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Do venture capitalists play a monitoring role in an emerging market: Evidence from the pay-performance relationship of Chinese entrepreneurial firms?

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ABSTRACT

This paper investigates venture capitalists' monitoring of managerial behaviour by examining their impact on CEO pay-performance sensitivity across various controlling structures in Chinese firms. We find that the effectiveness of venture capitalists' monitoring depends on different types of agency conflict. In particular, we find that venture capital (VC) monitoring is hampered in firms that experience severe controlling-minority agency problems caused by disproportionate ownership structures. We provide further evidence that VC is more likely to exert close monitoring in firms that have greater managerial agency conflict, and thus require more direct monitoring. However, controlling-minority agency problems have a greater impact on VC monitoring than managerial agency problems. Overall, our

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study suggests that venture capitalists' monitoring role is hampered in an emerging market where firms have complex ownership structures that contribute to severe agency conflict between controlling and minority shareholders.

Key words: Venture capital; disproportionate ownership; the pay-performance relationship; agency problems.

JEL Classification: G32, G34

1. Introduction

Conventional wisdom indicates that venture capital (VC) investors, who typically make a profit by funding, monitoring, and then exiting entrepreneurial companies, tend to be specialists in developing and monitoring new ventures. Engel et al. (2002) find that venture capitalists directly monitor managerial behaviour, documenting that firms with greater VC involvement display a weaker pay-performance association than comparable companies. Strong VC oversight substitutes for the pay-performance relationship, since managers are directly monitored by venture capitalists. In comparison, entrepreneurial firms without VCs may have to rely on various performance measures in annual compensation grants to incentivize CEOs. Barry et al. (1990) also find that venture capitalists play a key role in monitoring top management in entrepreneurial firms that are characterized by high-risk and high-growth opportunities, indicating that more direct monitoring is required when the classic managerial conflict described by Jensen and Meckling (1976) is more severe.

However, the existing literature of VC monitoring and its impact on the CEO pay-performance relationship (Engel et al., 2002) is only based on US firms where shares are usually diversely held by shareholders. There is no evidence to suggest whether VC monitoring will still be effective in emerging markets, where firms have more concentrated ownership structures. Previous studies show that in the corporate world outside the US and UK, ownership is usually concentrated in the hands of a few controlling shareholders through complex ownership structures (La Porta et al., 1999; Claessens et al., 2000). For example, in most emerging economies, where legal protection for shareholders can be weak, large controlling shareholders usually control listed firms through disproportionate ownership structures (Faccio et al., 2001; 2010; Lin et al., 2011, 2012). In previous literature, such disproportionate ownership structure are associated with severe agency conflict between controlling and minority shareholders because controlling shareholders of those firms usually

have an incentive to expropriate the interests of minority shareholders (Lemmon and Lins, 2003; Maury and Pajuste, 2004; Gompers et al., 2011; Lin et al., 2011, 2012). It is therefore reasonable to expect that effective VC monitoring may be hampered because controlling shareholders in these firms have strong incentives and the ability to transfer corporate resources for private benefits at the expense of other investors, including venture capitalists (Lin et al., 2011).

In this paper we investigate venture capitalists' monitoring role in an emerging market by examining their impact on the CEO pay-performance relationship and how the strength of their monitoring is influenced by agency conflict between controlling and minority shareholders. In particular we examine: (1) whether venture capitalists' direct monitoring reduce entrepreneurial firms' reliance on performance-based contracts; (2) whether venture capitalists' monitoring role differs in firms with different levels of agency conflict between controlling-minority shareholders; (3) whether VC plays a monitoring role in firms with greater managerial agency problems, which have greater need for monitoring; (4) whether controlling-minority agency problems have greater impact on venture capitalists' monitoring than managerial agency problems; and (5) whether non-state-funded and state-funded VC have a similar incentive to monitor.

We conduct our research using a sample of Chinese entrepreneurial firms due to their specific controlling structures. More specifically, Chinese entrepreneurial firms have a controlling structure characterized by the ubiquitous presence of the disproportionate ownership structures. As indicated by Fan et al. (2011), disproportionate ownership structure is an important institutional factor that influences firms' corporate finance and managerial behaviour in an emerging market, such as the Chinese capital market. Previous studies have shown that with disproportionate ownership structures, the controlling shareholders always have a strong incentive to expropriate the interests of other investors, including venture

capitalists, because they obtain all the private benefit without bearing the full consequences (Lin et al., 2012). This means that a disproportionate ownership structure results in severe agency conflicts between controlling and minority shareholders (Claessens et al., 2002; Faccio and Lang, 2002; Faccio et al., 2010; Wei and Zhang, 2008; Lin et al., 2011; Liu and Tian, 2012). It is therefore interesting to examine whether VC monitoring is strengthened or weakened by the severe controlling-minority shareholders agency conflicts caused by disproportionate ownership structures. We exclude state-owned enterprise (SOEs) for the following two reasons. First, the assumption underlying our analysis is that firms tend to adopt performance-based compensation to incentivize managers. However, CEOs in SOEs are usually paid based on their official ranking rather than their performance given that managers are nominated by the government to pursue the government's objectives rather than maximizing value (Fan et al., 2007). Therefore a weaker pay-performance relationship does not necessarily reflect the stronger role of VC monitoring[2]. Second, compared to these entrepreneurial controlled firms, SOEs in China have different principal–agent framework: the dominating agency issue in SOEs is the agency conflict between shareholders and managers rather than between controlling shareholders and minority shareholders even although they also adopt disproportionate ownership structure (Rousseau and Xiao, 2007).

Since China has become the second largest economy in terms of VC-related activities such as initial public offerings (IPOs), fund raising, and entrepreneurial financing (Ahlstrom et al., 2007), it therefore provides a perfect context to examine the role venture capitalists play in entrepreneurial firms. Using Heckman two-step regressions that address potential endogeneity issues throughout the paper, our empirical findings confirm the monitoring role of venture capitalist weakens the relationship between CEO compensation and market performance of Chinese entrepreneurial firms (ECEs). In order to find out whether venture

[2] We appreciate the reviewers' comment and suggestion on this issue.

capitalists' monitoring role is influenced by agency conflict between controlling and minority shareholders, we examine the effect of VC on the pay-performance relationship in ECEs with and without disproportionate ownership structure. As expected, we find that the monitoring role of VC weakens or disappears in ECEs with disproportionate ownership structures although the actual ownership of VC in these firms is higher than firms without disproportionate ownership. By examining the effect that significant VC and actual VC ownership have on pay-performance relationship, we provide direct evidence that the difference in the effect that VC has on pay-performance relationship in ECEs with and without disproportionate ownership structure reflects the difference in agency conflicts rather than the difference in actual VC ownership. We further examine the effect that VCs have on the pay-performance relationship of firms with different levels of managerial agency problems to see whether the level of VC monitoring differs when firms have different monitoring needs. From this examination we find that VCs weaken the pay-performance relationship more in firms that need greater managerial discretion.

As robustness test, we also examine the effect of VC on pay-performance sensitivity, measured by delta of CEO compensation, which identify whether the change in executive compensation is due to the change in performance and VC monitoring. Our results reveal that the negative effect of VC on delta of CEO compensation is weakened in firms with severe agency conflict between controlling and minority shareholders. Our results confirm that controlling-minority shareholder agency conflict dominates venture capitalists' monitoring other than managerial agency problems. We further provide evidence that VCs tend to invest in those firms with lower costs and shorter investment duration to IPO. This result addresses the concern that why venture capitalists invest in firms with severe controlling-minority agency problems where their interests are more likely to be exploited. We also provide evidence that non-state funded VCs have stronger incentive to monitoring than state funded

VCs. Finally, our results are found to be robust when we use either an alternative model that controls for expected pay and expected performance or industry-adjusted measures of performance.

The major contribution of this paper is that we investigate what Engel et al. (2002) ignore: the potential conflict between controlling shareholders and venture capitalists. By examining the effect of VC on the pay-performance relationship in firms with different controlling structures, we find that direct monitoring by venture capitalists is hampered by the disproportionate ownership structure. Second, our study also contributes to agency theory in that extant literature examines the values of firms' ownership structure by focusing on either the managerial agency conflict in US firms (Berger et al., 1997), or the controlling-minority shareholders conflict in firms with concentrated ownership structures (Claessens et al., 2000, 2002; Faccio and Lang, 2002; Faccio et al., 2001, 2010). We have now extended the existing literature by providing evidence that in countries where firms are controlled by large controlling shareholders, the strength of VC monitoring is influenced by both agency problems, but in opposite directions. Moreover, the dominating controlling-minority agency conflict in emerging markets has greater impact on VC monitoring than the managerial agency conflict. Third, VC monitoring has been widely documented by previous studies in developed countries such as the US, but in emerging markets such as China it is still a black box, even though the VC industry has grown rapidly over the last few years. This study fills this gap by showing that VC monitoring is greatly reduced by the agency conflict between controlling and minority shareholders caused by disproportionate ownership structure in China.

The remainder of this paper is organized as follows: Section 2 reviews the pertinent literature and develops our main hypothesis. Section 3 describes the variable measures and

chosen methodology. Section 4 outlines and interprets our primary empirical results, and Section 5 summarizes our main conclusions.

2. Institutional background, literature review, and development of the hypothesis

2.1 VC within China's institutional context

The Chinese capital market is characterized as being greatly influenced by government intervention, as is the development of VC. In the 1980s and 1990s, China began to establish a few state-funded VC firms to promote the development of high-technology industries (Xiao, 2002). Since 1999 the Chinese VC industry has gained more support from the government, including the establishment in 2004 of a Small and Medium Enterprises (SME) board [3] within the Shenzhen Stock Exchange, a NASDAQ-type market where entrepreneurial firms make initial public offerings (IPOs) in China, and the implementation in 2006 of "the Interim Measures for the Administration of Early-Stage Venture Capital Enterprises." Since then, VC activities have increased rapidly, and according to recent statistical data from the China Venture Capital Research Institute's 2008 Report, there were 402 (261 domestic and 141 foreign) VC firms active in China by that year. The total amount of capital committed to VC reached US$ 36.67 billion in 2008, and the average amount of VC capital per institution was US$ 191.96 million.

