Restricting Top Executive Pay and Corporate Mergers and Acquisitions*

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Abstract

The literature suggests that top executives receive a significantly higher pay after they conduct a sizable merger, which has become a pecuniary incentive for top executives to pursue mergers and acquisitions (M&As). In this paper, we take advantage of a pay-restriction policy implemented on Chinese state-owned enterprises (SOEs) since 2015 and show that when the top executives' pecuniary incentive for M&As is restricted, firms tend to conduct fewer M&As. This result is more pronounced for SOEs whose top executives have stronger pecuniary incentive for a merger prior to the regulatory change. We further find that the performance of M&As conducted by SOEs improved modestly after the policy, which implies that the policy has induced SOEs to forego value-destroying M&As. However, this seeming bright side of the policy is accompanied by a significant decrease in the value of SOEs.

Key words: pay-restriction policy; mergers and acquisitions; incentive for growth

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1. Introduction

In response to the excessive top executive compensation, governments worldwide have implemented various regulatory policies, trying to influence the level and structure of top executive pay. Among these regulations, the widely-known ones include the "Clinton/Trump $1 million deductibility limitation" that eliminates the tax reduction on executive pay in excess of $1 million and the "say on pay" regulations that, being adopted by several developed countries[1], give shareholders voting rights regarding top executive pay (see, e.g., Murphy and Jensen, 2018; Nanda, Silveri, Wang and Zhao, 2024). Given the specific legal requirements, many governments have been unable to directly cap the level of top executive pay or impose restrictions on the structure of the pay (Murphy and Jensen, 2018). Therefore, studies on pay-restriction policies have focused on the question of whether these policies have realized their stated objectives and explored the impact of the policies on the level and structure of executive pay, pay mechanisms and practices, executives' behavior such as turnover and firm performance and value. Unless the primary purpose of a policy is to influence a specific outcome (not executive compensation *per se*), very few studies have investigated the role of the policies in impacting firms' strategic policies[2].

Existing literature on pay-restriction policies shows that most of these policies have not realized their stated purpose of lowering top executive pay but, instead, give rise to unintended, mostly undesirable, consequences (e.g., Murphy and Jensen, 2018). Due to the

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[1] These countries include the United Kingdom (U.K.), the United States (U.S.), Australia, Denmark, Portugal, Spain, Sweden, the Netherlands and Norway.

[2] For example, being motivated by the intention of the policy, Kleymenova and Tuna (2021) investigate the effect of the 2010 UK Remuneration Code on the risk-taking and related policies in U.K. banks.

ineffectiveness of the policies in curbing top executive pay, it is still unclear about the real impact of limited top executive compensation on firms. Filling this gap in the literature, in this study we take advantage of a pay-restriction policy imposed on Chinese stated-owned enterprises (SOEs) that is shown to be effective in curbing top executives' pay and investigate the impact of the policy on the affected firms' decisions on the largest corporate investments, i.e., M&As.

Confronted with the excessive compensation received by some SOEs' top executives and the inequality of pay between executives and ordinary employees in SOEs[3], the Chinese government has implemented two major regulations to limit SOEs' executive compensation, trying to restrict the executive compensation to a multiple of ordinary employees' average salary in SOEs. Given the stability and predictability of employees' salary, these policies have essentially capped the level of top executives' pay, a practice that is infeasible in many other countries. Studies on pay-restriction policies in China have mainly focused on the first policy that was implemented in 2009 (henceforth the 2009 pay-restriction policy or 2009 policy) (e.g., Bae Gong and Tong, 2024; Nanda et al., 2024). However, as shown by Bae et al. (2024), although the 2009 policy has been effective in limiting top executives' annual pay, the policy is associated with a substantial increase in perks, a less visible but important form of pay for top executives in China. Therefore, the role of the 2009 policy in restricting top executives' total pay in the affected firms is limited.

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[3] As shown by our statistics, the average top executive pay is comparable between SOEs and non-SOEs even though SOEs' firm size is much larger. However, it is well recognized that top executives in SOEs are more government officials than professional managers. Compared to government officials of the similar rank, SOEs' top executives receive a noticeably higher level of pay (see a report by *People's Daily*: http://finance.people.com.cn/n/2014/0929/c1004-25755900.html (in Chinese)).

We focus on the second pay-restriction policy that is deemed to be effective in curbing the total pay for top executives in the affected firms. Implemented in January 2015 and imposed on central state-owned enterprises (CSOEs), the policy stipulates that the compensation for corporate leaders[4] should have three components: base salary, performance-based pay and incentive income for the tenure, and the multiple of a company leader's total annual pay to the ordinary employees' average salary cannot be greater than 10.4 (versus 30 stipulated under the 2009 policy). Further overcoming the weakness of the 2009 policy, the 2015 policy sets restrictions on seven types of allowance[5] and imposes injunctions that prohibit firms from paying for executives' personal expenses; thus, this policy limits the amount of perks consumed by top executives. Although the 2015 policy targets directly at CSOEs, it requires local SOEs (LSOEs) to push forward the reform on corporate leaders' remuneration following the guidelines for CSOEs. Therefore, all SOEs are affected by the 2015 policy. As shown by our empirical results, the level of both top executive pay particularly CEO pay and perks has indeed decreased significantly in SOEs after the policy relative to non-SOEs, indicating that policy has been effective and achieved its stated purpose of curbing top executive pay in the affected firms.

The mechanism behind the role of the 2015 pay-restriction policy in impacting SOEs' M&A activities is intuitive. The literature suggests that top executives' pay package provides them with an incentive for growth and M&As are a tool often used by top executives to increase the size of the firm (Bliss and Rosen, 2001; Harford and Li, 2007; Murphy, 2013).

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[4] The corporate leaders include the chairman, secretary of the party committee, general manager, chairman of the board of supervisors and other personnel in charge.
[5] The seven types of allowance include the allowance on company cars, office occupancy, training, business entertainment, domestic and overseas travel and communication.

By limiting the level of top executives' pay (including perks), the 2015 policy is supposed to lower the sensitivity of pay to firm size and hence the pecuniary reward to top executives for conducting sizable M&As. Therefore, the policy is expected to reduce the M&A propensity in SOEs.

Our sample consists of 8,696 firm-year observations of 2,174 non-financial firms listed in Shanghai and Shenzhen stock exchanges from 2013 to 2016, two years before and after the 2015 policy. Because the policy only affects SOEs, we take it as a quasi-natural experiment and employ the difference-in-difference (DID) methodology, in which SOEs are the treated group and non-SEOs are the control group. Because only sizable M&As would noticeably affect firm size and top executive pay, we focus on large M&A deals whose value to the acquirer's total assets is at least 1% (we call these M&As *1% acquisitions*). The DID regression results for the number of *1% acquisitions* show that, consistent with our conjecture, the M&A propensity in SOEs has reduced dramatically relative to non-SOEs after the policy. The result is statistically significant and economically strong: the number of 1% *acquisitions* announced by SOEs has decreased by -0.046 relative to SOEs, noting that the average number of *1% acquisitions* announced by SOEs (non-SOEs) is 0.07 (0.19) before the policy.

Our main finding that the M&A propensity in SOEs has reduced substantially after the 2015 policy has survived a battery of robustness checks, including the propensity score matching (PSM)-DID analysis, parallel trend analysis, placebo tests and the usage of alternative fixed effects or dependent variables. These robustness checks suggest that our samples for the analyses satisfy the parallel trend assumption, thereby validating the usage of

DID models. Besides, these checks also indicate that our main finding is unlikely to be driven by problems such as sample selection bias or omission of confounding events or variables that simultaneously influence both the implementation of the policy and the outcome, i.e., firms' M&A propensity. Further supporting the causal relation between the 2015 policy and reduced M&A propensity in SOEs, our cross-sectional analyses reveal that this relation is more pronounced among SOEs that are more severely impacted by the policy than those that are less impacted.

Then, we investigate the mechanisms behind our main finding. Specifically, we examine whether the 2015 policy has lowered top executives' pecuniary incentive to conduct M&As, which in turn leads to reduced M&A activities in SOEs. To this end, we first examine whether and how the policy affects the top executives' incentive for growth (pay-size elasticity). Intuitively, when the level of top executive's pay is limited, the pay would become less sensitive to its primary determinants such as firm size. Consistent with this notion, our results show that both the CEO pay-size elasticity and perk-size elasticity have reduced substantially in SEOs relative to non-SOEs, indicating that top executives' pecuniary incentive for growth in SOEs has indeed been weakened by the 2015 policy. Next, we use cross-sectional analyses to bridge the weakened top executives' incentive for growth and declined M&A propensity in SOEs. Supporting this link, our results show that SOEs whose executive have greater incentive for growth prior to the policy (e.g., smaller SOEs or SOEs managed by younger top executives) tend to experience a larger decrease in M&A activities. Lastly, we rule out some alternative channels for the 2015 policy to impact SOEs' M&A propensity, which include the elevated top executive turnover or improved corporate

governance in SOEs accompanying the implementation of the policy.

To further investigate the economic consequences of the reduced M&A propensity in SOEs, we examine how the performance of M&As conducted by SOEs changed around the 2015 policy. Our results suggest that the performance of M&As conducted by SOEs has slightly improved after the policy relative to non-SOEs. While implying a seeming bright side of the 2015 policy, this finding does not mean that the policy is beneficial for SOEs' shareholders: on the contrary, we find that SOEs' Tobin's Q decreased significantly after the policy relative to non-SOEs.

Our paper contributes to the literature studying the consequences of pay-restriction policies (e.g., Bae et al, 2024; Dittmann, Maug and Zhang, 2011; Kleymenova and Tuna, 2021; Murphy and Jensen, 2018; Nanda et al. 2024; Obermann and Velte, 2018). The literature shows that most of the pay-restriction policies have been unable to realize their stated purpose of curbing executive pay; thus, the real effect of limited top executive pay on firms is unclear. Focusing on a policy that is demonstrated to be effective in limiting top executive pay, this study shows a significant impact of the policy on M&A activities of the affected firms and uncovers that, had a policy realized its stated purpose, it could give rise to other unintended consequences, which are possibly associated with firms' strategic policies and value and call for attention from regulators and shareholders.

Our paper also contribute to the literature studying the motives for top executives to conduct M&As, particularly the stream focusing on top executives' pecuniary incentive for growth (e.g., Bliss and Rosen, 2001; Grinstein and Hribar, 2004; Harford and Li, 2007; Yim, 2013). Adding to this literature, we introduce a regulatory change as an exogenous shock to

top executives' pecuniary incentive for growth in the affected firms, thereby mitigating the

potential endogeneity problem in this issue and reinforcing the causal relation between the

top executives' pecuniary incentive for growth and their engagement in M&A activities.

The remainder of this paper is organized as follows: Section 2 introduces the background

regarding the executive compensation in Chinese listed firms and two pay-restriction policies

implemented in China and develops the main hypothesis. Section 3 describes the sample and

data. Section 4 provides evidence on the impact of the 2015 pay-restriction policy on the

M&A propensity in SOEs. Section 5 examines mechanisms behind the role of the 2015

policy in impacting SOEs' M&A activities. Section 6 investigates the impact of the 2015

policy on the performance of M&As conducted by SOEs. Section 7 concludes.

2. Background and hypothesis development

2.1. Executive compensation in Chinese listed firms

Starting from 2006, public firms in China have been required to disclose the

compensation for individually-named managers and board members (Conyon and He, 2011).

Associated with the availability of data is a growing literature on the executive compensation

in China. Studies show that although the level of executive pay in Chinese listed firms is

relatively low[6], the mechanisms of executive pay are comparable between China and Anglo-

American countries, such as the U.S. For instance, firms' size and performance are two

primary determinants of executive pay and a positive pay-performance sensitivity is

documented by a number of studies that use alternative samples and proxies for firm

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[6] For example, Jiang and Kim (2015) report that the median compensation for top managers of SOEs
(non-SOEs) is 470,000 (398,164) RMB, which translates to about 77,000 (65,231) U.S. Dollar (USD),
whereas Pan and Zhou (2018) report that the median compensation for U.S. CEOs is 5.9 million USD.

performance (see, e.g., Conyon and He, 2011; Firth, Fung and Rui, 2006; Kato and Long, 2006). However, despite of the positive link between the executive pay and firm performance, it does not mean that executives in China are similarly incentivized as those in the U.S. According to Jiang and Kim (2015), top managers of SOEs generally hold a negligible proportion of the firm's shares. Although top managers of non-SOEs especially those of family firms or firms founded by entrepreneurs hold a larger proportion of shares, like in SOEs, most non-SOEs' top managers are insignificant owners of firms.

