

## **Restricting CEO Pay Backfires: Evidence from China**

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## **Restricting CEO Pay Backfires: Evidence from China**

### **Abstract**

Using the pay restriction imposed on CEOs of centrally administered state-owned enterprises (CSOEs) in China in 2009, we study the effects of limiting CEO pay. Compared with firms not subject to the restriction, the CEOs of CSOEs experience a significant pay cut. Pay-performance sensitivity for these firms also significantly decreases. In response to the pay cut, CEOs increase their consumption of perks and siphon off firm resources for their own benefit. Ultimately, the performance of these firms drops significantly following the pay restriction. Our findings suggest that restricting CEO pay distorts CEO incentives and brings unintended consequences. Our findings caution against limiting the pay of CEOs.

## 1. Introduction

Should CEO pay be restricted? Proponents of restrictions on CEO pay argue that executive pay is excessive and unjustified by performance, and should thus be restricted (e.g., Bebchuk and Fried 2003, 2004; Bebchuk 2007). Opponents argue that regulating the compensation contracts between executives and shareholders causes unintended consequences and may create more problems in CEO pay than it solves (e.g., Jensen and Murphy 1990; Kaplan 2007; Murphy and Jensen 2017). Despite the intense debate on this controversial issue, there are few empirical studies in the U.S. regarding the effects of directly restricting CEO pay, because such restrictions could pre-empt state corporation laws.<sup>1</sup>

In this paper, we investigate the consequences of CEO pay restriction using Chinese data. In 2009, the Central Government of China introduced a regulation to limit executive salaries for the country's centrally-administered state-owned enterprises (CSOEs).<sup>2</sup> The regulation appears to have been triggered by disclosures of overpaid executives. In April 2008, 20 executives in oil industry were reported to have received over one million Chinese yuan, which is more than 40 times the average national pay of workers in Chinese firms in 2007. Fourteen executives out of 20 were from two CSOEs, China Shenhua Energy and China Oilfield Services Limited.<sup>3</sup> On September 16, 2009, six administrative departments of the central government of China jointly issued the policy document endorsed by the State Council, the highest authority for setting government policy. While the policy was intended to provide comprehensive guidance on executive compensation, it served primarily to restrict excessive executive compensation by setting a cap on the ratio of total executive compensation to employee compensation.

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<sup>1</sup> Executive pay regulations in the U.S. have taken place mainly through changes in taxation. For instance, the Internal Revenue Code Section 162(m) of 1992–93 limits the deductibility of non-performance related compensation over one million dollars. The effect of the regulation is at best mixed (see Perry and Zenner 2001; Rose and Wolfram 2002; Balsam and Ryan 2007). For a comprehensive discussion of executive pay regulations, see Murphy and Jensen (2017).

<sup>2</sup> State-owned enterprises (SOEs) in China are either owned by central government (CSOEs) or local government (LSOEs). The central government directly controls and manages strategic SOEs through the State Assets Supervision and Administration Commission (SASAC).

<sup>3</sup> The news was posted on people.com.cn, the web section of People's Daily, which is the largest official newspaper in China (<http://energy.people.com.cn/GB/71895/7125606.html>, in Chinese). Incidentally, the disclosure of executive compensation in March 2008 by Ping An Insurance, the largest insurance company in China, caused a huge public outcry. The CEO pay of Ping An Insurance Group was 2,751 times the average national pay of workers ([http://www.china.com.cn/review/txt/2008-03/28/content\\_13779419.htm](http://www.china.com.cn/review/txt/2008-03/28/content_13779419.htm), in Chinese).

The pay regulation in China provides an ideal setting to examine the effects of pay restriction on CEO behavior and firm performance.<sup>4</sup> First, the regulation is exogenous to firm performance, reducing the endogeneity issue regarding CEO pay and firm performance. Second, the pay restriction applies only to CSOEs but not to local state-owned enterprises (LSOEs) or private enterprises. This enables us to do difference-in-differences (DiD) tests to sort out the effects of pay restriction on CEO pay and CEO incentives.

Using a sample of CSOEs and non-CSOEs during 2005–2015, we find several interesting results. First, we find a significant pay cut for the CEOs of CSOEs. As the measure of CEO pay, we use basic salary plus bonus (cash compensation) but omit stock options, as very few firms have stock option schemes (Firth, Fung, and Rui 2006). In our baseline regression model, the CEOs of CSOEs experience a drop of 17.7% relative to those of non-CSOEs after the regulation, indicating that the pay regulation was effective and binding.

Second, we find a significant drop in pay-performance sensitivity (PPS) for CSOEs. We use return on sales (ROS) and return on assets (ROA) as measures of firm performance. Depending on the specification, the CEO compensation of CSOEs is two to six times as sensitive to performance as that of non-CSOEs before the regulation. However, after the regulation, the PPS of CSOEs drops significantly to the level of non-CSOEs. The pay cut imposed on the CEOs seems to have decreased their incentive to perform. Alternatively, the decrease in PPS could simply be a mechanical result of the CEO pay restriction without affecting CEO incentives.

To examine the effect of pay restriction on CEO incentives, we examine perk consumption and tunneling activities. As a proxy for perk consumption, we use the sum of six types of expense (scaled by the number of paid executives), namely travel, business entertainment, overseas training, board meetings, company cars, and meeting expenses, as in Gul, Cheng, and Leung (2011) and Xu, Li, Yuan, and Chan (2014), who study the effect of perks on stock price informativeness and stock price crash risk, respectively. We hypothesize that these expenses are correlated with CEO incentives for perk consumption, although these are also incurred

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<sup>4</sup> While the pay regulation is intended for all executives, we focus on the compensation of general managers, equivalent to CEOs in the U.S.

during normal business activities. Perks are often granted as allowances, and the unused part may even be pocketed by the executives (Firth, Leung, and Rui 2010). In the base regression model, we find a 20% increase in perk consumption in CSOEs relative to non-CSOEs after the pay regulation. Furthermore, the CEOs who experience higher pay cuts consume more perks.

We use net other receivables as a proxy for tunneling activities following Jiang, Lee, and Yue (2010). This variable measures the extent to which controlling shareholders use intercorporate loans to siphon funds from firms. Since the influential paper by Jiang, Lee, and Yue (2010), this variable is well known as a proxy for the extent of tunneling by Chinese firms (Busaba, Guo, Sun, and Yu 2015; Liu, Luo, and Tian 2015; Liu, Miletkov, Wei, and Yang 2015; Li, Liu, Ni, and Ye 2017). Consistent with the evidence from perk consumption data, we find a significant increase in tunneling in CSOEs. Relative to non-CSOEs, the extent of tunneling increases by 20.1% after 2009. Furthermore, the CSOEs whose CEOs experience higher pay cuts tunnel more of firm resources. Compared to non-CSOEs, the extent of tunneling for these firms increases by as much as 35.1% after 2009.

Our findings suggest that the CEOs of CSOEs consume more perks and tunnel more firm resources to compensate for their pay cuts. A natural question that arises then is whether CSOE performance deteriorates following the pay restriction. We find that the ROS of CSOEs drops significantly after the pay regulation. The difference-in-differences in ROS between CSOEs and non-CSOEs is 3.51%, driven mainly by the decrease in ROS of CSOEs after 2009. The ROS of non-CSOEs, if anything, increases slightly after 2009. The deterioration in CSOEs' firm performance is economically substantial, as their average ROS during the sample period is 6.4%. We also find that the deterioration is more severe in CSOEs whose CEOs undergo higher pay cuts.

One may argue that CSOEs suffered more from the global crisis of 2008, which led to the pay cut for CEOs in these firms, which in turn encouraged them to consume more perks and tunnel more resources. We argue that our evidence is inconsistent with such an interpretation. Note that the PPS of CSOEs drops significantly following the pay cut regulation. If performance deterioration following the crisis was the driver of the pay cut, one should not observe a drop in PPS. Furthermore, when we partition CSOEs into two groups by change in performance around the crisis, we find no difference in perk consumption and

tunneling between the two groups, suggesting that the crisis-caused performance decline of CSOEs does not induce the CEOs of these firms to consume more perks and tunnel more firm resources. We also conduct several robustness tests using alternative measures for executive compensation, perks, tunneling and alternative control sample, and find robust results.

Our study adds to the growing literature on pay restriction. Dittmann, Maug, and Zhang (2011) analyze the effect of CEO pay restrictions and find that many restriction proposals may have unintended consequences. Thanassoulis (2012) develops a theoretical argument for limiting banker pay. Cadman, Carter, and Lynch (2012) show that executive pay restrictions associated with the Troubled Asset Relief Program (TARP) deterred participation in the program. Cebon and Hermalin (2015) derive conditions under which limits on performance-based payments can enhance efficiency and benefit shareholders. Dhole, Khumawala, Mishra, and Ranasinghe (2015) study the effect of the California Nonprofit Integrity Act of 2004 on CEO compensation and find that contrary to the objective of this act to ensure “just and reasonable” executive compensation, CEO compensation for affected non-profit organizations increased relative to unaffected non-profit organizations. Our experimental setting utilizes a policy targeted at directly regulating executive compensation, and provides evidence that restricting CEO pay distorts CEO incentives and hurts firm performance.

In a recent paper, Abudy, Amiram, Rozenbaum, and Shust (2017) conduct an event study of the passage of a law in Israel restricting executive pay to a binding upper limit in the insurance, investment, and banking industries. They find significantly positive abnormal announcement returns in these industries, thus pay restriction appears to benefit shareholders, at least in the short term. Our findings from CSOEs in China indicate that limiting CEO pay backfires. In addition to institutional differences in Israel and China, our study differs from that of Abudy, Amiram, Rozenbaum, and Shust (2017) in at least two important ways. First, they use a sample of 20 firms in the financial industry, whereas we use all CSOEs covering a broad

range of industries.<sup>5</sup> Second, they focus on the short-term market reaction to the announcement of pay regulation, while we focus on the effect of regulation on long-term firm performance.

