stage PE investors than stronger firms. Do late-stage PE investors affect

⁷ From Shanghai Stock Exchange website.

weaker firms more?

We then partition the sample by the firm-quality measures, namely profit margin and growth of profit. We run logit regressions on the subsamples separately to see whether the effect of late-stage PE investment is different for applicant companies of different quality. It is worth mentioning that the variation in performance of applicant firms is smaller than for a randomly selected group of private firms, as all applicants have already been pre-screened under preliminary standards set by the CSRC.

(Insert Table 4 about here)

Table 4 shows the results using subsample regressions. We compare the effects of PE investment on the rejection rate of firms with performance figures above and below the median. We find that for weaker quality firms, measured as either below median profit margin or growth rate, the coefficients for late-stage PE are negative and significant (columns 2 and 5). For firms with above median profit margin or growth rate, the coefficients for late-stage PE are not significant (columns 1 and 4). Late-stage PE investors are better able to help applicant firms with weaker performance to gain approval to conduct an IPO.

We also conduct a regression on the full sample with interaction terms between the dummy “late-stage PE investment” and the performance measures. Column 3 of Table 4 shows that the interaction term between late-stage PE and profit margin are positive and significant. Column 6 displays the equivalent test with the interaction between late-stage PE and the growth of profit, and finds a similarly positive and significant coefficient for the interaction term.

The above evidence indicates that for firms with weaker performance, the presence of PE

investment significantly reduces IPO rejection rates. The last two rows of Table 4 present the marginal effect of PE investment: for firms with profit margins below the median, the marginal rejection rate is 23% without PE investment and 8% with PE investment; for firms with growth rates below the median, the marginal rejection rate is 21% without PE and 10% with PE. On the other hand, for stronger performing firms, the involvement of PE does not make a significant difference: for firms with profit margins above the median, the marginal rejection rate is 14% with PE and 12% without PE; for firms with growth rates above the median, the marginal rejection rate is 9% with PE and 13% without PE.

5. Alternative Roles for PE in the IPO Process

Rent-seeking is just one possible explanation for the positive relationship between the late-stage PE investment and a lower rejection rate for IPO reviews. PE investors can improve their portfolio companies in various ways to enhance the chance of gaining approval. We propose three different alternative explanations in this section and conduct a series of additional tests to rule them out.

a. Financing

Firstly, we consider the possibility of PE investment as an additional source of financing to companies awaiting listing. PE investment might be used as a special type of bridge loan to enable companies to continue to grow before receiving the proceeds from the IPO. PE investors receive pre-IPO shares as the compensation for providing financing. In practice, most Chinese PE investments include a put option for share repurchase by the firm if the firm misses its performance targets or fails to gain IPO approval. Late-stage PE investments are

almost as short-term as one-year working capital loans commonly provided by banks in China.

As shown in the earlier section, PE investors make windfall profits within two years if the IPO goes ahead. For an average deal, PE investors make a profit of RMB 163 million, with a rate of return of 950%, which is extraordinarily high compared with other forms of debt financing. An applicant company would have to be extremely liquidity-constrained to accept such terms if the cash from PE investment is mainly used as liquidity. In our sample, the average amount invested by PE investors is about RMB 32.5 million, which is about 27% of applicant firms' cash holdings or about 40% of existing bank loans at the beginning of the year in which the investment occurs. These companies do not seem to be severely liquidity-constrained, and the additional cash from PE investment makes a positive but not huge difference to the balance sheets.

In addition, we compare cash holdings and bank loans between firms with and without late-stage PE investment to see whether there is any significant cash shortage for firms with PE investment. We find no significant difference, which is inconsistent with the financing explanation. The need for financing is unlikely to drive applicant companies to seek late-stage PE investment.

B. Selection/Certification Effect

Another alternative explanation for the effect of PE investment in our study is the *selection effect*, whereby PE investors select only the best performing companies. Sophisticated PE investors, with the benefit of their expertise or an informational advantage

or both, may assiduously select companies better positioned to gain approval.

