

Reform of the state-owned enterprise wage determination system and pay gap

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Abstract

Purpose – Excessive income inequality is a significant obstacle to achieving shared prosperity in China. Using Chinese listed firms from 2016 to 2021, we test the effect of the reform of the state-owned enterprise wage determination system on the pay gap between executives and ordinary employees.

Design/methodology/approach – Based on data from Chinese A-share listed companies from 2016 to 2021, we employ the difference-in-differences model to study the impact of state-owned enterprise wage system reform on the pay gap between executives and ordinary employees.

Findings – We find that the reform narrows the pay gap between executives and ordinary employees. This conclusion holds after a series of robustness tests. Heterogeneity analysis reveals that the effect of the reform on the pay gap is more pronounced for firms in regions with lower income disparity and firms with weaker corporate governance. Mechanism tests indicate that the reform reduces the pay gap by reducing executive compensation rather than affecting ordinary employees' wages.

Originality/value – This paper provides new evidence on the role of the reform in firms and offers important policy implications for other countries.

Keywords State-owned enterprises, Wage determination reform, Pay gap, China

Paper type Research article

1. Introduction

In recent years, slowing economic growth has exacerbated income inequality, making it a focal point of social concern. To address this, reforming the existing income distribution structure to achieve a better balance between efficiency and equity through socialist market-oriented reforms has become a critical step in achieving high-quality economic development and social stability. Given that wage income serves as a vital source of income for residents (Wang, Xie, & Zhu, 2015) and plays a pivotal role in the primary distribution of economic benefits (Kong, Huang, & Ma, 2023b), adjusting the internal compensation distribution within firms is of particular importance in curbing the widening income gap and achieving shared prosperity.

Research on pay gaps primarily concentrates on executive-to-executive pay disparities and the pay gap between executives and ordinary employees. Compared with the pay gap among executives, the pay gap between executives and ordinary employees exerts a stronger influence on widening income disparities in society. For instance, Sun, Ruan, Peng, and Liu (2022) quantified the average pay gap among executives by taking the logarithm of the pay

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differential between general managers and non-general managers, resulting in an average pay gap of 11.74. However, using the logarithm of the difference between the average pay of executives and that of ordinary employees, they revealed an average pay gap of 12.41. When the logarithmic transformation is taken into account, it becomes evident that the pay gap between executives and employees is larger than the gap among executives. Hence, this paper investigates the pay gap between executives and ordinary employees.

While numerous studies have explored factors influencing the pay gap between executives and ordinary employees from both internal and external perspectives (Chen, Ma, & Bu, 2014; Liu & Kong, 2021; Wei, Wang, & Cai, 2022; Ye, Li, & Zeng, 2022; Kong, Huang, & Liu, 2023a), none have investigated whether the reform affects the pay gap between executives and employees. The Opinions on Reforming the Wage Determination Mechanism of State-Owned Enterprises, issued by the State Council of China in 2018, serves as a significant exogenous shock for studying the causal relationship between compensation system adjustments and the pay gap.

Using data from Chinese listed companies from 2016 to 2021 and employing the difference-in-differences model, we examine the impact of this exogenous compensation policy shock on the pay gap between executives and ordinary employees. The study shows that the reform exerts a negative effect on the pay gap between executives and ordinary employees. This conclusion remains robust against changing the measurement of the pay gap, controlling for the influence of corporate digital transformation, considering the role of minimum wages, conducting the test of coefficient stability, including industry-year and province-year fixed effects, conducting parallel trends tests, and using propensity score matching. Heterogeneity analysis suggests that the effect of the reform on the pay gap is more pronounced for firms in regions with lower income disparities and firms with weaker corporate governance. Mechanism analysis finds that the reform primarily reduces the pay gap by lowering executive compensation rather than through changes in ordinary employees' wages.

This paper's contributions can be summarized as follows. First, we investigate the impact of compensation system adjustments on the pay gap between executives and ordinary employees, thereby enriching the existing literature on the determinants of this pay gap (Bu, Zhang, & Lin, 2016; Kong, Kong, & Lu, 2020; Wei *et al.*, 2022; Yin, Tao, & Wang, 2022). Second, the study provides empirical support for the reasonableness of the reform, demonstrating that it narrows the pay gap between executives and ordinary employees. Third, the paper extends the existing literature on the impact of wage system reform on income distribution. Cruz and Rau (2022) find that Chile's fair payment law reduces the gender pay gap, while Bennedsen, Simintzi, Tsoutsoura, and Wolfenzon (2022) study Denmark's gender pay transparency policy and find that it lowers the gender pay gap in firms. Unlike previous studies that focus primarily on gender-based pay disparities, this research explores the effect of wage system reform on the executive-employee pay gap, further deepening our understanding of how wage system adjustments can reshape income distribution within firms.

The remainder of this paper is structured as follows. Section 2 provides the policy background and literature review. Section 3 outlines the research design. Section 4 presents the empirical analysis. Section 5 concludes the study.