VC investment in China depends on its unique institutional environment, which differs significantly from its US counterpart. Because China's legal system offers little protection for either minority or private investors (Peng, 2001), venture capitalists must reduce their investment risks by selecting companies or industries with a record of profitability, or located in Beijing or Shanghai. For example, in the US during the 1961–1992 period, high-tech industries such as communications and computer-related industries received

[3] The SME board aims to encourage early-stage firms with smaller size and higher growth opportunity to go public; thus this market provides an ideal channel for VC investors to exit.

the most VC investment (Gompers, 1995), but in China, traditional industry has received the greatest proportion (29.4%) of total VC investment, with around 50% of VC firms and VC backed firms being located in Beijing, Shanghai, or Shenzhen (China Venture Capital Research Institute's report, 2008).

The most profitable strategy for exiting an entrepreneurial firm is through an initial public offering (IPO). According to Gompers and Lerner (1999), every $1 invested in a firm that later has an IPO generates a profit of $1.95, whereas every $1 invested in a firm that is acquired only generates a profit of $0.40. In the US the NASDAQ makes it easy for VC firms to exit through IPOs, while in China, despite the establishment of the Growth Enterprises Market (GEM) in 2009, it remains difficult for small and medium entrepreneurial firms to go public[4]. The lock-up period in China is longer than in the US. For example, in the US, VC shares in an IPO are often subject to a lock-up period of 180 days on average, after which they can liquidate or distribute their shares to limited partners with few further restrictions (Dauterive and Fok, 2004). In China, however, before the share split reform from 2005 to 2007, VC shares in an IPO were regarded as "legal person shares" that could not be traded on the stock exchange. Since the share split reform in 2007, VC shares can be traded on the capital market, but the lock-up period often lasts three years.[5] Therefore, VCs in China would have strong incentives to monitor their sponsored IPO companies. Overall, under China's unique institutional background, the rapid growth over the past 10 years of both VC investors and VC-backed firms provides a unique opportunity to understand their monitoring role.

[4] That is because the Chinese securities regulatory commission (CSRC) requires that firms who want to list with the SME board must meet a number of financial requirements: 1) the firm has had a consistently positive net profit over the past three years and a total net profit over the past three years of no less than 30 million; 2) the total operation cash flow over the past three years is no less than 50 million or the total sales revenue over the past three years is no less than 300 million; 3) the total shares outstanding before IPO is no less than 30 million; and 4) total intangible assets are less than 20% of total net assets.

[5] In fact, because of the share-split problem and the long lock-up period in China, although our sample includes a number of VC-backed firms listed on the Chinese capital market, no venture capitalists really exited from VC-backed firms during our research period, which is also why we do not control for VC exit in our regression models.

2.2 Literature review

2.2.1 Venture capitalists' monitoring of management

A few studies focus explicitly on how venture capitalists affect the board of directors in entrepreneurial firms. Hochberg (2008) finds that venture capitalists have strong incentives to monitor the managerial behaviour of the firms in which they invest, while Gompers (1995), in a similar argument, uses a random 1961–1992 sample to show that VC firms monitor entrepreneurs more frequently when agency costs are expected to be high, and Lerner (1995) used a 1978–1989 sample of American bio-technology firms to show that VC firms are important managerial monitors. In privately held entrepreneurial firms, Hellmann and Puri (2002) show that VCs play an important role, especially during CEO turnovers.

Engel et al. (2002), using 1996–1999 sample of US listed firms, find that the pay-performance relationship is stronger in non-VC-backed firms than VC-backed, suggesting that direct VC monitoring should have a substitutionary effect on CEO pay-performance. One implication of Engle et al. (2002) is that venture capitalists' direct monitoring should be stronger, while firms incentivize executives by relying less on monetary compensation when firms need more managerial discretion. How venture capitalists affect firms' compensation policies for CEOs in the presence of controlling shareholders remains an open question. Such a compensation policy is especially important because CEOs are often hired by controlling shareholders and their incentives are not aligned with VCs or other minority shareholders. In this case, venture capitalists' monitoring managerial behaviour can be weakened due to the existence of the powerful controlling shareholders. We therefore empirically examine whether the findings of Engel et al. (2002) can be generalized into a weak institutional environment characterized by concentrated ownership structures.

2.2.2 Controlling structure and the pay-performance relationship

According to the agency theory of Jensen and Meckling (1976), making executive compensation dependent on firm performance is an important measure for reducing managerial agency conflict. Not only is this positive pay-performance relationship confirmed in several earlier empirical studies for the US (e.g., Jensen and Murphy, 1990; Gibbons and Murphy, 1992) but more recently, another important body of literature has indicated that the pay-performance relationship is also influenced by specific types of ownership structure. For example, in the Chinese setting the pay-performance relationship is impaired by state-ownership (Kato and Long, 2005; Firth et al., 2006), while in European countries family ownership seems to have a positive impact on executive compensation (Elston and Goldberg, 2003; Barontini and Bozzi, 2010).

Overall, the previous research indicates that a firm's ownership structure has a considerable impact on the CEO pay-performance relationship even though no evidence exists to prove whether the effect of VC on the pay-performance relationship differs between firms with different controlling structures and associated agency problems.

2.3 Development of the hypotheses

2.3.1 VC monitoring and firms' controlling structures

According to Engel et al. (2002), direct VC monitoring reduces the need for costly performance-based incentives in compensation because the VC firms' closer involvement and expertise enable them to base CEO compensation on information about managerial actions that is not reflected in measures of current performance. Therefore, VC and firm performance should have a strong substitutionary effect on the CEO compensation of US firms, which usually have dispersed ownership structures. However, the monitoring role of VC is found in the US firms that are dominated by the managerial agency problem, where VC plays a monitoring role in alleviating this problem. This study expects that the monitoring role of VC

may be hampered in an emerging market where firms are controlled by controlling shareholders and the agency conflict between controlling and minority shareholders dominates. Particularly, the monitoring role of VC is expected to be weakened by the agency conflicts between controlling and minority shareholders caused by the disproportionate ownership structure in ECEs. Particularly, we expect that the substitutionary effect of VC on the pay-performance relationship would be stronger in ECEs without a disproportionate ownership structure than those with a disproportionate structure because it is associated with less severe agency conflict between controlling and minority shareholders (Claessens, 2000; Faccio and Lang, 2002). According to Faccio et al. (2001, 2011), expropriation by the controlling shareholder is very strong in emerging markets where the legal system is still weak, and hence the controlling shareholders of Chinese firms with a disproportionate ownership structure usually have a strong incentive to expropriate the interests of minority shareholders, including VC investors. As a result, we expect that these large controlling shareholders will be reluctant to be monitored by VC investors, because this direct monitoring will curb their expropriation. That is, as the following hypothesis implies, VC monitoring will be weakened when the controlling shareholders have excess control rights:

H1: VC monitoring only exists in ECEs without disproportionate ownership; that is, the presence of VC weakens the pay-performance relationship in ECEs without disproportionate ownership more than in those with disproportionate ownership.

2.3.2 VC monitoring and the managerial agency conflict

As previously analyzed, if the aim of VC monitoring is to reduce the opportunistic behaviour of managers stemming from agency problems between managers and shareholders, it is reasonable to expect that venture capitalists usually monitor firms with a greater need for very close monitoring; that is, firms with higher managerial agency costs and discretions. In

terms of agency cost, Gompers (1995) suggests that firms with higher growth opportunities and more capital expenditure tend to have more managerial discretion, and are thus more likely to require closer monitoring by VC investors. Therefore, we further expect that firms with higher growth opportunities or capital expenditure have more need of VC monitoring due to higher managerial agency problems. From this we establish the following hypothesis:

H2: VC monitoring only exists in firms with more need of monitoring; that is, the presence of VC weakens the pay-performance relationship in firms with more severe managerial agency problems.

3. Data and methodology

3.1 Data collection

Our sample includes all VC-backed and non-VC-backed newly listed firms from 2004 to 2009 that are listed with the Chinese SME board. This sample period has been chosen because most VC-backed IPOs began to be listed after 2004. Firms from the SME board have been chosen because the board was created to allow small or medium-sized and growth firms, which are firms that are more likely to be backed by VC, to tap into the equity market. While some VC-backed firms have recently chosen to be listed on the GEM board of the Shenzhen Stock Exchange, this market is excluded from our sample mainly because the GEM board was established in late 2009[6].

CEO pay, performance and other financial and governance information used are collected from a series of data sets developed by the SinoFin Information Services of the China Centre for Economic Research (CCER) at Beijing University. They include the Chinese Listed Firm Annual Report Database (2004–2009) and the Chinese Listed Firm

[6] Our research needs at least two years of observations because our regressions use lagged values of performance or CEO compensation.

Corporate Governance Database (2004–2009). The VC data and related information are collected by compiling shareholder information from the company prospectuses for their IPOs. As indicated in earlier studies, the CCER is one of the most important data sets on the Chinese capital market.

As with previous research, we exclude financial firms, Special Treatment (ST) firms, and firms whose relevant data were either incomplete or inaccessible.[7] Our sample consists of 1,057 firm-year observations of 357 newly listed firms during 2004–2009. However, because CEO pay responds to firm performance in the previous year, we also conform to the usual research practice of using lagged performance values when studying the CEO pay-performance relationship (Firth et al., 2007), and conduct our regressions from the second year after the firm's IPO year. As the reasons given before, SOEs with 178 observations are further excluded. Our final sample for regression therefore covers 2005 to 2009 and comprises 522 firm-year observations for 203 newly listed ECEs.

3.2 Variable measurements

3.2.1 CEO compensation (LNPAY)

Since 1998, listed firms in China have been required to disclose their managerial compensation in an annual report, including the salary and bonus aggregation of the top three executives. We therefore use the log of the total compensation of the top three executives, designated as the variable LNPAY, as a proxy for CEO compensation[8].

3.2.2 Firm performance

[7] Financial firms and ST firms (in other words, firms in financial distress), of which there is only one each in our sample, are excluded because they have quite specific financial characteristics.

[8] This paper does not include stock options as part of CEO compensation for the following reasons: (1) Only about 5% of the total sample firms announced stock options, which is not enough for conducting a regression analysis; (2) there is no option market in China, so it is difficult to estimate the value of stock options; and (3) there is no regulation requirement for the information release of stock options, so the announcement of limited stock options does not include adequate information for using the models to estimate the value of stock options.

