

Regulatory restriction on executive compensation, corporate governance and firm performance

Evidence from China

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Abstract

Purpose – The purpose of this paper is to investigate whether regulatory restriction on executive compensation in Chinese state-owned enterprises is beneficial to firm performance. The authors also examine the role of monitoring mechanisms in offsetting the effect of compensation restriction.

Design/methodology/approach – Multivariate analysis is conducted using archival data from Chinese listed companies over the period of 2007-2014.

Findings – The findings show that the restriction on executive compensation is negatively associated with a firm's accounting performance, and this negative effect is ameliorated in firms with good internal control and a high level of institutional shareholding. Additional analysis reveals that the negative effect of pay restriction on firm performance is more pronounced in central government-controlled listed SOEs than in those controlled by local government.

Originality/value – This study is the first to investigate a government's say-on-pay policy. Specifically, the findings pinpoint the inefficacy of regulatory intervention in corporate executive compensation. The findings add to compensation literature using China's unique institutional setting.

Keywords China, Firm performance, Internal control, Institutional shareholding, Executive cash compensation

Paper type Research paper

1. Introduction

This study aims to investigate regulatory restriction on executive compensation and its consequences for firm performance. What is also examined, is the role of corporate governance mechanisms in offsetting those consequences. The theoretical agency literature regards executive compensation as a market mechanism to prevent excessive rent extraction by executives by aligning managerial decision making with creation of shareholder value (Armstrong *et al.*, 2010; Bushman and Smith, 2001). One way of mitigating the conflict of interests between the managers and the shareholders is to make executive pay sensitive to firm performance via, for example, share ownership, stock options and bonuses. There is a voluminous body of accounting literature on the role of financial accounting information in managerial incentive contracts, and the findings have enriched our understanding of the corporate governance role of accounting information (Bushman and Smith, 2001).

Unlike the USA, where market forces (e.g. the market for corporate control, the managerial labor market, and a competitive product market) and explicit and implicit compensation contracts powerfully motivate and discipline managers, China employs a regulatory regime in setting executive compensation in state-owned enterprise (SOE) listed firms.



Commencing in 2004, China issued a series of regulations to rein in executive compensation[1]. Specifically, the pertinent regulations prescribe the maximum level of executive compensation that should be set with reference to the average salary of employees. This paper argues that in an economy moving quickly toward market mechanisms, regulatory intervention in setting executive pay may distort managerial incentives and engender unwanted consequences on firm performance. In this paper, we also study the role of corporate governance mechanisms in mitigating this potentially negative impact of executive compensation regulation. In particular, we investigate whether effective internal control and institutional ownership ameliorate the negative effect of compensation restriction on firm performance.

We operationalize regulatory restriction on executive compensation using three measures including: the deviation of pay gap of an SOE from the industry-year average pay gap of non-SOEs, where pay gap is defined as the ratio of average cash compensation of the top three executives to the average salary of employees, and the ratio of average cash compensation of the top three executives to the average salary of all employees in an SOE; and the difference between the average cash compensation of the top three executives and the average cash compensation of all executives in an SOE. The first measure, the deviation of pay gap in an SOE from the industry-year average pay gap of non-SOEs, sets non-SOEs' pay gap as the benchmark, so a low value of an SOE's pay gap relative to non-SOEs industry-year average indicates a constrained pay gap in the SOE. For easy exposition, the second and third measures are multiplied by -1 so that the higher the value is, the greater the constraint on top executives' compensation. Firm performance is measured as the return on assets because Chinese firms predominantly use accounting earnings in executive compensation packages (Conyon and He, 2012). Internal control strength is measured as a continuous measure of the internal control score provided by Shenzhen Dibo Ltd Using sample observations of SOEs on an A-share market over the period 2007-2014, we reveal that restriction on executive compensation is associated negatively with a firm's accounting performance, and this is consistent with the conjecture that regulatory intervention distorts managerial incentives. Our analyses also demonstrate that this negative effect of compensation restriction on firm performance is ameliorated in firms with good internal control and a high level of institutional shareholding. Additional analysis reveals a more pronounced negative effect of pay restriction on firm performance in central government-controlled SOEs than on local government-controlled SOEs. In addition, we find weak evidence that the value-enhancing effect of institutional shareholding is stronger for firms with foreign institutional shareholders than for those with only domestic institutional shareholders.

This paper makes several important contributions to policy making and the literature. The compensation literature has made great strides in understanding the mechanisms and incentives of executive pay and the consequences of pay packages on shareholders' wealth, but little is known about the effect of government intervention in corporate pay setting. Using China's unique regulations on limiting executive pay in SOEs, this study adds to the compensation literature from a regulatory perspective. Specifically, the findings pinpoint the inefficacy of the government's say-on-pay policy. In addition, we contribute to the literature by constructing compensation restriction proxies that are original in the compensation literature. Our compensation restriction proxies are relative measures that either benchmark an SOE's pay gap against the average industry-year non-SOE pay gap, or compare the average compensation of an SOE's top three executives to its average employee salary or to the average compensation of lower ranked executives in the same SOE. Pay restrictions apply only to top executives in SOEs, but not to those in non-SOEs, and not to normal employees or lower ranked executives. Thus, this natural regulatory setting allows us to use relative measures to gauge the extent of the restriction on top executives' compensation imposed on SOEs in China.

The findings also offer important implications for policy makers. First, our finding of the value-decreasing effect of compensation restriction suggests that limiting the level of pay distorts managerial incentives. It is well established in the compensation literature that the optimal compensation contract is the one aligning executive pay to firm performance, because the purpose of the contract is to provide managers with incentives to act in ways that increase shareholder wealth (Jensen and Murphy, 1990). Rather than merely restricting pay, policy makers should strive to optimize pay incentives. In addition, our findings also indicate that sound corporate governance, such as effective internal control and active institutional shareholder monitoring, are more beneficial than legalizing executive pay levels.

The remainder of the paper proceeds as follows. Section 2 provides a brief explanation on the institutional context and develops testable hypotheses. Section 3 presents the sample selection and descriptive analysis of data. It also explains research design. A correlation matrix and the main analysis results are presented in Section 4, followed by additional tests in Section 5. Section 6 concludes the paper.

2. Institutional context and development of hypotheses

2.1 Literature background and executive compensation in China

In a free market economy, the external managerial labor market determines managers' pay, providing incentives for managerial competition and service (Fama, 1980). Thus, market mechanisms entail specialised human capital becoming important and mobile (e.g. Zingales, 2000). There is a growing disparity between CEO and workers' pay worldwide. Hall and Liebman (1998) report that the average compensation of US CEOs increased by 175 percent in comparison to the average pay increase of 0.6 percent a year for normal US workers. A similar trend is reported in the UK in that CEO compensation has increased by 149 percent over the period between 1980 and 1993 (Conyon *et al.*, 1995). In the wake of economic crises, there is public demand for legislation against excessive executive compensation worldwide. Regulation in Canada, Germany, and the Netherlands all require boards to pay explicit attention to the scenarios that may lead to large payouts to executives. Despite the proposals to restrict executive pay, legally binding standards may be difficult to implement because of concern for the unintended consequences, including reduced risk-taking and resultant rewards for mediocre performers (Dittmann *et al.*, 2011). Therefore, regardless of the heated debate on regulating executive pay, governments in developed markets have eschewed the more radical proposals for compensation cuts and have, instead, relied on either market mechanisms or shareholders' say-on-pay schemes.

There is an emerging literature on pay restrictions. Most of those papers are analytical, using models built in frictionless and free managerial labor markets. Dittmann *et al.* (2011) proposes a model where managerial production is a function of incentive pay. They find that a cap on the value of compensation has an adverse impact on firm value: cutting CEO pay by 20 percent leads to a decline by 0.07 percent in firm value. In absolute terms, firm value drops by \$0.12 for each dollar of the 20 percent cut in compensation. Nevertheless, Lense (2010) finds only a moderate impact of compensation caps on shareholder value. In the wake of the financial crisis, Bolton *et al.* (2010) argue that pegging the executive pay of financial service companies on debt prices (credit default swaps) would improve (i.e. reduce) risk-taking incentives, but such contracts may not be optimal from the perspective of shareholders. It is unclear how Dittmann *et al.* (2011) and others' analytical model, which was developed with the underlying assumption of free markets, could be applied to a regime like China's using legislative restriction.

