



Exploring the Nexus between Corporate Greenwashing, Pay Disparities, and Fixed Asset Ratios in Chinese Firms amidst Emerging ESG Frameworks

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Abstract. This study investigates the relationship between corporate greenwashing behaviors and salary disparities within Chinese A-share listed companies, utilizing panel regression models for empirical analysis on data spanning from 2012 to 2023. Furthermore, it examines how the nature of enterprises, industry characteristics, and shareholder ownership ratios influence this relationship, while also exploring the moderating role of fixed asset ratios. The findings reveal that greenwashing significantly exacerbates the salary gap, particularly within state-owned enterprises and those with low ownership concentration among major shareholders. Conversely, in heavily polluting industries, the impact of greenwashing on the salary gap is not statistically significant. Rigorous oversight and control by major shareholders with substantial ownership stakes can effectively mitigate the adverse effects of greenwashing on salary disparities. Moreover, the proportion of fixed assets exerts a negative moderating influence on the correlation between greenwashing and the salary gap, suggesting that firms with high fixed asset ratios adopt a more prudent approach to long-term resource allocation. This research contributes to the academic literature by addressing the influence of corporate greenwashing on employee salary disparities, elucidating the heterogeneous effects of greenwashing across different enterprise types, and providing empirical support for enhancing China's environmental governance legal framework and developing a multidimensional ESG evaluation system to foster sustainable corporate development.

Keywords: Greenwashing, Pay Disparities, ESG Practices, Fixed Asset.

1 Introduction

To achieve the objective of transforming industries towards sustainable and green development, and to foster a community with a shared future for mankind through enhanced environmental governance, the Chinese government has systematically formulated a series of environmental policies, including low-carbon and green technology innovation policies [1]. As the world's second-largest economy, China's extensive consumer market and pivotal role in the global supply chain impose significant responsibilities and obligations with regards to environmental sustainability. The increasing

popularity of green consumption concepts, along with enhanced policy support, is driving the expansion and robust demand within China's green consumption market (Ibid). However, in the context of burgeoning Environmental, Social, and Governance (ESG) demands, Chinese enterprises are progressively advancing towards green transformation, revealing the emergent issue of "greenwashing." Delmas et al. (2011) define greenwashing as a company's practice of misleading consumers regarding its environmental performance or the environmental benefits of its products or services [2]. Specifically, greenwashing encompasses misrepresentations at both the corporate level and the product level, thus allowing companies to project an environmentally friendly image while masking their non-environmentally conscious practices [3]. In fact, in China, companies selectively disclose data, often opting to release quantifiable metrics while avoiding contentious data, which results in a low ESG information disclosure rate [4]. Furthermore, China's ESG information disclosure standards are immature and dispersed across various frameworks and standards issued by different regulatory bodies. This fragmentation results in duplication, insufficient authority, and ambiguity in independently prepared disclosure standards by other social organizations, thereby complicating ESG information disclosure efforts [5]. Legally, China lacks specific laws and regulations targeting greenwashing, with pertinent provisions scattered across various statutes like the *Consumer Rights and Interests Protection Law* (revised in 2019) and the *Advertising Law* (revised in 2021), demonstrating a deficiency in precise, targeted, and systematic legal frameworks [6]. This stands in contrast to the European Union's regulatory approach. In 2025, the EU revises the *Unfair Commercial Practices Directive* and proposes the *Green Claims Directive*, which will stipulate detailed requirements for the communication of "green claims" to consumers, thereby explicitly addressing greenwashing [7].

Overall, existing regulatory gaps within China's environmental framework provide opportunities for companies to exploit unchecked development. As highlighted by Zhang et al. (2023), the absence of mandatory governmental measures in developing countries facilitates a proclivity for greenwashing among corporations [1]. Therefore, within the context of China's market and policy environment, the regulation and correction of corporate greenwashing necessitate optimization. Investigating greenwashing within China offers significant academic value and practical implications, aiding in the exploration of ESG frameworks tailored for the Chinese context and promoting the realization of sustainable development objectives both within China and globally. Additionally, as an exemplary case of green transformation in developing countries, China can contribute to filling the theoretical void concerning similar greenwashing practices in enterprises of other developing nations.