Following Firth et al. (2006), Cheng (2008), and Cao et al. (2011), we measure the firms' accounting-based performance using return on assets (ROA) and return on sales (ROS). We proxy the firms' market performance using Tobin's Q and share return (SR). The former is measured as the ratio of market value to firm replacement value together with each firm's annual share return, while the latter is the yearly share return of each firm in each year. We also calculate industry-adjusted performance in terms of the differences between a firm's actual ROA/ROS/Q/SR and the median ROA/ROS/Q/SR in the same industry in the same year (expressed as ROAAD, ROSAD, QAD, and SRAD), and use these measures to boost our main results.

3.2.3 Measures of VC

Our regressions also include several variables that measure firms' VC ownership as another type of main independent variable. Following Hochberg (2008), we first define the dummy variable VC as equal to 1 if a firm received VC investment before an IPO and 0 otherwise. Second, following Engel et al. (2002), who define a "significant VC" as 1 if VC ownership is more than 20% to measure the potential VC monitoring, we also create a similar variable, SIGVC to examine whether higher VC ownership will result in stronger VC monitoring[9]. With regard to the VC characteristics, we create two variables: VCCOST, or the investment P/BV ratio when VC made the investment; and VCDURARTION, the number of years between the initial VC investment year and the IPO year. STATEVC and NONSTATEVC dummies are also defined according to whether the VC company is state funded or not. Finally we also define the variable 'VCOWNERSHIP' that is defined as the percentage of shareholdings of VC investors to measure the actual ownership of VCs.

3.2.4 Categorical variable

[9] We did not use significant VC as our main regression variable because VC ownership in China is usually lower than that in the US, which means that more than half of VC-backed firms have a VC ownership of less than 20%. If we use this variable as main measure of VC, we may ignore the VC monitoring in firms that have VC ownership of less than 20%.

We separate our sample of Chinese ECEs according to firms' controlling structures[10] by defining a company as 'DIS' if the control rights of the controlling shareholder exceed its cash flow rights or as a firm without DIS if they do not (based on Faccio and Lang, 2002; Faccio et al., 2010).

3.2.4 Control variables

Firm size (SIZE)

Most of the previous studies report a strong positive relationship between firm size and CEO compensation (Core et al., 1999; Brunello et al., 2001; Elston and Goldberg, 2003; Firth et al., 2006), and conclude that CEOs are paid more when a company is more successful and when a company is larger. Like these studies, we measure firm size (SIZE) as the log of its total assets.

Board size (BOARDSIZE)

Corporate governance theory states that the board of directors generally exists to advise and monitor top management, establish executive compensation, and protect the interests of its shareholders. Previous studies have indicated that the effectiveness of a board is influenced by its size. For example, Yermack (1996) shows that small boards are more effective than large boards because the latter have less influence over CEOs, which complicates decision-making. We therefore use board size (BOARDSIZE) as a control variable.

Board composition (BOARDCOMP)

The effectiveness of a board of directors is also influenced by the proportion of independent directors, because a larger number of independent directors can protect shareholders' interests and monitor managerial behaviour far more effectively (Cheng, 2008).

[10] We also use other classification criteria, which will be indicated as used.

We therefore use board composition (BOARDCOMP) as another control variable to measure the independence of a board of directors.

Leverage (LEV)

Leverage, always an important external power for monitoring managers, has been shown in previous research to influence both CEO compensation and firm performance. Hence, we also include leverage (LEV) as a control variable, measured as the book value of total debts to total assets.

CEO duality (DUALITY)

Previous research also shows that when the CEO is the chairman of the board, the ability of the board to monitor management is weak and the agency cost between managers and shareholders increases (Core et al., 1999). Therefore, empirical studies of CEO compensation usually indicate a positive relationship between CEO compensation and the CEO/chairman duality. To address this issue, we include duality (DUALITY) as a control variable.

CEO age (CEOAGE)

Age is seen as an important individual characteristic for managers, not only because older managers usually have more industrial experience (which is very valuable to the firm), but also because the literature indicates that age is significantly positively related with CEO compensation (Brunello et al., 2001). Hence, we define the variable CEO age (CEOAGE) as a measure of CEO experience.

Foreign ownership (FOREIGN)

Previous research on the CEO pay-performance relationship in China also shows that firms with foreign investors have stronger pay-performance sensitivities, which implies that foreign investors have more incentive to monitor managers and encourage firms to pay managers according to their performance (Firth et al., 2006). Therefore, to measure the effect

of foreign ownership, we create a dummy variable for foreign ownership (FOREIGN), which equals 1 if a firm has one or more foreign shareholders, and 0 otherwise.

CEO ownership (CEOSHARE)

According to the literature, CEO ownership may also be an important determinant of compensation; for example, Core et al. (1999) indicate that CEO compensation decreases when CEO ownership increases. We therefore include CEO ownership (CEOSHARE) in our regressions.

Other control variables

We include a year and an industry dummy in our equation to control the effect of time and industry. In China, however, because of the Chinese official industry classifications, some industries only include a limited number of firms. We therefore follow Firth et al. (2006) and classify our sample into five groups: industrial, commercial, public utility, property, and conglomerate (all other industries). Table 1 gives detailed definitions for all the variables used in this paper.

<Table 1>

3.3 Estimation models

To address any potential endogeneity issue of VC, this study adopts the Heckman two-step regression method with instrument variables throughout the paper. In the first step of the regressions, we analyze the probability of VC backing using a probit regression model where the explanatory variables include instrumental variables as well as other controls, and get the predicted value of VC. In the second stage we conduct new regressions by including the predicted VC from the first-stage regression in the baseline regression models.

The key for the success of the two-step regression model is the choice of instrument variables, which must be exogenously determined. This study chooses firm location (LOCATION) and listing time (LISTTIME) as instrumental variables, following Baker and

Gompers (1999). In terms of the location, just as the VC industry in the US is concentrated in several states, including Massachusetts, California, and Texas, in China, between 1991 and 2001, more than 70% of VC-backed firms were located in Beijing, Guangdong, Shanghai, Zhejiang, Jiangsu, or Shandong (Zeng, 2004). The probability of VC backing is therefore related to the location of a firm. With regard to the second variable, previous literature on VCs in the US also indicates that whether a firm was founded after 1979 has an important impact on the probability of VC backing (Gompers and Lerner, 1998; Kortum and Lener, 1999; Baker and Gompers, 1999). Because the rapid expansion of the VC industry in China began after March 2006, the implementation of "The Interim Measures for the Administration of Early-Stage Venture Capital Enterprises", which dramatically increased the probability of VC backing in the Chinese capital market, we identify whether a firm was listed before or after March 1, 2006.

We establish the following baseline equation, following Engel et al. (2002):

$$LNPAY_{i,t} = \alpha + \beta_1 VC^{\wedge}_{i,t} + \beta_2 PERFORMANCE_{i,,t-1} + \beta_3 VC/SIGVC * PERFORMANCE_{i,t-1} + \beta_4 X_{i,t} + \varepsilon \quad \text{Equation (1)}$$

where i and t represent the firm and year, respectively, and ε is the error term related to unobservable features that explain the cross sectional variation in CEO pay. VC^ is the predicted value of VC from the first step regression. PERFORMANCE is firm performance, measured by return on assets (ROA), return on sales (ROS), Tobin's Q (Q), and share return (SR), which are regressed in separate equations. X is a vector of control variables as specified in Table 1. We also include year and industry dummy variables to control the fixed effects for industry and year, and cluster standard errors at firm level, as VC does not vary over time for a given firm.

3.4 Summary statistics and univariate tests

3.4.1 Distribution of VC and summary statistics

Table 2 presents the summary statistics for our sample, of which panels A and B show the distribution of VC-backed firms and firm-year observations respectively; Panels C and D present the distribution of VC ownership (VCOWNERSHIP) and state funded VC (STATEVC); and panel E presents the descriptive statistics of variables based on firm-year observations.

The results in panels A and B indicate that VC-backed firms (VC dummy) account for about 26.60% (25.48%) of our total of 203 (522) firms (firm-year observations). In addition, the percentage of VC-backed firms and VC-backed observations does not vary greatly between ECEs with disproportionate ownership and those without. Our result suggests that VCs do not have preference in choosing firms without severe agency conflicts between controlling and minority shareholders, so venture capitalist's monitoring role in firms with different controlling-minority agency conflicts are less likely to be caused by VC's investment preference.

In addition, panel C shows that the average VC ownership in VC-backed ECEs, VC-backed ECEs with disproportionate ownership, and VC-backed ECEs without disproportionate ownership is 13.36 per cent, 15.69 per cent, and 10.56 per cent respectively, indicating that VCs actually have more investment in firms with disproportionate ownership structure, that is, the actual ownership of VCs is higher in firms with disproportionate ownership structure than firms without. This finding enables us to identify whether the difference in the effect of VC on pay-performance relationship is caused by the difference in the actual ownership of VC or agency conflict between the controlling and minority shareholders. If the former works, we should observe a stronger monitoring of VC in firms with disproportionate ownership structure, given the higher VC ownership in these firms, but if as expected, our empirical results indicates a stronger VC monitoring in ECEs without

disproportionate ownership structure, we can conclude that the difference in the effect of VC on pay-performance relationship is driven by the difference in agency conflicts in ECEs with and without disproportionate ownership structure because those VCs have stronger monitoring in ECEs without disproportionate ownership even though their actual ownership is lower. Finally, we find from panel D that 7.14 percent of our full observations, consist of both SOEs and ECEs are backed by state-funded VCs, which is close to the number in ECEs sample (7.09 percent). The result indicates that state-funded VCs do not have preference in investing in SOEs.

Regarding the descriptive statistics of our variables, we find from panel E that the average CEO compensation for the top three executives is 896,660 RMB, and that the average ROA, ROS, Q, and SR for the sample firms is 6%, 10%, 1.66, and 72%, respectively.

<Table 2>

3.4.2 Univariate test results

Table 3 presents the univariate test results of CEO pay for VC-backed and non-VC-backed observations in different groups of firms.

If VC plays a monitoring role in the Chinese market, we should observe that VC-backed firms have higher performance but lower CEO compensation than non-VC-backed firms. However, we find from panel A that VC-backed firms have both significantly higher CEO compensation and significantly higher ROA, ROS, and Q than non-VC-backed firms, although the result does not clearly suggest whether venture capitalists have a monitoring role or not .