Given that top managers of SOEs receive a pay that is very low relative to the size of the firm they manage and hold a proportion of shares too small to align their wealth to the value of the firm, whether these managers are adequately motivated has become an interesting question. Indeed, other than the explicit incentive provided in the compensation contracts, there are at least two ways for top managers of SOEs to be incentivized. The first way is through the promotion to a higher-level government position. Top managers of SOEs are essentially government officials who will return to government posts when their term as firm managers is finished (Firth et al., 2006; Jiang and Kim, 2015). Therefore, a good performance of the firm that they manage would benefit the managers' post-manager career. Consistent with the notion, Cao, Lemmon, Pan, Qian and Tian (2019) find that the likelihood that the CEO receives a political promotion is positively related to firm performance. The second way to incentivize the SOEs' managers is through the usage of perks. The literature suggests that perk consumption is a non-negligible component of executive pay that acts as a substitute for cash compensation to motivate executives, with the role especially pronounced in SOEs. (see, e.g., Adithipyangkul, Alon and Zhang, 2011; Gul, Cheng and Leung, 2011; Jiang and Kim,

2015).

2.2. The pay-restriction policies

Being confronted with the excessive compensation received by some SOEs' top executives and the inequality of pay between SOEs' executives and ordinary employees, the Chinese government has implemented two pay-restriction policies on SOEs. The first policy was carried out in 2009, in which six administrative departments in China jointly issued the "Guideline to Further Regulate Executive Compensation in Central State-Owned Enterprises" with the consent of the State Council, the chief administrative authority in China. This policy applies to senior executives of CSOEs, including the chairman and general manager. A comprehensive interpretation of this policy can be found in Bae et al. (2024) and Nanda et al. (2024).

According to Bae et al. (2024) and as our analysis will show, the 2009 pay-restriction policy has theoretically limited CSOEs' executive pay to 30 times the ordinary employees' average salary, which seems to be unbinding given the relative low level of CSOEs' executive compensation. Although the empirical results of both Bae et al. (2024) and Nanda et al. (2024) confirm the effectiveness of the policy in curbing top executives' annual pay in CSOEs, Bae et al. (2024) further show that perks consumed by CSOEs' top executives increased substantially after the policy. Given the importance of perks as a component of executive pay, the findings of Bae et al. (2024) suggest that the role of the 2009 policy in restricting CSOEs' total executive pay (including annual pay and perks) is limited.

Despite of the finding of Bae et al. (2024) and Nanda et al. (2024), anecdotal evidence suggests that top executives of some SOEs were still receiving abnormally high pay even

after the implementation of the 2009 policy. This observation has attracted a great deal of attention from the public, media and regulators. In November 2013, the Third Plenary Session of the 18th Central Committee of the Communist Party of China (CPC) clearly proposed that the compensation of SOEs' executives need to be reasonably determined and strictly standardized. This proposal has been concretized after the meeting of the Political Bureau of the CPC Central Committee held on August 29th, 2014, in which four reform proposals were deliberated and approved, including the "Reform Proposal for the Remuneration System of Central State-Owned Enterprise Leaders". Because the reform proposal was to take effect after January 1st, 2015, we refer to it as the 2015 reform proposal.

According to the 2015 reform proposal, executive compensation in CSOEs should have three components: base salary, performance-based pay and incentive income for the tenure. The proposal further stipulates that the base salary should be determined based on twice the average salary for the firm's ordinary employees in the previous fiscal year. The performance-based pay should be no more than twice the base salary and can be adjusted using an adjustment factor, which, being determined by the firm's characteristics and industry, should be capped at 1.5. The incentive income for the tenure should be linked with the executive's evaluation outcome for the tenure and cannot be greater than 30% the total pay received by the executive during the tenure. In the Appendix Table A1, we summarize the requirements stipulated by the 2015 reform proposal and compare them with those stipulated by the 2009 pay-restriction policy. By expressing the maximum amount of each component of the pay as a multiple of the average salary of ordinary employees, Table A1 shows that the multiple of an executive's pay to the ordinary employees' average salary is limited to 10.4

under the 2015 reform proposal, which is much lower than 30, the maximum multiple stipulated under the 2009 policy. In this regard, the 2015 reform is more binding in restricting executives' compensation than the 2009 pay-restriction policy.

Another notable issue is that, along with the reform proposal, the meeting of the Political Bureau of the CPC Central Committee on August 29th , 2014 also approved the "Opinions on Reasonably Determining and Strictly Standardizing the Treatment and Business Expenses of Personnel in Charge of Central State-Owned Enterprises" (henceforth opinions), which sets limits for CSOEs and other government agencies on seven types of allowance and imposes injunctions that prohibit companies from paying for executives' personal expenses. The opinions were further concretized and refined by the State-Owned Assets Supervision Commission of the State Council in August 2015[7]. Because the opinions and measures target at the perk consumption and were issued at almost the same time as the 2015 reform proposal, we refer to the combined 2015 reform proposal, opinions and measures as the 2015 pay-restriction policy (or 2015 policy).

As mentioned above, the 2015 pay-restriction policy is more binding than the 2009 policy in restricting executives' annual pay and sets limits on perk consumption. Therefore, the 2015 policy is supposed to be more effective in limiting executives' total compensation compared to the 2009 policy. Another noteworthy difference between the 2009 and 2015 policies is that, while both polices apply to leaders of CSOEs, the 2015 policy stipulates that LSOEs should push forward the reform on corporate leaders' remuneration following the

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[7] See the "Measures for the Treatment and Business Expenses of Personnel in Charge of Central State-Owned Enterprises" (henceforth measures) issued by the State-Owned Assets Supervision Commission of the State Council on August 16th , 2015.

guidelines for CSOEs. The effectiveness of the 2015 pay-restriction policy in limiting the executive pay in both LSOEs and CSOEs is confirmed by empirical results of this paper and some articles published in Chinese journals. Therefore, in our DID model, we classify all SOEs (including CSOEs and LSOEs) as the treatment group and non-SOEs as the control group.

2.3. Hypothesis development

It is well documented that firm size is the primary determinant of CEO compensation (Murphy, 1999; Murphy, 2013). The strong relation between CEO compensation and firm size gives CEOs substantial incentive to increase firm size (Murphy 2013). Among the many approaches for the firm to grow, mergers and acquisitions are relatively a fast one and, by significantly changing the firm's size and scope of operation, provide a natural opportunity for CEOs to renegotiate their compensation with the board (Bliss and Rosen, 2001; Harford and Li, 2007). Consistent with this notion, the literature reports that CEOs of acquiring firms are richly rewarded with M&A bonuses (Grinstein and Hribar, 2004) and stock and option grants (Harford and Li, 2007). Yim (2013) further contends that because a one-time acquisition could permanently increase firm size and the future stream of compensation benefits, CEOs have strong incentive to pursue acquisitions early in their career.

The above-mentioned studies suggest that the mechanism of CEO compensation provides CEOs with an incentive for growth and M&As are a tool often used by CEOs to increase the size of the firm. Although these studies are based on the U.S. context, similar conclusions are presumably applicable to China, in which firm size is also a primary determinant of both executives' annual pay and perk expenses (e.g., Adithipyangkul et al.,

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2011; Bae at al. 2024; Conyon and He, 2011) and M&As are found to play an important role in increasing top executives' benefits including annual pay and perk consumption (Li, Mao and Zhao, 2009).

An intuitive, yet could be easily neglected, prerequisite for the hypothesis of incentive for growth is that the executive pay is determined by the firm without the interference from government regulations. Compared to the situation in which executive pay is unrestricted, an M&A of a similar size would not lead to an increase in top executives' annual pay and (or) perk consumption by a similar magnitude if the executives' annual pay and (or) perks are restricted by government policies. Therefore, such policies would reduce the sensitivity of executives' pay and (or) perks to firm size, thus reducing top executives' pecuniary incentive for growth. Given this, we propose the hypothesis:

H1: The 2015 pay-restriction policy has a negative effect on the M&A propensity of SOEs.

3. Sample and data

Our raw sample contains all Chinese A-share firms listed in Shanghai and Shenzhen stock exchanges from 2013 to 2016. In December 2012, the new leadership of president Xi Jinping embarked on an anti-corruption campaign in China, a campaign that has shown to have profound effects on corporate policies and outcomes, including the M&A policy and performance (see, e.g., Huang, Jin, Tian and Wu, 2023). In 2017, the Chinese government carried out a series of regulations to enforce its supervision on overseas investments and guidance on the investment directions, which have significantly tightened cross-border M&As. To rule out the confounding effects of different regulations, we restrict our sample to

the period of 2013 to 2016, two years before and after the implementation of the 2015 pay-restriction policy. After excluding all firms in the financial industry, in which a firm's M&A policy is usually more regulated than in other industries, we obtain the final sample, which consists of 8,696 firm-year observations of 2,174 unique firms. We follow the common practice and define SOEs as firms whose actual controller is the State Council or local government and other firms as non-SOEs. Our sample contains 928 SOEs and 1,246 non-SOEs.

We retrieve our data from the China Stock Market & Accounting Research database (CSMAR). The data on M&As are obtained from the "M&A and restructuring" section of CSMAR. In screening the M&A sample, we select deals in which the acquirer is a Chinese listed firm and set no limits on the nation of targets. Therefore, the raw M&A sample consists of both domestic and cross-border M&As conducted by Chinese listed firms. As with Huang et al. (2023), we exclude deals that involve a connected transaction within a conglomerate. Because only large M&As would affect a firm's size and the top executive pay (Harford and Li, 2007; Yim, 2013), we further restrict the M&A sample to deals whose value to the acquiring firm's total assets of the fiscal year is at least 1%[8]. Then, we construct two variables to represent a firm's takeover propensity: *No. of 1% acquisition*, the number of M&As announced by the firm in the fiscal year, for which the deal value is at least 1% of the acquirer's total assets, and *Dummy (1% acquisition)*, a dummy variable indicating that the firm announced at least one *1% acquisition* in the fiscal year.

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[8] We refer to these acquisitions as *1% acquisitions*. In the robustness checks, we change the threshold to 5% and examine the effect of the 2015 pay-restriction policy on the number of *5% acquisitions* announced by SOEs.

We conjecture that the 2015 pay-restriction policy affects firms' M&A activities through its direct effect on top executives' compensation and, consequently, the executives' pecuniary incentive for growth. In Chinese companies, general managers are often titled as CEOs, but in many firms particularly in SOEs, the chairman is the active controller who is in charge of the firm's day-to-day operations (Jiang and Kim, 2015; Xu, Xu, Chan and Li, 2021). Thus, we refer to general managers as CEOs and the CEO and chairman as top executives of a firm. Because Chinese firms did not start to grant stock options and stocks to executives until recent years and, so far, the equity-incentive pay has accounted for only a trivial proportion of an executive's compensation, we follow the literature and use the total cash compensation as the measure of executive compensation[9] (e.g., Bae et al, 2024; Jiang and Kim, 2015). The total cash compensation paid to a CEO (chairman) in a fiscal year is denoted as *CEO pay* (*Chairman Pay*).

The data on perk expenses are voluntarily disclosed by listed firms in the "other cash flows related to operating activities" section of the statement of cash flows. We follow Gul et al. (2011) and Xu, Li, Yuan and Chan (2014) and manually collect the six items of perk expenses from the footnotes of firms' cash flow statements[10]. Then, as in Bae et al. (2024), we construct the variable *Perk per executive* by dividing the firm's total perk expenses of a year by the number of paid executives. Of our sample, 7,574 firm-years (or 87%) have disclosed the data on perks.

Following the literature (e.g., Xu et al., 2021; Yim, 2013), we construct a set of control

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[9] The total cash compensation mainly includes basic salary and bonus.
[10] These perk expenses include travel, business entertainment, overseas training, board meetings, company cars and meeting expenses.

variables that are likely to affect a firm's M&A propensity. These variables include firm and top executive characteristic variables and corporate governance variables. The definition of the variables are provided in the Appendix Table A2.

Table 1 reports summary statistics on outcome variables, firm and top executive characteristic variables and governance variables for SOEs and non-SOEs separately. On average, a SOE announces 0.07 *1% acquisition* in a year, fewer than 0.22, the average number announced by non-SOEs. Because it is relatively rare for a firm to conduct more than one sizable M&As in a year, the statistics on *Dummy (1% acquisition)* is similar: On average, 7% of SEOs announce at least one *1% acquisition* in a year versus 20% of non-SOEs. Overall, the average number of *1% acquisition* announced by all firms in a year is 0.16 and 14.4% firms announced at least one acquisition. These statistics are comparable to those reported by other studies[11].