2. Policy background and literature review

2.1 Policy background

State-owned enterprises are a significant component of the global economy (Matuszak & Kabaciński, 2021) and serve as a crucial channel for government intervention in economic operations (Lin, Lu, Zhang, & Zheng, 2020). However, the low degree of marketization of income distribution, weak distribution enforcement, and inadequate regulatory mechanisms in state-owned enterprises have weakened employee morale and hindered firm development, thereby obstructing the high-quality development of state-owned enterprises. In order to further improve the distribution system of state-owned enterprises, the Chinese State Council

issued the Opinions on Reforming the Wage Determination Mechanism of State-owned Enterprises in May 2018.

This reform covers two main aspects of the wage determination mechanism in state-owned enterprises. First, it emphasizes the reform of the total wage bill determination mechanism, requiring a closer linkage between the total wage budget of state-owned enterprises and their operating performance, with the total wage bill allowed to increase or decrease accordingly. Second, the reform focuses on improving internal wage distribution in state-owned enterprises. Specifically, state-owned enterprises are required to strengthen performance evaluations for all employees based on the basic wage system, establishing a closer link between employees' wage income and their job performance and actual contributions. Moreover, it is emphasized that during negotiations over wage levels for different positions within firms, preference should be given to first-line workers, key positions, and highly skilled and high-level talents. This involves rationalizing wage disparities as well as adjusting unreasonable income differentials.

From the content of this wage determination system reform, the wage effects on executives and ordinary employees are reflected in two aspects. On the one hand, executives typically benefit most from excessive and unreasonable income. Therefore, this reform aims to curb these excessive and unreasonable incomes, potentially leading to lower executive compensation. On the other hand, although the pay gap between ordinary employees may slightly widen, their wage determination for their respective positions becomes more performance-oriented and closely related to their work contributions. This suggests that ordinary employees may obtain higher income overall. Consequently, as this reform is effectively implemented, it is expected that we will observe a reduction in the pay gap between executives and ordinary employees within companies.

2.2 Literature review

The literature most relevant to this study primarily focuses on the determinants of pay gaps between executives and ordinary employees. In contrast to the literature that examines the pay gap between CEOs and top management from the perspective of tournament theory (Lin, Yeh, & Shih, 2013; Xu, Ponnappalli, & Wang, 2025), scholars have investigated how various internal and external factors influence the pay gap between executives and ordinary employees from multiple perspectives.

Regarding internal factors, existing research has generated a diverse set of findings. On the one hand, certain firm-level mechanisms tend to compress the pay gap: political promotion incentives for SOE executives (Bu *et al.*, 2016; Kong, Zhang, Wang, Yang, & Liu, 2021), the presence of Communist Party organizations (Chen, Hu, & Na, 2018), and digital transformation strategies (Kong *et al.*, 2023a) have all been shown to reduce pay dispersion. On the other hand, several factors appear to exacerbate the gap: executives with overseas experience and management education backgrounds (Fu, Zhang, & Wu, 2023; Liu & Kong, 2021), fragmented board structures (Xu, Li, & Liang, 2021), and strategic emphasis on innovation (Kong, Jiang, & Zhu, 2022) are associated with larger pay gaps. Additionally, post-retirement CEO board appointments (Ye *et al.*, 2022) and greater financial asset allocation (Xie, Chu, & Liu, 2022) have also been shown to widen pay inequality.

In terms of external factors, the literature has largely concentrated on the role of government regulations and institutional environments. Studies indicate that tax enforcement (Wei *et al.*, 2022), capital market openness (Zhang, Ma, & Wang, 2020), and anti-corruption campaigns (Kong *et al.*, 2023b) tend to reduce the executive-employee pay gap. However, government subsidies (Bu & Wang, 2014) and mixed-ownership reforms that empower non-state major shareholders to appoint directors (Chen, Huang, & Chen, 2021) have been shown to widen the gap by raising executive pay while suppressing employee wages. Beyond formal regulations, external cultural and social factors also matter: a stronger Confucian cultural atmosphere is associated with a larger pay gap (Rao, Ding, & Chen, 2022), while a better social

trust environment reduces the gap by enhancing corporate social responsibility (Yin *et al.*, 2022).

Several studies have examined the implications of state-owned enterprise wage reform. For instance, using the 2015 State-owned Enterprises Executive Compensation Regulation as an exogenous shock, Lu, Dong, and Yang (2024) find that the reform improves corporate employment and increases the share of workers with higher education levels. However, Liu and Tai (2020) demonstrate that the same reform curbs investment efficiency by raising agency costs, with this negative effect being more pronounced among firms facing intense product market competition. Ma, Yang, and Chen (2026) show that the state-owned enterprise wage reform in 2018 can enhance corporate intelligence manufacturing levels by optimizing human capital structure and increasing the demand for labor productivity improvement.

From this literature review, two gaps can be identified. First, while existing studies have provided meaningful insights into the determinants of the executive-employee pay gap, the vast majority focus on internal firm characteristics or gradual institutional changes, leaving the role of explicit wage system adjustments and direct regulatory interventions that target internal profit distribution largely unexplored. Second, the findings of existing literature remain predominantly associational, with limited causal evidence on whether mandatory wage reforms achieve their intended policy goals. Our study directly addresses this gap by evaluating the effects of the reform within the broader context of shared prosperity, providing causal evidence on whether such policy interventions can effectively reduce pay inequality in firms and thus offering valuable empirical benchmarks for optimizing distribution patterns.