The salary gap serves as a fundamental indicator of internal resource distribution within enterprises, reflecting the valuation of human capital and constituting a critical element in assessing social equity and governance quality in corporate settings. Drawing on empirical studies by Chen & Zhang (2006) and Liang & Zhang (2019), which utilized data from Chinese listed companies, the Tournament Theory appears applicable within the context of Chinese enterprises [8-9]. This theory posits that a moderate pay disparity can enhance the efficiency of executives and employees by acting as an incentive mechanism. However, substantial salary gaps within enterprises can disrupt

perceived fairness, leading to adverse outcomes such as diminished employee satisfaction and weakened organizational cohesion [10]. From an external perspective, salary disparities implicate social labor distribution, employee rights protection, and harmonious labor relations, which are pertinent aspects of social performance indicators. In the realm of ESG practices, significant salary gaps reflect deficiencies in corporate social responsibility. It is imperative to explore whether corporate salary gaps are associated with other dimensions of ESG violations and whether such gaps correlate with greenwashing behaviors within the current Chinese context.

This study leverages Resource Dependence Theory, Agency Theory, and Information Asymmetry Theory, employing data from Chinese A-share listed companies spanning 2012 to 2023. A panel regression model is constructed to quantitatively assess the relationship between corporate greenwashing and salary disparities, as well as to evaluate how this relationship varies between state-owned and non-state-owned enterprises, and between industries classified as heavy-polluting versus non-heavy-polluting. Additionally, the study meticulously examines the moderating role of fixed asset ratios in this relationship, aiming to offer novel insights into corporate ESG practices and the evolution of China's ESG market.

The contributions of this research manifest in three primary areas. Firstly, from a theoretical standpoint, this study investigates the impact of greenwashing on corporate salary disparities. Whereas the extant literature predominantly focuses on the external ramifications of greenwashing on capital markets and corporate financial performance, there remains a paucity of research addressing the internal management implications related to resource allocation and employee rights protection. Despite some scholars addressing related issues such as financial constraints and organizational resilience in the Chinese context [11-12], a gap persists in examining the micro-governance effects of greenwashing on human resource allocation. This study aims to bridge this gap and extend the research boundary concerning the economic consequences of greenwashing.

Secondly, in terms of empirical design, the study stratifies the sample based on property rights, industry characteristics, and shareholder shareholding ratios. The findings reveal that in sub-samples such as state-owned enterprises, greenwashing exerts a more pronounced effect on widening salary disparities. The underlying mechanisms are explored in depth, thereby deepening the understanding of ESG valuation. By incorporating the fixed asset ratio as a moderating variable, the study identifies its moderating effect on the relationship between greenwashing and salary disparities, offering a novel explanatory pathway for understanding the organizational consequences of greenwashing behavior. Thirdly, concerning theoretical expansion, this study transcends the traditional ESG research approach, which often isolates the analysis of environmental, social, and governance dimensions. By examining greenwashing and employee compensation, the study integrates evaluations of ESG environmental dimensions with social and governance dimensions, thereby conducting a systematic investigation of their internal interaction mechanisms. This comprehensive approach aids in a more nuanced understanding of ESG value evaluation, facilitating the establishment of a multidimensional ESG value assessment system and providing profound guidance for enterprises in enhancing ESG practices.

2 Theoretical Basis and Research Hypotheses

2.1 The Nexus Between Corporate Greenwashing and Pay Disparities

Corporate greenwashing behavior often mirrors internal managerial inefficiencies within organizations, highlighting its linkage with human resource management and resource distribution. Drawing upon Pfeffer and Salancik's Resource Dependence Theory, the sustainability and prosperity of a corporation hinge on its ability to procure external resources and its proficiency in effectively allocating these critical resources [13]. When corporate resources are diverted towards superficial environmental marketing rather than substantive ecological actions, this may lead to a skewed allocation of resources, potentially constraining the developmental prospects of general employees. Such an imbalance in resource distribution could contribute to an expanding wage disparity, particularly as employees begin to question the enterprise's long-term strategic orientation.