Our study provides important insights surrounding the controversial debate on the “pay ratio disclosure rule.” Initially proposed in the Dodd-Frank Act and finally adopted by the Securities Exchange Commission in August 2015, the rule requires disclosure of the ratio of CEO pay to the median pay of all employees. The pay-ratio disclosure is mandated for fiscal years beginning on or after January 1, 2017. The provision is based on the implicit assumption that CEO pay is excessive, and that disclosure of the ratio will create public pressure to lower CEO pay.

Proponents of the disclosure rule claim that large pay gaps undermine coordination by creating feelings of relative deprivation among lower level managers and employees, and that an egalitarian approach where pay gaps are smaller may lead to greater productivity (Cowherd and Levine 1992, Bloom 1999; Henderson and Fredrickson 2001). Opponents argue that the high pay gap ratio is a result of competition for talented managers and should not be lowered under pressure. In fact, Faleye, Reis, and Venkateswaran (2013) and Mueller, Ouimet, and Simintzi (2017) show that within-firm pay inequality is positively correlated with operating performance and firm valuation. Firth, Leung, and Rui (2010) find similar evidence using a sample of non-financial companies listed on the Shanghai and Shenzhen stock exchanges. In a survey paper on executive compensation, Edmans, Gabaix, and Jenter (2017) predict that a focus on pay ratios and social pressure to lower them are likely to induce unintended consequences that will make CEO pay less sensitive to firm performance and reduce shareholder value. This is exactly what we find in our empirical study—limiting CEO pay distorts CEO incentives and negatively affects firm performance.

Our study proceeds as follows. Section 2 provides a brief review of the 2009 pay regulation in China. Section 3 discusses the data construction and the methodology used for our tests. Section 4 presents the empirical results and section 5 the robustness tests. Section 6 concludes.

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<sup>5</sup> As a robustness check, we remove the financial industry from our sample and confirm that our results remain intact.

## 2. The pay regulation of 2009

On September 16, 2009, six administrative departments<sup>6</sup> in China jointly issued the Guideline to Further Regulate Executive Compensation in Central State-Owned Enterprises (hereafter the Guideline) with the consent of the State Council, the chief administrative authority in China. The Guideline itself is a classified document and was not made available to the public, but the government posted the announcement of the Guideline issuance and a summary of the Guideline on its official website.<sup>7</sup> The Guideline suggests that executive compensation should consist of a basic salary, pay for performance (bonuses), and incentive compensation. It also indicates that because incentive compensation such as stock options is under development, the Guideline focuses more on basic salary and pay for performance. The Guideline stipulates that the design of executive compensation packages should strike a balance between motivating executives and narrowing the pay disparity between executives and employees. It indicates that the annual salary of executives should be in line with that of employees and that the pay for performance should be based on the business performance of the enterprise.

While the Guideline was issued as a comprehensive guide to regulating executive compensation, the media regarded the Guideline primarily as a regulation to restrict excessive executive compensation. Before the Guideline, a few inchoate regulations have been issued, among which the most comprehensive one is the Provisional Guideline to Regulate Executive Compensation in Central State-Owned Enterprises (hereafter the Provisional Guideline) issued by State-Owned Assets Supervision and Administration Commission of the State Council (SASAC) on June 11, 2004. While the Provisional Guideline was considered ineffectively enforced, there are several reasons to believe that the 2009 pay regulation is binding and effective. First, although the exact formulae to determine executive compensation is confidential and not known to the public, the Guideline appears to set a cap on the pay gap ratio. Before the

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<sup>6</sup> The Ministry of Human Resources and Social Security, Ministry of Finance, State-Owned Assets Supervision and Administration Commission, National Audit Office, Ministry of Supervision, and Organization Department of the Communist Party of China.

<sup>7</sup> [http://www.gov.cn/jrzg/2009-09/16/content\\_1419270.htm](http://www.gov.cn/jrzg/2009-09/16/content_1419270.htm) (in Chinese).



issuance of the Guideline, it was reported in the media<sup>8</sup> that the Ministry of Human Resources and Social Security was preparing a new act to restrict total executive compensation to 10 to 12 times that of employee compensation. An excerpt of the Guideline discloses that the basic salary of executives is set to be 5 to 7.5 times the average wage of all CSOE employees in the previous year, depending on the management difficulty of the firm. Second, the Guideline was issued jointly by six administrative departments with the consent of the State Council, which indicates the seriousness of the regulation and the government's political will to implement the regulation. Moreover, two departments—SASAC and the Organization Department of the Communist Party of China—are in charge of hiring CSOE executives. Third, the Guideline specifically emphasizes the monitoring duty of the departments, including the National Audit Office and the Ministry of Supervision, and requires punitive measures to be taken in a timely manner should any irregularity be detected.

### **3. Data and summary statistics**

This section describes the sample selection process and presents summary statistics for the main variables: CEO compensation, perk consumption, tunneling, and firm performance.

#### *3.1. Data construction*

Our sample selection process starts with all companies listed on the Shanghai and Shenzhen stock exchanges. We obtain executive compensation, financial statements, and ownership data from the China Securities Market and Accounting Research (CSMAR) database, which is the most widely used database for Chinese financial market research. The sample period covers 2005 to 2015. We start with the year 2005 because the prior data on executive compensation is poor.<sup>9</sup> To be included into the sample, the sample firm must satisfy the following criteria:

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<sup>8</sup> [http://www.china.com.cn/economic/txt/2009-02/19/content\\_17299446.htm](http://www.china.com.cn/economic/txt/2009-02/19/content_17299446.htm) (in Chinese). The news website is under the supervision of The State Council Information Office.

<sup>9</sup> Early studies of CEO compensation in China could only use the total compensation of the three highest paid executives as a proxy for CEO compensation (e.g., Firth, Fung, and Rui 2006).

1. the ultimate controlling shareholder can be identified;
2. the number of employees is more than 10;
3. the CEO's annual compensation is more than 1,000 Chinese yuan (CNY); and
4. the total assets and total sales are greater than 0.

To investigate the effect of the policy introduced in 2009, we require the company to have at least one observation in both the pre-policy (2005–2008) and post-policy (2010–2015) period. We further require that the identity of the company as a CSOE remains unchanged throughout the sample period. A company is identified as a CSOE if its ultimate controlling shareholder is SASAC. SASAC publishes a list of CSOE names. Our sample of CSOEs are the publicly traded entities subordinate to the CSOEs as listed by SASAC.

We collect the perk consumption data from the footnotes of financial statements. As a proxy for perk consumption, we use the sum of six types of expense, namely travel, business entertainment, overseas training, board meetings, company cars, and meeting expenses. Disclosure of perk expenses was not mandatory and thus we obtain voluntarily disclosed perk expenses from “Cash Payment for Expenses Related to Operating Activity” section of financial statement footnotes as in Gul, Cheng, and Leung (2011) and Xu, Li, Yuan, and Chan (2014). We take the following steps to construct the perk consumption data. First, we manually download the financial statements of all CSOEs during 2005–2015 from the Shanghai and Shenzhen stock exchange websites and hand-collect their perk data from the “Cash Payments for Expenses Related to Operating Activity” section. Second, for non-CSOEs, we collect perk data only for the matched sample because manual collection of data is necessary and there are 1,212 unique non-CSOEs during our eleven-year sample period. We match each CSOE with at most two non-CSOEs in the same industry that are closest in total assets.<sup>10</sup> We require the ratio of total assets of the matched CSOE and non-

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<sup>10</sup> We use the industry classification guidance released by China Securities Regulatory Commission in 2012 ([http://www.csrc.gov.cn/pub/csrc\\_en/newsfacts/release/201301/t20130118\\_220575.html](http://www.csrc.gov.cn/pub/csrc_en/newsfacts/release/201301/t20130118_220575.html)). There are altogether 76 industries with the classification.

CSOE to be between 50% and 200%.<sup>11</sup> For the matched sample of non-CSOEs, we download their financial statements and collect the perk information.

Table 1 presents our sample composition by year. In the full sample, there are 102 unique CSOEs and 1,212 unique non-CSOEs. We were able to obtain the perk data for 52 out of 102 CSOEs and 65 out of 129 matched non-CSOEs. We have perk data for about half of the CSOEs and matched non-CSOEs.

We note that perk data have sample selection bias. Since our objective is to examine difference-in-differences in perk consumption, to the extent that voluntary disclosure behavior is not systematically different between CSOEs and non-CSOEs, our inference on perk consumption behavior is unlikely to be biased. We also note that the mandatory disclosure rule might have changed the perk consumption behavior of firm executives. Again, to the extent that the rule has similar effect on perk consumption behavior of executives in both COSEs and non-CSOEs, our inference should be unbiased.

### *3.2. Summary statistics*

Table 2 presents the summary statistics. All variables are defined in Appendix 1. We winsorize all ratio variables that have financial variables as denominators at 1% and 99%. Panel A of Table 2 presents the summary statistics for firm characteristic variables. A median-sized CSOE is more than twice the size of a median-sized non-CSOE in terms of total assets and total sales, while the median market capitalization of CSOEs is almost twice that of non-CSOEs. Non-CSOEs realize a higher market to book ratio with a median of 2.76 compared to 2.41 for CSOEs. While the ultimate controlling shareholders of all CSOEs are the central government, those of non-CSOEs can be local governments, industrial or financial companies or even individuals. The block ownership of ultimate controlling shareholders is larger in CSOEs. The mean (median) block ownership is 46% (47%) in CSOEs, and 35% (33%) in non-CSOEs.