3. Research design

3.1 Data source and sample selection

This study focuses on Chinese A-share listed companies from 2016 to 2021 as the research subjects. The financial data of these companies were obtained from the China Securities Market and Accounting Research database (CSMAR) and the China National Research Data Service (CNRDS), while other data were sourced from the National Bureau of Statistics. Several data processing steps were applied, including: (1) exclusion of companies belonging to the financial industry; (2) removal of companies where ownership changed during the sample period; (3) elimination of firm-year observations with missing information for the variables used in the main regressions. The final sample includes 3,534 firms with 17,032 firm-year observations. To mitigate the influence of outliers, all continuous variables were winsorized at the 1% and 99% levels.

3.2 Pay gap between executives and employees

Following previous studies (Dai, Kong, & Xu, 2017; Kong *et al.*, 2020; Xu *et al.*, 2021; Wei *et al.*, 2022), we measure the pay gap between executives and ordinary employees (GAP) as the ratio of average executive compensation to average employee compensation. Specifically, average executive compensation is calculated as total executive compensation divided by the number of executives, while average employee compensation is derived as the sum of changes in employee compensation payable and cash paid to and on behalf of employees, minus compensation paid to executives, all divided by the number of ordinary employees.

3.3 Empirical model

Since this policy shock is plausibly exogenous to individual firms, this paper employs a difference-in-differences (DID) framework with two-way fixed effects to identify the causal effect of the reform on the pay gap between executives and ordinary employees. Following previous studies (Wei *et al.*, 2022; Kong *et al.*, 2023a, b), the specific model is set as follows:

$$\begin{aligned}
 GAP_{i,t} = & \beta_0 + \beta_1 Treat_i \times Post_t + \beta_2 Size_{i,t} + \beta_3 Lev_{i,t} + \beta_4 Cash_{i,t} \\
 & + \beta_5 Tangi_{i,t} + \beta_6 RD_{i,t} + \beta_7 Age_{i,t} + \beta_8 Duality_{i,t} \\
 & + \beta_9 Indep_{i,t} + \beta_{10} TOP1_{i,t} + \eta_i + \mu_t + \varepsilon_{i,t}
 \end{aligned} \quad (1)$$

Where *i* denotes individual firms, and *t* represents years, respectively. *Treat* is a dummy variable. Because the wage reform is primarily targeted at state-owned enterprises, when a firm falls into the category of state-owned enterprises within the sample period, the value of *Treat* is set to 1 and 0 otherwise. *Post* is a dummy variable that equals 1 after 2018 and 0 otherwise because state-owned enterprises generally implement a budget-based salary system. In addition, we also include a series of control variables that are shown to affect the pay gap between executives and ordinary employees. Specifically, following previous studies (Bu & Wang, 2014; Zhang *et al.*, 2020; Chen *et al.*, 2021; Kong *et al.*, 2020; Yin *et al.*, 2022; Ye *et al.*, 2022), we control for firm size (*Size*), leverage ratio (*Lev*), fixed asset density (*Tangi*), operational cash flow (*Cash*), research and development expenditure (*RD*), firm age (*Age*), CEO duality (*Duality*), and the ownership percentage of the largest shareholder (*TOP1*). Furthermore, we include firm fixed effects (η) to account for unobservable time-invariant firm-specific characteristics and year effects (μ) to capture common time trends. The variable definitions are shown in Table 1.

4. Empirical analysis

4.1 Descriptive statistics

Table 2 reports the descriptive statistics of the main variables. The average value of *GAP* is 3.8589, with a maximum of 17.5349, which is consistent with previous studies (Dai *et al.*, 2017; Yang & Kong, 2019) and indicates a substantial compensation disparity between executives and ordinary employees within firms. The mean of *Treat* is 0.3018, indicating that 30.18% of the sample belong to the treatment group. The mean leverage ratio (*Lev*) is 0.4254, suggesting that, on average, total liabilities account for 42.54% of total assets, reflecting a relatively high overall leverage level. This is in line with the prevailing financing practices in China, where bank financing dominates due to the less developed equity financing market. In addition, the mean of *TOP1* is 33.2306, indicating that, on average, the largest shareholder holds approximately 33.23% of the firm's shares. This aligns with the highly concentrated ownership structure in China (Jiang & Kim, 2020).

4.2 Main results

Table 3 reports the regression results for Model (1). In column 1, without control variables, the coefficient of *Treat* $\times$ *Post* is negative and statistically significant at the 1% level, suggesting

Table 1. Variable definitions

Variable	Definition
<i>GAP</i>	Average executive compensation divided by average employee compensation
<i>Treat</i>	A dummy variable taking the value 1 if a firm belongs to a state-owned firm during the sample period and 0 otherwise
<i>Post</i>	A dummy variable that equals 1 after 2018 and 0 otherwise
<i>Size</i>	The natural logarithm of total assets
<i>Lev</i>	Total debt divided by total assets
<i>Cash</i>	Operating cash flow divided by total assets
<i>Tangi</i>	The natural logarithm of per capita fixed assets
<i>RD</i>	Research and development (R&D) expenditure divided by total assets
<i>Age</i>	The natural logarithm of one plus firm age
<i>Duality</i>	A dummy variable taking the value 1 if the Chairman and CEO are the same person and 0 otherwise
<i>TOP1</i>	The shareholding ratio of the largest shareholder