Agency Theory further substantiates this perspective, positing potential conflicts of interest between corporate managers (agents) and shareholders (principals) [14]. Within the context of greenwashing activities, managers might engage in deceptive environmental promotion to bolster the company's short-term image, thus prioritizing personal performance incentives while neglecting sustained investment in employee development. This could exacerbate the disconnect between managerial and employee remuneration. Concurrently, Akerlof's Information Asymmetry theory elucidates the challenges surrounding adverse selection in the context of greenwashing [15]. Given the difficulties faced by external investors in accurately assessing an enterprise's environmental performance, companies may resort to disseminating misleading signals to the market to secure low-cost financing. The short-term financial gains garnered through greenwashing tend to be concentrated among the upper echelons via executive stock options, performance bonuses, and similar mechanisms, primarily facilitating short-term gains over broad-based employee welfare. Consequently, greenwashing not only jeopardizes the long-term interests of rank-and-file employees but also precludes them from benefiting from the company's "faux prosperity" in the short term, thereby exacerbating the wage disparity between senior management and general employees.

Thus, this paper proposes Hypothesis 1: There exists a significant positive correlation between corporate greenwashing practices and pay disparities.

2.2 The Moderating Role of Fixed Asset Ratio in the Relationship Between Corporate Greenwashing Behavior and Salary Disparity

According to Resource Dependence Theory, firms with a higher proportion of fixed assets exhibit substantial capital accumulation characteristics and undertake a more cautious approach in resource allocation planning, underscoring the importance of long-term development and organizational stability. Specifically, firms with substantial fixed asset proportions encounter elevated strategic adjustment costs due to asset liquidity constraints. These firms necessitate maintaining cash flow through efficient operations, possess a robust long-term orientation, and demonstrate a predilection for

incentivizing employees via equitable salary distribution mechanisms while eschewing short-term greenwashing practices that potentially undermine their long-term value creation capabilities. Du's (2015) research highlights the pronounced negative market reaction in China to the revelation of corporate greenwashing activities [3]. Consequently, due to the inherent specificity of fixed assets, the reputational damage engendered by greenwashing significantly debilitates the resource acquisition capabilities of firms with high fixed asset proportions, thus imperiling their foundational stability. It can therefore be deduced that in enterprises with a greater allocation of fixed assets, the positive correlation between greenwashing practices and salary disparity is attenuated, indicating that the proportion of fixed assets serves as a negative moderating variable.

Within the Dynamic Capability Theory framework, it is posited that, in rapidly evolving technological contexts, a firm's competitive advantage is derived from distinctive process optimization and asset configurations [16]. Firms with elevated fixed asset ratios are inclined to preserve their competitive edge through internal technological and managerial process enhancements, attributable to their pronounced path dependency and heightened strategic adjustment costs. Theoretically, minimizing salary disparities is essential to stabilizing human resources and avoiding short-term greenwashing behaviors, thereby exerting a constraining influence on the expansion of salary disparity. This aligns with the implications derived from the Resource Dependence Theory articulated earlier.

Based on the aforementioned theoretical discourse, this paper posits Hypothesis 2: The proportion of fixed assets within enterprises exerts a significant negative moderating influence on the relationship between corporate greenwashing behavior and salary disparity.

3 Empirical Testing

3.1 Sample Selection and Data Sources

This study selects the annual data of A-share listed companies from 2012 to 2023 as the initial sample. The data mainly come from *Choice* Financial Terminal. The industry classification follows the industry classification standard of the *China Securities Regulatory Commission* in 2012. To ensure the reliability of the research results, the initial sample was filtered as following process: (1) Exclusion of observations with missing variable data; (2) Winsorization of the dataset at the 1% and 99% percentiles to mitigate outlier interference; (3) Removal of financial sector listed companies; (4) Elimination of firms classified as Special Treatment (ST) or *ST during the sample period. After these filtering procedures. The final analytical dataset comprises 7,955 valid company-year observations.