Panel B presents CEO compensation and CEO characteristics. For CEO compensation, we include only cash compensation—the sum of basic salary and bonuses. We exclude incentive compensation as it is

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<sup>11</sup> With these matching criteria, we are able to find 2 matches for 48 CSOEs, 1 match for 33 CSOEs and 0 match for 21 CSOEs, totaling 129 matched non-CSOEs.

not widely adopted by Chinese firms. Stock options have only been allowed since 2007, and as approval from the China Securities Regulatory Commission (CSRC) is required, very few firms adopt them (Firth, Fung, and Rui 2006; Firth, Leung, and Rui 2010). All compensation figures are inflation-adjusted and reported in 2010 Chinese yuan. The mean annual CEO cash compensation is 542,479 CNY, which is approximately 80,135 USD.<sup>12</sup> While quite low relative to CEO compensation levels in developed markets, the annual cash compensation of Chinese CEOs is no small figure when compared to GDP per capita in China (4,560 USD in 2010). A Chinese CEO earned more than 21 times what the average Chinese worker earned in 2010. CEO compensation is higher on average for CSOEs, but as CSOEs are much larger than non-CSOEs, their CEOs are not necessarily overpaid by comparison. If anything, they appear relatively underpaid considering firm size.

Average Chinese CEO in our sample is 48 years old, and there is little difference in CEO age between CSOEs and non-CSOEs. There are much fewer female CEOs in CSOEs than non-CSOEs. The proportion of female CEOs in CSOEs is only 1%, while the corresponding figure is 6.2%. The proportion of CEOs holding dual positions of both CEO and chairman of the board shows a similar pattern. It is only 5.6% in CSOEs whereas the figure is 17.4% in non-CSOEs.

We present the statistics on perk consumption in Panel C. Perks are scaled by the number of paid executives including CEOs, chief financial officers, and members of the board of directors and the supervisory board. The mean value of perks per paid executive for our sample firms is about four million CNY; this number is almost doubled in CSOEs and halved in non-CSOEs. As CSOEs are significantly larger, the level of perk consumption does not necessarily suggest that CSOE executives enjoy excessive perks. In fact, the average of total perk consumption scaled by sales (assets) for CSOEs is 0.68% (0.47%), which is similar to the 0.66% (0.52%) for non-CSOEs. The scaled perk figures are comparable to those of Gul, Cheng, and Leung (2011) and Xu, Li, Yuan, and Chan (2014). We note that the mean (median) perk consumption per executive for CSOEs is about 10.7 (3.2) times the value of CEO compensation in our

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<sup>12</sup> We use the 2010 exchange rate of 6.7695 CNY per USD throughout the paper.

sample. The level of perk consumption per executive seems enormously large compared to CEO cash compensation, although not all perks represent wasteful consumption by executives.

In Panel D, we present variables that proxy for tunneling. We use net other receivables from the balance sheet as a proxy for tunneling as in Jiang, Lee, and Yue (2010). The mean (median) net other receivables over total assets is 2.4% (1.1%) during our sample period (2005–2015), lower than that reported by Jiang, Lee, and Yue (2010) for 1996–2004. The other receivables balance declined after 2001, mainly due to a campaign by CSRC.

We present the ROS and ROA figures in Panel E. We calculate ROS as operating profit over total sales; we use operating profit because it is less subject to managerial discretion than net profit (Firth, Fung, and Rui 2006). We choose ROS as our main measure of firm performance over more popular measures such as return on equity (ROE) because Chinese listed companies frequently issued equity throughout our sample period, and equity issuance mechanically decreases ROA and ROE (Li, Megginson, Shen, and Sun 2017). In our sample, the average share capital growth is 12.3%, while in each year about 27% of the companies issued equity. We also present results for ROA, as ROA is less contaminated by equity issuances than ROE. We find that non-CSOEs deliver slightly better operating performance than CSOEs in both ROS and ROA.

Table 3 presents the medians of CEO compensation, perk consumption, net other receivables over total assets, ROS, and ROA by year during 2005–2015 for both CSOEs and non-CSOEs. During 2005–2009, the level of CEO compensation increases monotonically for both CSOEs and non-CSOEs. After the introduction of the pay restriction policy for CSOEs in 2009, the CEO compensation of CSOEs remains stagnant until 2015. In sharp contrast, the CEO compensation of non-CSOEs continues to grow monotonically even after 2009, indicating that the policy is binding for CSOEs, which is precisely what one would expect because the policy is targeted at CSOEs only. The key assumption for consistency of the DiD estimator is that in the absence of treatment (pay regulation), the average change in the response variable (CEO compensation) would have been the same for both the treatment (CSOEs) and control (non-CSOEs) groups, which is often called “parallel trends” assumption. In other words, trends in CEO pay for

CSOEs and non-CSOEs should be the same prior to pay regulation, but diverge after the regulation. The yearly median CEO compensation in Table 3 clearly indicates that our sample firms satisfy the assumption.

The change shown in perk consumption in CSOEs is striking. The median of perk consumption per executive in CSOEs ranges from 1.24 to 1.52 million CNY during 2005–2009. After the policy was introduced, perk consumption in CSOEs increases drastically and is almost doubled in 2011 and 2012. While perk consumption in non-CSOEs increases by 56% from 2005 to 2011, CSOE perk consumption rises by as much as 116% during the same period, much of it starting from 2009. However, after President Xi Jinping put forward the anti-corruption campaign in November 2012<sup>13</sup>, perk consumption in CSOEs starts to decrease and is more than halved by 2015. By contrast, we do not observe such a sharp decrease in perk consumption for non-CSOEs after 2012.

During 2005-2010, other net receivables over total assets keep decreasing in both CSOEs and non-CSOEs. The decrease is likely caused by CSRC's continuous effort to curb tunneling.<sup>14</sup> After 2010, the year after the Guideline was introduced, the downward trend is reversed for CSOEs, but continues for non-CSOEs.

The last four columns of Table 3 present the median firm performance of CSOEs and non-CSOEs by year. We see improvements in firm performance during 2005–2007 for both CSOEs and non-CSOEs before the significant drop in 2008 caused by the global financial crisis. The performance picks up a bit during 2009–2010 but starts to decrease again in 2011 and never returns to the pre-crisis level. Looking at the difference between CSOEs and non-CSOEs, we find that the ROS is not statistically different during 2005–2009. However, during 2010–2015, non-CSOEs outperform CSOEs in all 6 years and the differences are economically large. The ROA results present a similar pattern, suggesting that the operating performance of CSOEs deteriorates significantly after 2009 compared to non-CSOEs. While firm performance is determined by many factors, the summary statistics of CSOE performance together with perk consumption

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<sup>13</sup> On December 4, 2012, the Politburo launched the anti-corruption campaign with the announcement of the Eight-point Regulation, which restricted perk consumption of Communist Party cadres. See Lin, Morck, Yeung, and Zhao (2017) for details of the anti-corruption campaign.

<sup>14</sup> See Jiang, Lee, and Yue (2010) for details of the regulatory reforms.

and tunneling appear consistent with the view that the disincentive imposed on the CEOs of CSOEs by the pay restriction regulation contributed to the poor performance of CSOEs relative to non-CSOEs.

#### **4. Empirical results**

In this section, we first present evidence that the pay regulation of 2009 significantly decreases CEO compensation in CSOEs and their pay-performance sensitivity. We then show that perk consumption and tunneling significantly increase in these firms while firm performance deteriorates. Finally, we discuss and exclude alternative interpretations of our results.

##### *4.1. Univariate difference-in-differences tests*

The summary statistics in Table 3 suggest that following the pay restriction regulation in 2009, the CEO compensation of CSOEs decreases, while their perk consumption and tunneling increase compared to non-CSOEs. In Table 4, we conduct the univariate difference-in-differences (DiD) tests between CSOEs and non-CSOEs before and after the pay regulation.

Table 4 presents the results. In panel A, we apply the DiD test to the raw figures for CEO compensation, perk consumption, net other receivables balance, and firm performance. CEO compensation and perk consumption are in logarithm form. In panel B, we use the residuals from regressing the raw figures on firm fixed effects as well as year fixed effects. The figures used in the tests are the firm-level time-series average during the sub-periods 2005–2009 and 2010–2015. Both panels present the same patterns and we focus on the changes in the residual figures for interpretation.

Before the CEO pay restriction, we find higher compensation for the CEOs of CSOEs than non-CSOEs, which reverses after the pay restriction. CEO compensation for CSOEs is seen to decrease significantly while that for non-CSOEs hardly changes, resulting in significantly lower CEO compensation for CSOEs after the regulation. The pattern of change in perk consumption and net other receivables is exactly opposite to that of CEO compensation. Perk consumption and net other receivables are lower for CSOEs than non-CSOEs before the regulation, but significantly higher afterwards, resulting in significantly higher perk

consumption and net other receivables for CSOEs. Turning to ROS and ROA, we find that firm performance for CSOEs deteriorates after the regulation, but improves for non-CSOEs, so that CSOEs end up performing significantly worse than non-CSOEs after the pay regulation of 2009.

In sum, the univariate test results indicate that relative to non-CSOEs, CEO compensation for CSOEs decreases after pay regulation, while perk consumption and tunneling increase, and firm operating performance deteriorates.

#### *4.2. Pay regulation effect on CEO compensation, perk consumption, tunneling, and firm performance*

We now move on to multivariate regression analysis to test the effect of the 2009 regulation on CEO compensation, perk consumption, tunneling, and firm performance while controlling for variables that might affect these outcome variables.

##### *4.2.1. Pay regulation effect on CEO compensation*

To examine the policy effect on CEO compensation, we estimate the following regression model:

$$\begin{aligned} \text{Log}(\text{CEO compensation}) = & \beta_1 D\_CSOE \times \text{After 2009} + \beta_2 \text{Log}(\text{total assets}) + \\ & \beta_3 \text{ROS} + \beta_4 \text{Market to book ratio} + \beta_5 \text{CEO age} + \beta_6 \text{Female CEO} + \beta_7 \text{CEO duality} + \\ & \text{Firm FE} + \text{Year FE} + \varepsilon. \end{aligned} \tag{1}$$

The dependent variable is the logarithm of CEO cash compensation. The control variables include firm characteristic and CEO characteristic variables. Firm characteristic variables are the logarithm of total assets, ROS, and market to book ratio. CEO characteristic variables include CEO age, female CEO dummy, and CEO-chairman duality dummy. In all regressions, we control for both firm and year fixed effects and adjust the standard errors for clustering at the firm and year level.