According to panel B, higher ROA, ROS and Q in Non-VC-backed ECEs without disproportionate ownership structure are associated with significantly higher CEO compensation, suggesting a significantly positive pay-performance relationship in these firms. But the significant positive relationship between ROS and Q disappear in VC-backed ECEs

without disproportionate ownership structure. The results suggest that the positive CEO pay-performance relationship is weakened by the presence of VC in ECEs that have no disproportionate ownership structure.

In addition, in ECEs with disproportionate ownership structure, we find VC does not have significant effect on the relationship between accounting performance (ROA and ROS) and CEO compensation given that the high accounting performances are associated with higher CEO compensation in both VC-backed and Non-VC-backed ECEs with disproportionate ownership. While the positive relationship between CEO compensation and Q is stronger in VC-backed sample than their Non-VC-backed counterparts, indicating that the positive relationship between Q and CEO compensation is strengthened rather than weakened in ECEs with disproportionate ownership. We also do not find any evidence that the VC weakened the positive relationship between CEO compensation and share return. Overall, the results in panel B indicate that the presence of VC weakens the positive pay-performance relationship in ECEs without disproportionate ownership only, which is consistent with our H1 that the VC monitoring only exist in ECEs without disproportionate ownership structure.

<Table 3 >

4. Empirical results

4.1 The effect of VC on the pay-performance relationship of Chinese entrepreneurial firms

Our empirical analysis begins by examining whether VC plays a monitoring role by weakening the pay-performance relationship of Chinese ECEs, using Heckman two-step regression models (Table 4).

In the first step of our two-stage regression, we analyze the probability of VC backing using a probit regression model where the explanatory variables include firm and CEO characteristics and governance, as well as other control and instrumental variables. In the

second stage we conduct new regressions by including the predicted VC (VC^) from the first-stage regression in the baseline regression models.

As expected, not only do both location and listing time have a positive relationship with VC, but, consistent with Baker and Gompers (1999), the coefficient of location is also statistically significant. In addition, our results further show that the interactive terms of predicted VC (VC^) and lagged value of performance have a consistently negative relationship with CEO compensation, while the coefficients of the interactive terms of VC^ and market-based performance are statistically significant. By combining these results with the findings that the coefficients of the market-based performance variables are consistently and significantly positive, it is reasonable to conclude that VC and market-based performance have a significant substitutionary effect on CEO compensation. The negative pay-performance relationship in VC-backed entrepreneurial-controlled firms is also consistent with that found by Engel et al. (2002).

In terms of the other explanatory variables, most of our control variables have a statistically significant relationship with CEO compensation. For example, firm size has a positive relationship with CEO compensation, showing coefficients that are both statistically and economically significant. This positive relationship between firm size and CEO compensation is also consistent with earlier findings (Brunello et al., 2001). Leverage is statistically negatively associated with CEO compensation, which is consistent with Basu et al.'s (2007) findings that leverage has a statistically negative effect on CEO compensation, and indicates that firms with higher leverage pay their CEOs less.

Our results are consistent with Brunello et al. (2001), in that they also show that age is significantly positively related to CEO compensation, probably because older CEOs have more experience than younger ones. A negative relationship is found between foreign ownership (CEO ownership) and CEO compensation, which is consistent with Core et al.

(1999). However, unlike Core et al. (1999), who identifies a positive relationship between CEO compensation and board size and composition, our results show that board size and composition are negatively related to CEO compensation in China.

Overall, our results in Table 4 are consistent with our H1 and our univariate test results in panel B of Table 3, indicating that VC weakens the positive relationship between CEO compensation between market performance of ECEs.

<Table 4>

4.2 The effect of VC on the pay-performance relationship in firms with different agency conflicts between controlling and minority shareholders

Our study has confirmed that venture capitalists weaken the positive relationship between CEO compensation and market performance of Chinese ECEs. However we still don't know whether the monitoring role of VC is impaired by the agency conflicts between controlling and minority shareholders embedded in disproportional ownership structure or not. In order to provide evidence to this expectation, we further examine the effect of VC on pay-performance relationship of ECEs with and without disproportionate ownership structures. In order to do so, we further separate our ECE sample into two sub-samples[11] based on whether the firm has disproportionate ownership or not. We then use Equation (1) to conduct regressions using each of the two sub-samples, and report the results in Table 5. As the table shows, in ECEs without a disproportionate ownership structure, firm-performance measures (ROA, Q, and SR) have a statistically significant relationship with CEO compensation. Moreover, the interactive terms of predicted value of VC and performance have a consistently negative relationship with CEO compensation, with two of the coefficients (Q and SR) being statistically significant at a 5% or 10% level (p values = 0.03 and 0.08, respectively). These results suggest that the existence of VC weakens the positive

[11] The two sub-samples are entrepreneur-controlled firms with and without a disproportionate ownership structure.

relationship between CEO pay and market performance in ECEs without disproportionate ownership structure.

For ECEs with a disproportionate ownership, the predicted value of VC, measures of firm performance and their interaction terms are all statistically insignificantly related to CEO compensation. These results suggest that VC does not have any monitoring role in weakening the positive relationship between CEO compensation and firm performance in ECEs with a disproportionate ownership structure, which supports our hypothesis H1. Combined with our results in panel C of Table 2 that the actual ownership of VC is higher in ECEs with disproportionate ownership structure, our results indicate that VCs in ECEs with disproportionate ownership do not play any monitoring role even though their actual ownership is higher, while they only play an active monitoring role in firms without disproportionate ownership even though their ownership is lower. Thus we conjecture that the difference in the effect of VC on the pay-performance relationship reflects the conflict of interest between controlling and minority shareholders rather than the difference in the actual ownership of VC.

<Table 5>

4.3 Does the difference in the effect of VC on pay-performance relationship reflect the difference in the actual ownership, rather than the conflict between controlling and minority shareholders?

We have provided evidence using VC dummy that the VC plays an active monitoring role in Chinese ECEs without disproportionate ownership structure, but not in firms with disproportionate structure. In order to provide direct evidence to support our argument that the difference in the effect of VC on pay-performance relationship reflects the conflict between controlling and minatory shareholders, rather than the difference in the actual ownership of VC, We conduct the following two tests.

First, Engel et al. (2002) indicate that VCs in the US do play a monitoring role when they hold a larger ownership of the firm (more than 20%). Thus we first attempt to provide evidence that whether VCs play a monitoring role in ECEs with disproportionate ownership structure when they hold larger VC ownership. Following Engel et al. (2002), we define a new dummy variable, significant VC influence (SIGVC), to reflect higher VC ownership. SIGVC equals 1 if venture capitalists' ownership is 20% or above, and 0 otherwise, which is the same with Engel et al. (2002). We repeat our regressions using the new variable SIGVC to replace the previous VC dummy to examine whether VCs play a more active monitoring role when they have greater VC ownership in ECEs (Table 6).

Similar to the results in Table 5, we find that predicted significant VC (SIGVC^) plays monitoring role in weakening the positive relationship between CEO compensation and market performance in ECEs without disproportionate ownership structure. However, in ECEs with disproportionate ownership structure, the interaction terms of SIGVC^ and performance measures are consistently negative but none of the coefficients are statistically significant, which indicates that venture capitalists in ECEs with disproportionate ownership structure play no monitoring role even when they hold greater (more than 20%) ownership of the firm.

<Table 6>

In addition, we further examined the effect of VC ownership on the pay-performance relationship using a sample of VC-backed ECEs to address the concern that any difference in the effect of VC on the pay-performance relationship reflects the difference in the actual ownership of VC rather than the conflict between controlling and minority shareholders. The results are reported below in Table 7. For ECEs without a disproportionate ownership structure, the significantly negative pay-performance relationship in these firms confirms the monitoring role played by VCs in these firms, which is consistent with the results in Table 5.

No significant results were found between VC ownership, the interaction of VC ownership and firm performance and CEO compensation, suggesting that VCs with high actual ownership do not have stronger incentive towards monitoring, probably because the variation of VC ownership is not high.

For firms with disproportionate ownership, we find that VC ownership does not have a significant influence on both CEO compensation and the pay-performance relationship, which is consistent with our results in Tables 5 and 6 above, where VCs in these firms do not monitor even though the actual ownership of VCs are high.

Overall, our results in Tables 6 and 7 confirm our results in Table 5 and provide additional evidence that the difference in the effect of VC on the pay-performance relationship in in ECEs with and without a disproportionate ownership structure reflects the difference in agency problems in the two types of firms rather than the difference in VC ownership."

<Table 7>

4.4 The effect of VC on the pay-performance relationship in firms with different needs for monitoring

We have provided evidence that the strength of VC monitoring in China is weakened by agency conflict between the controlling shareholder and minority shareholders, but it is still not clear whether VC monitoring is also influenced by managerial conflict, which is expected to have an impact on a firm's need for monitoring.

To provide evidence for our hypothesis H2, we then divide our sample of ECEs into three groups of sub-samples according to a firm's owner-manager agency costs and managerial discretion: firms with high (low) growth opportunity; and firms with high (low)

capital expenditure; and firms without (with) a family CEO. We then use Equation (1) to conduct new regressions on each sub-sample. The results are reported in Tables 8[12].

Table 8 illustrates the effect of VC on the pay-performance relationship in firms with high and low growth opportunity. As expected, VC weakens the positive pay-performance relationship in firms with high growth opportunity rather than in firms with low growth opportunity, indicating that VC tends to increase monitoring when the managerial agency problem is high. Similar results are found in firms with high capital expenditure (results not reported). Therefore, our results suggest that although VCs' monitoring role is impaired in China, they still have an incentive to monitor when firms have greater managerial agency problems – that is, firms with high growth and high capital expenditure, which is consistent to our hypothesis H2.

<Table 8>

4.5 The effect of VC on pay performance sensitivity

Our study has provided substantial evidence that venture capitalists' monitoring role is hampered in the Chinese market, especially in ECEs with a disproportionate ownership structure. However, it is still hard to draw the inference that the change in executive compensation with regard to change in performance is caused by VC monitoring. Therefore, we further examine the effect of VC on delta of the CEO compensation packages. Following previous studies by Hartzell and Starks (2003), we construct the variable DELTA using the change of CEO compensation divided by the change in share return. The results are reported in Table 9.