3.2 Variable Definition and Measurement

3.2.1 Explained Variable – Wage Gap (WGAP). The wage gap serves as the dependent variable in this study, quantifying the relative compensation disparity between corporate executives and general employees. Drawing from the executive compensation

measurement methodology established by Chen & Zhang (2006) and the calculation framework proposed by Shi et al. (2013), *WGAP* is defined as the ratio of executive compensation to ordinary employee compensation [8, 17]. Specifically, executive compensation is calculated by averaging the “annual compensation of the top three executives”, obtained by dividing the “total compensation of the top three executives” disclosed in annual reports by three. Employee compensation is determined through a two-step process: first, by subtracting the “total compensation of the top three executives” from the “cash paid to employees and for the benefit of employees” in the cash flow statement, and then dividing the resulting figure by the adjusted employee count, which equals the total number of employees minus three. A higher *WGAP* value corresponds to greater internal wage gap of the enterprise.

3.2.2 Explanatory Variable – Greenwashing Sore (*GWS*). The greenwashing score serves as the explanatory variable, representing the extent of greenwashing practices adopted by sample firms, denoted as *GWS*. Building upon the measurement methodology developed by Hu et al. (2023), this study quantifies greenwashing intensity through a comparative analysis between the quality of corporate ESG disclosure and actual environmental performance [18]. The calculation formula for *GWS* is as follows.

$$GWS_i = \left(\frac{ER_i - \overline{ER}_{dis}}{\sigma_{dis}} \right) - \left(\frac{ER_i - \overline{ER}_{per}}{\sigma_{per}} \right) \quad (1)$$

Specifically, in this Formula 1, the first term denotes the normalized measure of a firm’s position relative to its peers in the distribution of the disclosure score of environmental rating, and the second term is a normalized measure of a firm’s position relative to its peers in the distribution of its real-performance score of environmental rating. In this study, the *Bloomberg’s* environmental rating is used as the disclosure score (ER_{dis}), and *Huazheng’s* environmental ratings is used as the actual performance score (ER_{per}) for computation. A higher positive *GWS* value indicates more pronounced greenwashing tendencies, whereas negative values suggest potential concealment of genuine green behavior. The regression analysis incorporates the lagged (one-period) value of *GWS*.

3.2.3 Moderator Variable – Fixed Asset Ratio (*FA*). To examine the role of corporate fixed asset ratios in the relationship between greenwashing intensity and the wage gap, this study incorporates the *FA* as a moderator variable. The fixed asset ratio is calculated as the quotient of total fixed assets divided by beginning-of-year total assets, which represents the proportion of fixed assets within an enterprise’s total asset structure [19]. Elevated *FA* values suggest potentially limited asset liquidity and low financial risk resilience.

3.2.4 Control Variables. In addition, this study also introduces other control variables that may affect the company’s pay gap, including: leverage ratio (*LEV*), firm size (*A*), measured as the logarithm of total assets, year-over-year growth rate of operating

revenue (*GROWTH*), return on assets (*ROA*), ratio of the number of independent directors to the number of board members (*IDR*), ownership concentration among the top ten shareholders (*T10SHR*), Corporate Z-Score (*ZS*), and firm age (*AGE*).

3.3 Empirical Models

Based on the research hypothesis established in the previous text, a multiple regression model is constructed to test the impact of corporate greenwashing on employee pay gap. The regression formula for Hypothesis 1 is as follows:

$$WGAP_{i,t} = \alpha_0 + \alpha_1 GWS_{i,t-1} + \alpha_2 ControlVar_{i,t-1} + \varepsilon_{i,t} \quad (2)$$

Considering the moderating effect of *FA* in Hypothesis 2, a new regression model is established as follows:

$$WGAP_{i,t} = \beta_0 + \beta_1 GWS_{i,t-1} + \beta_2 FA_{i,t-1} + \beta_3 (GWS_{i,t-1} * FA_{i,t-1}) + \beta_4 ControlVar_{i,t-1} + \varepsilon_{i,t} \quad (3)$$

Among the two formulas, *WGAP* is the salary gap, *GWS* is the degree of greenwashing. And in Formula 3, $GWS_{i,t-1} * FA_{i,t-1}$ is the intersection term between the independent variable and the moderator variable, denoted as $G * F$ in subsequent model result analysis.