Pertinent to our study, several papers investigate the efficacy of shareholders' say-on-pay schemes[2] in the USA and the UK. Cai and Walkling (2011) find a positive market reaction to the say-on-pay requirement in the USA for firms with high excess compensation and low pay-performance sensitivity. Using UK data, Carter and Zamora (2009) find that shareholders

tend to disapprove of excessive compensation, weak pay-performance bonus and greater dilution in equity pay, suggesting an increase in the monitoring function of shareholders on executive pay issues. However, opposite evidence on the effectiveness of a say-on-pay policy is found in the USA. Murphy (1995) criticizes the 1992 proxy reforms as a populist outcome. Knutt (2005) shows that government regulation of executive compensation has not decreased excess executive compensation, and also suggests better corporate governance systems as a solution to executive compensation problems. Dew-Becker (2009) reviews the history of executive compensation regulation and examines the consequences of the policies. He finds little evidence that any of the policies impact on executive compensation considerably. Garner and Kim (2010) investigate regulation in South Korea, where shareholders have to vote on the maximum amount of compensation that managers can receive. This regulation is more akin to say-on-pay rules, and different from restrictions imposed by regulators, or through legislation. To the best of our knowledge, literature on legislative restriction on the level of executive pay is virtually non-existent. Our study intends to test this issue empirically, using China as a natural setting.

In contrast to free market economies, China has a political economy where government intervention and political considerations constantly interfere with corporate operation. Upholding the ideology of social equality, the Chinese government imposes strict restrictions on top executives' compensation in all SOEs but leaves compensation received by non-SOE executives unregulated[3]. As illustrated in Appendix, from 2004 to 2014, a series of Chinese regulations have restricted executives' pay by pegging it on the employees' average salary, and set an upper limit on executive salaries. Specifically, in 2004, China issued the first legislation designed to restrict SOE top executive compensation, titled "Executive Compensation Rules and Guidelines for Government-controlled SOEs" (Stage I, Appendix). This set of rules and guidelines stipulates a formula for determining each top executive's compensation. The executives concerned in this 2004 regulation are the three top executives delegated or nominated by the National Asset Bureau (NAB) including the CEO, the deputy CEO and the CFO (The State Council of the People's Republic of China, 2003). The formula in the 2004 regulation takes into account not only the total assets, main operating revenues, net assets and net profit of the SOE concerned, but also the average employee salaries of all SOEs in the country, the same region and the same industry. The calculation is complex, and the NAB sets adjusting factors in computing the compensation of individual executives in SOEs. The NAB also reviews the top executives' compensation computation yearly, along with all documents submitted by an SOE. In a nutshell, the restriction benchmarks top executives' compensation by using a mathematical function of the salary of normal employees to limit the maximum pay of top executives.

This regulation was updated later in 2009 (Stage II, Appendix) to clarify the inclusion of superannuation and insurance into the broad concept of executive compensation. The 2009 regulation does not stipulate new standards on the level of compensation. Very recently, the 2014 regulation (Stage III, Appendix) increased the cap on total executives' compensation from five times to seven-eight times the average salary of employees, after taking into account other factors in the formula. Among total compensation, the base salary should be no more than two times the average salary of employees, and any bonus should be no more than two times the executive's own base salary. Although share-based incentives such as stock options are rarely used by SOEs, the 2014 regulation states that the total incentive pay within an executive's tenure should be no more than 30 percent of his/her total compensation per year.

Because of the restriction on executive pay levels imposed by these regulations, the level of executive pay in China is less phenomenal than in other countries (for international

evidence on CEO pay increases over the period of 1997-2005, please see Goergen and Renneboog, 2011). For instance, Conyon and He (2011) reveal that US executive pay (salary and bonus) is about 17 times higher than in China, and this significant difference in US–China pay exists even after controlling for economic and governance factors.

In China, cash and bonus-based compensation is still dominant, as opposed to executive stock and stock option portfolios. In the design of cash and bonus-based compensation, Chinese firms still rely on accounting earnings predominantly in setting performance benchmarks and, thus, executive pay is highly sensitive to accounting performance (Conyon and He, 2012; Li *et al.*, 2013). For intricate reasons, there is rarity of share-based incentive plans used by firms, especially by SOEs[4]. This stands in sharp contrast to the decline in the use of cash compensation and an increasing trend in the use of stock and stock options in some developed countries such as the USA, UK, and Australia. Over our sample period 2007-2014, the China Stock Market and Accounting Research (CSMAR) database shows 561 firm-year observations with share-based incentive plans. Among them, 59 observations are from SOEs, and non-SOEs contribute 502 observations.

Prior executive compensation literature using Chinese data documents a positive relationship between executive compensation and firm performance in general, although there are variations in the level of significance when different measures of performance and sample periods are used[5]. Two recent studies investigate executive pay-performance issues in a Chinese context and provide direct implications. Chen *et al.* (2015) find that pay-performance sensitivity improves greatly after split-share structure reform, and the improved pay-performance sensitivity during the post-reform period is more pronounced for non-SOEs (i.e. privately controlled firms) than for SOEs. Conyon and He (2011) find that executive compensation is correlated with firm performance positively, but that this relationship is lower in state controlled firms, and in firms with concentrated ownership structures. Our research question differs from the extant executive compensation literature in that we focus on the effect of regulation restriction on performance, rather than on the executive pay-performance relationship *per se*. A common finding of prior studies on Chinese executive compensation is that the elasticity of SOE executive compensation relative to firm performance is low in comparison to that of non-SOE listed firms. Because the executive compensation restriction imposed by regulation is applicable only to SOEs, compensation restriction may explain the insignificant executive pay-performance relationship in SOEs.

Furthermore, it is argued that limits on executive compensation are not competitive and, thus, may drive talented executives to more lucrative positions (Garner and Kim, 2010). We posit that the cap imposed on executive compensation discourages executives from making sufficient effort and, thus, has a negative effect on a firm's performance. Taken together, the following hypothesis is developed:

H1. Ceteris paribus, restriction on executive pay is negatively associated with performance in SOEs.

Garner and Kim (2010) argue that only firms with a highly effective monitoring system set their salary cap to be significantly sensitive to firm performance (cap-performance sensitivity), suggesting that the existence of firm-level monitoring is critical for a salary cap system to be successful. Therefore, we also examine the moderating roles of internal control strength and institutional ownership on cap-performance sensitivity. Corporate internal control is needed to instil proper procedures, separate duties, and conduct reviews and evaluations of managerial and employees' performance according to the policies in place. Those mechanisms can ensure proper monitoring of managerial opportunism and avoid expropriation of firm resources[6].

Chinese studies on internal control issues are emerging, with the improvement in internal control regulations in recent years[7]. Some recent papers investigate the determinants and consequences of listed firms' internal control weakness (Ji *et al.*, 2015) as well as the impact of internal control on stock price crash risk (Chen, Chan, Dong and Zhang, 2017) and corporate corruption (Ge *et al.*, 2015). The findings of those studies suggest that internal control is an important monitoring mechanism because effective internal control enhances accounting information value relevance (Ji *et al.*, 2015), curbs corporate corruption (Ge *et al.*, 2015), and alleviates future stock price crash risk (Chen, Chan, Dong and Zhang, 2017).

Regarding the effect of internal control on executive compensation, Henry *et al.* (2011) find that internal control effectiveness is related to the fitted components of compensation (i.e. those explained by a firm's economic characteristics), but unrelated to the residual (i.e. unexplained) components. The findings indicate that fit compensation is a natural outcome of a firm's internal control effectiveness. Thus, we expect a positive moderating effect of internal control effectiveness on the executive compensation cap-performance relationship, if internal control is used by firms to ensure managerial effort in maximizing shareholders' wealth and increasing firm value. Although an executive pay cap may discourage managerial due diligence, sound internal control should play an important role in curbing managerial malfunction and in increasing firm value. Accordingly, the following hypothesis is developed:

H2. Strong internal control alleviates the negative effect of an executive compensation cap on firm performance in SOEs.