Table 5 reports the results. In column (1), we include only the control variables and fixed effects in the regression. Older CEOs receive higher salary likely due to longer tenure. There appears no gender gap in CEO pay in China. Those CEOs who hold board chairman position receive higher salary, but its statistical



significance is at best marginal. Not surprisingly, we find that the CEOs of larger and more profitable firms get paid more. However, the market to book ratio is found to be unrelated to CEO compensation. In column (2), we include our key independent variable,  $D\_CSOE \times After2009$ , which is the interaction of the CSOE dummy and a time-period dummy that takes the value of one for the years after 2009 (i.e., 2010–2015). Because we already control for firm and year fixed effects, neither the CSOE dummy nor the *After2009* dummy is included in the specification. The negative coefficient estimate for  $D\_CSOE \times After2009$  captures the difference-in-differences of CEO compensation between CSOEs and non-CSOEs before and after the pay regulation, and indicates that relative to non-CSOEs, the CEO compensation of CSOEs decreases after the pay regulation. The estimate is both statistically and economically significant.

In column (3), we additionally control for  $D\_CSOE \times After2012$  where *After2012* is a time-period dummy that takes the value of one for the years after 2012 (i.e., 2013–2015). This is because of the concern that the decrease in CEO compensation could be mostly driven by the anti-corruption campaign initiated in November 2012, which had bigger effect on the CEO compensation of CSOEs than non-CSOEs. However, we find that the coefficient estimate for  $D\_CSOE \times After2009$  remains significant, ruling out the anti-corruption campaign explanation. In column (4), we exclude firms that are dual-listed in both the China A-share and the Hong Kong H-share markets, because CEO compensation disclosed by firms listed in Hong Kong may not reflect actual CEO compensation. This is because the pay packages from these firms were considered “too high” and not in line with domestic companies, thus the top management of these firms “donated” their compensation to the parent company, which then returned an undisclosed salary and bonus for the year as their real compensation.<sup>15</sup> Our results still hold when we restrict the sample to companies listed on the domestic stock exchanges only. In unreported tests, we repeat the same tests as Table 5 using the subsample of firms for which we have perk consumption data available. While the size of the subsample with perk data available is small relative to the whole sample, the results are similar in this subsample.

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<sup>15</sup> “Pay cuts no cure for good governance,” South China Morning Post, July 4, 2016.

#### 4.2.2. Pay regulation effect on pay-performance sensitivity

In this subsection, we examine the effect of pay restriction on pay-performance sensitivity (PPS) in CSOEs using the following specification:

$$\begin{aligned} \text{Log}(\text{CEO compensation}) = & \beta_1 \text{Performance} + \beta_2 \text{Performance} \times \text{After 2009} + \\ & \beta_3 \text{Performance} \times D\_CSOE + \beta_4 D\_CSOE \times \text{After 2009} + \beta_5 \text{Performance} \times \\ & D\_CSOE \times \text{After 2009} + \beta_6 \text{Log}(\text{total assets}) + \beta_7 \text{Market to book ratio} + \\ & \beta_8 \text{CEO age} + \beta_9 \text{Female CEO} + \beta_{10} \text{CEO duality} + \text{Firm FE} + \text{Year FE} + \varepsilon. \end{aligned} \quad (2)$$

The dependent variable is the logarithm of CEO compensation. We use ROS and ROA as measures of firm performance. While most previous studies of PPS in the U.S. use stock return performance, we do not use this measure for several reasons. First, there is evidence that stock prices in the Chinese stock markets are influenced largely by noise traders (Eun and Huang 2007; Sun, Tong, and Yan 2009; Tong and Yu 2012). Second, stock returns in China are mostly a function of macro events (Morck, Yeung, and Yu 2000) over which CEOs have no control. Third, state-owned enterprises base performance-related CEO pay on accounting profitability rather than on stock returns (Firth, Fung, and Rui 2006).

We use ROS to measure firm performance in columns (1) and (3) and ROA in columns (2) and (4). In columns (3) and (4), the sample period is constrained to 2005–2012 to exclude the anti-corruption campaign effect. The interpretation of the coefficients is as follows:  $\beta_1$  measures PPS for non-CSOEs;  $\beta_2$  is the difference in PPS before and after regulation for non-CSOEs;  $\beta_3$  is the difference in PPS between CSOEs and non-CSOEs before regulation;  $\beta_4$  is the difference in CEO compensation between CSOEs and non-CSOEs after regulation; and  $\beta_5$  is the difference-in-differences in PPS between CSOEs and non-CSOEs before and after regulation, which is the main coefficient of interest.

Table 6 presents the results. The coefficient estimates for performance measures are significantly positive in all specifications, suggesting a strong positive PPS for non-CSOEs before regulation. We find that the estimates for  $\text{Performance} \times \text{After 2009}$  are statistically insignificant in all specifications, suggesting

that the PPS for non-CSOEs remains unchanged after 2009. The significantly positive coefficient estimates for  $\text{Performance} \times \text{D\_CSOE}$  suggest that CSOEs have a higher PPS than non-CSOEs before regulation. Depending on the specification, the compensation of CEOs for CSOEs is 2 to 6 times as sensitive to performance as that for non-CSOEs before regulation. For instance, in column (3), the estimates of PPS before regulation for non-CSOEs and CSOEs are 0.283 and 1.749 ( $0.283+1.466$ ), respectively, indicating that the PPS of CSOEs is 6.2 times that of non-CSOEs. This finding is consistent with Firth, Fung, and Rui (2006) who find that CEO pay is positively related to ROS for CSOEs.

Our main variable of interest,  $\text{Performance} \times \text{D\_CSOE} \times \text{After2009}$ , captures the difference-in-differences in PPS between CSOEs and non-CSOEs before and after regulation. The coefficient estimates are significantly negative in all specifications, suggesting that the PPS of CSOEs relative to non-CSOEs decreases significantly after regulation. Interestingly, the magnitude of the estimates is close to that of the coefficient estimates for  $\text{Performance} \times \text{D\_CSOE}$  in absolute value. This result suggests that after regulation, the PPS of CSOEs decreases to the level of non-CSOEs. Unlike the results in Table 5, the coefficient estimates for  $\text{D\_CSOE} \times \text{After2009}$  are not significant. This is because in Table 6 we allow the slope of compensation with respect to performance to vary between CSOEs and non-CSOEs and across time.

#### *4.2.3. Pay regulation effect on perk consumption*

In Table 7 we investigate the policy effect on perk consumption and its association with compensation changes. The dependent variable is the logarithm of total perk consumption over the number of paid executives. The control variables are the logarithms of total assets and total employee wages as in Gul, Cheng, and Leung (2011). We control for firm size as a proxy for operating complexity because executives of more complex firms are likely to consume more perks for work-related reasons (e.g., more frequent meetings and long-distance flights). We also control for total employee wages because total perk consumption includes several types of work-related expenses that non-executive employees can also

consume, such as company car expenses and meeting expenses. Controlling for firm size and employee wages helps us tease out the portion consumed by executives in their personal interest (i.e., excess perks).

In column (1), we include only control variables and fixed effects. As expected, the coefficient estimates for both control variables are positive and significant. In column (2), we add  $D\_CSOE \times After2009$  in addition to the control variables. The coefficient estimate for  $D\_CSOE \times After2009$  is 0.2 and is significant at the 5% level, showing that compared to non-CSOEs, the perk consumption of CSOEs increases significantly after 2009. The coefficient estimate increases to 0.25 in column (3) and is significant at the 1% level when we include  $D\_CSOE \times After2012$  to control for the anti-corruption campaign effect.

Perk consumption increases significantly following the pay restriction. The question that naturally follows is whether the CEOs who experience greater pay cuts consume more perks to compensate for their monetary losses. In column (4), we divide CSOEs into two groups by the median of change in CEO compensation before and after the pay regulation. For each CSOE, we compute the change in abnormal CEO compensation by subtracting the mean abnormal compensation during 2005–2009 from that during 2010–2015. Abnormal CEO compensation is the residual from column (1) of Table 5. We then create two dummy variables: one takes the value of one if the change in compensation is lower than the median, and the other takes the value of one if the change is higher than the median. In short, we divide the CSOE dummy into two dummy variables by the median of CEO compensation change for CSOEs before and after the pay restriction, and then interact each with the *After2009* dummy. The results show statistically significant increase of 28% in perk consumption for CSOEs that experience below median CEO compensation change, but only a 13% increase (not significant) in CSOEs with above median compensation change. These results show that CEOs who suffer more severe pay cuts tend to consume more perks. Column (5) tests the same specification as column (4) but uses the sample period 2005–2012 to eliminate the anti-corruption campaign effect. The results remain unchanged.

In sum, the results in Table 7 suggest that CEO cash compensation and perk consumption are substitutes: when compensation decreases due to pay restrictions, CEOs increase their perk consumption to offset the pay cut.

#### 4.2.4. Pay regulation effect on tunneling

In Table 8 we investigate the effect of the policy on tunneling activities and its association with the change in CEO compensation. The dependent variable is the logarithm of net other receivables. In column (1), we include only control variables and fixed effects. We control for the key determinants of net other receivables used in Jiang, Lee, and Yue (2010), including the logarithm of total assets, firm performance, and block ownership. We do not include the state ownership dummy or regional marketization as control variables because we control for firm fixed effects. More profitable firms have less net other receivables. Block ownership is negatively but at best weakly correlated with net other receivables.

The positive coefficient estimates for  $D\_CSOE \times After2009$  in columns (2) and (3) indicate an increase in the extent of tunneling by CSOEs after 2009 relative to non-CSOEs. The coefficient estimate is significant at the 10% level in column (2) but not significant in column (3) where we use  $D\_CSOE \times After2012$  to control for the anti-corruption campaign. In column (4), we again divide CSOEs into two groups by the median of change in CEO compensation around 2009 and create two dummy variables: one takes the value of one if the change in compensation is lower than the median, and the other takes the value of one if it is higher than the median. When we interact both with the *After2009* dummy, the results suggest that tunneling increases by 35.1% for CSOEs whose CEOs experience a more negative change in compensation. This increase in tunneling is statistically significant. In sharp contrast, tunneling increases insignificantly by only 4.7% for CSOEs whose CEOs experience less negative compensation change. In column (5), we restrict the sample period to 2005–2012 to remove the anti-corruption effect on tunneling and find the results unchanged.