Consistent with the results in Tables 5, the results in Table 9 show that although VC has a significantly negative effect on delta of CEO compensation in ECEs with disproportionate ownership structure, the regression coefficients become statistically

[12] To save space, we only report the results of the effect of VC on the pay-performance relationship of firms with and without high growth opportunity. The results of other tests are quite similar with the reported results.

insignificant in firms with severe agency conflict between controlling and minority shareholders; that is, in ECEs with a disproportionate ownership structure.

<Table 9>

4.6 Why venture capitalists invest in firms with severe agency conflict between controlling and minority shareholders?

Our study has shown that VCs do not play monitoring role in firms with severe controlling-minority shareholder agency conflict. At the same time we show that our results are not caused by VC only has little investment in firms with severe controlling-minority shareholders agency conflicts because the probability that firms with great controlling-minority conflict are backed by VC is quite similar to firms without such conflict (Table 2, panels A and B). The question is: why do venture capitalists invest in those firms, given that their interests are much more likely to be exploited by controlling shareholders? Thus it is reasonable to argue that VCs may be award of additional benefit if they invest in firms with severe controlling-minority shareholder conflicts. In this subsection, we try to figure out what such benefit might be by examining whether venture capitalists invest in those firms with lower cost and shorter investment duration before the IPO process. To do so, we define two new variables: VCCOST, which is the VC investment price to the book value per share when the investment is made, and VCDURATION, which is the number of years from VC investment year to IPO. If a firm has more than one VC investment, we calculate the weighted averages VCCOST and VCDURATION. The lower the VCCOST and the shorter the VCDURATION, the more benefit venture capitalists have from the investment.

Then we conduct regressions to regress VCCOST and VCDURATION on both SOE dummy and disproportionate ownership dummy (DIS) using a cross sectional sample of VC-backed firms. The results are reported in Table 10. The results in Table 10 confirm our expectation that VC investment in firms with great controlling-minority agency conflicts with

lower cost and shorter duration because DIS dummy is negatively related to our dependent variables and the coefficients are statistically significant. Therefore, we provide evidence that VCs do have additional benefit when investing in firm with great controlling-minority agency conflicts.

<Table 10>

4.7 Further tests

To provide additional robustness to our main findings, we further conduct a series of regressions, which includes: (1) a regression that examines the relative importance of the two types of agency conflicts in explaining VC monitoring; (2) the effect of state-owned or non-state-owned VC on the pay-performance relationship; (3) the effect of VC on the pay-performance relationship using expected CEO compensation and expected accounting performance; (4) the effect of VC on the pay-performance relationship before and after 2006; and (5) the effect of VC on the pay-performance relationship using industry adjusted performance. However, not all results are reported due to space limitations.

4.7.1 The relative importance of two types of agency conflict in explaining VC monitoring

This paper has provided evidence that venture capitalists' monitoring role is impaired by the second type of agency problem (conflict between controlling and minority shareholders), and that venture capitalists tend to play an active monitoring role when the first type of agency problem (managerial agency problem) is severe and no agency problem of the second type exists. However, it is still unclear which type of agency problem dominates. To answer this question, we further divide our ECEs sample with high growth into two subsamples – ECEs with high growth and disproportionate ownership and ECEs with high growth but without disproportionate ownership – and we conduct regressions to examine VC monitoring in the two subsamples. The results are reported in Table 11.

We find that venture capitalists play no monitoring role in the subsample of firms with high growth and disproportionate ownership, indicating that their monitoring role is impaired even in firms that have both severe managerial agency problem and the controlling-minority shareholders agency problem, which means that venture capitalist does not monitoring even when firms with disproportionate ownership structure have greater need for monitoring. Combined with the finding that VC does play an active monitoring role in firms with high growth but without disproportionate ownership, our results show that the second type of agency problem dominates in explaining VC monitoring.

<Table 11>

4.7.2 State-funded vs. non-state-funded VC: which plays a more important monitoring role?

As discussed above, state-funded and non-state-funded VC coexists in the Chinese market. For example, our sample shows that a total of 62 VC companies are involved in 76 VC-backed IPOs, of which 22 (37%) are state-funded. Venture capitalists of state-funded VC in China are less likely to play an active monitoring role because they are usually established by local governments to help the development of local firms, the aim being to stimulate the local economy; thus venture capitalists of these state-funded VC tend, therefore, to care more about the political goal than investment return. To provide evidence for this expectation, we further create two dummy variables: STATEVC, which is defined as 1 if the firm is backed by state-funded VCs, and NONSTATEVC, which is defined as 1 if the firm is backed by at least one non-state-funded VC. We then conduct new regressions to see whether the two dummies have different effects on the pay-performance relationship. The results are reported in Table 12.

As expected, the results support our expectation that venture capitalists' monitoring role is found only in ECEs that are backed by non-state-funded VC[13].

[13] Similar results are found in ECEs without disproportionate ownership structure; the results are not reported to save space.

<Table 12>

4.7.3 The effect of VC on the pay-performance relationship using expected CEO compensation and expected accounting performance

Following Core (2002), who argues that expected pay and expected accounting performance should be controlled for when examining the pay-performance relationship, we further conduct regressions controlling for both expected pay and expected accounting performance. The results are reported in Table 13. Similar to the results in Tables 5 and 6, we find that VC does not have a significant impact on the relationship between CEO compensation and accounting performance when expected CEO compensation and expected accounting performance are controlled for.

<Table 13>

4.7.4 Other results

For robustness, we also conduct regressions that examine the effect of the implementation of the interim measures for the administration of early-stage venture-capital enterprises in 2006 on our main results. We do not find any evidence that our main results change significantly after 2006. The results suggest that although the regulation change increases VC investment activity, venture capitalists' monitoring role does not change.

Finally, we also conduct regressions using industry-adjusted performances as measures of firm performance, and the results are quite similar to our main results, as reported in Tables 4 and 5. The results for these tests are not reported to save space.

5. Conclusions

This research examines VC monitoring of managerial behaviour in the Chinese capital market by examining its impact on CEO pay-performance sensitivity. We document that venture capitalists' monitoring role depends on agency conflict between controlling and minority shareholders caused by firms' controlling structures. Particularly, venture capitalists'

monitoring is impaired in ECEs with disproportionate ownership structures, which cause severe agency conflict between controlling and minority shareholders. In addition, we show that venture capitalists' monitoring increases where firms have greater managerial agency problems, which means greater need for monitoring. Our findings further show that venture capitalists invest in firms with great controlling-minority shareholder conflict because their investment risk that they may be exploited by controlling shareholders is compensated for in terms of lower investment cost and shorter investment duration to IPO. We also provide additional evidence that the second type of agency issue (controlling-minority agency conflict) has a greater impact on VC monitoring than the first type of agency issue (managerial agency problem), and that non-state-funded VC have much more incentive to monitor than those state-funded VC.

Previous literature has documented that VC in the US works to mitigate the managerial agency problem by playing an active monitoring role (Engel et al., 2002); our findings complement this literature by showing that the effectiveness of Venture capitalist's monitoring is dominated and impaired by the second type of agency problem which is the agency conflicts between controlling and minority shareholders. Our results indicate that although venture capitalists in China identify and monitor their invested firms more closely when the firms have greater managerial agency issues, such monitoring disappears if the firms also have great controlling-minority agency conflict. Overall, our study suggests that the monitoring role of VC is impaired in an emerging market, where firms have a much more complex ownership structure than that in the US market, and where the agency conflict between controlling and minority shareholders dominates.

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Table 1. Detailed definition of variables

Variable	Definition
Dependent variables	
Managerial compensation (LNPAY)	Log of the top three executives' compensation
Delta of executive compensation(DELTA)	The change in CEO compensation with respect to the change in share return.
Main independent variables	
VC-backed firms (VC)	Dummy equals 1 if a firm received VC investment in its pre-IPO period.
Significant VC influence (SIGVC)	Dummy equals 1 if more than 20% of the firm's ownership is owned by VC.
State-funded VC (STATEVC)	Dummy equals 1 if the VC funded by the state or a state-owned entity.
VC ownership (VCOWNERSHIP)	Percentage of shares held by VC investor.
Firm performance	
Return on assets (ROA)	Net income/total assets
Return on sales (ROS)	Net income/sales
Tobin's Q (Q)	Market value/replacement value
Share return (SR)	Yearly share return of each firm
Categorical variables	
Disproportionate ownership (DIS)	If the control rights of the ultimate owner exceed the cash flow rights, we define the firm as DIS; otherwise, we define the firm as a NON-DIS.
High growth opportunity (HGROWTH)	If the sales growth of a firm is higher than the median, we define the firm as HGROWTH; otherwise, we define it as without HGROWTH.
Firm and CEO characteristics	
Firm size (SIZE)	Log of total assets
Board size (BOARDSIZE)	Total directors on the board
Board composition (BOARDCOMP)	Independent directors/total directors
Leverage (LEV)	Total debts/total assets in book value
CEO-chair duality (DUALITY)	Equal to 1 if the CEO is also the chairman of the board
CEO age (AGE)	Average age of managers and board directors
Foreign ownership (FOREIGN)	Equal to 1 if the firm has foreign investors
CEO ownership (CEOSHARE)	Ownership proportion held by the CEO
Instrumental variables	
Firm location (LOCATION)	Equal to 1 if the firm is located in Beijing, Guangdong, Shanghai, Zhejiang, Jiangsu, or Shandong
Firm listing time (LISTTIME)	Equal to 1 if the firm went public after March 2006
Other variables	
Industry (INDUSTRY)	Equal to 1 for the specific industry
Year (YEAR)	Equal to 1 for the specific year

Table 2. Summary statistics

Panel A. Distribution of VC-backed firms

This panel presents the distribution of VC-backed firms with disproportionate ownership (DIS) and without disproportionate ownership.