Furthermore, we examine the monitoring role of institutional shareholders on alleviating the negative effect of a compensation cap. It is well documented in the literature that institutional shareholders serve as important monitors because they are able to absorb monitoring and take-over costs (Shleifer and Vishny, 1986), execute their vested fiduciary responsibility with financial expertise (Pound, 1988), and acquire more precise signals of management efforts (Huddart, 1993). In China, institutional ownership has increased rapidly in recent years with several major players, being securities investment funds, securities companies, commercial banks and the Qualified Foreign Institutional Investors (QFII[8]). Amidst the rise of institutional investor activism in China, Xi (2006) examines the legal and regulatory environments in which financial institutions actively participate in the governance of their portfolio companies. His analysis shows that institutional activism has brought real changes to corporate governance in China. Based on anecdotal evidence, Xi (2006) states that activism is achieved by institutional shareholders via two approaches: first, voting and, second, presenting a shareholder proposal on a corporate governance issue at a portfolio company's shareholders' meeting. Empirical studies on Chinese institutional shareholding also provide corroborative evidence that firms with a high level of mutual fund ownership subsequently have fewer incidents of financial fraud (Aggarwal *et al.*, 2015), and that institutional shareholders, especially mutual funds, instil better corporate governance in their portfolio companies, which, as a result, leads to better firm performance (Yuan *et al.*, 2008). With respect to executive compensation, Bertrand and Mullainathan (2001) find that the presence of large shareholders ameliorates CEO pay increases and limits CEO pay-for-luck. Hartzell and Starks (2013) demonstrate that institutional shareholding has a positive effect on the executive pay-performance relationship, and is negatively associated with level of compensation. Garner and Kim (2010) report significant cap-performance (lagged performance) sensitivity in firms with a high level of foreign shares (family shares). Taken together, strong evidence leads to the development of the following hypothesis:

H3. Institutional shareholding alleviates the negative effect of an executive compensation cap on firm performance in SOEs.

3. Data, sample selection and research design

3.1 Data and sample

Executive compensation, employee salaries information, all financials and corporate governance data are obtained from the CSMAR database [9]. To proxy for restriction on SOE executive compensation, we construct three measures. Because the regulatory restriction on executive pay applies only to listed SOEs, and not to listed non-SOEs, our first measure of restriction (RESR1) constructs a pay gap benchmark using non-SOE observations. Specifically, we first calculate the average pay gap of non-SOEs in each industry-year, and then compare an SOE's pay gap in the same industry-year with the non-SOE industry-year average. A smaller pay gap for an SOE, compared with the non-SOE industry-year average, indicates a restricted pay gap in the SOE. RESR1 is calculated using the following formula for each SOE firm-year observation:

$$RESR1_{i,j,t} = AveragePayGap_Non_SOE_{j,t} - PayGap_{i,j,t}$$

where *Average Pay Gap Non-SOE_{j,t}* is the average pay gap calculated for industry *j* in year *t* using Non-SOEs. *PayGap* is the ratio of the average compensation of top three executives to the average salary of normal employees, and it is calculated for SOE and non-SOE firm-year observations, respectively.

The second and third measures of regulatory restriction on executive compensation, *RESR2* and *REST3*, are relative constructs where we compare the top three executives' average compensation with the average pay of employees or average compensation of other executives. Specifically, *RESR2* is the ratio of average compensation of the top three executives to average salary of employees in an SOE; and *RESR3* is the difference between the average compensation of the top three executives and the average cash compensation of all executives, deflated by total assets. The values of both *RESR2* and *RESR3* are then multiplied by -1 so that the higher *RESR2* and *RESR3* indicate a greater restriction to which a firm's executive compensation is subject. It is noteworthy that *RESR2* and *REST3* differ from the level of executive compensation, in that they measure directly the pay gap between top executives and either normal employees, or lower ranked executives whose compensation is not subject to regulatory restriction. Therefore, they are intuitive, and serve as straightforward indicators of the restrictive effect [10].

Executive compensation is the sum of basic salary, bonuses, stipends and other benefits in accord with prior compensation studies using Chinese data (Chen *et al.*, 2010, 2011; Firth *et al.*, 2006, 2007). The reasons for our use of cash compensation are twofold. First, regulatory restriction on executive compensation has an exclusive interest in cash compensation. The 2004 and 2009 guidelines had no mentioning of share-based incentives. Although the 2014 Executive Compensation Reform Plan mentioned the long-term incentive plans the first time, it pointed out that a detailed guideline on this issue was to be provided in the future. Second, as aforementioned, share-based incentive is not commonly adopted by Chinese firms, especially by SOEs, due to the lack of use of share-based incentives.

Internal control strength is measured using an internal control index developed by Shenzhen Dibo Internal Control Database, which evaluates the company's overall internal control efficiency at the aggregate level, rather than its internal control of financial reporting only. The index is a construction of firm-specific internal control strength scores in relation to five aspects of internal control including internal control strategies, operation efficiency, reporting quality, legal compliance, and asset safety. The Dibo internal control data set is well used in academic research on the internal control issues of Chinese listed firms (e.g. Shu *et al.*, 2015) [11]. As our *H2* is conjectured theoretically based on the general monitoring function of effective internal control, we believe that an aggregate internal control score constructed by the Dibo database is appropriate for the research question.

Table I, Panel A, shows our sample selection procedure. Our sample consists of publically traded SOEs listed on the Shanghai and Shenzhen stock exchanges from 2007 to 2014. The sample period starts from 2007 in order to avoid the impact of change in new accounting standards, since Chinese listed firms started using a new set of accounting standards that have converged largely with international accounting standards from 1st January, 2007[12]. We start with 16,712 firm-year observations from SSE and SZSE over our sample period. Then, 170 observations of B- and H-share listed firms and 283 observations of financial companies are excluded[13]. Due to unavailable data for measuring control variables, we further delete 2,278 firm-year observations. Among the 13,981 observations left, 7,028 (6,953) observations belong to SOEs (non-SOEs). The executive compensation restriction is imposed on SOEs only, so Non-SOE listed firms are excluded from the sample. As a result, the sample used to test our hypotheses contains only A-share listed non-financial SOE firms with 7,028 firm-year observations.

Panel B of Table I shows the industry constitution of sample observations, and that the largest industry in our sample is machinery, equipment and instruments (C7), accounting for 16.26 percent of sample observations. The next two largest industries are petroleum, chemical, rubber, plastic (C4), and metal and nonmetal (C6), contributing 10.46 and 9.31 percent of total observations, respectively. This distribution is similar to other Chinese studies because of the predominance of certain industries in the Chinese economy. Panel C of Table I reports descriptive statistics. *RESR1* has a mean value of 1.65 and a median value of 2.36. There are a few SOE observations in our data set showing a lower ratio of pay gap than the non-SOEs' industry average, and thus their scores of *RESR1* take negative values, suggesting the absence of restriction due to incompliance[14]. In addition, the top three executives are paid 6.5 times more than their employees (*Raw_RESR2*) and the absolute difference in salaries between the top three executives and lower-ranked executives (*Raw_REST3*) is CNY 251,203, equivalent to USD 37,831. *Raw_REST2* and *Raw_REST3* statistics suggest that the pay gap between top executives and normal employees in SOEs is much lower than it observed in some countries. For instance, the ratio of CEO pay to average employee pay is around 400 in the USA, 22 in the UK, 20 in Canada and 11 in Japan (Hindery, 2008). Internal control (*IC*) shows a mean of 6.51 which is comparable to other studies using the Dibo index (e.g. Shu *et al.*, 2015). Institutional shareholding (*INST*) accounts for roughly 7.5 percent of listed SOEs' shares, whereas the top shareholders have sizable shareholdings with 39 percent of shares. Since we use a sample of SOEs exclusively, considerable ownership is in the hands of central or local governments.