Overall, Table 8 provides evidence that CSOEs whose CEOs experience significant cash compensation decreases engage in more tunneling activities. This result is consistent with the view that when CEOs' cash compensation decreases due to a pay restriction policy, they tunnel more resources from their company to

compensate for their utility losses, indicating that tunneling, like perk consumption, serves as a substitute for cash compensation.

#### *4.2.5. Pay regulation effect on firm performance*

Our findings so far show that the CEOs of CSOEs consume more perks and tunnel more firm resources to compensate for their pay cuts. A natural question that arises then is whether CSOE performance deteriorates following the pay restriction. In Table 9, we examine the policy effect on firm performance. As the dependent variable, we use ROS in columns (1) to (3) and ROA in columns (4) to (6), respectively. In column (1), we find a significantly negative estimate for  $D\_CSOE \times After2009$ , indicating that the ROS of CSOEs decreases more after 2009 relative to non-CSOEs. The magnitude of the change is large at -3.51%. In the next column, we add  $D\_CSOE \times After2012$  to control for the 2012 anti-corruption campaign and find the results unchanged. The effect of the anti-corruption campaign on firm performance is not significant, perhaps due to the short sample period after the campaign. In column (3), we examine whether the decrease in CEO pay is directly related to the decrease in firm performance. We use the same dummy variables as in column (4) of Table 8 based on the median of CEO compensation change for CSOEs before and after the pay restriction. We find that CSOEs whose CEOs received a bigger pay cut experience twice as big a drop in ROS as those whose CEOs received a smaller pay cut.

Using ROA as the measure of firm performance, we find similar but statistically weaker results. The coefficient estimates are only marginally significant, but the magnitude of the estimates still indicates an economically large decrease in ROA for CSOEs after 2009. The decrease is estimated to be 1.1% in columns (4) and (5), representing about 30% of the sample mean (3.6%) for CSOEs. When we partition CSOEs into two groups of firms by the median CEO compensation changes before and after the pay restriction, we find an economically and statistically significant decrease in ROA only for CSOEs whose CEOs experienced a bigger pay cut.

While we argue that the poor performance of CSOEs whose CEOs experienced a bigger pay cut is due to CEOs' increased incentives to consume more perks and tunnel firm resources, another possibility is decreased incentive to inflate earnings. It may well be that with pay restriction, CEOs have less incentive to manipulate and increase earnings, which will lead to poor performance after pay restriction. To examine whether the change in earnings manipulation activities contributed to the poor performance of CSOEs following pay regulation, we estimate discretionary accruals of CSOEs by year and find little change in their magnitude over time during our sample period.

## **5. Robustness tests**

In this section, we present the results of our robustness tests. We show that our findings are not due to the global crisis of 2008 and robust to several robustness tests using alternative measures of executive compensation, perk consumption, tunneling, and alternative control sample.

### *5.1. Crisis effect on compensation, perks, and tunneling*

One identification issue in our study is that the post-regulation period largely overlaps with the post-crisis period of the 2008 financial crisis. One may argue that CSOEs were more sensitive to the financial crisis, which would result in the same findings we document, that is, that CSOEs suffered more after the crisis, resulting in greater pay cuts for their executives, which in turn encouraged them to consume more perks and tunnel more resources. Thus, our findings may have little to do with pay regulation and more to do with the crisis-induced performance decline of CSOEs. However, we note that pay-performance sensitivity in CSOEs dropped significantly following the pay cut regulation, as evidenced in Table 6. If the pay cut was driven by the deterioration in performance following the crisis, we should not observe this drop in pay-performance sensitivity in CSOEs.

To further address the concern, we examine whether the crisis-induced decline in performance led to the increase in perk consumption and tunneling. Table 10 presents the results. In column (1), we repeat the regression in column (2) of Table 5 but add an additional interaction variable,  $D\_CSOE \times After2008$ . The

interaction variable captures the difference-in-differences of CEO compensation between CSOEs and non-CSOEs before and after the 2008 financial crisis. The coefficient estimate is negative but insignificant, whereas the coefficient estimate on  $D\_CSOE \times After2009$  remains negative and significant. These results indicate that the 2008 financial crisis is not likely the main cause of CEO pay drop in CSOEs. In the next column, we partition CSOEs into two groups by the median of performance change before and after the crisis of 2008. We use ROS as performance measure. Not surprisingly, we find that CEO pay drops more for those CSOEs whose performance declines more. In columns (3) and (4), we repeat the analysis of columns (1) and (2) but replace the dependent variable with perk consumption. In column (3), the coefficient estimate for  $D\_CSOE \times After2008$  is negative and insignificant, whereas the coefficient estimate for  $D\_CSOE \times After2009$  is significantly positive. More importantly, we find no difference in perk consumption between the two groups of CSOEs partitioned by performance change around the crisis. This finding suggests that the performance decline of CSOEs after the crisis does not drive the CEOs of these firms to consume more perks. In contrast, the evidence in Table 7 indicates that CEOs who suffer higher pay cuts consume more perks. In columns (5) and (6), we examine the effect of the crisis on tunneling. In column (5), we find a positive but insignificant coefficient estimate for  $D\_CSOE \times After2008$ , while the coefficient estimate for  $D\_CSOE \times After2009$  is significantly positive. Again, we find no difference in tunneling between the two groups of CSOEs partitioned by performance changes around the crisis, suggesting that the performance decline of CSOEs after the crisis do not drive the CEOs of these firms to tunnel more firm resources.

### *5.2. Top three executive compensation as a measure of compensation*

Because the pay regulation of 2009 applies to all top executives, not just CEOs, as a robustness test, we use the average compensation of the three most highly paid executives (top three executives) and repeat the tests of previous sections. In most companies, the most highly paid executives are the general manager (CEO), vice general manager, CFO, chairman of the board, and chairman of the supervisory board. We



repeat the main tests in Tables 5, 7, 8, and 9 using the compensation of the top three executives and find consistent results. The results are available in the Internet Appendix.

### *5.3. Entertainment and travel costs as a proxy for perk consumption*

Cai, Fang, and Xu (2011) note that “accounting practice in China is sufficiently lax that managers may be reimbursed for almost any kind of entertainment and travel for any purpose, often with fake or inflated receipts” (p. 61). In their study of the anti-corruption reforms and shareholder valuation, Lin, Morck, Yeung, and Zhao (2017) argue that entertainment and travel costs (ETC) from SOEs mainly fund private benefits. While our measure of perks includes ETC, given previous studies, ETC may serve to better capture the extent of private benefits. However, when we repeat the analysis in Table 7, we obtain practically the same results. We report the results the Internet Appendix.

### *5.4. Related-party transactions as a measure of tunneling*

Ideally, we seek to measure the portion of net other receivables related to the controlling shareholders to proxy for tunneling. Using the “Related Party Relationships and Business Transactions” category in annual reports, Bailey, Huang, and Yang (2011) collect information on “other accounts receivable” in their study of loan decisions by state-controlled banks. This variable reflects the cash amount owed by related parties that is not associated with the sale of goods, which should better capture the extent of expropriation or tunneling. We sum up the balance of “other accounts receivable” items with related parties for each firm-year and use its logarithm as a proxy for tunneling. The disadvantage of using this variable is that this data is missing for many of our firms. Nevertheless, when we repeat the tests in Table 8, we find similar albeit weak results. We report the results in the Internet Appendix.

### *5.5. Exclusion of financial firms from the sample*

As financial firms have substantially different characteristics from industrial firms, we examine whether the results are affected by such firms. We exclude financial firms from the sample and repeat the

main tests in Tables 5, 7, 8, and 9. Financial firms comprise 1.63% of the total sample and 2.57% of the subsample with perks data. We find that the results remain similar after excluding financial firms. The results are available in the Internet Appendix.

### *5.6. Alternative control sample*

The difference-in-differences test is a popular strategy in medical research to identify the causal effects of medicines. The typical research setting for DiD tests is a medical experiment in which all subjects are “sick” and “the medicine or placebo” is randomly assigned to the subjects (Adams 2017). Our setting does not resemble such an ideal medical experiment. As shown in Table 2, CSOEs are different from non-CSOEs in several respects. Thus, the DiD test may not be able to detect the causal effect of pay restriction regulation, to the extent that the differences in firm characteristics between CSOEs and non-CSOEs do not remain constant throughout the sample period. To mitigate such concern, we use only LSOEs as control sample as opposed to using all non-CSOEs that include both LSOEs and private companies. COSEs and LSOEs are more similar to each other in firm characteristics than to private firms. We repeat the main tests in Tables 5, 7, 8, and 9 and find the results remain unchanged. The results are available in the Internet Appendix.

### *5.7. CEO turnovers*

We show pay restriction imposes significant financial losses on the affected managers. One may argue that pay restriction may not be binding given that managers can move to other firms that are not affected by regulation and offer generous pay. Institutional factors in China make this argument unlikely. First, incentives for political promotion are as important as monetary incentives for managers of CSOEs (Cao, Lemmon, Pan, Qian, and Tian 2018). To CEOs who are concerned with political promotion, monetary losses alone may not provide enough incentive to leave for non-CSOE enterprises. Second, it is not likely that the managerial labor market in China is well developed so that managers have viable outside employment options. If so, one should see an increase in abnormal voluntary turnovers following the pay regulation. We find this is not the case. When we examine CEO turnovers by year during our sample period,

we find no abnormal increase in turnovers for managers of CSOEs following pay regulation except a big increase in 2013, which is due to anti-corruption campaign started in late 2012. The univariate difference-in-differences test in CEO turnovers between CSOEs and non-CSOEs before and after pay regulation shows no significant change in turnover behavior. The results are available in the Internet Appendix.