	No. of firms	VC-backed firms	Percentage (%)
ECEs	203	54	26.60
-ECEs with DIS	113	30	26.55
-ECEs without DIS	90	24	26.67

Panel B. Distribution of VC dummy, based on firm-year observations

	No. of observations	No. of VC dummies	Percentage (%)
ECEs	522	133	25.48
-ECEs with DIS	308	74	24.03
-ECEs without DIS	214	59	27.57

Panel C. Distribution of VC ownership: Sample of VC-backed observations

	No. of observations	VC ownership (%)
VC-backed ECEs	133	13.36
-ECEs with DIS	62	15.69
-ECEs without DIS	71	10.56

Panel D. Distribution of STATEVC, based on firm-year observations

	No. of observations	No. of STATEVC	Percentage (%)
Observations include SOEs and ECEs	700	50	7.14
ECEs	522	37	7.09
-ECEs with DIS	308	22	7.14
-ECEs without DIS	214	15	7.01

Panel E. Descriptive analysis of variables based on firm-year observations: full sample

This panel presents the summary statistics of our regression variables based on firm-year observations.

Var.	Mean	Median	Min	Max	St. dev.
PAY(1000 RMB)	896.66	687.80	36.00	5100.00	698.77
ROA	0.06	0.06	-0.29	0.37	0.05
ROS	0.10	0.08	-1.24	0.54	0.12
Q	1.66	1.41	0.89	10.30	0.98
SR	0.72	0.73	-1.91	11.94	1.24
SIZE (Million RMB)	1540.00	935.00	220	36000	2460.00
BOARDSIZE	7.47	6	5.00	11.00	1.28
BOARDCOMP	0.37	0.33	0.00	0.80	0.06
LEV	0.39	0.41	0.02	0.85	0.17
DUALITY	0.22	0.00	0.00	1.00	0.42
AGE	45.06	45.00	36.00	55.00	3.14
FOREIGN	0.10	0.00	0.00	1.00	0.30
CEOSHARE	0.22	0.17	0.00	0.78	0.22

Table 3. Univariate test results of VC and non-VC backed firms

This table reports various univariate test results for CEO pay of VC-backed and non-VC-backed firms. Definitions of all the variables are given in Table 1. We control for firm performance and firms' category when conducting the univariate tests in panels A, B, and C. In those panels, the VC columns represent the mean of CEO pay of VC-backed firms, and the non-VC columns represent the mean of CEO pay of non-VC-backed firms. The 'Difference' rows (columns) report the difference of CEO pay in different types of firms and the 'T-test' rows (columns) report the T-value of the difference test of CEO pay in different types of firms. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Univariate test for CEO pay and performance of VC-backed and non-VC backed firms

	VC	NON-VC	Difference	T-test
Pay (RMB)	1,048,784	846,208	202,576	2.88***
ROA	0.0718	0.0567	0.0151	2.96***
ROS	0.1316	0.0847	0.0469	2.47***
Q	1.7487	1.5691	0.1796	2.27***
SR	0.7417	0.6813	0.0604	0.57

Panel B. Univariate test for CEO pay of VC-backed and non VC-backed firms with and without disproportionate ownership: entrepreneur-controlled firms

		ECEs without DIS		ECEs with DIS	
		NON-VC	VC	NON-VC	VC
ROA	Low	588105.80	745217.30	718154.80	887417.50
	High	1258066.00	1203803.00	908596.10	1266513.00
Difference		-669960.20	-458585.70	-190441.30	-379095.50
T-value		-5.63***	-2.80***	-2.41**	-2.26**
ROS	Low	750293.20	979628.70	739837.80	952568.00
	High	1091610.00	984515.40	891714.60	1188482.00
Difference		-341316.80	-4886.70	-151876.80	-235914.00
T-value		-2.67***	-0.03	-1.91*	-1.83*
Q	Low	827959.10	971061.20	747648.10	1000102.00
	High	1016872.00	991229.00	880006.80	1168957.00
Difference		-188912.90	-20167.80	-132358.70	-168855.00
T-value		-1.75*	-0.12	-1.60	-1.96**
SR	Low	906107.70	896830.10	779083.00	1087123.00
	High	931695.20	1047401.00	836209.60	1119459.00
Difference		-25587.50	-150570.90	-57126.60	-32336.00
T-value		-0.20	-0.86	-0.72	-0.19

Table 4. The effect of VC on the pay-performance relationship of entrepreneurial controlled firms

This table presents the regression results for the effect of VC on the pay-performance relationship of Chinese ECEs. The Heckman two-step regression model is used to control the endogeneity of VC backing. The first-stage regression uses a probit regression, in which the dependent variable is a VC dummy and the instrumental variables are firm location and listing time. The second-stage regression uses CEO compensation as the dependent variable. The explanatory variable in the second-stage regression includes the predicted VC dummy from the first stage, performance measures, their interactive terms, and other controls. P-values are displayed in italics; standard errors are clustered at firm level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	First step	Second step			
Var.	VC	LNPAY			
VC^		0.85	0.86	1.88**	1.10
		0.30	*0.26*	*0.05*	*0.12*
ROA_{T-1}		3.90**			
		0.05			
ROS_{T-1}			1.14		
			0.19		
Q_{T-1}				0.16*	
				0.06	
SR_{T-1}					0.07**
					0.03
VC^*ROA_{T-1}		-3.82			
		0.62			
VC^*ROS_{T-1}			-2.75		
			0.44		
VC^*Q_{T-1}				-0.91**	
				0.04	
VC^*SR_{T-1}					-0.72***
					0.01
LOCATE	1.59**				
	0.05				
LISTTIME	0.31				
	0.55				
SIZE	-0.42	0.31***	0.36***	0.35***	0.38***
	0.11	*0.00*	*0.00*	*0.00*	*0.00*
BOARDSIZE	0.44***	-0.08	-0.08*	-0.07	-0.09*
	0.01	*0.11*	*0.10*	*0.16*	*0.10*
BOARDCOMP	1.71	-0.34	-0.31	-0.16	-0.25
	0.14	*0.11*	*0.16*	*0.48*	*0.23*
LEV	1.33	-0.57**	-0.94***	-1.20***	-1.09***
	0.26	*0.05*	*0.00*	*0.00*	*0.00*
DUALITY	0.33	0.21**	0.21**	0.23**	0.19**
	0.36	*0.02*	*0.03*	*0.02*	*0.04*
AGE	-0.01	0.03**	0.02**	0.02*	0.02
	0.89	*0.02*	*0.05*	*0.10*	*0.11*
FOREIGN	0.55	-0.07	-0.05	-0.01	-0.04
	0.27	*0.65*	*0.74*	*0.96*	*0.77*
CEOSHARE	0.53	-0.18	-0.13	-0.11	-0.10
	0.69	*0.33*	*0.49*	*0.54*	*0.58*
_cons	2.00	6.54***	5.99***	6.06***	5.79***
	0.72	*0.00*	*0.00*	*0.00*	*0.00*
year	Yes	Yes	Yes	Yes	Yes
industry	Yes	Yes	Yes	Yes	Yes
Obs.	522	522	522	522	522
Pseudo/Adjusted R^2	0.05	0.15	0.13	0.13	0.14

Table 5. The effect of VC on the pay-performance relationship: entrepreneur-controlled firms with and without disproportionate ownership

This table examines how VC affects the pay-performance relationship in Chinese ECEs by separating the sample into two types of firms (ECEs with disproportionate ownership and ECEs without disproportionate ownership). The dependent variable is CEO pay, and independent variables include the predicted value of the VC dummy, performance, their interactive terms, and other controls. The performance measures include ROA, ROS, Q, and SR. *P*-values are displayed in italics; *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Standard errors are clustered at firm level.

Var.	LNPAY							
	ECEs without DIS				ECEs with DIS			
VC^	1.39	0.99	2.58	0.77	0.65	0.65	1.22	0.75
	0.39	*0.47*	*0.14*	*0.54*	*0.49*	*0.47*	*0.27*	*0.36*
ROA_{T-1}	7.16**				0.34			
	0.05				*0.88*			
ROS_{T-1}		2.17				-0.71		
		0.16				*0.52*		
Q_{T-1}			0.22**				0.09	
			0.03				*0.51*	
SR_{T-1}				0.11**				0.06
				0.05				*0.37*
VC^*ROA_{T-1}	-18.37				8.57			
	0.24				*0.34*			
VC^*ROS_{T-1}		-7.77				4.67		
		0.24				*0.30*		
VC^*Q_{T-1}			-1.85**				-0.13	
			0.03				*0.80*	
VC^*SR_{T-1}				-1.02*				0.29
				0.08				*0.34*
SIZE	0.39***	0.42***	0.42***	0.46***	0.32***	0.35***	0.35***	0.34***
	0.01	*0.01*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
BOARDSIZE	-0.14*	-0.14*	-0.11	-0.13*	-0.02	-0.01	-0.00	0.01
	0.10	*0.10*	*0.19*	*0.10*	*0.81*	*0.88*	*0.96*	*0.92*
BOARDCOMP	-0.44	-0.42	-0.02	-0.21	-0.32	-0.25	-0.24	-0.17
	0.19	*0.21*	*0.96*	*0.51*	*0.28*	*0.42*	*0.44*	*0.57*
LEV	-0.96*	-1.35***	-1.85***	-1.58***	-0.51	-0.80***	-0.91***	-1.04***
	0.09	*0.01*	*0.00*	*0.00*	*0.12*	*0.01*	*0.00*	*0.00*
DUALITY	0.55***	0.58***	0.60***	0.48***	-0.06	-0.06	-0.06	-0.04
	0.00	*0.00*	*0.00*	*0.00*	*0.61*	*0.60*	*0.57*	*0.71*
AGE	0.01	0.00	-0.00	-0.01	0.05***	0.04***	0.04***	0.04***
	0.80	*0.88*	*0.85*	*0.56*	*0.00*	*0.00*	*0.00*	*0.00*
FOREIGN	-0.26	-0.31	-0.32	-0.25	-0.18	-0.13	-0.13	-0.10
	0.47	*0.39*	*0.36*	*0.44*	*0.24*	*0.40*	*0.42*	*0.51*
CEOSHARE	-0.58*	-0.58*	-0.64*	-0.64**	-0.13	0.00	0.04	0.03
	0.10	*0.10*	*0.07*	*0.05*	*0.69*	*1.00*	*0.90*	*0.92*
_cons	5.65**	5.63*	5.54**	5.60**	5.34***	4.97***	4.90***	5.09***
	0.05	*0.06*	*0.05*	*0.04*	*0.00*	*0.00*	*0.00*	*0.00*
year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	214	214	214	214	308	308	308	308
Adjusted R2	0.16	0.15	0.20	0.27	0.20	0.17	0.17	0.19

Table 6. The effect of significant VC on the pay-performance relationship: entrepreneur-controlled firms with and without disproportionate ownership

This table examines how significant VC ownership influences the pay-performance relationship in Chinese ECEs by separating the sample into two types of firms (one with disproportionate ownership and one without disproportionate ownership). The dependent variable is CEO pay, and independent variables include the predicted value of SIGVC dummy, performance, their interactive terms, and other controls. The performance measures include ROA, ROS, Q, and SR. P-values are displayed in italics; *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Standard errors are clustered at firm level.