Table 2. Descriptive statistics

Variables	N	Mean	Std	Minimum	Median	Maximum
GAP	17,302	3.8589	2.7367	1.1074	3.0751	17.5349
Treat	17,302	0.3018	0.4590	0.0000	0.0000	1.0000
Post	17,302	0.5501	0.4975	0.0000	1.0000	1.0000
Size	17,302	22.3536	1.2994	19.9953	22.1825	26.3666
Lev	17,302	0.4254	0.2003	0.0679	0.4156	0.9178
Cash	17,302	0.0505	0.0669	−0.1518	0.0493	0.2409
RD	17,302	0.0216	0.0207	0.0000	0.0183	0.1088
Age	17,302	2.9995	0.2755	2.3026	3.0445	3.5553
Duality	17,302	0.3035	0.4698	0.0000	0.0000	1.0000
TOP1(%)	17,302	33.2306	14.3793	8.3800	31.1100	71.7400

Note(s): This table reports summary statistics. GAP is measured by the average executive compensation divided by the average employee compensation. Treat is a dummy variable that equals 1 when a firm belongs to a state-owned enterprise and 0 otherwise. Post is a dummy variable that equals 1 after 2018 and 0 otherwise. Size is the natural logarithm of total assets. Lev is total debt scaled by total assets. Cash is the ratio of operating cash flow to total assets. Tangi is the natural logarithm of per capita fixed assets. RD is R&D expenditure scaled by total assets. Age is the natural logarithm of one plus firm age. Duality is a dummy variable that equals 1 if the Chairman and CEO are the same person and 0 otherwise. TOP1 is the shareholding ratio of the largest shareholder. The sample period is from 2016 to 2021

Table 3. Main results

	(1) GAP	(2) GAP	(3) GAP
Treat×Post	−0.1665*** (0.0576)	−0.2053*** (0.0592)	−0.2193*** (0.0592)
Size		0.7813*** (0.0825)	0.7769*** (0.0810)
Lev		−0.5008*** (0.1932)	−0.5020*** (0.1924)
Cash		0.8508*** (0.2388)	0.8448*** (0.2384)
Tangi		−0.4338*** (0.0518)	−0.4333*** (0.0518)
RD		3.076 (2.2324)	2.928 (2.2129)
Age		−0.783 (0.7335)	−0.655 (0.7369)
Duality			−0.0730 (0.0503)
TOP1			0.00760 (0.0053)
Constant	3.6959*** (0.0312)	−5.8170** (2.8651)	−6.3319** (2.9484)
Firm fixed effect	Yes	Yes	Yes
Time fixed effect	Yes	Yes	Yes
N	17,032	17,032	17,032
R ²	0.0120	0.0521	0.0529

Note(s): This table displays impact of the reform on the pay gap between executives and ordinary employees. GAP is measured by the average executive compensation divided by the average employee compensation. Standard errors reported within parentheses are clustered at the firm level. *, **, and *** indicate significance levels at 10%, 5%, and 1%, respectively. The sample period is from 2016 to 2021

that the wage reform in state-owned enterprises reduces the pay gap between executives and ordinary employees. In column 2, after further controlling for firm-specific characteristics such as firm size (Size), leverage (Lev), and operating cash flow (Cash), the coefficient of $Treat \times Post$ remains significantly negative. In the last column, with all control variables included, the coefficient of $Treat \times Post$ is negative and statistically significant at the 1% level, confirming that this reform lowers the pay gap between executives and ordinary employees.

Regarding the control variables, the coefficient for Size is positive and statistically significant at the 1% level, which is consistent with prior findings (Chen *et al.*, 2021; Yin *et al.*, 2022). Larger companies tend to have more complex hierarchical structures, and higher-ranking managers may extract rents of power, thereby widening the pay gap between executives and ordinary employees. By contrast, the coefficient for Lev is also significantly negative, indicating that higher corporate leverage is associated with a smaller pay gap between executives and ordinary employees (Bu *et al.*, 2016; Kong *et al.*, 2020). This may be because higher leverage raises bankruptcy risk, prompting executives to accept lower compensation in exchange for job security.

4.3 Robustness tests

In this section, we conduct several robustness tests to further demonstrate the reliability of our findings. First, we replace the measurement of the dependent variable. Following Luo, Xiang, and Zhu (2020), we use the logarithm of the difference between the average compensation of executives and ordinary employees to measure the pay gap (GAP1). As shown in column 1 of Table 4, the coefficient of $Treat \times Post$ remains negative and statistically significant at the 1% level, indicating that the reform reduces the pay gap between executives and ordinary employees.

Second, given that digital transformation has become a strategic priority for many firms, and that recent studies suggest it narrows the pay gap between executives and ordinary employees (Kong *et al.*, 2023a), we control for its potential influence. Specifically, we measure the degree of digital transformation (Digital) using the logarithm of one plus the frequency of digital-related keywords (e.g. big data, artificial intelligence, blockchain, and cloud computing) in annual reports. As shown in column 2 of Table 4, after controlling for digital transformation, the coefficient of $Treat \times Post$ remains significantly negative, confirming that our main finding is robust.