A notable difference between SOEs and non-SOEs is that SOEs are significantly larger. In terms of total assets, SOEs are more than twice as large as non-SOEs. However, despite the significant difference in firm size, the total compensation paid to top executives is very close between SOEs and non-SOEs. The mean *CEO pay* (*Chairman pay*) of SOEs is 688.3 (702.7) thousand RMB[12] and the mean *CEO pay* (*Chairman pay*) of non-SOEs is 691.9 (686.8) thousand RMB. In addition, perk expenses are also very close between SOEs and non-SOEs. The mean *Perk per executive* is 3,327 thousand RMB for SOEs and 3,159

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[11] For example, based on their sample of Chinese listed firms from 2002 to 2018, Xu et al. (2021) report that the average number of M&As conducted in a year is 0.238. Using the sample based on S&P 1500 firms in 1992-2017, Yim (2013) reports that the rate of "5% acquisition" (the deals whose value is at least 5% of the acquirer's market capitalization) is 15%.

[12] The average exchange rate between the USD and RMB during our sample period is 1 USD≈6.31 RMB. Thus, 688.3 thousand RMB is approximately 109 thousand USD.

thousand RMB for non-SOEs, which are comparable to the statistics reported by Bae et al. (2024). Being more than four times the level of CEO pay, perks are indeed a non-negligible component of pay for executives in Chinese listed firms.

4. Empirical results

4.1. The effect of the 2015 pay-restriction policy on the number of M&As

In this section, we investigate the effect of the 2015 pay-restriction policy on firms' M&A activities using the DID methodology. We first conduct a univariate analysis and report the statistics in Table 2. Because this policy was implemented since January 1st, 2015, we treat years 2015 and 2016 as the post-policy period and years 2013 and 2014 as the pre-policy period. The statistics reported in Table 2 show that, compared with SOEs (treated group), non-SOEs (control group) have experienced a more significant increase in acquisition activities after the implementation of the policy. For SOEs, their M&A activities are relatively stable: on average, a SOE announces 0.07 *1% acquisitions* before the policy and number increases by 0.01 to 0.08 after the policy. On the other hand, the number of *1% acquisitions* announced by non-SOEs increases substantially by 0.07 (or 36.8%), from 0.19 before the policy to 0.26 after the policy. The difference in difference is -0.06 and significant at the 1% level.

To rule out the possibility that the observed difference in changes of M&A propensity is due to the difference in firm or top executive characteristics or other unobservable factors between SOEs and non-SOEs, we use the following base regression to conduct a multivariate analysis:

$$No. of\ 1\%\ acquisition_{i,t} = \alpha_0 + \alpha_1 \times SOE\ dummy_i \times Post_t + Control_{i,t} +$$

$$Firm\ FE_i + Year\ FE_t + \varepsilon_{i,t} \qquad (1)$$

The dependent variable is the number of *1% acquisitions* announced by firm i in year t. *SOE dummy$_i$* is a dummy variable that indicates firm i is a SOE. *Post$_t$* is a dummy variable that indicates the post-policy period. The variable of our interest is the interaction term of *SOE dummy$_i$* and *Post$_t$*, which captures the difference between SOEs and non-SOEs in the change in the number of *1% acquisitions* announced around the implementation of the 2015 policy. *Firm FE$_i$* and *Year FE$_t$* represent firm fixed effects and year fixed effects, respectively. $\varepsilon_{i,t}$ is the error term.

We follow the literature (e.g., Xu et al., 2021; Yim, 2013) and select control variables that are supposed to affect a firm's takeover propensity. These variables can be roughly divided into three categories: firm characteristics, top executive characteristics and corporate governance. For firm characteristic variables, we include *Ln(Total assets)*, *Leverage*, *Tobin's Q*, *Cash/AT*, *ROA*, *Prior year stock return* and *Ln(List age)*. For top executive characteristics, we include *CEO age* and *CEO gender*[13]. For governance variables, we select two variables that are related to a firm's ownership structure: *Top 1* (the percentage of shares owned by the largest shareholder) and *Balance* (the balance among a firm's large shareholders, measured as the ratio of shares owned by a firm's second to fifth largest shareholders to those owned by the firm's largest shareholder). In addition, we include *Duality* (a dummy variable indicating that the firm's top executive takes the dual role of both CEO and chairman) and *Board size*

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[13] The results are qualitatively unchanged if *CEO age* and *CEO gender* are replaced by *Chairman age* and *Chairman gender*, respectively.

(the number of directors in the firm's board).

Table 3 reports the OLS regression results. As a comparison to the results obtained from the base model of Equation (1), in Columns (1) and (2) we run a model that controls for industry dummies as the only fixed effects, where the industry dummies are defined based on the China Securities Regulatory Commission (CSRC) industry classification, and *SOE dummy* and *Post* to capture the effects of the treatment group and post-policy time period, respectively. Only firm characteristic variables are controlled in Columns (1) and (3) and top executive and governance variables are further controlled in Columns (2) and (4). In all regressions throughout the paper, continuous variables are winsorized by trimming their 1th and 99th extreme values and standard errors are clustered at the firm level unless otherwise specified.

In the regression results reported in Table 3, the coefficients on *SOE dummy* $\times$ *Post* are all significantly negative, which indicate that, relative to non-SOEs, the number of *1% acquisition* announced by SOEs has reduced significantly after the implementation of the 2015 policy. This result is also economically strong: with firm and year fixed effects and all control variables included, the estimated coefficient on *SOE dummy* $\times$ *Post* is -0.046 and significant at the 5% level, noting that the average number of *1% acquisitions* announced by SOEs (non-SOEs) is 0.07 (0.19) before the policy. The estimated coefficients on control variables suggest that firms' size, leverage ratio and accounting performance have significantly positive effect on their propensity to announce sizable M&As, whereas the effect of the top-1 shareholder is significantly negative.

Taken together, the results shown in Table 3 are consistent with our conjecture that the

2015 pay-restriction policy has reduced SOEs' propensity to conduct sizable M&As. For the

mechanisms behind the effect, we conjecture that the policy has significantly reduced the

executive pay and pay-size relation in SOEs and, thus, reduced the executives' incentive to

scale up the company. The mechanisms will be examined in Section 5 after a series of checks

are made to ensure the robustness of our main result.

4.2. PSM-DID analysis

As shown in Table 1, there are large differences between SOEs and non-SOEs in many

aspects, indicating that non-SOEs may not be an ideal counterfactual to SOEs and the results

of baseline DID regressions based on the total sample may suffer from the problem of sample

selection bias[14]. Although the regressions of Table 3 have controlled for a number of firm,

top executive and governance variables, the sample selection problem could not be

completely solved. To further address this issue, we employ the PSM method and construct a

matched sample of SOEs and non-SOEs, attempting to eliminate a number of observable

differences between the two groups.

In constructing the matched sample, we select all firms in 2014, the year prior to the

implementation of the 2015 policy, and match each SOE with a non-SOE on firm

characteristics. Specifically, we first measure the propensity scores by running a logit model

in which the dependent variable is *SOE dummy* and independent variables include *Ln(Total*

assets), *Leverage*, *Tobin's Q*, *Cash/AT*, *ROA*, *Prior year stock return* and *Ln(List age)*. After

obtaining the scores, we then use the nearest-neighbor score matching technique and

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[14] For example, results of the baseline regression model could be attributed to some unique features
of SOEs rather than the 2015 pay-restriction policy of our interest.

construct a matched sample with non-repeated control firms[15]. The statistics reported in Panel A of Table 4 show that differences in the selected firm characteristics have been eliminated in the matched sample: the difference in all variables is negligible and statistically insignificant.

To investigate the effect of the 2015 policy on firms' M&A propensity with the matched sample, we obtain the firm-year observations spanning from 2013 to 2016 for the matched sample and run the same DID regression models as in Table 3. The results reported in Panel B of Table 4 show that the coefficients on *SOE dummy* × *Post* are all significantly negative, indicating that, relative to the non-SOEs with similar characteristics, the SOEs' propensity to announced sizable M&As has reduced significantly after the implementation of the 2015 policy. This result is consistent with the finding obtained from the total sample, which suggests that our main finding is unlikely to be driven by the potential sample selection problem.

4.3. Parallel trend analysis

A validity of the DID model is the parallel trend assumption, i.e., the trend of the outcome should be identical for both the treatment and control groups prior to the treatment. A violation of this assumption may lead to inconclusive and erroneous inferences (e.g., Roberts and Whited, 2013). To see if our samples for DID models satisfy the parallel trend assumption, we construct a variable *Pre-1 year dummy* that indicates the year prior to the implementation of the pay-restriction policy (i.e., year 2014) and its interaction term with *SOE dummy*. Then, we run the following regression model:

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[15] As a robustness check, we also construct a matched sample with repeated control firms. We obtain qualitatively similar results from this sample.

$$No.of \ 1\% \ acquisition_{i,t} = \beta_0 + \beta_1 \times SOE \ dummy_i \times Pre-1 \ year \ dummy_t +$$

$$\beta_2 \times SOE \ dummy_i \times Post_t + Control_{i,t}$$

$$+ \ Firm \ FE_i + Year \ FE_t + \varepsilon_{i,t} \qquad (2)$$

In Equation (2), the interaction term *SOE dummy × Pre-1 year dummy* is added to the

baseline model (Equation (1)). Therefore, the second year prior to the policy (i.e., year 2013)

is treated as the default year and the estimated β_1 could capture the difference in the M&A

propensity between SOEs and non-SOEs of the year prior to the policy relative to that of the

default year. An insignificant estimated β_1 would indicate a parallel trend of the outcome

variable between SOEs and non-SOEs prior to the policy. The regression is run on both the

total sample and propensity-score matched sample, with all control variables included. In the

regression results reported in Table 5, the coefficients on *SOE dummy × Pre-1 year dummy*

(estimated β_1) are all statistically insignificant, which indicate that both samples have

satisfied the parallel trend assumption; thus, lending validity to the DID models used in

subsections 4.1 and 4.2.

4.4. Placebo test

Another concern in the analysis is that some confounding events, policies or variables

that are simultaneously related with the 2015 pay-restriction policy and firms' M&A

propensity may have been omitted, preventing us from drawing a causal relation between the

policy and the observed change in SOEs' propensity to conduct sizable M&As. To address

this issue, we follow the literature and conduct a placebo test by randomizing the treated

group (e.g., Ouyang, Xiong, Liu and Yao, 2024; Shi, Li and Liu, 2023). If the change in

SOEs' M&A propensity is due to the implementation of the 2015 policy rather than other nonrandom factors, with artificial treated groups, we would not expect to see a change in the outcome around the policy that is significantly different from the change of the control group.

The raw sample for the baseline regressions contains 2,174 firms, including 928 SOEs and 1,246 non-SOEs. In the placebo test, each time 928 firms are randomly selected from the total 2,174 firms and used as the artificial treated group. With the sample containing the firm-year observations of both the artificial treated group and original control group, we rerun the specification of Column (4) in Table 3 and store the estimated coefficient on the interaction term *SOE dummy* × *Post* and the t statistic of the estimated coefficient. The process is repeated for 500 times before we draw the kernel density map for both the estimated coefficients and their t statistics. Figure 1 presents the kernel density maps, which show that both the estimators and t statistics cluster around zero. As a comparison, we use a dotted vertical line to show the estimator and t statistic obtained from our baseline regression (Column (4) of Table 3) and find that only 3 estimators (11 t statistics) obtained from the simulations fall on the left side of the real estimator (t statistic), accounting for less than 1% (5%) of the number of simulations.

Collectively, with artificial treated groups, the estimated coefficients on *SOE dummy* × *Post* tend to cluster around zero and are unlikely to be more significant than the real estimator. These results suggest that our main finding should be attributed to the implementation of the 2015 pay-restriction policy rather than other confounding factors.

4.5. Other robustness checks

4.5.1. Alternative fixed effects

In the baseline model, we have included firm fixed effects and year fixed effects, assuming that year effects are the same across all firms. However, because some industry-wide shocks might occurred and acquisition-related policies might have been imposed on certain industries during our sample period, the year effects on firms' M&A activities might vary across different industries. Similarly, some city-level policies or events may also alter the year effects across different cities (e.g., Huang et al., 2023). Therefore, the time effects may be industry- or region- varying. Failing to adequately account for the time effects may lead to problematic conclusions[16].