The *Selection effect* is a challenging issue that plagues many studies. The previous multivariate logit regressions with fixed effects are able to account for the selection at industry level and year level, as well as the key performance criteria set by the CRSC. But if PE investors select based on criteria not in our list of control variables, such as managerial quality, then our current regressions are not able to deal with this type of selection issue.

Empirically, the best way to deal with the selection issue is to find a clean exogenous variation of PE investment, which is uncorrelated with the IPO review process. Given the current setting, we could not identify such a source of variation. But conceptually, the selection effect is not able to explain our other findings: it does not explain why firms are willing to sell significant shares at such a steep discount. Why let PE investors free-ride? The selection explanation is incomplete without addressing what value PE investors can provide in return to the applicant firms.

One possible answer is that the presence of PE investors, as third-party specialists, certifies the value of a firm to other types of outsiders who are less informed (Baum and Silverman, 2004; Pollock et al., 2010). In the case of an IPO application, the presence of PE investors gives the regulator a more reliable indication of the value of applicant companies, and makes the IPO more likely to be approved. We call this mechanism the *certification effect*. The *selection effect* needs to work in conjunction with *certification effect*, as PE investors need to not only to identify good companies but also to provide something valuable in return to companies in order to acquire shares at pre-IPO prices.

One implication for this explanation is that if firms want to be certified, they would

prefer to engage PE investors with the strongest reputation, which can potentially provide the best endorsement. But the reality paints a different picture. As mentioned earlier, none of the top global PE investors were engaged, despite their pedigree. Instead, applicants firms chose to team up with local PE investors, many with low visibility and unknown to outsiders, which is inconsistent with the *certification effect*.

Another implication of the *certification effect* is that other market participants are able to observe the quality signaled by PE investment. The certification effect should affect the pricing of IPOs. In an earlier study, Megginson and Weiss (1991) demonstrate that the *certification effect* exist for venture capital (VC)-backed IPOs by showing that certified IPOs have significantly lower underpricing, measured by lower first trading day returns, than uncertified IPOs. The presence of VC investors certifies firm value to outside investors by assuaging concerns about information asymmetry. Similar to Megginson and Weiss's argument, if the main role of PE investment here is to signal certification, then we would expect that this mechanism should affect the valuation of IPOs and that certified IPOs have significantly lower underpricing by having lower first trading day returns.

(Insert Table 5 about here)

We examine the IPO pricing of the sample firms. Panel A of Table 5 provides the summary statistics on all the applicant companies that have received IPO approval. The focus is to compare the group with late-stage PE investment and the group without PE. Between the two groups, we find there are no statistically significant differences in broker fees, percentage of new shares offered, and IPO proceeds. In terms of offering price, firms with late-stage PE investment have about 8% higher average price to earnings (P/E) ratios than other firms

(*p-value* = 0.08). For the key variable of interest, IPO underpricing, firms with PE have slightly higher, rather than lower, first-day trading return (40%) compared with firms without PE (37%), and the difference is insignificant (*p-value* = 0.53).

Next, we run regressions with the IPO P/E ratio and IPO first-day return as the dependent variable, and report the results in panel B of Table 5. The coefficient for the dummy of late-stage PE investment is not significant in either model, thus offering no evidence that outside investors are willing to pay a premium for firms with late-stage PE backing. Overall, we find no supporting evidence for the *certification effect*.

C. Managerial involvement

The third alternative explanation is that managerial involvement by PE investors in portfolio firms can potentially generate significant value (Sahlman, 1990). PE investors can act as advisors or coaches to enhance the competence of portfolio companies and thus build up firms with better performance (Hellmann and Puri, 2002; Baum, 2004). They can also provide help to find new revenue sources, reach out to more clients, and facilitate strategic alliances. If PE-backed firms become stronger due to PE's managerial involvement, then they are more likely to pass the IPO review.

One caveat for this explanation is that all these potential benefits from PE investment normally take an extended period to materialize, as the process of improving business operations is often time-consuming. If *managerial involvement* is the key reason for the reduced rejection rate for firms with late-stage PE investment, then we expect those firms with shorter investment periods by PE to benefit less from PE's involvement and experience

less change in IPO rejection rates.