4 Research Results and Analysis

4.1 Descriptive Analysis

To examine the fundamental characteristics of variables, the research conducts a descriptive statistical analysis. Table 1 reports the summary statistics for key variables: (1) The mean and standard deviation of the measure of employee salary gap (*WGAP*) are 9.6871 and 9.4307 respectively, indicating a significant disparity in employee salary gaps among the sample companies. Moreover, the mean-median disparity (Mean=9.6871 > Median=6.4961) indicates right-skewed distribution, with extreme outliers (Max=55.1313) potentially inflating the average, this suggests significant salary dispersion and potential compensation inequity issues within certain firms. (2) The greenwashing score index (*GWS*) has a mean of -0.4891 (Std=1.2246), indicating significant individual differences, some companies have severe greenwashing behaviors. The asymmetric distribution (Min=-3.2897; Max=2.7862) implies firms more frequently underreport environmental efforts than exaggerate green credentials. (3) Other variables do not have significant abnormal distributions.

Table 1. Descriptive statistical results.

Variable	Sample number	Average value	Standard deviation	Minimum	Median	Maximum
<i>WGAP</i>	7955	9.6871	9.4307	1.2737	6.4961	55.1313
<i>GWS</i>	7955	-0.4891	1.2246	-3.2897	-0.5354	2.7862
<i>FA</i>	7955	0.2347	0.1767	0.0023	0.1927	0.7271
<i>LEV</i>	7955	0.4821	0.1906	0.0779	0.4958	0.8654
<i>A</i>	7955	23.4297	1.2960	20.6412	23.3398	27.0404
<i>GROWTH</i>	7955	0.1220	0.2608	-0.4698	0.0933	1.2589
<i>ROA</i>	7955	0.0491	0.0595	-0.1478	0.0404	0.2441
<i>IDR</i>	7955	0.3741	0.0555	0.3000	0.3636	0.5714
<i>T10SHR</i>	7955	0.6010	0.1587	0.2368	0.6057	0.9236
<i>ZS</i>	7955	4.8038	6.5226	0.1490	2.7156	44.5213
<i>AGE</i>	7955	20.2362	5.6499	7.0000	20.0000	36.0000

4.2 Multicollinearity Test

To preliminarily assess multicollinearity among independent variables, variance inflation factors (VIFs) were calculated for the variables except the dependent variable. As shown in Table 2, all VIF values are below the conventional threshold of 10, thus no obvious multicollinearity is discovered thus all variables can be retained. Additionally, the correlation coefficients between the main variables were calculated, and the correlation coefficient between corporate greenwashing (*GWS*) and the employee salary gap (*WGAP*) is found to be 0.0266, providing preliminary evidence that corporate greenwashing behavior may exacerbate employee compensation inequality, consistent with the theoretical hypothesis.

Table 2. Statistics of variable Variance Inflation Factor

	Feature	VIF
1	<i>GWS</i>	1.0346
2	<i>FA</i>	1.1558
3	<i>LEV</i>	1.1283
4	<i>A</i>	2.1478
5	<i>GROWTH</i>	1.7298
6	<i>ROA</i>	1.0638
7	<i>IDR</i>	1.6226
8	<i>T10SHR</i>	1.0268
9	<i>ZS</i>	1.2387
10	<i>AGE</i>	1.8337

4.3 Panel Regression Analysis

4.3.1 Results of Hypothesis 1. Based on the previously mentioned Hypothesis 1, an analysis was conducted on the entire sample, with the main multiple regression results presented in Table 3. The findings reveal that the coefficient for *GWS* is both positive and statistically significant at the 5% significance level. This suggests that an increased propensity for corporate greenwashing is associated with a widening salary gap among employees. Specifically, when firms demonstrate a greater inclination toward greenwashing practices, they allocate resources to superficial green promotional activities rather than substantive environmental initiatives. Concurrently, managers exploit deceptive environmental messaging to boost the company’s short-term image, consequently neglecting long-term investments in employee development. This approach facilitates the use of financial instruments to divert short-term management gains, resulting in inefficient resource allocation. Consequently, there is an increase in the disparity between executive and ordinary employee salaries, thereby exacerbating the salary gap. This result substantiates the validity of hypothesis H1.