To address this issue, we use more granular year fixed effects to allow for the flexibility of year effects across industries or cities. Specifically, we rerun the specification of Column (4) of Table 3, replacing the year fixed effects with industry-year or city-year fixed effects. In the regression results reported in Table 6 Panel A, the coefficients on *SOE dummy* $\times$ *Post* are significantly negative and of a similar significance and magnitude as that obtained in the base model. These results indicate that our main finding is not driven by year effects that are industry- or region- varying. Therefore, for the rest of the paper investigating the determinants of firms' M&A propensity, we will still use firm and year dummies as fixed effects.

4.5.2. Alternative dependent variables

As another robustness check, we use alternative dependent variables and rerun the base

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[16] For example, if SOEs tend to cluster in industries or cities that discourage firms from engaging in acquisitions in more recent years, we may also obtain our main finding. However, failing to account for the industry- or region- varying time effects would problematically attribute our main finding to other factors, such as the effect of the 2015 pay-restriction policy.

model. The regression results are reported in Panel B of Table 6. In Column (1), we use *Dummy (1% acquisition)* as the dependent variable, which has been defined earlier. The estimated coefficient on *SOE dummy* × *Post* is -0.031 and significant at the 10% level.

The second alternative dependent variable we use is *No. of 5% acquisition*, which is defined as the number of M&As announced by a firm in a fiscal year, in which the deal value is at least 5% of the firm's total assets. In Column (2) of Table 6 Panel B, the estimated coefficient on *SOE dummy* × *Post* is -0.027 and significant at the 10% level. Although the statistical significance of the estimated coefficient is weaker than that obtained from the baseline regression for the *No. of 1% acquisitions*, the magnitude, in terms of the percentage of the *No. of 5% acquisitions* announced by SOEs or non-SEOs prior to the policy, reveals that the *5% acquisitions* have experienced a more significant decrease than the *1% acquisitions*, noting that the average number of *5% acquisitions* announced by SOEs (non-SOEs) is 0.026 (0.093)[17].

According to Schweizer, Walker and Zhang (2019), as a part of its "go global" strategy, the Chinese government has supported non-SOEs on their overseas investments by offering tax rebates or long-term financing at favorable terms since 2006. Partly due to this reason, non-SEOs have become much more active in pursuing cross-border M&As in recent years, even threatening the dominant position of SOEs in this specific area. To see if it is the increasing cross-border M&As conducted by non-SOEs that leads to our main finding, we

[17] This result is consistent with the notion that, because the impact of M&As on top executives' compensation increases with the size of M&As, without restrictions on top executives' compensation, firms' top executives are presumed have the incentive to conduct largest possible M&As; thus, when this incentive is weakened by a pay-restriction policy, large M&As are supposed to be more significantly affected than small ones.

then focus only on domestic M&As. Specifically, we construct a variable *No. of 1%*

acquisition (domestic), which is measured as the number of the domestic *1% acquisition*

announced by a firm in a fiscal year, and, using it as a dependent variable, rerun the base

model. In Column (3) of Table 6 Panel B, the estimated coefficient on *SOE dummy × Post*

is -0.048 and significant at the 5% level, which is very close to that obtained from the

baseline regression for the *No. of 1% acquisition*. Given that cross-border M&As account for

less than 5% of all acquisitions for both SOEs and non-SOEs, this result is not surprising and

suggests that our main finding is not driven by non-SOEs becoming more active in pursuing

cross-border M&As in more recent years.

Taken together, using the DID methodology, we find that the number of sizable M&As

announced by SOEs reduced significantly relative to non-SOEs after the implementation of

the 2015 pay-restriction policy. Further analysis reveals that the samples used for the

regressions satisfy the parallel trend assumption and our main finding is robust to various

tests, including the PSM-DID analysis, placebo test and the usage of alternative fixed effects

and dependent variables. In the next section, we will investigate the mechanism behind our

main finding. In particular, we will examine whether the impact of the 2015 policy on SOEs'

takeover propensity is through the policy's direct effect on the top executive compensation

and executives' pecuniary incentive for growth in SOEs.

5. Mechanisms

5.1. The 2015 pay-restriction policy and top executive compensation

In this section, we will examine the role of the 2015 pay-restriction policy in impacting

the level of top executives' pay as the first step of exploring the mechanisms behind our main

finding. This analysis would also allow us to investigate the effectiveness of the policy that is

supposed to significantly curb the level of both top executives' annual compensation and perk

consumption in SOEs. By limiting the level of executive annual pay and perks, the policy

may also reduce the sensitivity of pay and perks to their important determinants, such as firm

size and, consequently, reduce top executives' pecuniary incentive to pursue sizable M&As.

Thus, we will also examine whether and how the policy affects SOEs' pay (perk)-size

elasticity.

The DID regression model for estimating the effect of the 2015 pay-restriction on top

executives' pay (perks) are as follows:

$$Ln(Pay\ or\ Perk\ per\ executive)_{i,t} = \gamma_0 + \gamma_1 \times SOE\ dummy_i \times Post_t + Control_{i,t}$$

$$+ Firm\ FE_i + Year\ FE_t + \varepsilon_{i,t} \tag{3}$$

and

$$Ln(Pay\ or\ Perk\ per\ executive)_{i,t}$$

$$= \theta_0 + \theta_1 \times Ln(Total\ assets)_{i,t} \times SOE\ dummy_i \times Post_t$$

$$+ \theta_2 \times Ln(Total\ assets)_{i,t} \times SOE\ dummy_i + \theta_3 \times Ln(Total\ assets)_{i,t}$$

$$\times Post_t + \theta_4 \times SOE\ dummy_i \times Post_t + \theta_5 \times Ln(Total\ assets)_{i,t}$$

$$+ Other\ Controls_{i,t} + Firm\ FE_i + Year\ FE_t + \varepsilon_{i,t}$$

$$\tag{4}$$

Equations (3) and (4) estimate the effect of the policy on the level of executive pay

(perks) and the pay (perk)-size elasticity, respectively. In both equations, the dependent

variables include *Ln(CEO pay)*, *Ln(Chairman Pay)* and *Ln(Perk per executive)*. The control

variables include selected firm characteristic variables (*Ln(Total assets)*, *Leverage*, *Tobin's Q*,

ROA, *Prior year stock return* and *Ln(List age)*), governance variables (*Top1*, *Balance*, *Board size* and *Duality*) and the top executive's age and gender when *Ln(CEO pay)* or *Ln(Chairman Pay)* are used as the dependent variable. In Equation (3) ((4)), the estimated $\gamma_1(\theta_1)$ indicates the change in the level of top executive's pay or perks (pay or perks-size elasticity) of SOEs relative to that of non-SOEs after the implementation of the 2015 policy. If the policy is effective, the estimated γ_1 and θ_1 are expected to be negative.

The regression results reported in Table 7 confirm the effectiveness of the 2015 pay-restriction policy: the estimated γ_1 in Columns (1), (3) and (5) are all negative, indicating that the top executives' pay and perks have all reduced in SOEs after the policy relative to non-SOEs. Although the estimated γ_1 is statistically insignificant when *Ln(Chairman Pay)* is the dependent variable, it does not necessarily indicate that the policy's effect on the pay for SOEs' chairmen is weak. On the one hand, according to regulations in China, had a non-independent director of a company received pay from the company's parent or affiliated firms, she/he is not allowed to receive pay from the company. As a consequence, almost 50% of SOEs' chairmen do not receive pay from the firm versus a 12% for non-SOEs. The serious lack of data on chairman pay in the SOE sample might be a reason for the statistical insignificance of the result. On the other hand, as the top executive of a firm, the chairman is supposed to be a major consumer of corporate perks, which, as Column (5) of Table 7 show, have decreased substantially after the policy.

The estimated θ_1 are all negative in Columns (2), (4) and (6) of Table 7, which is consistent with our conjecture and indicates that the 2015 policy has also reduced the elasticity of top executive pay and perk consumption to firm size in SOEs relative to non-

SOEs. The magnitude of this effect is remarkable: the CEO pay (perk)-size elasticity of SOEs has reduced by 4.5% (4.3%) relative to non-SEOs after the policy, noting that the CEO pay (perk)-size elasticity is 16.4% (44.3%) for SOEs and 15.7% (47.9%) for non-SOEs prior to the policy.

Collectively, the results shown in Table 7 suggest that the 2015 policy is effective in curbing the top executives' annual compensation and perk consumption in SOEs. Associated with the lower level of executive pay and perks is a reduced elasticity of pay and perks to firm size in SOEs. By restricting the pecuniary reward for expanding the firm, the policy is supposed to reduce the top executives' incentive for growth and, thus, their motivation to conduct sizeable M&As.

So far, we have reported the role of the 2015 policy in reducing top executives' pursuit of sizable M&As and, relatedly, the top executives' pecuniary incentive for increasing the size of the firm. However, whether it is top executives' lower incentive for growth that leads to the reduced M&A propensity in SOEs is still unclear and requests for further analysis. To this end, we will conduct a battery of cross-sectional analyses, trying to bridge the weakened executives' incentive for growth and reduced M&A propensity in SOEs. Later, we will explore other possible explanations for the reduced M&A activities in SOEs.

5.2. Incentive for growth and M&A propensity: cross-sectional analyses

In the cross-sectional analyses, we first examine whether the reduced M&A propensity in SOEs results from the effect of the 2015 pay-restriction policy rather than other confounding factors. Specifically, we partition the SOE sample into two subsamples based on the extent to which the SOE is affected by the policy and test whether the effect of the policy

is more pronounced in the subsample that is more severely impacted by the policy. In this regard, we divide the SOEs using two approaches. In the first approach, we divide the SOEs into CSOEs and LSOEs. Because the 2015 reform proposal, options and measures all directly target at CSOEs, and LSOEs are only required to push forward the reform on the remuneration for corporate leaders following the guidelines for CSOEs, it is presumable that the requirements of the policy might be more stringent and the policy might be more strictly enforced in CSOEs than in LSOEs. In the second approach, we divide the SOEs according to the change in the abnormal CEO pay around the policy. SOEs that have experienced a larger decrease in CEO pay are deemed to be more affected by the policy. We focus on CEO pay because unlike perks, for which the requirement of the policy is more qualitative than quantitative, top executive pay is subject to clearly imposed limits that apparently affects some firms more than the others. Besides, the CEO pay does not suffer from the problem of seriously lack of data as the chairman pay does.

Table 8 reports the regression results of the cross-sectional analyses. In each analysis, we construct two dummy variables, each indicating a subsample of SOEs, and their respective interaction term with *Post*. Then, we run the specification similar as in Column (4) of Table 3, replacing *SOE dummy* × *Post* with the two newly constructed interaction terms. The difference in the coefficients on the two interaction terms would indicate the difference in the effect on the number of *1% acquisitions* announced by the firm of the 2015 pay-restriction policy between the two subsamples of SOEs. Column (1) compares the effect of the policy between CSOEs and LSOEs. Consistent with our conjecture that CSOEs might have been more affected by the policy than LSOEs, the estimated coefficient on *CSOE*

dummy $\times$ *Post* is -0.064 and significant at the 5% level, while the estimated coefficient on

LSOE dummy $\times$ *Post* is -0.040 and significant at the 10% level.

In Column (2), we divide the SOEs according to the change in abnormal CEO pay and test whether the effect of the policy is more pronounced among SOEs that have experienced a larger decrease in abnormal CEO pay. To calculate the abnormal CEO pay, we run the specification of Column (1) of Table 7 that excludes the interaction term *SOE dummy* $\times$ *Post* and obtain the residuals. The change in abnormal CEO pay for a SOE is calculated as the difference between the average residual over the post-policy period and that over the pre-policy period. Then, the SEO sample is partitioned based on the median change in abnormal CEO pay (which is almost equal to 0), and the subsample with the change below (above) the median is denoted as the group of large (small) pay cut. In Column (2), the estimated coefficient on *Large pay cut dummy (SOE)* $\times$ *Post* is -0.051 and significant at the 5% level, whereas the estimated coefficient on *Small pay cut dummy (SOE)* $\times$ *Post* is -0.034 and statistically insignificant. This result indicates that the decrease in SOEs' M&A propensity is indeed more dramatic among firms that are more severely impacted by the 2015 policy compare to those less impacted.