3.2 Models for testing hypotheses

We construct the following model to examine whether the association between executive compensation restriction and firm performance is negative, as conjectured in *H1*:

$$ROA_{i,t} = \beta_0 + \beta_1 RESR_{i,t} + \beta_2 SHARE1_{i,t} + \beta_3 MANS_{i,t} + \beta_4 DUAL_{i,t} + \beta_5 BSIZE_{i,t} \\ + \beta_6 INDIR_{i,t} + \beta_7 AGE_{i,t} + \beta_8 SIZE_{i,t} + \beta_9 LEV_{i,t} + \beta_{10} GRWTH_{i,t} + \varepsilon_{i,t} \quad (1)$$

where *ROA* represents firm performance, measured as the return on assets, calculated as the ratio of net profit to total assets. We measure *RESR* using three alternatives. *RESR1* is the deviation of pay gap of an SOE from the industry-year average pay gap of non-SOEs; *RESR2* is the ratio of average cash compensation of the top three executives to the average salary of employees multiplied by -1 ; *RESR3* the natural logarithm is the difference between the average cash compensation of the top three executives and the average cash compensation of all executives multiplied by -1 . A set of variables is controlled in the regression. *SHARE1* is the percentage of top shareholding, to control for the effect of top shareholders on performance. Managerial power affects executive compensation and firm

Panel A: sample selection procedure

Selection process	Observations
Initial observations for listed firm on SSE and SZSE over the period 2007-2014	16,712
Less: B-share observations	(170)
Less: financial companies' observations	(283)
Less: observations without sufficient data for variables measurement	(2,278)
Less: Non-SOE observations	(6,953)
A-share SOE firm-year observations	7,028

Panel B: industry distribution

Industry	Observations	Percentage
A: farming, forestry, animal husbandry and fishery	158	2.25
B: mining and quarrying	244	3.47
C0: food and beverage	280	3.98
C1: textile, clothing, fur	184	2.62
C2: timber, furniture industry	3	0.04
C3: papermaking, printing	106	1.51
C4: petroleum, chemical, rubber, plastic	735	10.46
C5: electronic	253	3.60
C6: metal, non-metal	654	9.31
C7: machinery, equipment, instrument	1,143	16.26
C8: medicine, biologic products	357	5.08
C9: other manufacturing	63	0.90
D: production and supply of power, gas and water	472	6.72
E: construction	166	2.36
F: transportation, storage	449	6.39
G: information technology industry	379	5.39
H: wholesale and retail trades	465	6.62
J: real estate	330	4.70
K: social services	256	3.64
L: transmitting, culture industry	94	1.34
M: integrated	237	3.37
A-share SOEs used for analysis over the period of 2007-2014	7,028	1

Panel C: descriptive statistics

Variable	Mean	MEDIAN	SD	Min	Max
ROA	0.033	0.0301	0.0556	-0.2437	0.2236
RESR1	1.6500	2.3553	3.8694	-5.6235	84.2007
Raw_RESR2	6.5122	4.7671	5.8617	1.4245	36.1188
Raw_RESR3	251,203.4	1,88790.6	2,31705.3	1,6203.26	1,397,702
IC	6.5114	6.5332	0.1839	2.1939	6.9009
INST	0.0746	0.0338	0.1144	0	0.5656
QFII	0.1125	0	0.3161	0	1
DUAL	0.095	0	0.2933	0	1
SHARE1	0.3919	0.3892	0.1546	0.0899	0.75
MANS	0.0016	0	0.0115	0	0.2998
BSIZE	2.2278	2.1972	0.1935	1.6094	2.7081
INDIR	0.3647	0.3333	0.0513	0.3	0.5714
AGE	2.6861	2.7081	0.3283	1.3863	3.2958
SIZE	22.2506	22.0442	1.318	19.2726	25.7137
LEV	0.5289	0.5401	0.2035	0.0425	1.357
GRWTH	0.465	0.0967	1.6252	-0.7572	13.2685

Notes: Variable definitions: *ROA* represents firm performance, measured as the return on assets calculated as the ratio of net profit to total assets; *RESR1* is equal to the industry-year average pay gap for non-SOEs minus an SOE's pay gap. Pay gap is the ratio of the average compensation of the top three executives to the average salary of normal employees; *RESR2* is the ratio of the average cash compensation of the top three executives to the average salary of employees multiplied by -1 ; *Raw_RESR3* is the difference between the average cash compensation of the top three executives and the average cash compensation of all executives. The natural logarithm of the raw value of *RESR3* multiplied by -1 , is used in correlation and regression analyses; *IC* stands for internal control strength that is measured using the Dibo internal control index; *INST* is institutional holding measured as the percentage of shares held by all institutional shareholders including mutual funds, insurance companies, pension funds, trust, QFII, and other investment companies; *QFII* is dummy variable taking value of 1 if there is the presence of qualified foreign institutional investors (QFII) among a firm's shareholders, and zero otherwise; *DUAL* represents CEO-chairman duality, taking a value of 1 if both positions are occupied by the same person, and zero otherwise; *SHARE1* is the percentage of top shareholding; *MANS* stands for managerial ownership measured as the cumulative percentage of executive shareholding; *BFSIZE* is the natural logarithm of the number of directors on the board; *INDIR* is the percentage of independent directors on the board; *AGE* is the natural logarithm of one plus firm age; *SIZE* represents firm size, and is measured as the natural logarithm of total assets; *LEV* is leverage, measured as the total long-term debt divided by total assets; *GRWTH* is sales growth, calculated as the percentage change in sales from year $t-1$ to year t ; All variables are winsorized at the bottom and top 1 percent points of their empirical distributions

Table I.
Sample selection
procedure and
descriptive statistics

performance and, thus, it is controlled using two measures including managerial ownership (*MANS*) (following Chen *et al.*, 2011) and chairman/CEO duality (*DUAL*). *BFSIZE* is the natural logarithm of the number of directors on the board; *INDIR* is the percentage of independent directors on the board, because Conyon and He (2011) find more independent directors on the board have a higher pay-for-performance sensitivity. *AGE* is the natural logarithm of 1 plus firm age; *SIZE* represents firm size that is measured as the natural logarithm of total assets; *LEV* is leverage measured as the total long-term debt divided by total assets; *GRWTH* is sales growth rate. A negative β_1 will be observed if *H1* is supported.

To test *H2*, we extend Equation (1) to examine the moderating effect of internal control (*IC*) on the association between compensation restriction (*RESR*) and firm performance (*ROA*) by adding internal control (*IC*) and its interactive term with compensation restriction (*RESR* × *IC*):

$$\begin{aligned} ROA_{i,t} = & \beta_0 + \beta_1 RESR_{i,t} + \beta_2 IC_{i,t} + \beta_3 RESR_{i,t} \times IC_{i,t} + \beta_4 SHARE1_{i,t} \\ & + \beta_5 MANS_{i,t} + \beta_6 DUAL_{i,t} + \beta_7 BFSIZE_{i,t} + \beta_8 INDIR_{i,t} \\ & + \beta_9 AGE_{i,t} + \beta_{10} SIZE_{i,t} + \beta_{11} LEV_{i,t} + \beta_{12} GRWTH_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (2)$$

where *IC* stands for internal control strength that is measured using the Dibo internal control index. All other variables are the same as those defined in Equation (1). If *H2* is supported, we will observe a positive coefficient on the interactive term (*RESR* × *IC*).

Then, the above equation is revised to replace *IC* with institutional shareholding (*INST*) and its interaction with compensation restriction, in order to test *H3*'s prediction on the monitoring effect of institutional shareholding. *INST* is measured as the percentage of shares held by all institutional shareholders:

$$\begin{aligned} ROA_{i,t} = & \beta_0 + \beta_1 RESR_{i,t} + \beta_2 INST_{i,t} + \beta_3 RESR_{i,t} \times INST_{i,t} + \beta_4 SHARE1_{i,t} \\ & + \beta_5 MANS_{i,t} + \beta_6 DUAL_{i,t} + \beta_7 BFSIZE_{i,t} + \beta_8 INDIR_{i,t} + \beta_9 AGE_{i,t} \\ & + \beta_{10} SIZE_{i,t} + \beta_{11} LEV_{i,t} + \beta_{12} GRWTH_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (3)$$

H3 predicts a positive effect of institutional shareholding on the compensation restriction-performance relationship. Thus, a positive β_3 will support this conjecture. An OLS regression estimation is applied to pooled panel data. Our regression analyses are conducted by controlling for year- and industry-fixed effect to capture any possible effect of temporal events and industry-specific characteristics that cannot be captured by the control variables. To control for potential heteroscedasticity, the standard errors are clustered by firm, providing more robust standard error estimations and reliable *t*-statistics (Petersen, 2009). This is important because, in the presence of clustered errors, OLS estimates are still unbiased but standard errors may be incorrect and lead to spurious conclusions in the panel data setting.