We examine the different investment durations for late-stage investments, by looking at investments that occur even closer to the IPO review dates. We subsequently redefine “late-stage investment” as 18 months or 12 months preceding an IPO and reconstruct the dummies for different types of late-stage investors. If the *managerial involvement* explanation holds, we expect any reduction in the rejection rate to be smaller among companies receiving PE investment within shorter duration.

(Insert Table 6 about here)

Table 6 compares the effect of late-stage PE on IPO rejection rates across different time spans. The first three columns are the same as reported in Table 3, using the 24-month window. Columns 4-6 use an 18-month duration and columns 7-9 use a 12-month duration. We find the effect of late-stage PE is stronger, rather than weaker, for shorter durations. The coefficients for late-stage PE for the 18-month window are about 20% bigger than those for 24-months window. And the coefficients for the 12-month window are about twice as big as those for the 24-month window. The margin estimates in the last two rows of Table 7 also confirm the same trend: for the 24-month window, the presence of PE reduces the rejection rate from 18% to 9%; for the 18-month window, the rejection rate drops from 18% to 7%; for the 12-month window, it drops from 16% to 4%.

These findings are contrary to the suggested role of PE investment in enhancing operations in invested firms. But they are consistent with the rent-seeking hypothesis and suggest that PE investment received closer to the date of review has an even stronger effect on the IPO-approval rate.

6. Influence from Executives of Applicant Firms

What types of companies are more willing to give away substantial amount of equity to late-stage PE investors, even if PE investors do not provide significant financial support or have enough time for in-depth management involvement?

One clue lies in the returns on pre-IPO investments made by executives. In our sample, about 24% of firms have late-stage investment from their executives with an average holding of 1.4% of company shares. These executives made a fortune once the company listed. For an average IPO firm in the sample, the profit for executives' investment is RMB 124 million (about \$20 million), with a rate of return about 30 times, even higher than the return rate enjoyed by PE investors. This indicates that when managers are able to invest in pre-IPO shares, they have a strong personal incentive to minimize the possibility of the IPO application being rejected.

(Insert Table 7 about here)

We explore whether the managerial incentive is linked to the existence and the magnitude of pre-IPO PE investments. We run regressions using the dummy for late-stage PE and the percentage of shares PE acquire, with the key explanatory variables being dummies for the presence of other types of late-stage investors.

Table 7 displays the regression results. In models 1 and 2, the dependent variable is the dummy of late-stage PE, and logistic regressions are conducted. In model 1, the coefficient for late-stage investment by executives is positive and significant, which suggests that the presences of late-stage executive investment is significantly and positively related to the presence of PE investors. The margin estimates show that when a firm has late-stage

investment from executives, the likelihood of obtaining late-stage PE investment is 55%, while the likelihood is only 30% for other firms.

Model 2 adds firm characteristics as control variables and we still find the same positive and significant coefficient for late-stage executives. The regression results also show that firms with higher profit margins are more likely to gain late-stage PE investment. In addition, the Herfindahl index of the five largest shareholders' ownership has a negative and significant coefficient, indicating that more widely-held companies are more willing to sell shares to late-stage PE investors, or alternatively, that PE investors are more inclined to invest in firms with a dispersed ownership structure.

In models 3 and 4, the dependent variable is the percentage of a firm's ownership held by late-stage PE investors. The independent variables are the same as those in models 1 and 2. The results are similar overall to those of models 1 and 2: Compared to other firms, firms with executive investment let PE investors acquire 3% more shares, about 75% of the sample mean.

We also observe from Table 7 that late-stage investment by individuals has a similar effect on PE investment. Due to data constraints, we are not able to identify the affiliations of those individuals. From a few case studies, we notice a significant fraction of those individuals are related to executives and may share similar incentives to executives.

The significant and positive link between late-stage investment by executives and late-stage PE investment suggests that executives' equity investment may motivate them to gain late-stage PE investment. Companies with managerial ownership express more willingness to collaborate with late-stage PE investors to increase the likelihood of gaining

IPO approval, thereby enhancing the value of the executives' stake. In addition, PE investors could also prefer executive ownership because the interests of the invested company's executives are then better aligned with the PE investors'.