As mentioned in the last subsection, in the cross-sectional analyses, we would also investigate the link between the weakened top executives' incentive for growth and reduced M&A propensity in SOEs. Presumably, if this link exists, SOEs whose top executives have greater incentive for growth before the policy are expected to be associated with a larger decrease in M&A activities around the policy. If the top executive pay is unrestricted, we conjecture that the heterogeneity in top executives' pecuniary incentive for growth can be

related to firm size and top executives' age. Regarding the relation between firm size and executives' incentive for growth, Harford and Li (2007) and Yim (2013) note that only sizable M&As would substantially alter the firm size and provide opportunities for CEOs to renegotiate their compensation with the board. Because it is the relative size of the M&A to the firm that matters, it would be easier for smaller firms to notably increase the firm size by conducting M&As than for larger firms. Thus, top executives of smaller firms are supposed to have greater incentive for growth than those of larger firms. We calculate the average pre-policy total assets of each SOE and, based on the sample median, split the SOE sample. The results shown in Column (3) of Table 8 indicate that, consistent with our conjecture, the M&A propensity has indeed reduced more significantly among small SOEs than large ones.

As for the relation between top executives' age and their incentive for growth, Yim (2013) contends that because a one-time acquisition is accompanied by a permanent increase in the firm size and CEO compensation, CEOs have incentive to pursue sizable acquisitions starting from a young age. Therefore, there is a negative relation between executives' age and their incentive for growth. In Columns (4) and (5) of Table 8, we split the SOEs according to the sample median of the average pre-policy CEO age and average pre-policy chairman age, respectively. The results reveal that, whereas there is no meaningful difference in the change in M&A propensity between firms managed by younger CEOs and those managed by older CEOs, the M&A propensity has reduced more dramatically in firms with younger chairmen than those with older chairman. By showing that SOEs whose executive have greater incentive for growth prior to the policy tend to experience a larger decrease in M&A activities, these results lend support to the link between the change in top executives'

incentive for growth and the corresponding change in M&A activities in SOEs.

5.3. Alternative mechanisms

In this section, we will explore some alternative channels for the 2015 pay-restriction policy to reduce SOEs' M&A propensity. The first potential channel is through the elevated top executive turnover in SOEs. As Nanda et al. (2024) note, the assortative matching assignment model of Gabaix and Landier (2008) indicates that firms optimally choose compensation packages to attract and retain the best candidates; thus, pay restriction policies can disturb the equilibrium and increase executive turnover. Consistent with this conjecture, Nanda et al. (2024) find that the voluntary executive turnover in CSOEs (firms that are affected by the 2009 pay-restriction policy) increased significantly after the 2009 policy. Because an M&A is usually the largest investment made by a firm that calls for a series of complex procedures, executing an M&A is time consuming; thus, it is less likely for newly appointed top executives to announce M&As than for tenured top executives. Therefore, if the 2015 pay-restriction policy indeed increases the top executive turnover in affected firms as does the 2009 policy, the 2015 policy can reduce SEOs' M&A activities in a relatively short period of time due to the increased replacement of tenured top executives by new ones in SOEs.

To test whether the elevated top executive turnover is an explanation for our main finding, we examine whether and how the 2015 policy impacts the top executive turnover in SOEs. We construct a *CEO turnover dummy* (*Chairman turnover dummy*) that indicates that the firm's CEO (chairman) in a year is different from that of the last year and, using it as the dependent variable, perform a DID analysis similar as in the specification of Column (1) ((3))

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of Table 7. In the regression results reported in Columns (1) and (2) of Table 9, the

coefficients on *SOE dummy* × *Post* are statistically insignificant, which indicate that the

2015 policy has not noticeably altered the odds of top executive turnover in SOEs relative to

non-SOEs[18] and, thus, reject the conjecture that the heightened top executive turnover is a

channel for the 2015 policy to reduce the M&A propensity in SOEs.

The second potential channel is through the improved corporate governance in SOEs. In

modern corporations, the separation of ownership and control gives rise to the agency

problem for which managers pursue their own interest rather than maximize shareholder's

wealth. The literature suggests that M&As can amplify the agency problem: managers

usually engage in empire-building by conducting M&As, extracting their private benefit at

the cost of shareholders' wealth (Chen, Harford and Lin, 2015; Jensen, 1986). On the other

hand, improved corporate governance that are better in either monitoring managers or

aligning the interest between managers and shareholders could more forcefully deter

managers' misbehavior, including their engagement in value-destroying M&As. During our

sample period particularly after the Third Plenary Session of the 18th Central Committee, the

Chinese government has enacted a series of guiding policies on the reform of SOEs, with a

primary purpose of improving the SOEs' corporate governance[19]. Therefore, it is plausible

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[18] This result does not necessarily contradict with the finding of Nanda et al. (2024). On the one hand, in accordance with our purpose, we do not distinguish between voluntary and involuntary turnovers and focus on all turnovers, while Nanda et al. (2024) focus on voluntary turnovers. On the other hand, the 2015 policy affects SOEs (CSOEs and LSOEs), whereas the 2009 policy only affects CSOEs. That is, firms affected by the 2009 policy is a subgroup of those affected by the 2015 policy. As a result, compared to the 2015 policy, the 2009 policy is associated with more outside job options from firms that are not subject to the policy and, thus, likely to better facilitate the turnover of top executives in the affected firms.

[19] See the article for the summary of relevant policies (in Chinese) (http://gjs.cssn.cn/kydt/kydt_kycg/201711/t20171107_3725934.shtml)

that the reduced M&A activities in SOEs is attributable to their improved corporate governance.

We investigate the potential channel of improved corporate governance by examining whether SOEs' governance mechanisms and outcomes are indeed improved in the post-policy period and, if they do, whether the reduced M&A propensity is more pronounced among SOEs with weaker governance than those with stronger governance prior to the policy. We use three measures as proxies for corporate governance: top executive turnover-performance sensitivity, CEO-chairman duality and analyst coverage, where the turnover-performance sensitivity is a measure of governance outcome and duality and analyst coverage highlight internal and external corporate governance mechanisms, respectively.

For firms with a strong top executive turnover-performance sensitivity, they can easily identify and terminate poorly performing top executives and are deemed to have a relatively good outcome of corporate governance (e.g., Aggarwal, Erel, Ferreira and Matos, 2011). To see if the turnover-performance sensitivity is indeed promoted in SOEs after the 2015 policy, we use *ROA* as the measure of firm performance[20] and run specifications of Columns (1) and (2) of Table 9 that add three interaction terms: *ROA $\times$ SOE dummy $\times$ Post*, *ROA $\times$ SOE dummy* and *ROA $\times$ Post*. The coefficient on *ROA $\times$ SOE dummy $\times$ Post* could capture the change in turnover-performance sensitivity in SOEs around the policy relative to non-SOEs. In regression results reported in Columns (3) and (4) of Table 9, the coefficients on *ROA $\times$ SOE dummy $\times$ Post* are both significantly positive, which indicate that the top executive turnover-performance sensitivity has become weaker, rather than stronger, in SOEs than in

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[20] The results are qualitatively unchanged if ROA_{t-1} is used as the measure for firm performance.

non-SEOs after the policy.

Next, we examine how the 2015 policy impacts the prevalence of top executives' dual role in SOEs by performing a DID analysis using *Duality* as the dependent variable. It is well recognized that top executives assuming the dual role of both CEO and chairman are deemed to be more powerful and entrenched than those without the dual role (e.g., Jiang and Kim, 2015). The regression result shown in Column (5) of Table 9 suggests that the effect of the policy is negligible, since the coefficient on *SOE dummy* × *Post* is statistically insignificant. On the other hand, the negative sign of the coefficient seems to indicate that the odds of top executives' dual role have mildly decreased in SOEs relative to non-SOEs, implying a marginal improvement in this internal governance mechanism of SOEs after the policy. Thus, we further our analysis by examining whether the reduced M&A propensity is more pronounced in SEOs with worse governance mechanism (i.e., greater odds of duality) prior to the policy. Specifically, we split the SOE sample by whether or not there is CEO-chairman duality in at least one year before the policy and run the specifications similar as in Table 8 for the cross-sectional analysis. The untabulated results reveal that the decrease in M&A propensity is actually more pronounced in SOEs with no CEO-chairman duality (better governance mechanism) before the policy; thus, these results reject the conjecture that the modest decrease in the prevalence of CEO-chairman duality, the seemingly improved internal corporate governance mechanism, is an explanation for the reduced M&A activities in SOEs.

The last corporate governance mechanism we consider is the analyst coverage, the monitoring role of which has been documented by Chen et al. (2015). We follow the literature (e.g., Chan, Guo, Wang and Yang, 2022; Chen et al., 2015) and measure the analyst coverage

as the number of analysts that follow a firm in a given year. The regression results shown in Column (6) of Table 9 reveal that the analyst coverage of SOEs has decreased relative to non-SOEs, indicating a worse, instead of improved, external governance mechanism in SOEs after the policy.

Taken together, in this subsection we rule out two potential channels for the 2015 policy to impact SOEs' M&A propensity: the elevated top executive turnover or improved corporate governance in SOEs accompanying the implementation of the 2015 pay-restriction policy.

6. The 2015 pay-restriction policy and the performance of M&As

Our main finding shows that the 2015 pay-restriction policy imposed on SOEs has noticeably reduced SOEs' M&A propensity relative to non-SOEs. A natural follow-up questions is, how does the policy affect the performance of M&As conducted by SOEs? The answer to this question, while being unclear *ex ante*, could shed some lights on whether and how the policy impacts the benefits of SOEs' shareholders.

The sample for this analysis contains all *1% acquisitions* announced by firms from the sample for the M&A propensity analysis. The performance of M&As are measured using both short-term and long-term indices. The short-term performance is measured as the cumulative abnormal return (CAR) around the announcement of the M&A. Specifically, following Gokkaya, Liu and Stulz (2023), among others, we construct a *CAR[-1, 1]* (*CAR[-2, 2]*), which is the accumulated market-model-adjusted abnormal return over the [-1, 1] ([-2, 2]) –day event window surrounding the acquisition announcement date, where the market model is estimated over the trading days [-240, -41] relative to the announcement date, with the value-weighted average of Shanghai stock exchange A-share stock returns being the

market return. The results reported in Table 10 Panel A show that CARs around the announcement dates have slightly improved in SOEs after the policy relative to non-SOEs.

In the analysis for the long-term performance of M&As, we use the sample containing the completed *1% acquisitions* and follow Huang et al. (2023) and measure the M&A long-term performance as the change in acquirer's *ROA* (*Tobin's Q*) from the year prior to the announcement of the deal (t-1) to two (t+2) or three years (t+3) after the completion of the deal. In Columns (3)-(5) of Table 10, the coefficients on *SOE dummy × Post* are all positive but insignificant, while in Column (6), the coefficient on *SOE dummy × Post* is significantly positive. These results show that, as acquirers, SOEs' long-term performance particularly firm value has improved after the 2015 policy relative to non-SOEs.

The results shown in Table 10 together with those of the M&A propensity imply that, relative to non-SOEs, SOEs tend to forego value-destroying M&As after the 2015 policy, which reveals a seeming bright side of the policy. Then, has the policy improved the value of SOEs and benefit their shareholders? To answer this question, we use the sample for the M&A propensity analysis and run a DID regression similar as our baseline model, using *Tobin's Q* as the dependent variable. In untabulated results, we find that SOEs' *Tobin's Q* has significantly decreased, rather than increased, after the 2015 policy relative to non-SOEs. Apparently, this result is not attributable to the change in SOEs' M&A activities around the 2015 policy as documented in this paper. On the other hand, it is beyond the scope of this paper to explain the decreased value in SOEs accompanying the 2015 policy.

7. Conclusion

Focusing on a pay-restriction policy imposed on Chinese SOEs that is demonstrated to

have realized its stated purpose of curbing top executive compensation, this paper shows that the policy has significantly reduced SOEs' M&A propensity. The mechanism behind this effect is through the policy's impact on the sensitivity of top executive pay to firm size and hence top executives' pecuniary incentive to conduct sizable M&As in SOEs. This paper further shows that the performance of M&As conducted by SOEs has improved modestly, implying that top executives in SOEs have tended to forego value-destroying M&As. However, despite of this seeming bright side of the policy, it does not mean that the policy has benefited SOEs' shareholders: the value of the SOEs reduced dramatically after the policy.

Studies on pay-restriction policies have focused on the question of whether these policies have achieved their stated objective of limiting top executive pay and found that most of the polices have not realized their stated purpose but led to unintended consequences, which have actually increased pay levels and hindered the corporate Compensation Committee's ability to create effective incentive packages (Murphy and Jensen, 2018). In this study, we show that, even if a pay-restriction policy has realized its purpose of curbing top executive pay, the policy can lead to other unintended consequences. These consequences, while being likely to be associated with the affected firms' strategic policies, may impact the firms' performance and value. Therefore, although the excessive top executive compensation has been outrageous around the world, regulators need to be more careful in their efforts to restrict the executive pay.