Var.	LNPAY							
	ECEs without DIS				ECEs with DIS			
SIGVC^	0.68	0.62	0.77**	0.20	0.47**	0.44**	0.44*	0.53***
	0.19	*0.14*	*0.04*	*0.37*	*0.04*	*0.04*	*0.09*	*0.00*
ROA T-1	2.99**				2.15***			
	0.05				*0.01*			
ROS T-1		0.39				0.32		
		0.55				*0.35*		
Q T-1			0.13*				0.06	
			0.07				*0.25*	
SRT-1				0.30***				0.17***
				0.00				*0.00*
SIGVC^* ROA_{T-1}	8.30				-1.03			
	0.25				*0.67*			
SIGVC^* ROS_{T-1}		5.86				-0.23		
		0.16				*0.88*		
SIGVC^* Q_{T-1}			-0.37***				-0.01	
			0.01				*0.92*	
SIGVC^* SR_{T-1}				-0.45***				-0.16
				0.00				*0.12*
SIZE	0.44***	0.51***	0.52***	0.44***	0.29***	0.32***	0.32***	0.31***
	0.00	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
BOARDSIZE	-0.15**	-0.16***	-0.15**	-0.10	0.03	0.03	0.04	0.03
	0.02	*0.01*	*0.02*	*0.11*	*0.46*	*0.45*	*0.37*	*0.55*
BOARDCOMP	-0.45	-0.46	-0.25	0.08	-0.25	-0.21	-0.19	-0.19
	0.13	*0.13*	*0.38*	*0.78*	*0.37*	*0.46*	*0.51*	*0.49*
LEV	-0.85	-1.38***	-1.86***	-1.52***	-0.71**	-0.98***	-0.99***	-1.15***
	0.13	*0.01*	*0.00*	*0.00*	*0.02*	*0.00*	*0.00*	*0.00*
DUALITY	0.48***	0.50***	0.55***	0.50***	-0.01	-0.03	-0.02	-0.01
	0.00	*0.00*	*0.00*	*0.00*	*0.92*	*0.77*	*0.81*	*0.89*
AGE	0.01	0.00	-0.00	-0.01	0.05***	0.05***	0.05***	0.05***
	0.78	*0.98*	*0.94*	*0.72*	*0.00*	*0.00*	*0.00*	*0.00*
FOREIGN	-0.26	-0.36	-0.38	-0.25	-0.12	-0.10	-0.11	-0.10
	0.40	*0.26*	*0.21*	*0.38*	*0.29*	*0.40*	*0.38*	*0.41*
CEOSHARE	-0.54*	-0.59*	-0.70**	-0.56*	-0.04	0.04	0.09	0.10
	0.09	*0.07*	*0.03*	*0.06*	*0.90*	*0.91*	*0.76*	*0.75*
_cons	5.13*	4.38	4.46*	5.45**	5.60***	5.14***	5.15***	5.57***
	0.06	*0.11*	*0.09*	*0.03*	*0.00*	*0.00*	*0.00*	*0.00*
year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	214	214	214	214	308	308	308	308
Adjusted R2	0.17	0.15	0.21	0.29	0.22	0.20	0.20	0.23

Table 7. The effect of VC ownership on the pay-performance relationship: entrepreneur-controlled firms with and without disproportionate ownership

This table examines the effect of direct VC ownership on the pay-performance relationship of Chinese ECEs. The sample includes only VC-backed observations. The dependent variable is CEO pay, and key independent variables are VC ownership, firm performance and their interaction term. The performance measures include ROA, ROS, Q, and SR. P-values are displayed in italics; *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Standard errors are clustered at firm level.

Var.	LNPAY							
	ECEs without DIS				ECEs with DIS			
VCOWNERSHIP	-2.00	0.15	-2.08	0.19	-1.71	-1.24	2.50	-0.08
	0.64	*0.97*	*0.51*	*0.91*	*0.39*	*0.61*	*0.33*	*0.94*
ROA_{T-1}	0.97				-2.09			
	0.90				*0.44*			
ROS_{T-1}		-1.28				-1.37		
		0.76				*0.53*		
Q_{T-1}			-0.58***				0.38	
			0.00				*0.13*	
SR_{T-1}				-0.34*				0.08
				0.06				*0.57*
VCOWNERSHIP* ROA_{T-1}	43.16				18.16			
	0.45				*0.41*			
VCOWNERSHIP* ROS_{T-1}		3.25				7.23		
		0.94				*0.65*		
VCOWNERSHIP* Q_{T-1}			1.49				-1.89	
			0.41				*0.22*	
VCOWNERSHIP* SR_{T-1}				-0.36				-0.44
				0.77				*0.62*
SIZE	-0.17	-0.11	0.11	-0.18	0.63***	0.63***	0.61***	0.61***
	0.59	*0.74*	*0.68*	*0.51*	*0.00*	*0.00*	*0.00*	*0.00*
BOARDSIZE	-0.04	0.02	0.07	0.06	-0.01	-0.02	-0.01	-0.02
	0.75	*0.86*	*0.47*	*0.59*	*0.89*	*0.85*	*0.86*	*0.84*
BOARDCOMP	0.19	0.40	0.38	0.82	-0.06	-0.05	-0.10	-0.13
	0.72	*0.52*	*0.40*	*0.12*	*0.91*	*0.93*	*0.86*	*0.82*
LEV	-1.59	-2.49*	-2.22**	-1.93*	-2.23***	-2.35***	-2.19***	-2.21***
	0.23	*0.08*	*0.03*	*0.07*	*0.01*	*0.00*	*0.00*	*0.00*
DUALITY	0.20	0.38	0.22	0.39	0.32	0.32	0.35*	0.34*
	0.57	*0.26*	*0.42*	*0.18*	*0.11*	*0.12*	*0.07*	*0.08*
AGE	0.00	0.01	0.00	-0.01	0.02	0.01	0.03	0.02
	0.95	*0.92*	*0.99*	*0.91*	*0.63*	*0.69*	*0.44*	*0.59*
FOREIGN	0.17	0.02	0.06	0.06	-0.35	-0.34	-0.35	-0.33
	0.84	*0.98*	*0.93*	*0.94*	*0.13*	*0.16*	*0.13*	*0.17*
CEOSHARE	-0.16	0.13	-0.32	-0.36	0.83	0.92	0.93	0.99
	0.88	*0.91*	*0.72*	*0.71*	*0.39*	*0.33*	*0.31*	*0.28*
_cons	15.87***	14.71**	10.94**	15.91***	1.62	1.78	0.93	1.84
	0.01	*0.02*	*0.04*	*0.00*	*0.73*	*0.71*	*0.84*	*0.70*
year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	62	62	62	62	71	71	71	71
Adjusted R2	0.07	0.04	0.34	0.24	0.27	0.27	0.30	0.27

Table 8. The effect of VC on the pay-performance relationship: entrepreneur-controlled firms with low and high growth opportunity

This table examines how VC affects the pay-performance relationship in Chinese entrepreneurial firms by separating the sample into two types of firms (one with high growth rate and one with low growth rate). The dependent variable is CEO pay, and independent variables include predicted VC, performance, their interactive terms, and other controls. The performance measures include ROA, ROS, Q, and SR. *P*-values are displayed in italics; *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Standard errors are clustered at firm level.

Var.	LNPAY							
	ECEs with HGROWTH				ECEs without HGROWTH			
VC^	0.79	0.20	2.49	0.76	0.83	1.52	0.45	1.00
	0.51	*0.86*	*0.04*	*0.42*	*0.48*	*0.17*	*0.79*	*0.37*
ROA_{T-1}	5.21*				1.52			
	0.06				*0.62*			
ROS_{T-1}		1.02				1.23		
		0.49				*0.31*		
Q_{T-1}			0.41***				-0.28	
			0.00				*0.19*	
SR_{T-1}				0.14*				-0.17
				0.07				*0.19*
VC^*ROA_{T-1}	-10.64				9.03			
	0.32				*0.46*			
VC^*ROS_{T-1}		-1.61				-3.34		
		0.77				*0.52*		
VC^*Q_{T-1}			-1.66***				0.25	
			0.00				*0.79*	
VC^*SR_{T-1}				-1.04***				0.03
				0.01				*0.95*
SIZE	0.37***	0.41***	0.34***	0.41***	0.23**	0.29***	0.29***	0.30***
	0.00	*0.00*	*0.00*	*0.00*	*0.02*	*0.01*	*0.00*	*0.00*
BOARDSIZE	-0.08	-0.09	-0.07	-0.08	-0.06	-0.05	-0.04	-0.04
	0.22	*0.18*	*0.35*	*0.24*	*0.46*	*0.50*	*0.64*	*0.63*
BOARDCOMP	-0.48*	-0.47*	-0.23	-0.32	0.15	0.13	0.13	0.19
	0.07	*0.08*	*0.39*	*0.23*	*0.70*	*0.74*	*0.73*	*0.63*
LEV	-0.88**	-1.14***	-1.32***	-1.31***	-0.20	-0.75*	-1.13***	-0.90**
	0.03	*0.01*	*0.00*	*0.00*	*0.64*	*0.07*	*0.00*	*0.02*
DUALITY	0.39***	0.37***	0.40***	0.33***	0.04	0.08	0.11	0.08
	0.00	*0.01*	*0.00*	*0.01*	*0.75*	*0.59*	*0.43*	*0.59*
AGE	0.03*	0.03*	0.03*	0.02	0.03*	0.02	0.02	0.02
	0.10	*0.08*	*0.10*	*0.17*	*0.10*	*0.25*	*0.26*	*0.31*
FOREIGN	0.09	0.08	0.18	0.04	-0.20	-0.13	-0.08	-0.07
	0.68	*0.70*	*0.41*	*0.86*	*0.36*	*0.55*	*0.72*	*0.75*
CEOSHARE	-0.04	-0.06	-0.05	-0.04	-0.42	-0.26	-0.15	-0.22
	0.88	*0.81*	*0.83*	*0.88*	*0.15*	*0.38*	*0.59*	*0.45*
_cons	4.84***	4.17**	5.06***	4.44**	7.15***	6.60***	7.05***	6.44***
	0.01	*0.03*	*0.01*	*0.02*	*0.00*	*0.00*	*0.00*	*0.00*
year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	261	261	261	261	261	261	261	261
Adjusted R2	0.18	0.16	0.19	0.18	0.09	0.06	0.09	0.09

Table 9. The effect of VC on delta of CEO compensation

This table reports the results on the effect of VC on delta of CEO compensation in different types of firms. The dependent variable is DELTA, which is the change in CEO compensation divided by the change in share return. P-values are displayed in italics; *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Standard errors are clustered at firm level.