7. Conclusion

In this paper, we explore the potential rent-seeking behavior in China's highly-regulated equity-financing market. We examine the link between the presence of late-stage PE investors and the rejection rate of IPO applications. We find that applicants with late-stage PE investment have a significantly lower likelihood being rejected than other applicants. In addition, the effect of PE investment is more pronounced among firms with below-median profit margins and below-median profit growth.

Detailed information on purchase prices and dates in required regulatory filings enables us to estimate the reward for PE investors is on average RMB 201 million and 9.5 times initial investment per deal. This evidence is consistent with the rent-seeking hypothesis that late-stage PE investors utilize their network and connections to help companies to lower the rejection rate of IPO applications, and extract a significant rent for themselves. Furthermore, we show that the effectiveness of late-stage PE investment increases for firms with weaker performance.

We conduct a variety of additional tests to explore alternative explanations for the link between late-stage PE investment and lower IPO rejection rates, such as financing, selection/certification, and managerial involvement, and find none of them are consistent with the set of empirical evidence we find. Furthermore, firms with late-stage investment from their own executives are significantly more likely to gain late-PE investment and sell

larger shareholdings to PE investors.

One major limitation of this study is that our evidence regarding rent-seeking for IPO approval is indirect, and only suggests that rent-seeking is the more likely explanation for the link between the presence of late-stage PE investment and a lower rejection rate. Ideally, direct evidence, such as links between PE investors and the IPO review committee members, can be provided. But the unobservable nature of most rent-seeking makes it a challenge for all researchers on this topic. The recent arrest of Li Liang, the Chief of the Investor Protection Bureau of the CRSC, in December 2014, due to his corrupt behavior while in charge of the GEM reviews from 2009 to 2011, gives additional conviction to our thesis. Despite the caveat, we believe this study enables us to get one step closer to uncovering and understanding rent-seeking behavior.

Our study also yields strong policy implications and contributes to the intensive debate on whether to overhaul the current IPO review system⁸. The fact that growth firms relinquish huge shareholdings to late-stage PE investors in exchange for securing IPO approval makes us question the effectiveness of a tightly-regulated equity financing market, which directs the efforts of market participants toward securing wealth transfer rather than wealth creation. An alternative option for the government would be to move towards a more market-oriented IPO system. Improving the quality of institutions while minimizing government intervention would reduce welfare losses due to rent-seeking activities.

⁸ Ex-Chairman of the CRSC, Guo Shuqing, is known for his desire to reform the IPO system and abolish the review process. His tenure lasted less than 14 months, which makes him the shortest tenured Chairman in the CRSC history.