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Table 1 Summary statistics

This table reports summary statistics on selected firm and top executive characteristics for SOEs (treated group) and non-SOEs (control group), respectively. The sample consists of all non-financial Chinese listed firms from 2013 to 2016, including 3,712 SOE-year observations and 4,984 non-SOE-year observations. The definition of all variables are provided in Appendix Table A2. Continuous variables are winsorized by trimming their first and 99th percentiles.

	SOEs				Non-SOEs			
	Mean	Median	Std dev	N	Mean	Median	Std dev	N
No. of 1% acquisition	0.07	0.00	0.29	3,702	0.22	0.00	0.50	4,908
Dummy(1% acquisition)	0.07	0.00	0.25	3,712	0.20	0.00	0.40	4,984
CEO pay (thousand RMB)	688.3	556.0	535.9	3,414	691.9	530.2	561.9	4,784
Chairman pay (thousand RMB)	702.7	550.0	624.4	1,850	686.8	523.6	593.9	4,305
Perk per executive (thousand RMB))	3,327.2	1,630.1	4,909.9	2,943	3,159.4	1,705.1	4,677.4	4,490
Total assets (million RMB)	16,213	6,296	27,424	3,602	5,790	2,678	12,089	4,922
Leverage	0.51	0.52	0.20	3,640	0.38	0.37	0.20	4,884
Tobin's Q	2.01	1.59	1.23	3,507	2.56	2.11	1.50	4,662
Cash/AT	0.16	0.13	0.11	3,652	0.18	0.15	0.12	4,872
ROA	0.03	0.03	0.05	3,650	0.04	0.04	0.05	4,874
Prior year stock return	0.28	0.20	0.44	3,646	0.42	0.29	0.54	4,742
List age	15.13	16.43	5.23	3,645	8.60	6.10	5.77	4,880
Top1 (%)	38.30	37.41	14.68	3,650	32.23	30.00	13.49	4,874
Balance	0.50	0.32	0.48	3,638	0.76	0.62	0.57	4,886
Board size	9.20	9.00	1.82	3,691	8.27	9.00	1.44	4,974
Duality	0.10	0.00	0.30	3,644	0.34	0.00	0.48	4,947
CEO age	50.19	50.00	5.09	3,641	48.70	49.00	6.19	4,809
CEO gender	0.05	0.00	0.21	3,653	0.07	0.00	0.26	4,948
Chairman age	52.92	53.00	5.11	3,704	52.79	52.00	7.22	4,835
Chairman gender	0.03	0.00	0.18	3,709	0.05	0.00	0.22	4,979

Table 2 Univariate analysis

This table reports a univariate DID analysis that estimates the effect of the 2015 pay-restriction on the number of *1% acquisitions* announced by Chinese listed firms for the two-year window before and after the 2015 policy. The sample consists of all non-financial firms from 2013 to 2016, including 3,712 SOE-year observations (treated group) and 4,984 non-SOE-year observations (control group). *1% acquisitions* refer to M&As whose deal value is greater than 1% of the acquirer's total assets. The number of *1% acquisitions* is winsorized by trimming the first and 99th percentiles. Standard errors are in the parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

	2013-2014	2015-2016	Difference
SOE	0.07	0.08	0.01
	(0.01)	(0.01)	(0.01)
	n=928	n=928	
Non-SOE	0.19	0.26	0.07 ***
	(0.01)	(0.01)	(0.01)
	n=1,244	n=1,244	
Relative difference			-0.06 ***
			(0.02)

Table 3 The 2015 pay-restriction policy and the number of M&As

This table reports the results of the DID regression model that estimates the effect of the 2015 pay-restriction policy on the number of M&As announced by Chinese listed firms. The sample consists of all non-financial firms from 2013 to 2016, including 3,712 SOE-year observations (treated group) and 4,984 non-SOE-year observations (control group). The dependent variable is *No. of 1% acquisition*, the number of M&As announced by a firm in a year for which the deal value of the M&A is greater than 1% of the firm's total assets. *SOE dummy* is a dummy variable that equals one if the firm is a state-owned enterprise, and equals zero otherwise. *Post* is a dummy variable that equals one if the year is 2015 or 2016, and equals 0 otherwise. Control variables are defined in the Appendix Table A2. Industry dummies are defined based on the CSRC industry classification. All continuous variables are winsorized by trimming their first and 99th percentiles. Standard errors are clustered at the firm level, and p values are reported in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

	Dependent variable: *No. of 1% acquisition*			
	(1)	(2)	(3)	(4)
Constant	0.465***	0.432***	-1.034	-0.758
	(0.000)	(0.001)	(0.101)	(0.260)
SOE dummy × Post	-0.058***	-0.063***	-0.037*	-0.046**
	(0.002)	(0.001)	(0.080)	(0.044)
SOE dummy	-0.058***	-0.037**		
	(0.000)	(0.020)		
Post	0.076***	0.081***		
	(0.000)	(0.000)		
Ln(Total assets)	-0.005	0.007	0.058**	0.056*
	(0.378)	(0.250)	(0.036)	(0.068)
Leverage	0.041	0.019	0.275***	0.237**
	(0.239)	(0.593)	(0.002)	(0.013)
Tobin's Q	0.005	0.008	0.017*	0.013
	(0.381)	(0.166)	(0.056)	(0.138)
Cash/AT	-0.082*	-0.077	-0.064	-0.091
	(0.097)	(0.135)	(0.505)	(0.365)
ROA	0.419***	0.434***	0.313	0.383*
	(0.001)	(0.001)	(0.108)	(0.053)
Prior year stock return	0.024*	0.022	-0.006	-0.009
	(0.061)	(0.105)	(0.640)	(0.532)
Ln(List age)	-0.098***	-0.109***	-0.104	-0.118
	(0.000)	(0.000)	(0.228)	(0.198)
Top1		-0.002***		-0.003*
		(0.000)		(0.056)
Balance		-0.028*		-0.022
		(0.067)		(0.501)
Board size		-0.004		0.004
		(0.308)		(0.600)
Duality		0.049***		0.004
		(0.002)		(0.878)
CEO age		-0.002**		-0.001
		(0.037)		(0.413)
CEO gender		-0.019		0.029
		(0.399)		(0.455)
Industry fixed effects	Yes	Yes	No	No
Firm fixed effects	No	No	Yes	Yes
Year fixed effects	No	No	Yes	Yes
N	7,281	6,799	7,206	6,685
R²	0.065	0.073	0.399	0.413

Table 4 PSM-DID

This table reports the results of the PSM-DID model that analyzes the effect of the 2015 pay-restriction policy on the number of M&As conducted by Chinese listed firms. The treated group (SOEs) and control group (non-SOEs) are matched by firms' characteristics in 2014 using the nearest-neighbor score matching technique. The matching scores are generated by a logit model in which the dependent variable is *SOE dummy* and independent variables include *Ln(Total assets)*, *Leverage*, *Tobin's Q*, *Cash/AT*, *ROA*, *Prior year stock return* and *Ln(List age)*. The samples are matched with nonrepeated control firms. Panel A compares the mean value of firm characteristics of the matched sample. Panel B reports the regression results of the DID model obtained from the propensity-score matched sample spanning from 2013 to 2016. The dependent variable is *No. of 1% acquisition*, the number of M&As announced by a firm in a year for which the deal value of the M&A is greater than 1% of the firm's total assets. *SOE dummy* is a dummy variable that equals one if the firm is a state-owned enterprise, and equals zero otherwise. *Post* is a dummy variable that equals one if the year is 2015 or 2016, and equals 0 otherwise. Control variables are defined in the Appendix Table A2. Industry dummies are defined based on the CSRC industry classification. All continuous variables are winsorized by trimming their first and 99th percentiles. Standard errors are clustered at the firm level, and p values are reported in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Panel A: Statistics on firm characteristics for the matched sample

	Treated		Control		Treated-Control difference	t stat
	Mean	N	Mean	N		
Ln(Total assets)	22.03	552	22.11	552	-0.08	-1.29
Leverage	0.46	552	0.48	552	-0.02	-1.44
Tobin's Q	2.38	552	2.36	552	0.02	0.14
Cash/AT	0.16	552	0.16	552	0.00	0.70
ROA	0.03	552	0.04	552	-0.00	-0.26
Prior year stock return	0.23	552	0.22	552	0.01	0.62
Ln(List age)	2.53	552	2.50	552	0.03	1.32

Panel B: PSM-DID regressions

	(1)	(2)	(3)	(4)
Constant	0.337*	0.330	-1.462*	-1.532*
	(0.090)	(0.127)	(0.062)	(0.083)
SOE dummy × *Post*	-0.072***	-0.076***	-0.061**	-0.068**
	(0.004)	(0.004)	(0.018)	(0.014)
SOE dummy	-0.047***	-0.027		
	(0.004)	(0.135)		
Post	0.088***	0.092***		
	(0.000)	(0.000)		
Ln(Total assets)	-0.002	0.007	0.079**	0.079**
	(0.776)	(0.473)	(0.013)	(0.032)
Leverage	0.034	0.013	0.069	0.005
	(0.421)	(0.769)	(0.489)	(0.959)
Tobin's Q	0.002	0.004	0.005	0.003
	(0.703)	(0.535)	(0.632)	(0.756)
Cash/AT	-0.085	-0.096	0.009	0.002
	(0.156)	(0.122)	(0.930)	(0.983)
ROA	0.400**	0.394**	0.060	0.049
	(0.015)	(0.023)	(0.781)	(0.822)
Prior year stock return	0.001	-0.000	-0.024	-0.021
	(0.972)	(0.988)	(0.227)	(0.325)
Ln(List age)	-0.069***	-0.079***	-0.076	-0.049
	(0.000)	(0.000)	(0.585)	(0.751)

Top1		-0.001*		-0.000
		(0.069)		(0.877)
Balance		-0.001		0.004
		(0.979)		(0.940)
Board size		-0.015***		-0.002
		(0.003)		(0.858)
Duality		0.025		-0.038
		(0.237)		(0.332)
CEO age		0.000		0.001
		(0.986)		(0.567)
CEO gender		-0.036		0.054
		(0.148)		(0.217)
Industry fixed effects	Yes	Yes	No	No
Firm fixed effects	No	No	Yes	Yes
Year fixed effects	No	No	Yes	Yes
N	3,763	3,516	3,741	3,473
R^2	0.041	0.051	0.384	0.394

Table 5 Parallel trend analysis

This table reports the results of the parallel trend analysis for the total sample (Columns (1) and (2)) and propensity-score matched sample (Columns (3) and (4)). The total sample consists of all non-financial Chinese listed firms from 2013 to 2016, including 3,712 SOE-year observations (treated group) and 4,984 non-SOE-year observations (control group). The propensity-score matched sample is constructed as in Table 4. The dependent variable is *No. of 1% acquisition*, the number of M&As announced by a firm in a year for which the deal value of the M&A is greater than 1% of the firm's total assets. *SOE dummy* is a dummy variable that equals one if the firm is a state-owned enterprise, and equals zero otherwise. *Pre 1 year dummy* is a dummy variable that equals one if the year is 2014 (the year before the implementation of the pay-restriction policy), and equals 0 otherwise. *Post* is a dummy variable that equals one if the year is 2015 or 2016, and equals 0 otherwise. Control variables include *Ln(Total assets)*, *Leverage*, *Tobin's Q*, *Cash/AT*, *ROA*, *Prior year stock return*, *Ln(List age)*, *Top1*, *Balance*, *Board size*, *Duality*, *CEO age* and *CEO gender* and are defined in the Appendix Table A2. Industry dummies are defined based on the CSRC industry classification. All continuous variables are winsorized by trimming their first and 99th percentiles. Standard errors are clustered at the firm level, and p values are reported in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

	Total sample		PSM-DID sample	
	(1)	(2)	(3)	(4)
Constant	0.436***	-0.690	0.345	-1.496*
	(0.001)	(0.306)	(0.116)	(0.090)
SOE dummy × Pre 1 year dummy	0.008	-0.039	0.016	-0.035
	(0.551)	(0.118)	(0.391)	(0.268)
SOE dummy × Post	-0.059***	-0.069***	-0.068**	-0.087***
	(0.003)	(0.008)	(0.012)	(0.004)
SOE dummy	-0.041**		-0.035*	
	(0.016)		(0.081)	
Post	0.081***		0.093***	
	(0.000)		(0.000)	
Control variables	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	No	Yes	No
Firm fixed effects	No	Yes	No	Yes
Year fixed effects	No	Yes	No	Yes
N	6,799	6,685	3,516	3,473
R^2	0.073	0.414	0.051	0.395