Minimum wage policy, as an important labor market policy, may affect intra-firm income distribution and thus may confound our estimates (Majchrowska & Strawinski, 2018). To address this concern, we follow Liu and Zhao (2019) and control for the provincial minimum wage level (Mwage), measured as the natural logarithm of the maximum monthly minimum wage standard in the province where the firm is located. As shown in column 3 of Table 4, after including this control, the coefficient of $Treat \times Post$ remains negative and statistically significant at the 1% level, indicating that our main finding is robust to the inclusion of minimum wage policy.

We also conduct a test of coefficient stability. Specifically, the coefficient of the independent variable does not substantially change in the model that includes the primary determinants of the dependent variable, even when we further add other control variables. Following He, Liu, Yu, and Zhou (2026), we select the primary determinants based on the magnitude of their coefficients in the baseline regression. These core variables include firm size (Size), leverage (Lev), operating cash flow (Cash), R&D investment (RD), and firm age (Age). The remaining three control variables are then gradually introduced to examine whether their inclusion significantly affects the coefficient of $Treat \times Post$. As shown in columns (4)–(6) of Table 4, adding these non-core control variables does not materially change the coefficient of $Treat \times Post$, suggesting that potential omitted variables pose minimal risk to our findings.

In addition, time-varying regional and industry-specific factors may confound our estimates. To account for these potential confounders, we include industry-year and

Table 4. Robustness tests

	(1) GAP1	(2) GAP	(3) GAP	(4) GAP	(5) GAP	(6) GAP	(7) GAP	(8) GAP	(9) GAP
Treat×Post	−0.0632*** (0.0194)	−0.2188*** (0.0591)	−0.2185*** (0.0593)	−0.2053*** (0.0592)	−0.1926*** (0.0593)	−0.2104*** (0.0593)	−0.1405** (0.0693)		−0.3710*** (0.1181)
Size	0.2917*** (0.0238)	0.7818*** (0.0821)	0.7769*** (0.0810)	0.7813*** (0.0825)	0.7255*** (0.0830)	0.7219*** (0.0815)	0.7572*** (0.0833)	0.7774*** (0.0809)	0.9533*** (0.1498)
Lev	−0.1340** (0.0666)	−0.5054*** (0.1925)	−0.5021*** (0.1924)	−0.5008*** (0.1932)	−0.5462*** (0.1969)	−0.5542*** (0.1963)	−0.4628** (0.1949)	−0.5030*** (0.1943)	−0.7328* (0.3963)
Cash	0.3138*** (0.0847)	0.8422*** (0.2383)	0.8437*** (0.2384)	0.8508*** (0.2388)	0.7939*** (0.2403)	0.7928*** (0.2401)	0.8746*** (0.2343)	0.8845*** (0.2388)	0.732 (0.4594)
RD	4.6207*** (0.7722)	2.993 (2.2189)	2.936 (2.2132)	3.076 (2.2324)	3.9111* (2.2239)	3.7827* (2.2034)	3.8387* (2.2053)	3.115 (2.2120)	5.698 (5.8607)
Age	−0.131 (0.2023)	−0.647 (0.7382)	−0.653 (0.7369)	−0.783 (0.7335)	−0.953 (0.7304)	−0.817 (0.7356)	−0.874 (0.7534)	−0.801 (0.7480)	−1.953 (1.3288)
Tangi	−0.1128*** (0.0152)	−0.4348*** (0.0520)	−0.4333*** (0.0518)	−0.4338*** (0.0518)			−0.4462*** (0.0521)	−0.4341*** (0.0519)	−0.6614*** (0.1319)
Duality	−0.0247 (0.0178)	−0.0726 (0.0503)	−0.0733 (0.0502)		−0.0612 (0.0510)		−0.0602 (0.0504)	−0.0731 (0.0503)	−0.0837 (0.1067)
TOP1	0.00260 (0.0016)	0.00760 (0.0053)	0.00760 (0.0053)			0.00830 (0.0053)	0.00770 (0.0056)	0.00840 (0.0054)	0.000200 (0.0091)
Digital		−0.0225 (0.0256)							
Mwage			−0.113 (0.4098)						
Forth_1								0.0380 (0.0868)	
Forth_2								0.0620 (0.0725)	
Forth_3								0.0653 (0.0545)	

(continued)

Table 4. Continued

	(1) GAP1	(2) GAP	(3) GAP	(4) GAP	(5) GAP	(6) GAP	(7) GAP	(8) GAP	(9) GAP
Back_1								−0.2194*** (0.0595)	
Back_2								−0.2894*** (0.0694)	
Constant	7.3567*** (0.7702)	−6.4270** (2.9668)	−5.492 (4.3050)	−5.8170** (2.8651)	−9.4940*** (2.8702)	−10.1065*** (2.9514)	−4.972 (3.1619)	−5.9606** (2.9616)	−3.130 (5.4525)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year fixed effects	No	No	No	No	No	No	Yes	No	No
Province-year fixed effects	No	No	No	No	No	No	Yes	No	No
N	17,032	17,032	17,032	17,032	17,032	17,032	17,032	17,032	6,313
R ²	0.164	0.0530	0.0529	0.0521	0.0372	0.0377	0.841	0.0541	0.0651