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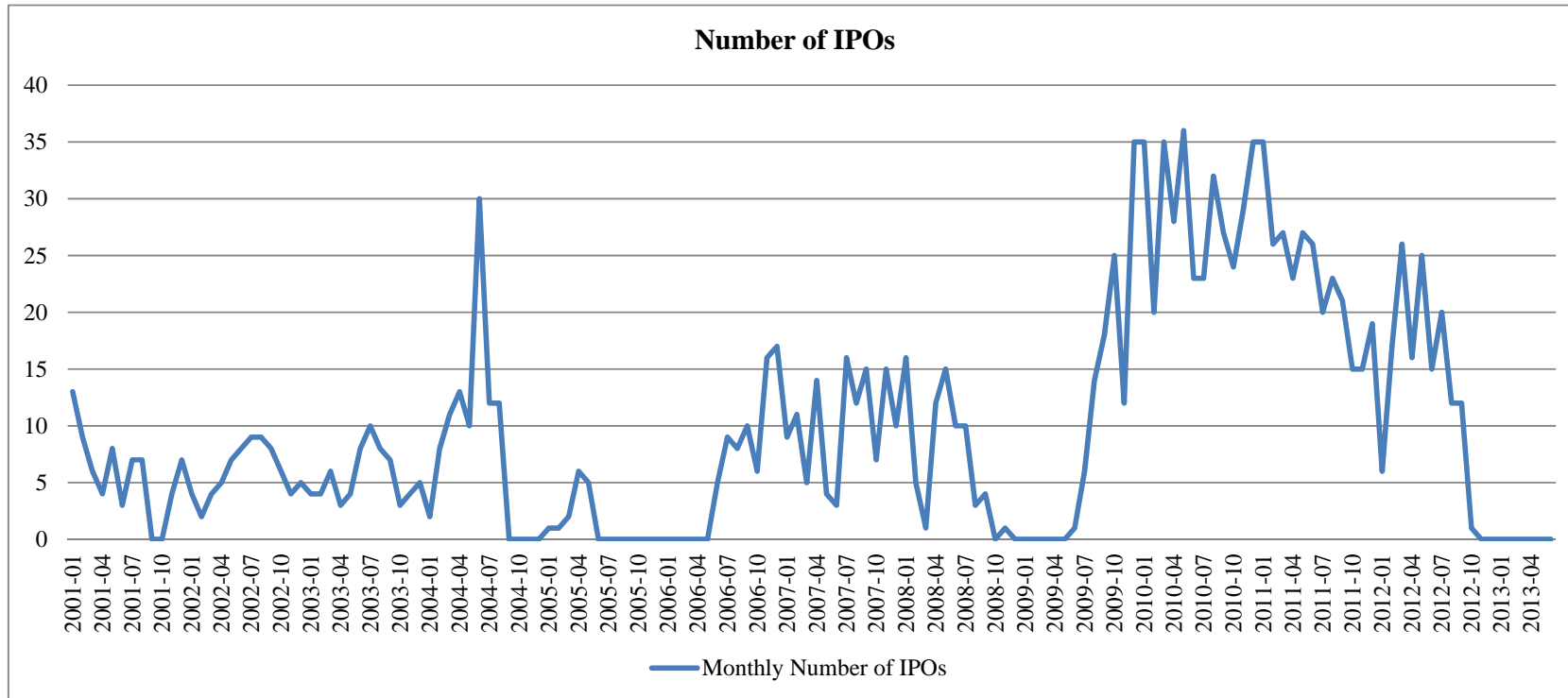
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Appendix: Definitions of Variables

Variable	Definition
Fail	Dummy variable, which equals 1 if the company fails to gain approval of IPO application, otherwise 0.
Late-stage Investment by PE	Dummy variable, which equals 1 if equity investment by private-equity conducted within the two years before the IPO review, otherwise 0.
Late-stage Investment by Executives	Dummy variable, which equals 1 if equity investment by senior management or technical staff conducted within the two years before the IPO review, otherwise 0.
Late-stage Investment by Brokers	Dummy variable, which equals 1 if equity investment by investment banks conducted within the two years before the IPO review, otherwise 0.
Late-stage Investment by Individuals	Dummy variable, which equals 1 if equity investment by individuals conducted within the two years before the IPO review, otherwise 0.
% of PE Holdings	The percentage of ownership acquired by Late-stage PE investors when the company files its IPO application.
% of Executive Holding	The percentage of ownership acquired by Late-stage executive investors when the company files its IPO application.
% of Broker Holding	The percentage of ownership acquired by Late-stage broker investors in Late-stage when the company files its listing application.
% of Individual Holding	The percentage of ownership held by Late-stage brokers when the company files its listing application.
Revenue	Log of Revenue in RMB millions one year before the company files its listing application.
Growth of Profit	(Net profit one year before the company files its listing application/Net profit three years before the company files its listing application) - 1
Profit Margin	Net profit one year before the company files its listing application/Revenue one year before the company files its listing application.
Herfindahl index	The sum of the squares of the five largest shareholding percentages.

Figure 1
 Number of IPOs on the Chinese Stock Market



Source: Wind Information

Table 1**Summary Statistics of the Sample**

Table 1 provides the distribution of the sample. The sample spans the period 2009-2011, with a total of 330 firms which filed IPO applications at GEM. Panel A displays the number of observations in each year. Panel B shows the distribution by industry. Panel C shows the information about IPO and the return of Late-stage PE investments.