Table 6 Robustness checks

This table reports the results of the DID regression model that controls for alternative fixed effects (Panel A) or uses alternative dependent variables (Panel B). The sample for both panels consists of all non-financial Chinese listed firms from 2013 to 2016, including 3,712 SOE-year observations (treated group) and 4,984 non-SOE-year observations (control group). The dependent variable in Panel A is *No. of 1% acquisition*, the number of M&As announced by a firm in a year for which the deal value of the M&A is greater than 1% of the firm's total assets. Column (1) ((2)) of Panel A controls for firm fixed effects and industry-year fixed effects (city-year fixed effects). The dependent variables in Panel B are *Dummy(1% acquisition)* (Column (1)), *No. of 5% acquisition* (Column (2)) and *No. of 1% acquisition (domestic)* (Column (3)). *Dummy(1% acquisition)* is a dummy variable that equals one if the firm has announced at least one acquisition whose deal value is greater than 1% of the firm's total assets, and equals zero otherwise. *No. of 5% acquisition* is the number of M&As announced by a firm in a year for which the deal value of the M&A is greater than 5% of the firm's total assets. *No. of 1% acquisition (domestic)* is number of domestic M&As announced by a firm in a year for which the deal value of the M&A is greater than 1% of the firm's total assets. *SOE dummy* is a dummy variable that equals one if the firm is a state-owned enterprise, and equals zero otherwise. *Post* is a dummy variable that equals one if the year is 2015 or 2016, and equals 0 otherwise. Control variables in both panels include *Ln(Total assets)*, *Leverage*, *Tobin's Q*, *Cash/AT*, *ROA*, *Prior year stock return*, *Ln(List age)*, *Top1*, *Balance*, *Board size*, *Duality*, *CEO age* and *CEO gender* and are defined in the Appendix Table A2. All continuous variables are winsorized by trimming their first and 99th percentiles. Standard errors are clustered at the firm level, and p values are reported in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Panel A: Alternative fixed effects

	Firm and industry-year fixed effects	Firm and city-year fixed effects
	(1)	(2)
Constant	-0.619	-0.329
	(0.369)	(0.651)
SOE dummy × Post	-0.052**	-0.056**
	(0.025)	(0.045)
Control variables	Yes	Yes
Firm fixed effects	Yes	Yes
Industry-year fixed effects	Yes	No
City-year fixed effects	No	Yes
N	6,681	6,126
R^2	0.421	0.464

Panel B: Alternative dependent variables

Dependent variable	*Dummy (1% acquisition)*	*No. of 5% acquisition*	*No. of 1% acquisition (domestic)*
	(1)	(2)	(3)
Constant	-0.812	-0.258	-0.287
	(0.134)	(0.627)	(0.661)
SOE dummy × Post	-0.031*	-0.027*	-0.048**
	(0.096)	(0.078)	(0.033)
Control variables	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
N	6,765	6,740	6,690
R^2	0.418	0.408	0.413

Table 7 The 2015 pay-restriction policy and executive compensation

This table reports the results of the DID regression model that estimates the effect of the 2015 pay-restriction policy on top executives' compensation. The sample consists of all non-financial Chinese listed firms from 2013 to 2016, including 3,712 SOE-year observations (treated group) and 4,984 non-SOE-year observations (control group). The dependent variables are *Ln(CEO pay)* (Columns (1) and (2)), *Ln(Chairman Pay)* (Columns (3) and (4))and *Ln(Perk per executive)* (Columns (5) and (6)). *Ln(CEO pay)* is the natural logarithm of the CEO's total compensation. *Ln(Chairman Pay)* is the natural logarithm of the chairman's total compensation. *Ln(Perk per executive)* is the natural logarithm of a firm's perk expenses divided by the firm's number of paid executives. *SOE dummy* is a dummy variable that equals one if the firm is a state-owned enterprise, and equals zero otherwise. *Post* is a dummy variable that equals one if the year is 2015 or 2016, and equals 0 otherwise. Control variables are defined in the Appendix Table A2. All continuous variables are winsorized by trimming their first and 99th percentiles. Standard errors are clustered at the firm level, and p values are reported in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Dependent variable	Ln(CEO pay)		Ln(Chairman Pay)		Ln(Perk per executive)	
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	8.970***	8.894***	7.980***	7.771***	2.185**	1.955*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.026)	(0.070)
SOE dummy × Post	-0.083***	0.919**	-0.028	0.612	-0.140***	0.816
	(0.000)	(0.043)	(0.441)	(0.315)	(0.000)	(0.103)
Ln(Total assets) × SOE × Post		-0.045**		-0.029		-0.043*
		(0.030)		(0.290)		(0.057)
Ln(Total assets) × SOE		0.007		0.086		-0.036
		(0.900)		(0.440)		(0.709)
Ln(Total assets) × Post		0.007		0.003		0.041**
		(0.681)		(0.859)		(0.016)
Ln(Total assets)	0.159***	0.157***	0.197***	0.178***	0.482***	0.479***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
Leverage	-0.059	-0.053	-0.133	-0.132	-0.026	-0.024
	(0.495)	(0.540)	(0.263)	(0.264)	(0.825)	(0.836)
Tobin's Q	0.019***	0.015*	0.027***	0.024**	0.016**	0.023**
	(0.010)	(0.064)	(0.005)	(0.028)	(0.043)	(0.011)
ROA	1.431***	1.431***	1.148***	1.145***	-0.106	-0.111
	(0.000)	(0.000)	(0.000)	(0.000)	(0.643)	(0.630)
Prior year stock return	0.028**	0.028**	0.006	0.008	0.009	0.010
	(0.022)	(0.023)	(0.637)	(0.551)	(0.444)	(0.440)
Ln(List Age)	-0.127	-0.129	-0.266**	-0.252**	0.619***	0.668***
	(0.178)	(0.171)	(0.034)	(0.039)	(0.000)	(0.000)
Top1	0.001	0.001	0.002	0.002	0.002	0.002

	(0.433)	(0.446)	(0.414)	(0.435)	(0.415)	(0.333)
Balance	0.035	0.036	0.035	0.033	0.009	0.015
	(0.351)	(0.338)	(0.477)	(0.493)	(0.790)	(0.666)
Board size	0.013	0.012	0.023*	0.023*	0.002	0.002
	(0.165)	(0.191)	(0.097)	(0.091)	(0.841)	(0.804)
Duality	-0.000	0.001	0.097**	0.096**	-0.000	0.000
	(0.998)	(0.978)	(0.023)	(0.024)	(0.993)	(1.000)
CEO age	0.015***	0.015***				
	(0.000)	(0.000)				
CEO gender	-0.010	-0.006				
	(0.917)	(0.951)				
Chairman age			0.020***	0.020***		
			(0.000)	(0.000)		
Chairman gender			-0.168	-0.174		
			(0.360)	(0.335)		
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	6,529	6,529	4,786	4,786	6,009	6.009
R^2	0.820	0.820	0.847	0.847	0.929	0.929

Table 8 Cross-sectional analyses

This table reports the results of cross-sectional analyses on the role of the 2015 pay-restriction policy in affecting the number of M&As announced by Chinese listed firms. The sample consists of all non-financial firms from 2013 to 2016, including 3,712 SOE-year observations (treated group) and 4,984 non-SOE-year observations (control group). The dependent variable is *No. of 1% acquisition*, the number of M&As announced by a firm in a year for which the deal value of the M&A is greater than 1% of the firm's total assets. In each regression, the sample of SOEs is divided into two subsamples and each subsample is indicated by a dummy variable. In Column (1), *CSOE dummy* indicates central state-owned enterprises and *LSOE dummy* indicates local state-owned enterprises. In Column (2), *Large (Small) paycut dummy (SOE)* indicates the SOEs whose change in abnormal CEO pay is below (above) the sample median. In Column (3), *Small (Large) SOE dummy* indicates the SOEs whose pre-policy average total assets is below (above) the sample median. In Column (4), *Young (Old) CEO dummy (SOE)* indicates the SOEs of which the pre-policy average CEO's age is below (above) the sample median. In Column (5), *Young chairman dummy (SOE)* indicates the SOEs of which the pre-policy average chairman's age is below (above) the sample median. *Post* is a dummy variable that equals one if the year is 2015 or 2016, and equals 0 otherwise. Control variables include *Ln(Total assets)*, *Leverage*, *Tobin's Q*, *Cash/AT*, *ROA*, *Prior year stock return*, *Ln(List age)*, *Top1*, *Balance*, *Board size*, *Duality*, *CEO age* and *CEO gender* and are defined in the Appendix Table A2. All continuous variables are winsorized by trimming their first and 99th percentiles. Standard errors are clustered at the firm level, and p values are reported in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Dependent variable	No. of 1% acquisition				
	(1)	(2)	(3)	(4)	(5)
Constant	-0.754	-0.808	-0.797	-0.756	-0.771
	(0.263)	(0.236)	(0.242)	(0.261)	(0.252)
CSOE dummy × Post	-0.064**				
	(0.037)				
LSOE dummy × Post	-0.040*				
	(0.085)				
Large pay cut dummy (SOE) × Post		-0.051**			
		(0.041)			
Small pay cut dummy (SOE) × Post		-0.034			
		(0.182)			
Small SOE dummy × Post			-0.052**		
			(0.038)		
Large SOE dummy × Post			-0.037		
			(0.149)		
Young CEO dummy (SOE) × Post				-0.047*	
				(0.063)	
Old CEO dummy (SOE) × Post				-0.044*	
				(0.082)	
Young chairman dummy (SOE) × Post					-0.059**
					(0.016)
Old chairman dummy (SOE) × Post					-0.029
					(0.263)
Control variables	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
N	6,685	6,589	6,685	6,681	6,685
R^2	0.413	0.413	0.413	0.413	0.414

Table 9 Ruling out alternative explanations

This table reports results of the DID regressions that attempt to rule out alternative explanations for this paper's main finding. The sample consists of all non-financial firms from 2013 to 2016, including 3,712 SOE-year observations (treated group) and 4,984 non-SOE-year observations (control group). The dependent variable in Columns (1) and (3) is *CEO turnover dummy*, a dummy variable that equals one if there is a CEO turnover in a year (the CEO of the year is different from the CEO of the previous year), and equals zero otherwise. The dependent variable is in Columns (2) and (4) is *Chairman turnover dummy*, a dummy variable that equals one if there is a chairman turnover in a year (the chairman of the year is different from the chairman of the previous year), and equals zero otherwise. The dependent variable in Column (5) is *Duality*, a dummy variable that equals one if the CEO also assumes the position of the chairman of the board, and equals zero otherwise. The dependent variable in Column (6) is *Analyst coverage,* which is the number of analysts following a firm in a given year. *SOE dummy* is a dummy variable that equals one if the firm is a state-owned enterprise, and equals zero otherwise. *Post* is a dummy variable that equals one if the year is 2015 or 2016, and equals 0 otherwise. Control variables are defined in the Appendix Table A2. All continuous variables are winsorized by trimming their first and 99th percentiles. Standard errors are clustered at the firm level, and p values are reported in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Dependent variable	Alternative explanation: Increased top executive turnover		Alternative explanation: Improved corporate governance			
	CEO turnover dummy	Chairman turnover dummy	CEO turnover dummy	Chairman turnover dummy	Duality	Analyst coverage
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-1.748***	-0.606	-1.999***	-0.662	0.094	-73.399***
	(0.006)	(0.263)	(0.002)	(0.219)	(0.841)	(0.000)
SOE dummy × Post	0.011	-0.000	-0.022	-0.043	-0.023	-0.711***
	(0.632)	(0.996)	(0.446)	(0.116)	(0.115)	(0.009)
ROA × SOE dummy × Post			0.840*	0.981**		
			(0.081)	(0.021)		
ROA × SOE dummy			-0.062	-1.205***		
			(0.903)	(0.010)		
ROA × Post			-0.869***	-0.639***		
			(0.004)	(0.005)		
ROA	-0.185	-0.502***	0.128	0.125	0.130	27.595***
	(0.391)	(0.008)	(0.669)	(0.578)	(0.335)	(0.000)
Ln(Total assets)	0.034	-0.020	0.044	-0.018	-0.002	3.899***
	(0.243)	(0.405)	(0.135)	(0.444)	(0.909)	(0.000)
Leverage	-0.045	-0.059	-0.046	-0.057	0.017	-0.930
	(0.587)	(0.405)	(0.577)	(0.423)	(0.729)	(0.282)
Tobin's Q	0.014*	0.017**	0.014*	0.016**	-0.001	0.938***
	(0.097)	(0.014)	(0.097)	(0.018)	(0.819)	(0.000)