## **6. Conclusion**

The aftermath of the financial crisis of 2008 sparked an intense debate over executive compensation among politicians, investors, regulators, and the public. There are two essential issues in this debate: whether CEO compensation is excessive, and whether CEO pay should be restricted. The second issue warrants investigation regardless of the findings of the first. If CEO pay is not excessive, any restriction on CEO pay will lead to suboptimal results. But even if CEO pay is excessive, a pay restriction regulation may not achieve its intended objectives but instead produce unintended consequences. Using the executive pay regulation the Chinese government imposed on centrally administered state-owned enterprises in 2009, we find that limiting CEO pay backfires, as CEOs with pay cuts respond by consuming more perks and tunneling more firm resources, which in turn destroys firm performance. Rent-seeking behavior is ubiquitous and arguably particularly acute in China. Properly designed CEO compensation can better align the interests of shareholders and managers so that managers have less incentives to seek rents. Our findings provide evidence that cutting CEO compensation could induce more rent-seeking behavior, at least in the China setting.

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## Appendix 1. Variable definitions

Variable	Definition
CEO compensation	Total annual cash compensation (basic salary plus bonus) of CEO, adjusted to 2010 CNY.
Perks	Sum of expenses for travel, business entertainment, overseas training, board meetings, company cars, and meetings from “Cash Payment for Expenses Related to Operating Activity” section of financial statement footnotes, adjusted to 2010 CNY.
Number of paid executives	Number of executives with nonzero cash compensation.
Net other receivables	Balance on net other receivables.
Return on assets (ROA)	Operating profits over total assets.
Return on sales (ROS)	Operating profits over total sales.
Total assets	Total assets.
Total sales	Total sales.
Market capitalization	Market value of shares outstanding.
Market to book ratio	Market capitalization over book value of total shareholder equity.
Total wages	Total compensation paid to employees, adjusted to 2010 CNY.
CEO age	Age of CEO.
Female CEO	Dummy variable equal to one if a CEO is female and zero otherwise.
CEO duality	Dummy variable equal to one if a CEO is also the chairman of the same firm and zero otherwise.
Block ownership	Percentage of shares owned by the ultimate controlling shareholders.
CSOE	Centrally-administered state-own enterprises whose ultimate controlling shareholder is the State-Owned Assets Supervision and Administration Commission of the State Council (SASAC).
D_CSOE	Dummy variable equal to one for CSOEs and zero otherwise.
After2008	Dummy variable equal to one for years after 2008 (i.e., years 2009–2015) and zero otherwise.
After2009	Dummy variable equal to one for years after 2009 (i.e., years 2010–2015) and zero otherwise.
After2012	Dummy variable equal to one for years after 2012 (i.e., years 2013–2015) and zero otherwise.
Pay_Cut_High	Dummy variable equal to one for CSOEs whose pay change is below the median of CSOE pay changes after the regulation and zero otherwise.

Pay_Cut_Low	Dummy variable equal to one for CSOEs whose pay change is above the median of CSOE pay changes after the regulation and zero otherwise.
Performance_High	Dummy variable equal to one for CSOEs whose performance change is above the median CSOE performance change after the 2008 financial crisis and zero otherwise.
Performance_Low	Dummy variable equal to one for CSOEs whose performance change is below the median CSOE performance change after the 2008 financial crisis and zero otherwise.

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**Table 1. Sample composition**

This table presents the distribution of sample firms by year and firm type (CSOEs and non-CSOEs) for the full sample and the subsample with perk data available. All data are obtained from the China Securities Market and Accounting Research (CSMAR) database except perk data, which are hand-collected from financial statement footnotes. All variables are defined in Appendix 1.

Year	All sample firms		Firms with perk data	
	CSOE	Non-CSOE	CSOE	Matched non-CSOE
2005	67	712	26	26
2006	80	872	35	36
2007	94	1024	40	48
2008	99	1144	42	58
2009	95	1119	35	55
2010	95	1122	30	49
2011	94	1116	31	44
2012	95	1103	32	44
2013	93	1096	24	41
2014	92	1076	24	40
2015	89	1044	21	36
Total	993	11428	340	477
Number of unique firms	102	1212	52	65

**Table 2. Summary statistics**

This table presents summary statistics for firm characteristics, CEO compensation and characteristics, perk consumption, tunneling, and firm performance. All variables are defined in Appendix 1.

Variable	All firms			CSOEs			Non-CSOEs		
	N	Mean	Median	N	Mean	Median	N	Mean	Median
<i>Panel A: Firm characteristics</i>									
Total assets (in millions)	12421	25160	2764	993	155824	6320	11428	13806	2641
Total sales (in millions)	12421	6575	1579	993	23938	4185	11428	5067	1474
Market capitalization (in millions)	12421	9658	3777	993	30463	6954	11428	7850	3617
Market to book ratio	12421	3.831	2.728	993	3.214	2.410	11428	3.885	2.757
Total wages (in millions)	12421	442	123	993	1766	369	11428	327	113
Block ownership (%)	12421	36	34	993	46	47	11428	35	33
<i>Panel B: CEO compensation and characteristics</i>									
CEO compensation	12421	542479	378338	993	642538	531293	11428	533785	365630
CEO age	12421	48	47	993	49	49	11428	48	48
Female CEO	12421	0.058	0	993	0.010	0	11428	0.062	0
CEO duality	12421	0.165	0	993	0.056	0	11428	0.174	0
<i>Panel C: Perk consumption</i>									
Perks (in thousands) [A]	817	67092	20700	340	114224	24929	477	33497	17250
Number of paid executives [B]	817	15	14	340	15	14	477	15	15
A / B	817	4127	1383	340	6893	1703	477	2155	1264
Perks / sales (%)	817	1.142	0.672	340	1.151	0.676	477	1.136	0.659
Perks / assets (%)	817	0.784	0.497	340	0.777	0.471	477	0.789	0.518
<i>Panel D: Proxy variable for tunneling</i>									
Net other receivables (in thousands)	12331	161310	32320	967	637311	64853	11364	120806	30701
Net other receivables / assets (%)	12331	2.432	1.068	967	1.792	0.947	11364	2.486	1.081
<i>Panel E: Firm performance</i>									
ROS (%)	12421	6.802	5.627	993	6.394	4.513	11428	6.837	5.768

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ROA (%)	12421	3.789	3.333	993	3.623	3.072	11428	3.804	3.350
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**Table 3. Time variation in outcome variables**

This table presents the medians of CEO compensation, perk consumption, tunneling, firm performance by year, and firm type. All variables are defined in Appendix 1.

Year	CEO compensation (in thousands)		Perks / number of paid executives (in thousands)		Net other receivables / assets (%)		ROS (%)		ROA (%)	
	CSOE	Non-CSOE	CSOE	Non-CSOE	CSOE	Non-CSOE	CSOE	Non-CSOE	CSOE	Non-CSOE
2005	310	230	1241	962	1.627	2.515	5.602	5.036	4.648	3.139
2006	358	250	1417	954	1.446	1.969	6.440	5.468	4.169	3.597
2007	485	298	1196	983	1.050	1.278	7.623	7.309	5.054	4.952
2008	519	315	1228	1054	1.068	1.122	4.147	5.020	3.394	3.298
2009	535	347	1522	1079	0.841	0.997	5.249	6.601	2.994	3.865
2010	608	396	2161	1387	0.682	0.977	6.050	7.195	3.560	4.266
2011	594	429	2762	1503	0.822	0.962	3.594	6.315	2.276	3.784
2012	610	444	2713	1489	0.803	0.931	3.173	4.881	2.224	2.855
2013	562	450	1810	1893	0.831	0.869	3.504	4.982	2.671	2.728
2014	622	467	1483	1445	0.968	0.909	3.007	4.887	1.908	2.572
2015	582	479	1046	1340	0.991	0.866	3.576	5.084	1.959	2.470

**Table 4. Univariate difference-in-differences (DiD) tests**

This table shows the results of the univariate difference-in-differences (DiD) tests for the variables CEO compensation, perks, tunneling, and firm performance. Abnormal figures are the residuals from regressing the variables of interest on firm and year fixed effects. For each variable, we calculate firm-level means before and after regulation (during the periods 2005-2009 and 2010-2015), and then conduct DiD tests. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% level, respectively. All variables are defined in Appendix 1.

Variable		(1)	(2)	(3)
		Before regulation	After regulation	Difference
<i>Panel A: Raw figures</i>				
Log(CEO compensation)	CSOEs	12.975	13.232	0.256***
	Non-CSOEs	12.531	12.957	0.426***
	Difference	0.444***	0.275***	-0.169***
Log(perks / number of paid executives)	CSOEs	14.311	15.028	0.569***
	Non-CSOEs	13.867	14.170	0.324***
	Difference	-0.444*	-0.859***	0.245**
Net other receivables / assets (%)	CSOEs	2.087	1.518	-0.569**
	Non-CSOEs	3.267	1.987	-1.281***
	Difference	1.181***	0.469*	0.712*
ROS (%)	CSOEs	8.336	4.941	-3.395***
	Non-CSOEs	6.338	6.886	0.548
	Difference	1.999	-1.944	-3.943**
ROA (%)	CSOEs	4.278	2.796	-1.482***
	Non-CSOEs	3.883	3.574	-0.309**
	Difference	0.395	-0.777	-1.173**
<i>Panel B: Residual figures net of firm and year fixed effects</i>				
Abnormal log(CEO compensation)	CSOEs	0.095	-0.067	-0.162***
	Non-CSOEs	-0.012	0.004	0.015
	Difference	0.106***	-0.071***	-0.177***
Abnormal log(perks / number of paid executives)	CSOEs	-0.025	0.064	0.103
	Non-CSOEs	0.049	-0.054	-0.113
	Difference	0.074	-0.118**	0.216*
Abnormal (net other receivables / assets) (%)	CSOEs	-0.306	0.238	0.544**
	Non-CSOEs	0.131	-0.079	-0.210**
	Difference	0.437*	-0.317**	0.754**
Abnormal ROS (%)	CSOEs	1.841	-1.392	-3.233***
	Non-CSOEs	-0.336	0.296	0.632
	Difference	2.177**	-1.688**	-3.865**

Abnormal ROA (%)	CSOEs	0.515	-0.411	-0.925*
	Non-CSOEs	-0.130	0.074	0.203
	Difference	0.644*	-0.485**	-1.129**

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**Table 5. Effect of pay regulation on CEO compensation**

This table presents the regression results for the effect of pay regulation on CEO compensation. The dependent variable is the logarithm of CEO compensation. Column (4) excludes firms that are dual-listed on the Hong Kong Stock Exchange. All regressions include firm and year fixed effects. Standard errors are adjusted for clustering at both firm and year levels. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% level, respectively. All variables are defined in Appendix 1.