Panel A: Applicant firms by year

	Total	Fail	Fail %
2009	68	9	13%
2010	160	19	12%
2011	101	21	21%
Total	330	49	15%
Firms with Late-stage PE	119	12	10%
Firms without Late-stage PE	211	37	18%

Panel B: Applicant firms by industry

	Total	Fail	Fail %	Late-stage PE	% with Late-stage PE
Consumer Discretionary	24	4	17%	12	50%
Consumer Staples	11	1	9%	1	9%
Energy	10	5	50%	4	40%
Health Care	36	4	11%	8	22%
Industrials	94	17	18%	43	46%
Information Technology	106	12	11%	41	39%
Materials	46	5	11%	9	20%
Utilities	3	1	33%	1	33%
Total	330	49	15%	119	36%

Panel C. IPO and PE Returns

Applicant Firms (N=119)	Mean	S.D.	P10	Median	P90
IPO Approved	89%				
IPO Listed Price	34.36	17.9	16.8	30	58.5
Proceeds from IPO (million RMB)	650.4	423.9	271.9	527.1	1170
I-Bank Fee/Total Proceeds (%)	8.29	3.03	4.77	7.67	12.41

PE Investment (N=227)	Mean	S.D.	P10	Median	P90
PE Holdings of Applicant Firms (%)	10.74	8.36	2.5	8.95	21.94
Average Investment Cost (million RMB)	32.53	30.09	3.73	25.97	69.68
PE Average Profit (million RMB)	163.34	191.27	24.19	101.02	313.22
PE Average Rate of Return up to IPO Listing	950%	1329%	215%	500%	2464%
Days from investment to IPO listing	414.4	131.05	263	417	576

Table 2**Summary statistics: Late-stage Investors and the Outcome of IPO Applications**

This table provides descriptive statistics that compare firms that pass and failed applications. The variables are defined in Appendix. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Variables	Total	Pass (N=281)	Fail (N=49)	<i>P-Value</i>
% of firms with late-stage investment by PE	36%	38%	24%	0.07**
% of firms with late-stage investment by executives	24%	25%	22%	0.75
% of firms with late-stage investment by brokers	7%	6%	10%	0.34
% of firms with late-stage investment by individuals	26%	27%	22%	0.5
% of PE holdings	4.2%	4.2%	4.0%	0.87
% of executive holdings	1.4%	1.4%	1.4%	0.93
% of broker holdings	0.3%	0.3%	0.5%	0.25
% of individual holdings	1.6%	1.6%	1.6%	0.96
IPO offering price per share	31.7			
Price per share paid by PE	4.9	5.0	4.7	0.8
Price per share paid by executives	2.4	2.5	1.7	0.2
Price per share paid by brokers	5.8	6.2	4.5	0.3
Price per share paid by individuals	4.1	4.2	3.6	0.6
Revenue (RMB: million)	347	562	311	0.00**
Growth of profit	225%	241%	131%	0.17
Profit margin	24%	24%	22%	0.39

Table 3**Logit Regression: Late-stage Investors and the Outcome of IPO Applications**

This table examines the link between the outcome of IPO applications and the presence of late-stage investors. The dependent variable is the dummy variable of failed IPO application, which equals 1 if the company fails the review and 0 if it passes the review. The variables are defined in Appendix. Standard errors are in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Logit Regression	Dummy of Failed IPO Application					
	(1)	(2)	(3)	(4)	(5)	(6)
Late-stage Investment by PE	-0.81** (0.37)				-0.92** (0.40)	-0.89** (0.43)
Late-stage Investment by Executives		-0.19 (0.39)			0.03 (0.42)	0.10 (0.45)
Late-stage Investment by Brokers			0.48 (0.57)		0.70 (0.57)	0.84 (0.59)
Late-stage Investment by Individuals				-0.12 (0.39)	0.13 (0.42)	0.26 (0.43)
Profit Margin						-0.16 (0.10)
Growth of Profit						-0.62* (0.35)
Revenue						-2.93 (2.18)
Herfindahl Index						-1.03 (0.94)
Constant	0.28 (1.30)	0.12 (1.27)	0.07 (1.27)	0.08 (1.27)	0.30 (1.31)	0.29 (1.39)
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	330	330	330	330	330	328
Pseudo-R2	0.077	0.059	0.061	0.059	0.082	0.116
Margin (Late-stage Investment =1)	9%	13%	21%	14%		
Margin (Late-stage Investment =0)	18%	15%	14%	15%		