Prior year stock return	0.011	0.013	0.006	0.010	0.001	1.559***
	(0.407)	(0.241)	(0.656)	(0.372)	(0.866)	(0.000)
Ln(List age)	-0.084	-0.060	-0.070	-0.047	-0.120*	-4.639***
	(0.322)	(0.404)	(0.411)	(0.514)	(0.051)	(0.000)
Top1	0.001	0.001	0.001	0.001	0.003**	-0.028
	(0.456)	(0.566)	(0.449)	(0.604)	(0.035)	(0.178)
Balance	0.053	0.059*	0.049	0.057*	-0.007	-0.383
	(0.127)	(0.059)	(0.154)	(0.068)	(0.757)	(0.288)
Board size	-0.015*	-0.020**	-0.015*	-0.020**	-0.021***	0.128
	(0.088)	(0.016)	(0.083)	(0.015)	(0.001)	(0.142)
Duality$_{t-1}$	0.115***	-0.026	0.113***	-0.027		
	(0.001)	(0.266)	(0.001)	(0.264)		
CEO age$_{t-1}$	0.028***		0.028***			
	(0.000)		(0.000)			
CEO gender$_{t-1}$	0.085		0.083			
	(0.262)		(0.272)			
Chairman age $_{t-1}$		0.027***		0.027***		
		(0.000)		(0.000)		
Chairman gender $_{t-1}$		0.069		0.071		
		(0.522)		(0.511)		
Duality						0.624**
						(0.034)
CEO age					0.011***	0.025
					(0.000)	(0.245)
CEO gender					-0.014	-0.227
					(0.806)	(0.663)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	6,821	6,832	6,821	6,832	6,865	6,807
R^2	0.332	0.345	0.333	0.346	0.808	0.797

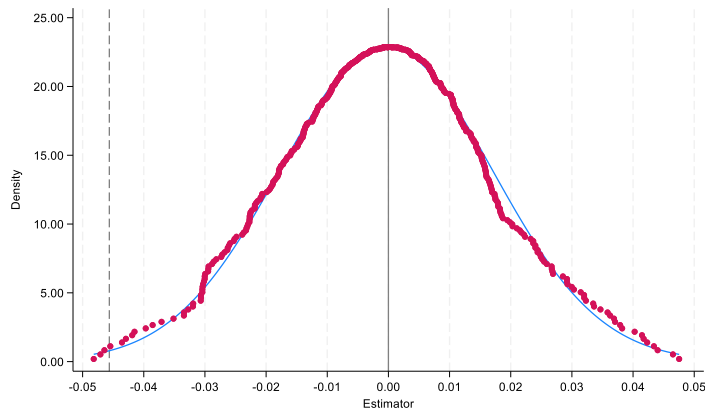# Table 10 The 2015 pay-restriction policy and M&A performance

This table reports the results of DID regression models that estimate the effect of the 2015 pay-restriction policy on M&A performance. The dependent variable in Column (1) ((2)) is *CAR[-1, 1]* (*CAR[-2, 2]*), which is the accumulated market-model-adjusted abnormal return over [-1, 1] ([-2, 2]) –day event window surrounding the acquisition announcement date, where the market model is estimated over the trading days [-240, -41] relative to the announcement date, with the value-weighted average of Shanghai stock exchange A-share stock returns being the market return. Dependent variables in Column (3)-(6) are the change in the acquirer's *ROA* (*Tobin's Q*) from the year prior to the announcement of the deal (t-1) to two (t+2) or three years (t+3) after the completion of the deal. The sample for Columns (1) and (2) consists of all M&As whose deal value is greater than 1% of the acquirer's total assets announced by non-financial Chinese listed firms between years 2013 and 2016. The sample for Columns (3)-(6) contains the completed deals. *SOE dummy* is a dummy variable that equals one if the acquirer is a state-owned enterprise, and equals zero otherwise. *Post* is a dummy variable that equals one if the announcement year is in 2015 or 2016, and equals 0 otherwise. *Relative size* is the ratio of the M&A's deal value to the acquirer's total assets. *Cross-border dummy* is a dummy variable that indicates cross-border M&As. Acquirers' characteristic variables are measured as of the fiscal year immediately prior to the acquisition announcement and defined in the Appendix Table A2. Industry dummies are defined based on the CSRC industry classification. All continuous variables are winsorized by trimming their first and 99th percentiles. Standard errors are clustered at the acquirer's industry level, and p values are reported in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Dependent variable	CAR[-1, 1]	CAR[-2, 2]	ΔROA [t-1, t+2]	ΔROA [t-1, t+3]	ΔTobin's Q [t-1, t+2]	ΔTobin's Q [t-1, t+3]
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.050	0.244**	-0.015	-0.220***	7.468***	4.944***
	(0.433)	(0.020)	(0.784)	(0.004)	(0.000)	(0.000)
SOE dummy × Post	0.016*	0.020	0.008	0.025	0.213	0.278**
	(0.095)	(0.134)	(0.421)	(0.247)	(0.338)	(0.016)
SOE dummy	0.001	-0.002	-0.001	-0.025**	0.002	-0.053
	(0.893)	(0.887)	(0.934)	(0.050)	(0.991)	(0.710)
Relative size	0.101***	0.164***	0.007	-0.037**	-0.525***	-0.355***
	(0.000)	(0.000)	(0.564)	(0.026)	(0.000)	(0.000)
Cross-border dummy	0.015	0.010	-0.014	-0.012	0.058	0.021
	(0.417)	(0.657)	(0.247)	(0.148)	(0.495)	(0.407)
Ln(Total assets)	-0.001	-0.009**	-0.000	0.004**	-0.286***	-0.167***
	(0.737)	(0.020)	(0.858)	(0.041)	(0.001)	(0.001)
Leverage	0.040***	0.105***	-0.012	-0.046**	-0.443	-0.350**
	(0.003)	(0.000)	(0.346)	(0.027)	(0.115)	(0.027)
Tobin's Q	-0.005**	-0.006	0.003	0.008***	-0.813***	-0.711***
	(0.023)	(0.177)	(0.252)	(0.000)	(0.000)	(0.000)
Cash/AT	0.030*	0.046**	0.035***	0.028*	0.288*	-0.296***
	(0.051)	(0.046)	(0.006)	(0.066)	(0.054)	(0.003)
ROA	0.086*	0.158	-0.483***	-0.592***	0.505	-0.701
	(0.079)	(0.112)	(0.000)	(0.000)	(0.722)	(0.171)
Stock return	-0.011*	-0.023***	0.001	-0.023**	-0.192***	-0.156***
	(0.054)	(0.000)	(0.817)	(0.011)	(0.003)	(0.000)
Ln(List age)	-0.003	-0.004	0.006	0.008	0.041	-0.005
	(0.544)	(0.517)	(0.256)	(0.221)	(0.561)	(0.934)
Top1	0.000	0.000	-0.000	0.000**	0.007**	0.002
	(0.648)	(0.924)	(0.588)	(0.022)	(0.027)	(0.436)
Balance	-0.002	0.000	-0.008***	-0.000	0.027	0.001
	(0.591)	(0.946)	(0.000)	(0.771)	(0.638)	(0.988)
Board size	0.000	-0.003	0.002	0.010**	0.077***	0.055***
	(0.884)	(0.345)	(0.173)	(0.039)	(0.000)	(0.000)
Duality	0.007*	0.005	-0.005**	-0.003	0.130***	0.117***
	(0.096)	(0.249)	(0.046)	(0.592)	(0.001)	(0.000)
CEO age	-0.001**	-0.001***	0.000	0.001**	-0.006***	-0.008***
	(0.026)	(0.007)	(0.821)	(0.036)	(0.008)	(0.003)

CEO gender	0.000	0.003	0.006	-0.001	-0.002	0.004
	(0.975)	(0.800)	(0.399)	(0.834)	(0.989)	(0.953)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	1,084	1,083	553	552	541	548
R^2	0.094	0.135	0.163	0.157	0.753	0.744

Figure 1 Placebo test

This figure reports the kernel density maps obtained from the placebo test. The sample for the baseline regressions contains 2,174 firms, including 928 SOEs and 1,246 non-SOEs. In the placebo test, each time 928 firms are randomly selected from the total 2,174 firms and used as the artificial treated group. With the sample containing the firm-year observations of the artificial treated group and original control group, we rerun the specification of Column (4) in Table 3 and store the estimated coefficient on *SOE dummy* × *Post* and the t statistic of the estimated coefficient. The process is repeated for 500 times. The kernel density of the estimated coefficients on *SOE dummy* × *Post* (t statistics on the estimated coefficients) is presented in Panel A (B).

Panel A   Kernel density of the estimators
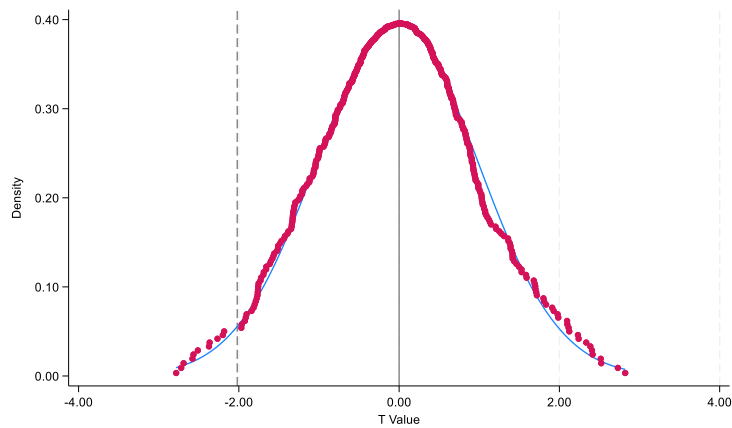
Panel B   Kernel density of the t statistics

Appendix

Table A1　A Comparison between the 2009 and 2015 pay-restriction policy

	2009 pay-restriction policy	2015 pay-restriction policy
Target	Leaders of CSOEs, including the chairman, secretary of the party committee, general manager, chairman of the board of supervisors and other personnel in charge.	Leaders of CSOEs, including the chairman, secretary of the party committee, general manager, chairman of the board of supervisors and other personnel in charge. LSOEs should push forward the reform on corporate leaders' remuneration following the guidelines for CSOEs.
Base salary	No more than 5 times the average salary of employees (x) and can be adjusted using a salary adjustment factor, which is capped 1.5.	2 times the average salary of employees (x).
	Maximum: $5x \times 1.5 = 7.5x$	Maximum: $2x$
Performance-based pay	No more than 3 times the base salary.	No more than 2 times the base salary and can be adjusted using an adjustment factor, which is capped 1.5.
	Maximum: $7.5x \times 3 = 22.5x$	Maximum: $2x \times 2 \times 1.5 = 6x$
Incentive income for the tenure	n.a.	No more than 30% of the total pay received during the tenure.
		Maximum: $30\% \times (2x+6x) = 2.4x$ (per year)
Total pay	Maximum: $7.5x + 22.5x = 30x$	Maximum: $2x + 6x + 2.4x = 10.4x$
Restriction on perks	No	Yes

Table A2　Variable definitions

Variable	Definition
Ln(Assets)	The natural logarithm of a firm's total assets.
Leverage	The ratio of a firm's total liability to its total assets.
Tobin's Q	The market value of a firm's total assets divided by the book value of its total assets.
Cash/AT	The ratio of a firm's cash balance to its total assets.
ROA	A firm's net income divided by the average total assets (Net income$_t$×2/(Total assets$_{t-1}$+Total assets$_t$)).
Prior year stock return	The firm's stock return in year t-1.
Ln(List age)	The natural logarithm of one plus the number of years since a firm's initial public offering.
Top1	The percentage of shares owned by the firm's largest shareholder (%).
Balance	The percentage of shares owned by the firm's second to fifth largest shareholder divided by the percentage of shares owned by the firm's largest shareholder.
Duality	A dummy variable that equals one if the CEO of the firm is also the firm's chairman, and equals zero otherwise.
Board size	The number of directors in a firm's board.
CEO age	The CEO's age.
CEO gender	A dummy variable that equals one if the CEO is female, and equals zero otherwise.
Chairman age	The chairman's age
Chairman gender	A dummy variable that equals one if the chairman is female, and equals zero otherwise.