4. Main results

This section presents a correlation matrix, and the main analysis results using Equations (1)-(3). The results of the correlation analyses are presented in Panel A of Table II. The correlation analyses show a negative coefficient between firm performance and compensation restriction measured in three ways (*RESR1*, *RESR2* and *RESR3*). Pearson correlation coefficients are statistically significant at better than the 0.01 level of significance (shown in bold and italics). Internal control (*IC*) and firm performance (*ROA*) are positively correlated, as is consistent with intuition and the prior internal control literature. In addition, institutional ownership (*INST*) and the presence of qualified foreign institutional shareholding (*QFII*) are also significantly and positively correlated with *ROA*,

Panel A: Pearson correlation matrix

	ROA	RESR1	RESR2	RESR3	IC	INST	QFII	DUAL	SHARE1	MANS	BFSIZE	INDIR	AGE	SIZE	LEV	GRWTH
ROA	1															
RESR1	-0.147	1														
RESR2	-0.176	0.756	1													
RESR3	-0.264	0.545	0.588	1												
IC	0.48	-0.190	-0.144	-0.253	1											
INST	0.142	-0.088	-0.073	-0.089	0.127	1										
QFII	0.103	-0.087	-0.053	-0.064	0.033	0.137	1									
DUAL	0.029	-0.039	-0.067	-0.054	0.168	-0.024	-0.034	1								
SHARE1	0.103	0.047	0.065	-0.054	0.168	0.033	0.068	-0.067	1							
MANS	0.103	0.013	-0.046	-0.058	0.012	-0.063	-0.046	0.433	-0.054	1						
BFSIZE	0.019	-0.080	-0.065	-0.138	0.119	0.081	0.067	-0.167	0.018	-0.145	1					
INDIR	-0.015	0.002	0.001	-0.017	0.013	-0.051	0	0.09	0.049	0.1	-0.415	1				
AGE	-0.098	-0.036	0.013	-0.071	-0.099	0.018	0.013	-0.094	-0.16	-0.25	0.015	-0.036	1			
SIZE	0.059	-0.243	-0.175	-0.372	0.388	0.139	0.161	-0.168	0.291	-0.199	0.276	0.033	0.119	1		
LEV	-0.378	-0.040	0.035	0.039	-0.137	0.002	0.001	-0.149	0.025	-0.287	0.135	-0.027	0.231	0.353	1	
GRWTH	0.012	0.031	0.075	0.012	-0.023	-0.025	-0.035	-0.005	0.026	-0.035	-0.059	0.025	0.089	-0.005	0.085	1

Panel B: univariate tests to compare top three executives' compensation between SOEs and non-SOEs

Year	SOEs		NON-SOEs		Difference of median	Wilcoxon test
	Median of (top three executives' compensation)/total assets)	Obs.	Median of (Top three executives' compensation)/total assets)	Obs.		
2003	0.000788	856	0.0001088	285	-0.00003	-5.12***
2004	0.000877	890	0.0001295	379	-0.0000418	-7.45***
2005	0.000886	900	0.0001356	396	-0.000047	-7.48***
2006	0.000888	878	0.0001444	475	-0.0000556	-8.49***
2007	0.00096	894	0.0001627	540	-0.0000667	-9.40***
2008	0.001036	899	0.0001882	591	-0.0000846	-11.58***
2009	0.000981	933	0.0002116	726	-0.0001135	-14.28***
2010	0.000992	967	0.0002124	1,038	-0.0001132	-16.31***
2011	0.001025	975	0.0002242	1,281	-0.0001217	-17.24***
2012	0.000947	987	0.000232	1,401	-0.0001373	-18.91***
2013	0.000906	976	0.0002145	1,438	-0.0001239	-19.06***
2014	0.000844	964	0.0002038	1,524	-0.0001194	-19.11***

Notes: Bold-faced and italicized correlations are significant at $p < 0.001$. Italicized correlations (not bold-faced) represents statistical significance at $p < 0.05$ level. Variable definitions are in Table I. ***Represents statistical significance at the 1 percent level (one-tail)

Table II. Correlation matrix and comparison of top three executives' compensation between SOEs and Non-SOEs

suggesting their value-enhancing function. In addition, large firms (*SIZE*) tend to perform better (coefficient 0.059), but firms highly leveraged (*LEV*) have suboptimal performance (coefficient -0.378).

In Panel B of Table II, we present the univariate tests designed to compare the top three executives' compensation between SOEs and non-SOEs over time. As the first regulation for compensation restriction was issued in 2004, we start the analysis from 2003[15]. The table shows that the median of the top three executives' pay in SOEs, deflated by total assets, is always smaller than it is in non-SOEs, but the differences in the median level of the top three executives' pay becomes greater over the years. The Wilcoxon T test is conducted to compare the differences, and shows a *t*-statistic of 5.12 in 2003, gradually increasing to a *t*-statistic of 19.11 in 2014. Therefore, the results suggest that SOE top executives are paid relatively much less than non-SOE top executives in recent years compared with earlier years. This time-series trend implies a regulatory effect, constraining SOE executives pay but not that of non-SOE executives.

Table III reports the results of regression analyses using Equation (1). The negative coefficient on *RESR1-3* strongly supports the prediction that CEO compensation restriction is associated with firm performance (*ROA*) negatively (coefficients -15.6058, -0.0087 and -0.0156, all significant at $\rho < 0.001$). Therefore, *H1* is strongly supported. Top shareholding (*SHARE1*) is associated with firm performance positively, suggesting that state ownership has a positive effect on firm performance, consistent with prior Chinese studies (e.g. Le and Chizema, 2011; Yu, 2013; Yuan *et al.*, 2008). This may be due to the benefits of government subsidies and political connections (Yu, 2013). The findings on control variables show that managerial shareholding (*MANS*), firm size (*SIZE*), and growth (*GRWTH*) are associated with performance positively, whereas leverage (*LEV*) has a negative effect on performance. However, chairman/CEO duality and board independence (*INDIR*) do not play a role in improving firm performance. Three specifications with different measures of *RESR* produce highly consistent results.

The regression analyses using Equations (2) and (3) are presented in Table IV. *H2* (*H3*) predicts a positive moderating effect of internal control - *IC* (institutional ownership - *INST*) on the compensation restriction-performance relationship. As expected, the sign on the interactive terms *RESR* × *IC* (*RESR* × *INST*) is positive and significant. As predicted,

Dependent variables: <i>ROA</i>	Coefficient (<i>t</i> -stat.)	Coefficient (<i>t</i> -stat.)	Coefficient (<i>t</i> -stat.)
<i>Constant</i>	-0.1791*** (-12.07)	-0.1380*** (-5.62)	-0.2255*** (-9.06)
<i>RESR1</i>	-15.6058*** (-5.02)		
<i>RESR2</i>		-0.0087*** (-7.21)	
<i>RESR3</i>			-0.0156*** (-12.56)
<i>SHARE1</i>	0.0215*** (5.18)	0.0298*** (4.12)	0.0271*** (3.92)
<i>MANS</i>	0.3397*** (6.64)	0.3232*** (2.66)	0.2686** (2.33)
<i>DUAL</i>	0.0019 (1.00)	0.0002 (0.09)	-0.0011 (-0.44)
<i>BSIZE</i>	0.0011 (0.32)	0.0010 (0.20)	-0.0055 (-1.15)
<i>INDIR</i>	-0.0425*** (-3.56)	-0.0399** (-2.27)	-0.046*** (-2.66)
<i>AGE</i>	0.0070*** (3.31)	0.0068** (1.97)	0.0042 (1.23)
<i>SZIE</i>	0.0119*** (20.35)	0.0092*** (9.20)	0.0066*** (6.80)
<i>LEV</i>	-0.1324*** (-42.38)	-0.1301*** (-21.11)	-0.1202*** (-19.96)
<i>GRWTH</i>	0.0013*** (3.36)	0.0014*** (3.25)	0.0013*** (3.21)
Industry and year factors	Included	Included	Included
Adjusted <i>R</i> ²	0.2708	0.2852	0.3105
Observations	7,028	7,028	7,028