Note(s): This table reports the results of robustness tests. In column 1, we change the measurement of the pay gap between executives and ordinary employees. GAP1 is the logarithm of the difference between the average compensation of executives and ordinary employees. We control the effect of digital transformation in column 2. Digital is the logarithm of one plus the frequency of terms related to digital transformation in annual reports (such as big data, artificial intelligence, blockchain, and cloud computing). We consider the effect of the minimum wage in column 3. Wage is the natural logarithm of the maximum value of provincial monthly minimum wage standards where firms are located (Mwage). We run the test of coefficient stability in columns (4)–(6). In column 7, we include industry-year fixed effects and province-year fixed effects to control for regional and industry factors that change over time. We run the parallel trend test in column 8 and use the propensity score matching method in column 9, respectively. The reduction in the sample in column 9 arises because the PSM procedure employs one-to-one nearest-neighbor matching, which necessarily discards untreated observations that fall outside the common support region, resulting in a substantially smaller estimation sample. Standard errors reported within parentheses are clustered at the firm level. *, **, and *** indicate significance levels at 10%, 5%, and 1%, respectively. The sample period is from 2016 to 2021

province-year fixed effects in column 7 of [Table 4](#). As shown, the coefficient of $\text{Treat} \times \text{Post}$ remains negative and statistically significant at the 5% level, confirming that the impact of the reform on the pay gap is robust to the inclusion of these additional fixed effects.

Moreover, a key identifying assumption of the DID framework is the parallel trends assumption, which requires that, in the absence of the policy intervention, the gap between executives and ordinary employees in the treatment group would have followed a trajectory parallel to that of the control group. In other words, any systematic differences in the pay gap between the two groups should remain stable over time prior to the reform. Following previous studies ([Moshirian, Tian, Zhang, & Zhang, 2021](#); [Yin et al., 2022](#)), we construct several dummy variables to investigate the dynamic effects of wage reform on the wage gap between executives and ordinary employees. Specifically, this study constructs *Forth_1*, *Forth_2*, *Forth_3*, *Current*, *Back_1*, and *Back_2*. When the observation is a state-owned enterprise and in the year 2016, *Forth_1* equals 1 and 0 otherwise. When the observation is a state-owned enterprise, and in the year 2017, *Forth_2* equals 1 and 0 otherwise. The same logic applies to *Forth_3*, *Current*, *Back_1*, and *Back_2*. As shown in column 8 of [Table 4](#), the overall coefficients of *Forth_1*, *Forth_2*, and *Forth_3* are not significant [[1](#)]. Meanwhile, the coefficients of *Back_1* and *Back_2* are significantly negative. This indicates that the parallel trends assumption for the difference-in-differences method is satisfied.

Finally, to mitigate selection bias and ensure that the treatment and control groups are comparable in terms of observable characteristics, we first apply propensity score matching (PSM) to construct a matched sample. We then estimate our DID specification using this matched sample. This combined approach helps to alleviate concerns that our results are driven by systematic differences between the two groups rather than the reform itself. Specifically, one-to-one nearest-neighbor matching is used. The matching variables include enterprise size (*Size*), leverage ratio (*Lev*), operating cash flow (*Cash*), fixed asset density (*Tangi*), and research and development expenditure (*RD*). The balance of variables before and after matching is shown in [Appendix A](#), where the enterprise characteristics of state-owned and non-state-owned enterprises are generally comparable after matching. Subsequently, this study investigates the effect of the reform on the wage gap between executives and ordinary employees using the matched sample. As shown in the last column of [Table 4](#), the regression coefficient of $\text{Treat} \times \text{Post}$ remains significantly negative, indicating that the reform of the reform reduces the wage gap between executives and ordinary employees.

4.4 Heterogeneity analysis

4.4.1 The impact of regional income disparity. The effect of the reform on the pay gap may vary across regions with different levels of income inequality, and there are competing predictions regarding the direction of this heterogeneity. On the one hand, from a policy demand perspective, regions with greater income inequality face more urgent pressure to address distributional imbalances, which may lead local governments to implement the reform with greater intensity, thereby producing a stronger reduction in the pay gap. On the other hand, from a policy implementation and institutional capacity perspective, the effectiveness of any top-down regulatory reform depends critically on local governance quality and institutional strength. Regions with smaller urban–rural income gaps tend to be more economically developed, with higher levels of marketisation, stronger rule of law, and more robust government enforcement, conditions that facilitate more effective policy transmission and firm-level compliance. Consequently, the net effect of the wage reform on the pay gap in regions with more unequal income distribution is theoretically ambiguous.