Variable	(1)	(2)	(3)	(4)
D_CSOE×After2009		-0.177*** (-3.206)	-0.132** (-2.736)	-0.138** (-2.329)
D_CSOE×After2012			-0.093* (-1.923)	
CEO age	0.011*** (4.598)	0.011*** (4.615)	0.011*** (4.604)	0.011*** (4.905)
Female CEO	-0.013 (-0.211)	-0.013 (-0.207)	-0.012 (-0.190)	-0.010 (-0.164)
CEO duality	0.070 (1.750)	0.068 (1.707)	0.068 (1.687)	0.069 (1.735)
Log(total assets)	0.207*** (8.734)	0.209*** (8.931)	0.208*** (8.969)	0.207*** (8.760)
Return on sales	0.413*** (7.764)	0.406*** (7.778)	0.406*** (7.798)	0.395*** (7.595)
Market to book ratio	0.007* (1.949)	0.007* (1.925)	0.007* (1.956)	0.006* (1.831)
Number of observations	12421	12421	12421	12058
Adjusted $R^2$	0.670	0.670	0.670	0.666
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes

**Table 6. Effect of pay regulation on pay-performance sensitivity**

This table presents the regression results for pay-performance sensitivity. The dependent variable is the logarithm of CEO compensation. The sample period is 2005–2015 in columns (1) and (2) and 2005–2012 in columns (3) and (4). Columns (1) and (3) use return on sales (ROS) as the performance measure, and columns (2) and (4) use return on assets (ROA). All regressions include firm and year fixed effects. Standard errors are adjusted for clustering at both firm and year levels. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% level, respectively. All variables are defined in Appendix 1.

Variable	Sample period: 2005–2015		Sample period: 2005–2012	
	<u>ROS</u> (1)	<u>ROA</u> (2)	<u>ROS</u> (3)	<u>ROA</u> (4)
Performance	0.383*** (4.617)	1.783*** (7.872)	0.283*** (3.622)	1.595*** (6.668)
Performance×After2009	-0.012 (-0.136)	0.226 (0.754)	0.059 (0.575)	0.260 (0.914)
Performance×D_CSOE	1.446*** (3.871)	1.893** (3.079)	1.466*** (3.715)	1.989** (3.088)
D_CSOE×After2009	-0.070 (-1.323)	-0.083 (-1.451)	-0.046 (-0.953)	-0.038 (-0.683)
Performance×D_CSOE×After2009	-1.181** (-2.953)	-1.921*** (-3.294)	-0.882* (-1.946)	-2.047* (-2.283)
CEO age	0.011*** (4.546)	0.011*** (4.525)	0.011*** (4.445)	0.011*** (4.327)
Female CEO	-0.014 (-0.224)	-0.024 (-0.379)	-0.088 (-1.429)	-0.103 (-1.692)
CEO duality	0.068 (1.709)	0.072 (1.717)	0.143*** (3.871)	0.152*** (4.241)
Log(total assets)	0.212*** (8.996)	0.209*** (8.850)	0.218*** (7.483)	0.219*** (7.870)
Market to book ratio	0.006* (1.856)	0.005 (1.447)	0.007* (1.910)	0.006 (1.712)
Number of observations	12421	12421	8927	8927
Adjusted $R^2$	0.672	0.677	0.700	0.705
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes



**Table 7. Effect of pay regulation on perk consumption**

This table presents the regression results for the effect of pay regulation on perk consumption. The dependent variable is the logarithm of perk consumption scaled by the number of paid executives. The sample period is 2005–2012 in column (5) and 2005–2015 in all other columns. All regressions include firm and year fixed effects. Standard errors are adjusted for clustering at both firm and year levels. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% level, respectively. All variables are defined in Appendix 1.

Variable	(1)	(2)	(3)	(4)	(5)
D_CSOE×After2009		0.200** (2.376)	0.249*** (3.431)		
D_CSOE×After2012			-0.121 (-1.190)		
Pay_Cut_High×After2009				0.281** (2.910)	0.324** (3.254)
Pay_Cut_Low×After2009				0.133 (1.250)	0.211* (2.311)
Log(total assets)	0.362*** (3.756)	0.357*** (3.624)	0.356*** (3.647)	0.359*** (3.653)	0.246** (2.480)
Log(total wages)	0.335*** (3.402)	0.343*** (3.544)	0.343*** (3.591)	0.347*** (3.599)	0.364*** (3.582)
Number of observations	817	817	817	817	630
Adjusted R <sup>2</sup>	0.902	0.903	0.903	0.903	0.916
Firm fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes

**Table 8. Effect of pay regulation on tunneling**

This table presents the regression results for the effect of pay regulation on tunneling. The dependent variable is the logarithm of net other receivables. The sample period is 2005–2012 in column (5) and 2005–2015 in all other columns. All regressions include firm and year fixed effects. Standard errors are adjusted for clustering at both firm and year levels. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% level, respectively. All variables are defined in Appendix 1.

Variable	(1)	(2)	(3)	(4)	(5)
D_CSOE×After2009		0.201* (1.959)	0.135 (1.283)		
D_CSOE×After2012			0.134 (1.729)		
Pay_Cut_High×After2009				0.351** (2.759)	0.345** (2.587)
Pay_Cut_Low×After2009				0.047 (0.379)	-0.111 (-0.924)
Log(total assets)	0.976*** (13.465)	0.973*** (13.487)	0.973*** (13.483)	0.972*** (13.507)	1.044*** (11.067)
Return on sales	-0.972*** (-4.853)	-0.965*** (-4.870)	-0.965*** (-4.874)	-0.962*** (-4.866)	-0.818** (-3.477)
Block ownership	-0.007 (-1.586)	-0.007 (-1.602)	-0.007 (-1.604)	-0.007 (-1.626)	-0.004 (-0.946)
Number of observations	12331	12331	12331	12331	8857
Adjusted R <sup>2</sup>	0.709	0.709	0.709	0.710	0.722
Firm fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes

**Table 9. Effect of pay regulation on firm performance**

This table presents the regression results for the effect of pay regulation on firm performance. The dependent variables are return on sales (ROS) in columns (1) to (3) and return on assets (ROA) in columns (4) to (6). All regressions include firm and year fixed effects. Standard errors are adjusted for clustering at both firm and year levels. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% level, respectively. All variables are defined in Appendix 1.

Variable	<u>ROS</u>			<u>ROA</u>		
	(1)	(2)	(3)	(4)	(5)	(6)
D_CSOE×After2009	-3.506** (-2.345)	-3.862** (-2.343)		-1.116 (-1.779)	-1.122 (-1.657)	
D_CSOE×After2012		0.731 (0.553)			0.013 (0.026)	
Pay_Cut_High×After2009			-4.880** (-2.974)			-2.139** (-2.613)
Pay_Cut_Low×After2009			-2.116 (-1.068)			-0.081 (-0.100)
Number of observations	12421	12421	12421	12421	12421	12421
Adjusted R <sup>2</sup>	0.414	0.414	0.414	0.467	0.467	0.467
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

**Table 10. Effect of financial crisis on CEO compensation, perks, and tunneling**

This table presents the regression results for the effect of the 2008 financial crisis on CEO compensation, perks, and tunneling. The dependent variables are the logarithm of CEO compensation in columns (1) and (2), the logarithm of perks scaled by the number of paid executives in columns (3) and (4), and the logarithm of net other receivables in columns (5) and (6). All regressions include firm and year fixed effects. Standard errors are adjusted for clustering at both firm and year levels. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% level, respectively. All variables are defined in Appendix 1.

Variable	<u>Log(CEO compensation)</u>		<u>Log(perks / number of paid executives)</u>		<u>Log(net other receivables)</u>	
	(1)	(2)	(3)	(4)	(5)	(6)
D_CSOE×After2008	-0.011 (-0.308)		-0.016 (-0.237)		0.061 (0.736)	
D_CSOE×After2009	-0.168*** (-4.282)		0.211** (3.008)		0.153** (2.330)	
Performance_High×After2008		-0.044 (-0.585)		0.147 (1.236)		0.144 (1.056)
Performance_Low×After2008		-0.260** (-3.060)		0.155 (1.648)		0.235 (1.659)
CEO age	0.011*** (4.612)	0.011*** (4.575)				
Female CEO	-0.013 (-0.207)	-0.014 (-0.218)				
CEO duality	0.068 (1.706)	0.069 (1.726)				
Log(total assets)	0.209*** (8.928)	0.208*** (8.884)	0.358*** (3.599)	0.356*** (3.672)	0.973*** (13.484)	0.973*** (13.491)
Return on sales	0.406*** (7.781)	0.399*** (7.812)			-0.964*** (-4.871)	-0.961*** (-4.863)
Market to book ratio	0.007* (1.928)	0.007* (1.885)				
Log(total wages)			0.343*** (3.527)	0.340*** (3.539)		
Block ownership					-0.007 (-1.641)	-0.007 (-1.627)
Number of observations	12421	12421	817	817	12331	12331

Adjusted $R^2$	0.670	0.670	0.903	0.902	0.709	0.709
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

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# **Restricting CEO Pay Backfires: Evidence from China**

## **Internet Appendix**

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## **Summary**

The internet appendix reports additional results from robustness tests in Section 5. Table IA1 reports results using top three executive compensation as a measure of compensation (Section 5.2). Table IA2 presents results using entertainment and travel costs as proxy for perk (Section 5.3). Table IA3 uses related party transactions as a measure of tunneling (Section 5.4). Table IA4 reports results after excluding financial firms from the sample (Section 5.5). Table IA5 reports results after excluding private firms from the sample (Section 5.6). Table IA6 reports results on CEO turnovers (Section 5.7).