Notes: Variable definitions are in Table I. *, **, ***Significant at 10, 5, and 1 percent levels, respectively (two-tailed test)

Table III.
Regression result on the effect of compensation restriction on firm performance - Equation (1)

Dependent variables: ROA	Equation (2)		Equation (3)	
	Coefficient (t-stat.)	Coefficient (t-stat.)	Coefficient (t-stat.)	Coefficient (t-stat.)
<i>Constant</i>	-1.0049*** (-38.46)	-1.2151*** (-12.66)	-0.1110*** (-7.70)	-0.1302*** (-5.35)
<i>RESR1</i>	-0.1716*** (-7.87)	-0.1236*** (-2.23)	-0.0081*** (-11.04)	-0.0103*** (-7.48)
<i>RESR2</i>				
<i>RESR3</i>				
<i>IC</i>	0.1691*** (39.25)	0.1997*** (13.48)	0.0459*** (9.19)	0.0857*** (4.11)
<i>RESR1 × IC</i>	0.0253*** (7.69)	0.0180** (2.13)	0.0199*** (4.61)	0.2801** (2.06)
<i>RESR2 × IC</i>				
<i>RESR3 × IC</i>				
<i>INST</i>				
<i>RESR1 × INST</i>				
<i>RESR2 × INST</i>				
<i>RESR3 × INST</i>				
<i>SHARE1</i>	0.0230*** (6.09)	0.0251*** (3.6)	0.0294*** (7.04)	0.0293*** (4.09)
<i>MAN5</i>	0.2924*** (6.41)	0.3003*** (2.96)	0.3176*** (6.31)	0.3154*** (2.7)
<i>DUAL</i>	0.0004 (0.21)	0.0005 (0.22)	-0.0001 (-0.05)	0.0002 (0.07)
<i>B/SIZE</i>	0.0019 (0.65)	0.0012 (0.3)	0.0015 (0.47)	0.0003 (0.06)
<i>INDIR</i>	-0.0260** (-2.43)	-0.0297* (-1.88)	-0.0279** (-2.36)	-0.0330* (-1.90)
<i>AGE</i>	0.0068*** (3.60)	0.0069** (2.35)	0.0058*** (2.78)	0.0066* (1.93)
<i>SIZE</i>	-0.0020*** (-3.52)	-0.0018** (-1.97)	0.0082*** (14.57)	0.0085*** (8.61)
<i>LEV</i>	-0.0927*** (-31.52)	-0.0932*** (-17.20)	-0.1277*** (-41.31)	-0.1281*** (-20.86)
<i>GRWTH</i>	0.0011*** (3.12)	0.0011*** (2.83)	0.0012*** (3.24)	0.0013*** (3.05)
Industry and year factors	Included	Included	Included	Included
Adjusted R ²	0.4423	0.4191	0.3271	0.2948
Observations	7,028	7,028	7,028	7,028

Notes: Variable definitions are in Table I. *, **, ***, Significant at 10, 5, and 1 percent levels, respectively (two-tailed test)

Table IV. Regression results on the moderating effect of internal control and institutional shareholding

the coefficients on both $RESR \times IC$ and $RESR \times INST$ are significantly positive for all specifications with different compensation restriction measures. After adding the interactive term in the regressions, the coefficients on $RESR$ are still significantly negative and consistent with the findings reported in Table III, where all compensation restriction is associated with firm performance negatively. In addition, both internal control (IC) and institutional ownership ($INST$) are value-increasing, as both coefficients on IC and $INST$ are significantly positive and consistent with prior literature on internal control and institutional shareholding. Most of the control variables show results similar to those reported in Table III, except for board independence ($INDIR$) which shows a marginal negative effect on firm performance. Noteworthy, is that the general explanatory power of the models has been improved after IC ($INST$) is added into the models in Table IV, suggesting the importance of a high level of effective monitoring on the performance implications of compensation restriction.

5. Additional analysis

In this section, several additional analyses are conducted in order to provide more insight into the research questions concerned.

First, we conduct an additional test to compare the effect of $RESR$ on firm performance between central- and local-government controlled SOEs. This analysis is motivated by the differences in corporate governance, financial reporting quality, and audit fees charged for central government-controlled SOEs relative to local government-controlled SOEs (e.g. Liu and Subramaniam, 2013; Chen *et al.*, 2009). SASAC issued 'Interim regulations on the evaluation of top executive operating performance' in SOEs affiliated to the central government in 2003, which clearly stated that top executive pay should be aligned to total profits and sales, and described how to evaluate executive performance. Thus, we would expect central government SOE performance to be more sensitive to pay restriction than local government SOE performance. As expected, this additional test in Table V shows that the negative effect of pay restriction on firm performance is more prominent for central government SOEs than for local government SOEs. The values of χ^2 for the Wald test on equality of coefficients are 5.49 and 6.65 for the $RESR1$ and $RESR3$ analyses, respectively, thus, the null hypothesis of equality is rejected at better than the 1 percent level. However, the differential effect of $RESR2$ on performance is not statistically significant, although the sign is as expected. Hence, the results indicate that the restriction on executives in central government SOEs is more damaging to a firm's performance than it is in local government SOEs.

An additional test we also conduct, is to examine whether there is a structural change in the effect of the variable of interest, $RESR$, on firm performance because of the staged amendments and additions to the compensation restriction regulations (as elaborated on in the Appendix). Given the enactment of the 2009 Guideline, we choose 2009 as the watershed year to partition the sample into two sub-sample periods, 2007-2009 and 2010-2014, and then test whether the independent variable, $RESR$, has a different impact on performance for these two sub-samples using the Chow test. Un-tabulated results show that the negative effect of compensation restriction on firm performance is not significantly different between these two sub-sample periods. Therefore, we conclude that there is no evidence of a structural break during our sample period. To check whether the results are sensitive to GFC, we re-run regressions on a trimmed sample excluding observations over the period of 2008-2009. Our results are qualitatively unchanged.

Furthermore, we test whether the foreign financial institutions monitoring effect differs from that of the domestic financial institutions, although we have only investigated the overall effect of institutional shareholding as hypothesized in $H3$. There is a rapid increase in institutional shareholding with the introduction of the QFII[16] and qualified domestic institutional investors (QDII[17]) programs. Recent research finds that a greater level of foreign holding in Chinese firms leads to a superior firm-specific information environment,

Dependent variables: ROA	Local SOEs	Central SOEs	Local SOEs	Central SOEs	Local SOEs	Central SOEs
<i>Constant</i>	-0.1751*** [-9.82]	-0.0449 [-1.64]	-0.2019*** [-6.68]	-0.0409 [-1.20]	-0.2698*** [-8.83]	-0.1623*** [-4.45]
<i>RESR1</i>	-0.0062*** [-9.74]	-0.0073*** [-6.58]	-0.0068*** [-5.19]	-0.0081*** [-3.28]		
<i>RESR2</i>					-0.0139*** [-9.40]	-0.0187*** [-8.41]
<i>RESR3</i>	0.0349*** [7.00]	0.0155* [1.93]	0.0376*** [4.37]	0.0150 [1.25]	0.0336*** [4.06]	0.0136 [1.17]
<i>SHARE1</i>	0.5875*** [7.59]	0.1276* [1.82]	0.5322*** [5.75]	0.1457 [1.12]	0.4786*** [4.63]	0.0842 [0.75]
<i>MANS</i>	-0.0016 [-0.71]	0.0030 [0.72]	-0.0022 [-0.76]	0.0046 [0.84]	-0.0032 [-1.12]	0.0017 [0.31]
<i>DUAL</i>	0.0046 [1.18]	-0.0027 [-0.44]	0.0057 [0.95]	-0.0065 [-0.76]	0.0011 [0.18]	-0.0175** [-2.12]
<i>BSIZE</i>	-0.0237* [-1.66]	-0.0560** [-2.46]	-0.0242 [-1.14]	-0.0828*** [-2.79]	-0.0306 [-1.47]	-0.0835*** [-2.80]
<i>INDIR</i>	0.0086*** [3.23]	-0.0028 [-0.74]	0.0093** [2.22]	-0.0045 [-0.79]	0.0068 [1.62]	-0.0063 [-1.14]
<i>AGE</i>	0.0108*** [15.13]	0.0070*** [6.97]	0.0115*** [9.39]	0.0073*** [4.52]	0.0087*** [7.22]	0.0046*** [2.89]
<i>SIZE</i>	-0.1320*** [-34.88]	-0.1253*** [-21.89]	-0.1306*** [-18.03]	-0.1237*** [-12.43]	-0.1224*** [-17.14]	-0.1148*** [-12.08]
<i>LEV</i>	0.0012*** [2.81]	0.0021*** [2.58]	0.0014*** [3.14]	0.0016 [1.46]	0.0014*** [3.27]	0.0011 [1.09]
<i>GRWTH</i>	Included	Included	Included	Included	Included	Included
Industry and year factors	$\chi^2 = 5.49$ ***		$\chi^2 = 1.46$		$\chi^2 = 6.54$ ***	
Wald test on equality of coefficient on RESR	0.3104	0.2493	0.3198	0.2664	0.3412	0.2991
Adjusted R ²	4,685	2,343	4,685	2,343	4,685	2,343
Observations						