Table 4**The Quality of Applicant Firms and Late-stage PE Investment**

This table relates the involvement of PE investors to the success or failure of IPO applications. The dependent variable is the dummy variable of failed IPO application, which equals 1 if the company fails the review and 0 if it passes the review. The variables are defined in Appendix. Standard errors are in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Logit Regression	Dummy of Failed IPO Application					
	(1)	(2)	(3)	(4)	(5)	(6)
	Profit Margin> Median	Profit Margin<= Median	All Firms	Growth of Profit >Median	Growth of Profit <=Median	All Firms
VARIABLES						
Late-stage PE Investment	0.28 (0.63)	-1.74** (0.78)	-1.02** (0.45)	-0.46 (0.57)	-1.04 (0.66)	-0.87** (0.40)
PE*Profit Margin			10.75*** (3.66)			
PE*Growth of Profit						0.37* (0.21)
Profit Margin	-0.03 (0.14)	-0.61** (0.30)	-0.16 (0.11)	-0.09 (0.11)	-0.81 (0.84)	-0.38* (0.21)
Growth of Profit	-4.31*** (1.07)	-0.32 (0.53)	-0.76** (0.36)	-0.80 (0.58)	-0.70 (0.49)	-0.62* (0.35)
Revenue	-7.37* (4.04)	-23.01** (9.29)	-7.50** (2.99)	-1.28 (2.84)	-4.46 (3.78)	-2.73 (2.19)
Herfindahl Index	0.47 (1.81)	-1.96 (1.48)	-0.94 (0.93)	0.90 (1.60)	-1.82 (1.30)	-0.97 (0.96)
Constant	-13.58 (2,077.48)	-0.12 (1.72)	-0.06 (1.38)	-15.60 (2,525.99)	1.52 (1.58)	0.31 (1.40)
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	162	142	328	157	166	328
Pseudo R-squared	0.299	0.287	0.141	0.109	0.173	0.122
Margin(Late-stage PE=1)	14%	8%	8%	9%	10%	9%
Margin(Late-stage PE=0)	12%	23%	18%	13%	21%	18%

Table 5**Certification Effect or not? Evidence from IPO Under-pricing**

Panel A of this table provides descriptive statistics for IPO-related variables. Panel B provides the regression results for the effects of late-stage investors on the offering price to earnings ratios and the first-day IPO returns. The variables are defined in Appendix. Standard errors are in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A. Key statistics

	Total	Non-Late-stage PE (N=173)	Late-stage PE (N=108)	<i>P-Value</i>
Fee (million RMB)	46.7	45.4	48.8	0.21
Percentage of Shares Offered	34.45	35.03	33.41	0.13
IPO Proceeds (million RMB)	650.4	627.1	688.4	0.24
Offering Price to Earnings ratio	61.6	59.8	64.6	0.08*
IPO First-day Return	37.9	36.8	39.8	0.53

Panel B. Regression results

	(1) IPO P/E ratio	(2) IPO First-day Return
Late-stage Investment by PE	2.67	-2.71
	-2.62	-4.63
Late-stage Investment by Executives	7.98***	6.26
	-2.91	-5.15
Late-stage Investment by Brokers	7.23	2.97
	-4.68	-8.27
Late-stage Investment by Individuals	-2.17	-1.14
	-2.81	-4.96
Profit Margin	0.15	0.37
	-0.21	-0.38
Growth of Profit	-1.02	-25.05***
	-2.40	-4.24
Revenue	9.22	-68.84***
	-13.08	-23.12
Herfindahl index	-1.99	-28.81**
	-6.32	-11.17
Constant	40.76***	43.09***
	-3.72	-6.57
Industry Fixed Effect	Yes	Yes
Year Fixed Effect	Yes	Yes
Observations	281	281
R-squared	0.34	0.31