To verify this conjecture, following previous studies ([Moshirian et al., 2021](#); [Wu, Pan, & Hu, 2026](#)), we construct the following model:

$$\begin{aligned}
 GAP_{i,t} = & \alpha_0 + \alpha_1 Treat_i \times Post_t \times TRGAP_{i,t} + \alpha_2 Treat_i \times Post_t \\
 & \alpha_3 Treat_i \times TRGAP_{i,t} + \alpha_4 Post_t \times TRGAP_{i,t} + \alpha_5 TRGAP_{i,t} \\
 & + \gamma' Control_{i,t} + \eta_i + \mu_t + \varepsilon_{i,t}
 \end{aligned} \quad (2)$$

Where i represents individual enterprises and t indicates the year, respectively. TRGAP represents regional income distribution, and Controls denotes the vector of control variables. We measure regional income inequality as the ratio of rural residents' per capita disposable income to the average per capita disposable income of all local residents. A higher value of this ratio indicates a larger share of rural income in the total, which corresponds to a less equitable regional income distribution. As shown in column 1 of Table 5, the regression coefficient of $Treat \times Post \times TRGAP$ is negative and statistically significant at a 10% level, indicating that the effect of the reform on the pay gap between executives and ordinary employees is more pronounced in regions with lower income inequality.

4.4.2 The impact of corporate governance. According to agency theory, self-interested agents have strong incentives to pursue personal gains, such as excessive compensation and perquisite consumption (Elston & Goldberg, 2003). Executives, as corporate decision-makers, have the ability and opportunity to manipulate compensation through earnings management, thereby widening the pay gap between executives and ordinary employees (Wei et al., 2022). An effective corporate governance framework can constrain management behavior, reducing unjustifiably high executive pay and narrowing the pay gap (Chen et al., 2018). In other words, well-governed firms already limit executive compensation ex ante, leaving little room for further compression under the reform. By contrast, poorly governed firms, where executives enjoy greater discretion to inflate their own pay through weak internal checks, face a larger mandatory adjustment following the reform. Consequently, the reform acts as a substitute for weak governance rather than a complement to strong governance. We therefore expect the reform's effect on the pay gap to be more pronounced in firms with weaker corporate governance. We use the following model to examine this conjecture.

$$\begin{aligned}
 GAP_{i,t} = & \chi_0 + \chi_1 Treat_i \times Post_t \times Governance_{i,t} + \chi_2 Treat_i \times Post_t \\
 & \chi_3 Treat_i \times Governance_{i,t} + \chi_4 Post_t \times Governance_{i,t} + \chi_5 Governance_{i,t} \\
 & + \gamma' Control_{i,t} + \eta_i + \mu_t + \varepsilon_{i,t}
 \end{aligned} \quad (3)$$

Where i represents individual enterprises and t indicates the year, respectively. Governance represents the level of corporate governance. In our study, we employ the proportion of independent directors to measure the level of corporate governance. This choice is attributed to the crucial role independent directors play in modern corporate governance. They serve as key supervisors, capable of restraining earnings manipulation and unjustifiably high executive compensation. As shown in column 2 of Table 5, the coefficient of $Treat \times Post \times Governance$ is positive and statistically significant at a 10% level, indicating that the impact of the reform on the wage gap between executives and ordinary employees is more pronounced in companies with weaker corporate governance.

4.5 Mechanism analysis

Our main findings indicate that the reform narrows the pay gap between executives and ordinary employees. This implies that corresponding changes in compensation levels should be observable. As shown in columns 1 and 2 of Table 6, we examine the effects of the reform on the average compensation of executives and ordinary employees, respectively. Specifically, average executive compensation (Epay) is defined as the natural logarithm of total executive compensation divided by the number of executives, while average employee compensation (Opay) is defined as the natural logarithm of total employee compensation divided by the number of ordinary employees.

Table 5. Heterogeneity analysis

	(1) GAP	(2) GAP
Treat×Post×TRGAP	−1.8347* (0.9850)	
Treat×TRGAP	−5.7074** (2.8539)	
Post×TRGAP	0.833 (0.6200)	
Treat×Post	0.842 (0.5356)	−0.9227** (0.3764)
TRGAP	2.822 (2.5750)	
Size	0.7783*** (0.0806)	0.7819*** (0.0811)
Lev	−0.5094*** (0.1924)	−0.4966*** (0.1921)
Tangi	−0.4331*** (0.0517)	−0.4322*** (0.0516)
RD	3.083 (2.2085)	2.921 (2.2161)
Cash	0.8722*** (0.2384)	0.8527*** (0.2382)
Age	−0.690 (0.7393)	−0.684 (0.7363)
Duality	−0.0705 (0.0504)	−0.0774 (0.0504)
TOP1	0.00810 (0.0054)	0.00780 (0.0053)
Treat×Post×Governance		1.8884* (0.9995)
Treat×Governance		−1.7618* (1.0216)
Post×Governance		−0.0382 (0.6634)
Governance		0.778 (0.6645)
Constant	−6.8794** (3.1594)	−6.4778** (2.9823)
Firm fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
N	17,032	17,031
R ²	0.0538	0.0536

Note(s): This table displays the results of the heterogeneity analysis. In column 1, we study whether regional income disparity moderates the relationship between the reform and the pay gap. TRGAP is the rural residents' per capita disposable income divided by the per capita disposable income of all local residents. In column 2, we examine the effect of corporate governance on the association between the reform and the pay gap. Governance is the ratio of independent directors. Standard errors reported within parentheses are clustered at the firm level. *, **, and *** indicate significance levels at 10%, 5%, and 1%, respectively. The sample period is from 2016 to 2021