Notes: Variable definitions are in Table I. *, **, *** Represent statistical significance at the 10, 5, and 1 percent levels, respectively (two-tailed test)

Table V. Differential effect of compensation restriction between central and local government controlled SOEs

as proxied by low stock price synchronicity (Gul *et al.*, 2010). Following this line of inquiry, we are interested in whether foreign institutional investors carry out better monitoring responsibilities to improve firm performance when there is a risk of managerial slack and malfunction resulting from compensation restriction.

To this end, we extend our Equation (3) analysis by partitioning sample observations into two sub-samples, based on whether there is the presence of QFII among a firm's institutional shareholders. QFII is a dummy variable, taking a value of 1 if there is the presence of QFII among a firm's shareholders, and zero otherwise. Then, Equation (3) is estimated separately for two sub-samples to compare the coefficients of the interactive term $RESR \times INST$. Based on prior literature, we expect a larger monitoring effect of QFII than QDII. As a result of this reasoning, the positive coefficient for $RESR \times INST$ from the QFII subsample group analysis is expected to be statistically greater than for $RESR \times INST$ from the QDII subsample group analysis. The results presented in Table VI reveal that the positive coefficient for $RESR \times INST$ under the QFII sub-sample (QFII = 1) is statistically larger than that for the non-QFII subsample only when using $RESR3$. A Wald χ^2 test on equality of coefficients on the two-way interactions $RESR \times INST$ under two subsamples is rejected at the 0.10 significance level for the $RESR3$ analysis. However, the analyses using $RESR1$ and $RESR2$ return insignificant differences between the QFII = 1 and QFII = 0 subsamples. Therefore, evidence for a differential modifying effect of foreign institutional investors on the pay restriction and performance association is inconclusive.

Lastly, as a robustness check, we re-estimate all equations by regressing ROA in year t on the compensation restriction measures in year $t-1$. This is to address the concern that managerial slack and demotivation may affect firm performance in future periods adversely. Un-tabulated results show findings highly consistent with those reported earlier. Two explanations are made for this high consistency. First, executive compensation is sticky, and there is not much variation from year to year. So, last year's compensation is highly correlated with this year's compensation. Conyon and He (2012) also find CEO pay to be dynamic in China, in that this year's CEO pay is related to the CEO's pay of the previous year positively. Second, this finding provides further evidence on the detrimental effect of compensation restriction on future firm performance.

6. Implications and conclusion

There is ongoing debate on regulating executive pay, especially during turbulent economic times. Although governments in developed markets have shunned the more radical proposals of compensation cuts and have left the setting of executive pay to either market mechanisms or shareholders' say-on-pay schemes, the Chinese government has issued a set of regulations to rein in the executive compensation in SOEs, by setting a maximum level of executive compensation with reference to the average salary of employees. Based on the emerging literature on pay restrictions and the heated debate whether restrictions would have unintended consequences, we argue that legalizing executive compensation levels distorts managerial incentives and invites unintended consequences. The results here provide strong supportive evidence for our argument, showing that restrictions on executive compensation are associated negatively with a firm's accounting performance. The analyses also demonstrate that this negative effect of compensation restriction on firm performance is ameliorated when firms adopt effective internal controls, and have a high level of institutional shareholding.

Our paper makes an important contribution to the compensation literature. There is scant research on the efficacy of regulatory restriction on corporate executive pay, with the one exception of Garner and Kim (2010). However, differently from Garner and Kim (2010), who study the efficacy of the shareholders' say-on-pay mechanism, our paper focuses on a pay restriction imposed by regulations. Thus, our paper is the first to examine the efficacy

	QFII = 1	QFII = 0	QFII = 1	QFII = 0	QFII = 1	QFII = 0
<i>Constant</i>	0.0569 (1.29)	-0.1170*** (-7.59)	0.0238 (0.56)	-0.1351*** (-8.91)	-0.1494*** (-3.10)	-0.2273*** (-14.26)
<i>RESR1</i>	-0.0079*** (-4.16)	-0.0082*** (-10.14)				
<i>RESR2</i>						
<i>RESR3</i>						
<i>INST</i>	0.0250* (1.94)	0.0461*** (8.51)	0.1056*** (3.55)	0.0811*** (6.40)	-0.0239*** (-8.13)	-0.0156*** (-16.40)
<i>RESR1×INST</i>	0.0207* (1.65)	0.0193*** (4.21)			0.6783*** (3.35)	0.2203*** (2.82)
<i>RESR2×INST</i>						
<i>RESR3×INST</i>						
<i>SHARE1</i>			0.0501*** (2.99)	0.0216*** (3.14)		
<i>MANS</i>	0.0417*** (3.32)	0.0271*** (6.13)	0.04666*** (3.75)	0.0267*** (6.07)	0.0530*** (3.25)	0.0146*** (2.29)
<i>DUAL</i>	0.2946*** (2.06)	0.3048*** (5.68)	0.2868** (2.03)	0.3039*** (5.65)	0.0366*** (3.11)	0.0244*** (5.69)
<i>BSIZE</i>	-0.0100* (-1.74)	0.0012 (0.57)	-0.0073 (-1.29)	0.0012 (0.58)	0.1810 (1.30)	0.2552*** (4.81)
<i>INDIR</i>	-0.0013 (-0.14)	0.0016 (0.47)	-0.0003 (-0.03)	0.0003 (0.08)	-0.0086 (-1.55)	-0.0001 (-0.03)
<i>AGE</i>	-0.0585* (-1.66)	-0.0237* (-1.89)	-0.0689** (-1.97)	-0.0283** (-2.26)	-0.0093 (-1.04)	-0.0061* (-1.79)
<i>SIZE</i>	0.0055 (0.91)	0.0051** (2.28)	0.0089 (1.50)	0.0055** (2.48)	-0.0564* (-1.65)	-0.0359*** (-2.92)
<i>LEV</i>	0.0028* (1.71)	0.0084*** (13.82)	0.0025 (1.61)	0.0087*** (14.53)	0.0052 (0.90)	0.0031 (1.40)
<i>GRWTH</i>	-0.1629*** (-16.42)	-0.1229*** (-37.63)	-0.1595*** (-16.20)	-0.1238*** (-37.85)	0.0003 (0.21)	0.0064*** (10.45)
Industry and Year Factors	-0.0001 (-0.07)	0.0013*** (3.37)	-0.0003 (-0.22)	0.0014*** (3.66)	-0.0002 (-0.11)	0.0014*** (3.58)
Wald test on equality of coefficient on the two-way interaction	Included	Included	Included	Included	Included	Included
Adjusted R ²	0.3829	0.3113	0.3537	0.2790	0.3780	0.3023
Observations	791	6,237	791	6,237	791	6,237
		$\chi^2 = 2.10$		$\chi^2 = 2.15$		$\chi^2 = 3.28^*$

Notes: Variable definitions are in Table I. *, **, ***Significant at the 10, 5, and 1 percent levels, respectively (two-tailed test)

Table VI.
Differential effect of foreign vs domestic institutional shareholding

of regulatory intervention in setting executive compensation. Obvious policy implications of the findings are twofold. First, rather than merely restricting pay, policy makers should strive to optimize pay incentives, because pay limits distort executive incentives and invite unintended consequences. In addition, our findings also indicate that sound corporate governance, such as effective internal control and active institutional shareholder monitoring, are more beneficial than legalizing executive pay levels.