Var.	ECEs	ECEs without DIS	ECEs with DIS
VC^	-0.28***	-0.25***	-0.37
	0.00	*0.01*	*0.12*
ΔSIZE (In Million)	0.00	0.00***	0.00
	0.21	*0.00*	*0.15*
ΔBOARDSIZE	0.10**	0.13***	0.09
	0.02	*0.01*	*0.15*
ΔBOARDCOMP	-0.20	-0.27	-0.08
	0.41	*0.24*	*0.84*
ΔLEV	0.72	0.18	1.09
	0.14	*0.70*	*0.15*
ΔDUALITY	-0.07	0.13	-0.15
	0.56	*0.26*	*0.41*
ΔAGE	0.02	0.00	0.05
	0.35	*0.94*	*0.20*
ΔFOREIGN	-0.13	-0.61*	0.00
	0.80	*0.07*	*-0.82*
ΔCEOSHARE	0.05	-0.17	1.79
	0.91	*0.60*	*0.28*
_cons	0.06	-0.01	0.04
	0.23	*0.83*	*0.58*
year	Yes	Yes	Yes
industry	Yes	Yes	Yes
Obs.	522	214	308
Adj R-squared	0.06	0.17	0.09

Table 10. VC investment cost and VC duration in SOEs and firms with disproportionate ownership: A cross-section sample of VC-backed ECEs only

This table presents the effect of SOE and DISPROPORTIONATE on VC investment cost and duration before IPO. VCCOST is the VC investment P/BV ratio when the investment is made; VCDURATION is the number of years between the investment year and the IPO year. SOE and DIS are dummy variables that represent SOEs and firms with a disproportionate ownership structure. Industry and investment year are controlled for. The sample is smaller because only VC-backed firms are included, and each firm only has one observation because the sample is cross-sectional. P-values are displayed in italics; *, and *** indicate significance at the 10%, and 1% levels, respectively.

Var.	VCCOST	VCDURATION
DIS	-0.43*	-1.19***
	0.08	*0.01*
_cons	2.24***	2.92*
	0.01	*0.07*
year	Yes	Yes
industry	Yes	Yes
Obs.	54	54
Adjusted R2	0.09	0.22

Table 11. The effect of VC on the pay-performance relationship: ECEs with high growth and disproportionate ownership and ECEs with high growth but without disproportionate ownership

This table examines how VC affects the pay-performance relationship in Chinese ECEs by separating the sample into two types of firms (one with HGROWTH and DIS; the other with HGROWTH but without DIS). The dependent variable is CEO pay, and independent variables include predicted VC, performance, their interactive terms, and other controls. The performance measures include ROA, ROS, Q, and SR. P-values are displayed in italics; *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Standard errors are clustered at firm level.

Var.	LNPAY							
	ECEs with HGROWTH and without DIS				ECEs with HGROWTH and DIS			
VC^	2.35	-0.14	3.52*	0.35	1.52	1.50	2.45	1.58
	0.33	*0.95*	*0.09*	*0.84*	*0.28*	*0.27*	*0.13*	*0.19*
ROA_{T-1}	12.29**				-0.80			
	0.04				*0.78*			
ROS_{T-1}		3.18				-1.54		
		0.33				*0.34*		
Q_{T-1}			0.78***				0.01	
			0.00				*0.97*	
SR_{T-1}				0.20*				0.00
				0.08				*0.95*
VC^*ROA_{T-1}	-45.80**				13.87			
	0.04				*0.23*			
VC^*ROS_{T-1}		-11.05				8.65		
		0.36				*0.14*		
VC^*Q_{T-1}			-3.39***				-0.10	
			0.00				*0.87*	
VC^*SR_{T-1}				-2.00***				0.74
				0.02				*0.12*
SIZE	0.37**	0.37**	0.28	0.43**	0.41***	0.43***	0.46***	0.41***
	0.05	*0.06*	*0.13*	*0.02*	*0.00*	*0.00*	*0.00*	*0.00*
BOARDSIZE	-0.11	-0.11	-0.03	-0.12	-0.05	-0.03	-0.03	0.01
	0.32	*0.34*	*0.79*	*0.27*	*0.61*	*0.76*	*0.79*	*0.96*
BOARDCOMP	-0.46	-0.46	0.15	-0.18	-0.27	-0.06	-0.06	0.14
	0.22	*0.23*	*0.72*	*0.62*	*0.58*	*0.90*	*0.91*	*0.78*
LEV	-1.55**	-1.53**	-1.44**	-1.51***	-0.17	-0.42	-0.85*	-0.71*
	0.05	*0.05*	*0.02*	*0.01*	*0.73*	*0.41*	*0.08*	*0.10*
DUALITY	0.69***	0.64***	0.74***	0.53***	-0.04	-0.09	-0.10	-0.05
	0.00	*0.00*	*0.00*	*0.01*	*0.81*	*0.61*	*0.56*	*0.76*
AGE	0.02	0.02	0.01	0.00	0.04**	0.04**	0.04**	0.04**
	0.68	*0.59*	*0.80*	*0.99*	*0.02*	*0.02*	*0.04*	*0.02*
FOREIGN	0.00	0.09	0.32	-0.14	-0.34	-0.33	-0.28	-0.26
	1.00	*0.84*	*0.44*	*0.74*	*0.16*	*0.18*	*0.26*	*0.28*
CEOSHARE	-0.23	-0.24	-0.02	-0.40	-0.09	0.04	0.03	0.04
	0.61	*0.60*	*0.96*	*0.34*	*0.83*	*0.93*	*0.94*	*0.94*
_cons	5.91	6.32	6.88*	5.80	3.78**	3.30*	3.04	3.62*
	0.14	*0.13*	*0.08*	*0.13*	*0.05*	*0.10*	*0.14*	*0.06*
year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	118	118	118	118	141	141	141	141
Adjusted R2	0.19	0.16	0.24	0.27	0.26	0.24	0.22	0.26

Table 12. The effect of state-funded VC and non-state-funded VC on the pay-performance relationship

This table examines how state-funded VC and non-state-funded VC affect the pay-performance relationship in Chinese firms. The dependent variable is CEO pay, and independent variables include dummies for state-funded VC and non-state-funded VC, performance, their interactive terms, and other controls. The performance measures include ROA, ROS, Q, and SR. Control variables are included but not reported to save space. P-values are displayed in italics; *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Standard errors are clustered at firm level.

Var.	LNPAY			
STATEVC	0.33	0.29	0.72***	0.26
	0.14	0.15	0.01	0.12
ROA_{T-1}	2.76***			
	0.00			
ROS_{T-1}		0.42		
		0.21		
Q_{T-1}			0.03*	
			0.09	
SR_{T-1}				0.07**
				0.04
ROA_{T-1}*STATEVC	-1.02			
	0.74			
ROS_{T-1}*STATEVC		-0.20		
		0.91		
Q_{T-1}*STATEVC			-0.24	
			0.15	
SR_{T-1}*STATEVC				0.03
				0.84
NONSTATEVC	0.30**	0.37**	0.57***	0.38***
	0.05	0.02	0.01	0.00
ROA_{T-1}*NONSTATEVC	0.19			
	0.92			
ROS_{T-1}*NONSTATEVC		-0.28		
		0.79		
Q_{T-1}*NONSTATEVC			-0.13**	
			0.02	
SR_{T-1}*NONSTATEVC				-0.04**
				0.05
_cons	6.59***	6.01***	5.78***	5.95***
	0.00	0.00	0.00	0.00
year	Yes	Yes	Yes	Yes
industry	Yes	Yes	Yes	Yes
Obs.	522	522	522	522
Adjusted R2	0.17	0.15	0.16	0.15

Table 13. The effect of VC on the pay-performance relationship: with control for expected pay and expected performance

This table presents the results on the effect of accounting VC and accounting performance on CEO compensation with control for expected pay and expected accounting performance. $LNPAY_{T-1}$ is the lagged value of LNPAY; ΔROA and ΔROS are the change of ROA and ROS compared to the previous year. Other variables are defined as in Table 1. Control variables are included but not reported to save space. P-values are displayed in italics; *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Standard errors are clustered at firm level.

Var.	LNPAY							
	ECEs without DIS				ECEs with DIS			
$LNPAY_{T-1}$	0.89***	0.88***	0.87***	0.97***	0.74***	0.73***	0.73***	0.68***
	0.00	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
VC^	0.23	0.16	0.03	2.26**	0.24	0.24	0.15	0.28
	0.79	*0.85*	*0.97*	*0.04*	*0.68*	*0.68*	*0.79*	*0.71*
ΔROA	5.09				2.69*			
	0.12				*0.08*			
ΔROS		1.29				1.39*		
		0.53				*0.08*		
ΔQ			0.30**				0.00	
			0.02				*0.97*	
ΔSR				0.05*				0.01
				0.06				*0.82*
VC^*ΔROA	-8.53				-6.80			
	0.52				*0.27*			
VC^*ΔROS		1.42				-4.82		
		0.85				*0.10*		
VC^*ΔQ			-0.63**				-0.03	
			0.02				*0.91*	
VC^*ΔSR				-0.06*				0.03
				0.06				*0.85*
year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	214	214	214	214	308	308	308	308
Adjusted R2	0.53	0.53	0.54	0.68	0.57	0.57	0.56	0.52