The regression results in [Table 6](#) show that the coefficient of $\text{Treat} \times \text{Post}$ in column 1 is negative and statistically significant at the 1% level, indicating that the SOE wage reform has curbed excessive executive compensation and reduced their average pay. In column 2, the coefficient of $\text{Treat} \times \text{Post}$ is positive but statistically insignificant, suggesting that the reform does not have a significant effect on the average compensation of ordinary employees. A possible explanation is that, compared with non-SOEs, the reform links employee

Table 6. Mechanism tests

	(1) Epay	(2) Opay
Treat×Post	−0.0441*** (0.0111)	0.00670 (0.0077)
Size	0.1979*** (0.0148)	0.0292*** (0.0112)
Lev	−0.0940** (0.0373)	0.0132 (0.0322)
Tangi	−0.0268*** (0.0078)	0.0742*** (0.0088)
RD	4.0093*** (0.4283)	3.2961*** (0.3267)
Cash	0.2760*** (0.0480)	0.1455*** (0.0324)
Duality	−0.0126 (0.0105)	0.0065 (0.0064)
Age	0.0002 (0.1216)	0.137 (0.0869)
TOP1	0.0015 (0.0009)	−0.0004 (0.0007)
Constant	8.5235*** (0.4723)	9.4866*** (0.3593)
Firm fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
N	17,032	17,032
R ²	0.332	0.471

Note(s): This table presents the results of mechanism tests and further analysis. In columns 1 and 2, we examine the effect of the reform on executive compensation and ordinary employee compensation, respectively. Epay is the natural logarithm of the total compensation for top executives divided by the number of top executives. Opay is the natural logarithm of the total compensation for ordinary employees divided by the number of ordinary employees. Standard errors reported within parentheses are clustered at the firm level. *, **, and *** indicate significance levels at 10%, 5%, and 1%, respectively. The sample period is from 2016 to 2021

compensation more closely to firm performance, yet the degree of wage marketisation in SOEs remains lower than that in non-SOEs. As a result, the increase in compensation for ordinary employees in SOEs, relative to their counterparts in non-SOEs, is less pronounced, which may account for the insignificant coefficient in column 2. Overall, these findings suggest that the reform primarily narrows the pay gap between executives and ordinary employees by reducing executive compensation.

5. Conclusion and policy implications

Achieving a more reasonable and equitable income distribution has become a central policy priority. Using the 2018 reform of China's state-owned enterprise wage determination system as a quasi-natural experiment, this study finds that this policy shock reduces the pay gap between executives and ordinary employees. This conclusion remains robust to alternative measures of the pay gap, controlling for digital transformation, accounting for minimum wage effects, conducting coefficient stability tests, including industry-year and province-year fixed effects, performing parallel trends tests, and applying propensity score matching (PSM). Heterogeneity analysis reveals that the effect of the reform on the pay gap between executives and ordinary employees is more pronounced for firms in regions with lower income inequality and firms with weaker corporate governance. Mechanism tests indicate that the reform reduces the pay gap by reducing executive compensation rather than affecting ordinary employees' wages.

Achieving common prosperity is a fundamental goal of socialist economies and a major challenge for the Chinese government in the new era. Our findings provide causal evidence that the reform has effectively compressed the pay gap between executives and ordinary employees, particularly in firms with weaker internal governance, confirming that regulatory intervention can serve as an effective substitute for deficient internal control mechanisms in reshaping firms' income distribution. These results carry several important policy implications. First, the government should further regulate the income distribution order in SOEs, strengthen governance efforts to curb unreasonable incomes, and promote a stronger performance-based linkage for ordinary employees' wages through internal assessment reforms, rather than relying predominantly on broad-based wage support, given that our mechanism analysis shows the reform primarily reduced executive pay while not significantly raising average employee compensation. Second, while the reform's estimated effect is most pronounced in poorly governed firms, policymakers should recognize this as a short-term substitution effect; to sustain distributive improvements in the long run, complementary measures to strengthen internal governance mechanisms, such as board independence and compensation committee oversight, should be gradually implemented. Third, given that the reform's effect is stronger in regions with smaller income disparities, policy efforts should be tailored accordingly. In regions with larger income gaps, priority should be given to strengthening institutional infrastructure and local regulatory capacity. In regions with smaller disparities, where the reform has already proven effective, policymakers should consolidate these gains and use them as models for best practice.

Despite these contributions, our study has several limitations that suggest fruitful directions for future research. First, while we have implemented various robustness checks to strengthen causal inference, the possibility of omitted variable bias cannot be completely ruled out, given the concurrent policy environment. Future studies could exploit alternative identification strategies or richer institutional details to further sharpen causal estimates. Second, our analysis relies on firm-level data, which, while appropriate for our research design, does not allow tracking the reform's effects at the individual employee level. Future research employing micro-level income data, such as employee-level wage records or household survey data, would enable a more precise assessment of the policy's micro-level impact on different employee groups. Third, our findings are derived exclusively from the Chinese SOE context, which limits their generalizability to other institutional settings. Comparative studies across countries with varying regulatory regimes would help establish the external validity of our conclusions and shed light on the contextual boundary conditions of regulatory wage interventions.

Note

1. Current is designed as the benchmark and is deleted.

Supplementary material

The supplementary material for this article can be found online.

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