Table 6
Different Time Windows for Late-stage Investments

This table presents the effects on IPO outcome of the involvement of Late-stage investors. The dependent variable is the dummy variable of failed IPO application, which equals 1 if the company fails the review and 0 if it passes the review. The variables are defined in Appendix. Standard errors are in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Investment Horizon	Logit Regression								
	Within 24 Months before IPO			Within 18 Months before IPO			Within 12 Months before IPO		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Late-stage PE Investment	-0.81** (0.37)	-0.92** (0.40)	-0.89** (0.43)	-1.11*** (0.42)	-1.12** (0.45)	-1.09** (0.47)	-1.76** (0.76)	-1.74** (0.77)	-1.81** (0.79)
Late-stage Executive Investment		0.03 (0.42)	0.10 (0.45)		-0.07 (0.45)	0.03 (0.48)		-0.35 (0.88)	0.02 (0.89)
Late-stage Broker Investment		0.70 (0.57)	0.84 (0.59)		0.46 (0.63)	0.58 (0.65)		0.78 (0.83)	0.74 (0.85)
Late-stage Individual Investment		0.13 (0.42)	0.26 (0.43)		-0.03 (0.47)	0.03 (0.48)		-0.19 (0.71)	-0.09 (0.71)
Profit Margin			-0.16 (0.10)			-0.14 (0.10)			-0.15 (0.11)
Growth of Profit			-0.62* (0.35)			-0.62* (0.35)			-0.65* (0.35)
Revenue			-2.93 (2.18)			-2.93 (2.17)			-3.05 (2.16)
Herfindahl Index			-1.03 (0.94)			-1.05 (0.95)			-1.11 (0.95)
Constant	0.28 (1.30)	0.30 (1.31)	0.29 (1.39)	0.06 (1.27)	0.09 (1.28)	0.16 (1.34)	-0.00 (1.27)	0.01 (1.28)	0.11 (1.35)
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	330	330	328	330	330	328	330	330	328
Pseudo-R2	0.08	0.08	0.12	0.09	0.09	0.12	0.09	0.09	0.13
Margin(Late-stage PE =1)	9%	9%	9%	7%	7%	7%	4%	4%	4%
Margin(Late-stage PE =0)	18%	19%	18%	19%	19%	18%	17%	17%	16%

Table 7**The Influence of Late-stage Investment by Executives**

This table provides regression results that relate the presence of other types of late-stage investors to the PE investment. The dependent variable is the dummy of late-stage PE investment for columns (1) and (2), and PE Holdings for columns (3) and (4). The variables are defined in Appendix. Standard errors are in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

VARIABLES	Logit		OLS	
	Late-stage PE		PE Holdings	
	Investment			
	(1)	(2)	(3)	(4)
Late-stage Investment by Executives	1.19*** (0.30)	1.37*** (0.32)	0.03*** (0.01)	0.03*** (0.01)
Late-stage Investment by Brokers	0.75 (0.47)	0.78 (0.50)	0.00 (0.02)	0.01 (0.02)
Late-stage Investment by Individuals	1.15*** (0.30)	1.00*** (0.30)	0.03*** (0.01)	0.03*** (0.01)
Profit Margin		3.33** (1.51)		-0.02 (0.05)
Growth of Profit median		0.04 (0.03)		0.003*** (0.00)
Revenue		0.12 (0.24)		-0.01 (0.01)
Herfindahl Index		-1.84** (0.76)		-0.05** (0.02)
Constant	-1.40 (1.31)	-0.91 (1.35)	-0.01 (0.04)	0.00 (0.04)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
Observations	330	328	330	328
R-squared			0.12	0.18
Pseudo R-squared	0.153	0.185		
Margin (Late-stage Executive =1)	55%	57%	6.5%	6.5%
Margin (Late-stage Executive =0)	30%	30%	3.4%	3.5%