Notes

1. The pertinent regulations are complex with several amendments or additions in recent years. A summary of pertinent Rules and Guidelines is provided in the Appendix and a brief introduction is provided in Section 2.
2. Regulations require shareholders to decide the maximum amount of total compensation to be received by executives, directors, and auditors. Normally votes are cast by shareholders at annual general meetings.
3. State-owned enterprises' (SOEs) are the entities owned by the state (National Bureau of Statistics, 2002). SOEs are either centrally owned or owned by provincial or local governments. Centrally owned SOEs include entities managed by the State-owned Assets Supervision and Administration Commission of the State Council (SASAC). Central SOEs can also be owned by other government ministries such as the Ministry of Commerce, Ministry of Education, Ministry of Science and Technology, etc. Local SOEs are those controlled by local SASACs. SASACs were formally established in 2009, being assigned the legal liabilities and rights of investors holding SOE shares on behalf of the state. They also have the responsibility of guiding and supervising further SOE reforms (Deng *et al.*, 2011). Some SOEs chose to list on stock exchanges and, in their case, the state remained as the largest shareholder. Non-SOEs are entities not owned or directly controlled by the state. They are important supplements to the state-controlled economy that has been developing rapidly since early 1990 (Tsai, 2002).
4. SOEs face more obstacles to employing share-based executive incentives compared with non-SOEs (Liu and Ren, 2014). Based on the ideology of equality, the State-owned Assets Supervision and Administration Commission of the State Council (SASAC) issued a series of rules and guidelines intentionally or unintentionally setting obstacles for SOEs to issue share-based incentive plans. For instance, the SASAC requires SOEs to use an excessively long exercise period if they intend to issue share-based incentives to executives. The long exercise period induces uncertainty. In a turbulent share market, executives often elect to forfeit share options when share prices crash, resulting in options being "out-of-money". In addition, to issue share-based incentives, SOEs must receive approval from the SASAC, which also sets the vesting conditions. Those vesting conditions include unduly high profitability thresholds (e.g. net profit and gross income being 30 percent greater than the previous year) or hard market conditions (e.g. closing share pricing of the year being at least 10 percent higher than the previous year). For these reasons, even if the share-based incentives have been granted, they are rarely vested due to the harsh conditions (Liu and Ren, 2014).
5. Conyon and He (2012) provide a detailed review of the Chinese executive compensation literature.
6. For a detailed review on internal control studies using US data, please refer to Schneider *et al.* (2009).
7. Since 2006, China has been strengthening its internal control regulations. Over the period from 2006 to 2008, listed companies did not fully comply with *the Guidance for Internal Control* despite the passage of the regulations in 2006 in both the Shanghai Stock Exchange (SSE) and the Shenzhen Stock Exchange (SZSE). Then, *the Basic Standard*, known as the China SOX, became effective on 1 July 2009. *The Basic Standard* requires listed firms to strengthen their internal control over the following five aspects, namely the internal control environment, internal risk assessment and management, internal control activities, internal control information disclosure and communication, and internal control oversight (MOF, 2008). After that, the *Internal Control Application Guidelines* issued in April 2010 provide detailed instructions on how the Basic Standard is to be fully implemented. Complementary regulations designed to strengthen internal

control monitoring; the *Internal Control Evaluation Guidelines* and the *Internal Control Audit Guidelines*; stipulate a listed firm's self-evaluation of their internal control effectiveness in relation to the five aspects and the responsibilities required of auditors.

8. QFII is a program that was launched in 2002 to allow licensed foreign investors to buy and sell Chinese currency-denominated A shares in the Shanghai and Shenzhen stock exchanges, which were previously closed off to foreign investors in order for government to exercise tight capital controls, and restrict the movement of assets in and out of the country (Xi, 2006).
9. Since 2004 publicly traded firms are required to report compensation of executives. Most firms have disclosed the amount of compensation received by the top three highest paid executives (including executive board members) rather than a complete disclosure of compensation received by all executives. Hence, CSMAR's data on the compensation of the top three highest paid executives is more reliable and complete than the data on compensation received by all executives. For this reason, we employ the top three highest paid executives' compensation for this study.
10. The National Asset Bureau applies a range of adjusting factors to the formula published by the 2004 regulation to calculate the maximum pay of each top executive as shown in Appendix. The specific adjusting factors are unobservable by the public. Therefore, we are unable to compute the cap - the maximum pay allowed for each top executive directly.
11. The alternative internal control measure used by several Chinese researchers is an index constructed by Chen, Dong, Han and Zhou (2017) and was commissioned by Xiamen University, China. However, the index constructed by Chen, Dong, Han and Zhou (2017) only covers the period between 2007 and 2010.
12. The new accounting standards differ significantly from the old accounting standards. These differences have certainly had a significant influence on accounting information quality. Ke *et al.* (2016) find that the implementation of the new accounting standards has reduced the sensitivity of executive compensation and accounting profitability in China.
13. Only A-share SOEs are used for analysis because AH- and AB-shares face different regulatory environment and labor market competition due to their dual listing status, and thus boards may take those factors into account when designing executive compensation package.
14. During our regression analyses, we test and find that deleting the observations with negative values of *REST1* does not change our main results.
15. 2003 is also the earliest year compensation information of executives and employees is disclosed by listed firms and thus recorded by CSMAR.
16. QFII is a program that was launched in 2002 to allow licensed foreign investors to buy and sell Chinese currency-denominated A shares in the Shanghai and Shenzhen stock exchanges, which were previously closed off to foreign investors in order for government to exercise tight capital controls and restrict the movement of assets in and out of the country.
17. The QDII program started on 13 April 2006. It allows Chinese domestic financial institutional investors to invest in foreign securities markets via certain fund management institutions, insurance companies, securities companies and other assets management institutions which have been approved by CSRC.

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Appendix. A brief introduction to Chinese regulations on executive compensation in SOEs

Stage I. Executive compensation rules and guidelines for SOEs Year 2004

Each top executive's compensation is determined using a formula as follows:

$$\begin{aligned} W &= W0 \times L \times R \\ &= W0 \times (60\%G + 40\%M) \times R \\ &= W0 \times [60\% \times (20\%z + 30\%x + 30\%j + 20\%y) + 40\% \times (30\%D + 30\%H + 40\%Q)] \times R \\ &= W0 \times (12\%z + 18\%x + 18\%j + 12\%y + 12\%D + 12\%H + 16\%Q) \times R \end{aligned}$$

where W is an executive's base salary in year t . $W0$ is five times the average salary of all employees hired by SOEs country-wide in year $t-1$. R is the ratio of adjustment within the range: 1-1.4, which was determined by the National Asset Bureau. Then, z, x, j, y stand for a firm's total assets, main operating revenues, net assets and net profit in year $t-1$, respectively. D and H represent the average employee salary for all SOEs in the same region and the same industry; Q stands for the average employee salary of the firm itself in year $t-1$. The regulation took effect immediately in June 2004.

Stage II. Guidelines for further regulating executive compensation in SOEs, year 2009

The guidelines further emphasize the importance of restraining executive pay relative to the average pay of employees, as well as the importance of providing sufficient motivation to executives. The guidelines address the issues of other executive benefits, such as superannuation and insurance, which should be dealt with in accordance with relevant policies. It also requires firms to keep managers' on-the-job perk consumption in check. No new standards on the level of compensation are stipulated. The regulation took effect immediately in September 2009.

Stage III. Executive compensation reform plan for SOEs Year 2014

Executive compensation should be no more than 7-8 times the average salary of employees.

Specifically, the base salary should be no more than two times the average salary of employees, the bonus should be no more than two times the executive's own base salary, and the long term incentive plans in his/her tenure should be no more than 30 percent of the total compensation per year. Specific guidelines for long-term incentive plans will be issued in the future. The regulation was effective on and from 1 January 2015.

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