**Table IA1. Top three executive compensation as the measure of compensation**

This table presents the results using top three executive compensation as a measure of compensation. The dependent variable is the average compensation of top three most paid executives in logarithm in column (1), the logarithm of perks scaled by the number of paid executives in column (2), net other receivables in logarithm in column (3), and return on sales (ROS) in column (4). Each column repeats the main regression specification in Tables 5, 7, 8, and 9 where the table and column numbers are presented below the column numbers of this table. Pay\_Cut\_High and Pay\_Cut\_Low are dummy variables based on the median of changes in top three executive compensation around 2009 in CSOEs. All regressions include firm and year fixed effects. Standard errors are adjusted for clustering at both firm and year levels. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% level, respectively. All variables are defined in Appendix 1.

Variable	<u>Log(perks / number of paid</u>			
	<u>Log(top three compensation)</u>	<u>executives)</u>	<u>Log(net other receivables)</u>	<u>ROS</u>
	(1)	(2)	(3)	(4)
	Column (3)	Column (4)	Column (4)	Column (3)
	Table 5	Table 7	Table 8	Table 9
D_CSOE×After2009	-0.115** (-2.656)			
D_CSOE×After2012	-0.064* (-2.038)			
Pay_Cut_High×After2009		0.303*** (3.362)	0.380** (3.047)	-5.118** (-2.938)
Pay_Cut_Low×After2009		0.101 (0.810)	0.023 (0.176)	-1.872 (-0.975)
Log(total assets)	0.249*** (13.612)	0.347*** (3.645)	0.972*** (13.506)	
Return on sales	0.319*** (6.671)		-0.960*** (-4.852)	
Market to book ratio	0.007** (2.258)			
Log(total wages)		0.353*** (3.708)		
Block ownership			-0.007 (-1.627)	
Observations	12421	822	12331	12421
Adjusted $R^2$	0.810	0.904	0.710	0.414
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes



**Table IA2. Entertainment and travel costs (ETC) as a measure of perk consumption**

This table presents regression results of the impact of pay regulation on perk consumption. The dependent variable is the logarithm of entertainment and travel costs (ETC) scaled by the number of paid executives. The sample period is 2005–2012 in column (5) and 2005–2015 in all other columns. All regressions include firm and year fixed effects. Standard errors are adjusted for clustering at both firm and year levels. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% level, respectively. All variables are defined in Appendix 1.

Variable	<u>Log(entertainment and travel costs / number of paid executives)</u>				
	(1)	(2)	(3)	(4)	(5)
D_CSOE×After2009		0.189* (2.137)	0.226** (2.788)		
D_CSOE×After2012			-0.092 (-0.862)		
Pay_Cut_High×After2009				0.298** (2.847)	0.322** (2.610)
Pay_Cut_Low×After2009				0.100 (0.867)	0.176 (1.562)
Log(total assets)	0.429*** (4.035)	0.425*** (3.931)	0.424*** (3.946)	0.427*** (3.974)	0.306** (2.722)
Log(total wages)	0.332** (3.113)	0.339*** (3.218)	0.339*** (3.243)	0.344*** (3.286)	0.359** (3.392)
Number of observations	817	817	817	817	630
Adjusted R <sup>2</sup>	0.902	0.903	0.903	0.904	0.918
Firm fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes

**Table IA3. Related party transactions as a measure of tunneling**

This table presents regression results of the impact of pay regulation on tunneling. The dependent variable is the logarithm of the sum of other accounts receivables from the “Related Party Relationships and the Business Transactions” section in annual reports. The sample period is 2005–2012 in column (5) and 2005–2015 in all other columns. All regressions include firm and year fixed effects. Standard errors are adjusted for clustering at both firm and year levels. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% level, respectively. All variables are defined in Appendix 1.

Variable	<u>Log (other accounts receivables)</u>				
	(1)	(2)	(3)	(4)	(5)
D_CSOE×After2009		1.327* (1.936)	1.091 (1.467)		
D_CSOE×After2012			0.485 (0.998)		
Pay_Cut_High×After2009				1.656* (1.944)	1.372 (1.640)
Pay_Cut_Low×After2009				0.999 (1.245)	0.687 (0.713)
Log(total assets)	1.066*** (4.527)	1.048*** (4.543)	1.049*** (4.544)	1.046*** (4.538)	0.869*** (2.993)
Return on sales	-2.174*** (-3.674)	-2.116*** (-3.683)	-2.119*** (-3.687)	-2.111*** (-3.684)	-1.597* (-2.133)
Block ownership	0.030 (1.523)	0.029 (1.505)	0.029 (1.526)	0.029 (1.538)	0.041 (1.697)
Number of observations	10737	10737	10737	10737	7742
Adjusted R <sup>2</sup>	0.387	0.387	0.387	0.387	0.397
Firm fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes

**Table IA4. Results using the sample without financial firms**

This table presents regression results after excluding financial firms from the sample. The dependent variable is the CEO compensation in logarithm in column (1), the logarithm of perks scaled by the number of paid executives in column (2), net other receivables in logarithm in column (3), and return on sales (ROS) in column (4). Each column repeats the main regression specification in Tables 5, 7, 8, and 9 where the table and column numbers are presented below the column numbers of this table. All regressions include firm and year fixed effects. Standard errors are adjusted for clustering at both firm and year levels. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% level, respectively. All variables are defined in Appendix 1.

Variable	<u>Log(perks / number of paid</u>			
	<u>Log(CEO compensation)</u>	<u>executives)</u>	<u>Log(net other receivables)</u>	<u>ROS</u>
	(1)	(2)	(3)	(4)
	Column (3)	Column (4)	Column (4)	Column (3)
	Table 5	Table 7	Table 8	Table 9
D_CSOE×After2009	-0.129** (-2.588)			
D_CSOE×After2012	-0.071 (-1.439)			
Pay_Cut_High×After2009		0.285** (2.834)	0.301** (2.458)	-5.406*** (-3.280)
Pay_Cut_Low×After2009		0.138 (1.283)	-0.000 (-0.000)	-2.009 (-1.008)
CEO age	0.011*** (4.611)			
Female CEO	-0.030 (-0.468)			
CEO duality	0.067 (1.735)			
Log(total assets)	0.213*** (9.179)	0.359*** (3.440)	1.059*** (16.414)	
Return on sales	0.413*** (7.439)		-0.833*** (-4.780)	
Market to book ratio	0.007* (1.832)			
Log(total wages)		0.302*** (3.339)		

Block ownership				-0.008** (-2.588)	
Observations	12218	796	12218		12218
Adjusted $R^2$	0.665	0.897	0.737		0.403
Firm FE	Yes	Yes	Yes		Yes
Year FE	Yes	Yes	Yes		Yes

**Table IA5. Results using the sample excluding private firms**

This table presents regression results after excluding non-SOE firms from the sample. The dependent variable is the CEO compensation in logarithm in column (1), the logarithm of perks scaled by the number of paid executives in column (2), net other receivables in logarithm in column (3), and return on sales (ROS) in column (4). Each column repeats the main regression specification in Tables 5, 7, 8, and 9 where the table and column numbers are presented below the column numbers of this table. All regressions include firm and year fixed effects. Standard errors are adjusted for clustering at both firm and year levels. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% level, respectively. All variables are defined in Appendix 1.

Variable	<u>Log(perks / number of paid</u>			
	<u>Log(CEO compensation)</u>	<u>executives)</u>	<u>Log(net other receivables)</u>	<u>ROS</u>
	(1)	(2)	(3)	(4)
	Column (3)	Column (4)	Column (4)	Column (3)
	Table 5	Table 7	Table 8	Table 9
D_CSOE×After2009	-0.096* (-2.102)			
D_CSOE×After2012	-0.046 (-0.955)			
Pay_Cut_High×After2009		0.342*** (3.248)	0.350** (2.508)	-4.017** (-2.695)
Pay_Cut_Low×After2009		0.193 (1.602)	0.053 (0.396)	-1.235 (-0.639)
CEO age	0.011*** (3.628)			
Female CEO	-0.066 (-1.040)			
CEO duality	0.026 (0.557)			
Log(total assets)	0.121** (2.850)	0.369** (3.028)	0.870*** (6.167)	
Return on sales	0.859*** (7.675)		-1.333** (-2.806)	
Market to book ratio	0.012* (1.911)			
Log(total wages)		0.344** (3.135)		

Block ownership			0.000 (0.067)	
Observations	5063	562	5015	5063
Adjusted $R^2$	0.629	0.900	0.738	0.556
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

**Table IA6. Results on CEO turnovers***Panel A: CEO turnover by year*

This panel presents CEO turnover rate by year and firm type. A CEO turnover is identified when the CEO name in the current year is different from the previous year. CEO turnover rate is the number of CEO turnovers identified in a given year over the number of companies in that year.

Year	CSOEs	Non-CSOEs
2005	0.122	0.114
2006	0.058	0.153
2007	0.119	0.197
2008	0.214	0.167
2009	0.170	0.161
2010	0.151	0.157
2011	0.167	0.170
2012	0.132	0.155
2013	0.289	0.169
2014	0.180	0.207
2015	0.230	0.221

*Panel B: Univariate difference-in-differences (DiD) test on CEO turnovers*

This panel presents the result of univariate difference-in-differences (DiD) test on CEO turnovers. The figures used in the tests are the average during the sub-periods 2005–2009 (before regulation) and 2010–2015 (after regulation). \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% level, respectively.

	Before regulation	After regulation	Difference
CSOEs	0.143	0.191	0.048**
Non-CSOEs	0.170	0.181	0.011
Difference	0.027	-0.011	0.037