Table 3. Regression results for Hypothesis 1.

	Full Sam- ple	Enterprise Nature Grouping		Industry Grouping		Shareholding Ratio Grouping	
		SOEs	Non-SOEs	Heavy polluting	Non-heavy polluting	High SHR	Low SHR
<i>GWS</i>	0.3311**	0.6824***	0.0808	0.2645	0.4093**	0.3151	0.3796**
<i>LEV</i>	0.8432	-2.5080	2.6558	0.6720	2.1904	1.2671	-0.2931
<i>A</i>	2.1084***	2.1817***	2.2250***	0.9617***	2.8356***	1.1972***	2.6894***
<i>GROWTH</i>	1.4677***	1.4210**	1.0140	0.5273	1.7183***	1.5121*	1.4712***
<i>FA</i>	1.0450	0.7965	1.6038	-1.8424	8.2180***	-0.3675	2.5913
<i>ROA</i>	26.9180** *	13.7130*	31.6130** *	28.673***	26.625***	27.7370** *	25.2890***
<i>IDR</i>	-2.7650	-8.9813**	1.6700	-2.7141	-5.3074	-3.4155	-1.8843
<i>T10SHR</i>	-5.4663***	-7.3014**	-5.2501**	-2.8377	-5.7040**	2.9879	-8.9182***
<i>ZS</i>	0.0254	-0.0486	0.0316	-0.0288	0.0654	0.0113	0.0278
<i>AGE</i>	0.1765***	-2.5080**	2.6558**	0.6720*	2.1904**	1.2671	-0.2931***
<i>year</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Industry</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>F</i>	45.5470	22.8640	32.8460	23.0460	37.1940	15.3510	36.608
<i>R-squared</i>	0.1716	0.2210	0.1783	0.1629	0.2095	0.1698	0.2005
<i>N</i>	7955	2775	5180	2867	5088	2663	5292

Note: The data in the table are regression coefficients of each variable, and ***, **, and * are significant at the significance level of 1%, 5% and 10% respectively.

In addition, the study conducted subgroup regression analyses on the full sample, categorized by enterprise nature, industry grouping, and the shareholding concentration level of the top ten shareholders.

Firstly, the samples were categorized by enterprise nature, with 2,775 observations for state-owned enterprises (SOEs) and 5,180 for non-state-owned enterprises (Non-SOEs). Regression results in Table 3 reveal that the coefficient for *GWS* remains positive and statistically significant at the 1% level for SOEs, while no significant relationship is observed for Non-SOEs. This suggests that, within SOEs, managers exhibit a stronger propensity to engage in greenwashing practices, such as environmental disclosure manipulation, which expanding the salary gap, and the positive association between corporate greenwashing and the salary gap in the full sample is primarily driven by SOEs. In fact, China's environmental legal framework exhibits institutional deficiencies in substantively regulating corporate environmental performance, resulting in a lack of binding constraints on environmental disclosure quality. Meanwhile, under explicit salary control policies, SOE executives have the motivation to, and are incentivized to, manipulate their salaries through environmental performance indicators. Specifically, when legal oversight fails to effectively deter environmental information distortion, SOE greenwashing may be misperceived as authentic Corporate Social Responsibility performance. This enables SOE managers to artificially inflate performance evaluations via fabricated environmental achievements, thereby circumventing salary caps or securing promotion opportunities. The regulatory loopholes thus create institutional gaps that allow SOE executives to exploit greenwashing for wage differentiation.

Secondly, following Ni's (2016) methodology in *Economic Review*, this study categorizes samples as heavy-polluting enterprises (HPEs) or non-heavy-polluting enterprises (Non-HPEs) based on three regulatory documents: the "Classification Guide for Listed Companies" revised by the *China Securities Regulatory Commission* in 2012, the "Classification Management Catalogue for Environmental Verification of Listed Companies" formulated by the *Ministry of Environmental Protection* in 2008, as well as the "Guidelines for Environmental Information Disclosure of Listed Companies" [20]. Specifically, heavy-polluting sectors encompass 16 industries including coal mining, textile manufacturing, leather tanning, papermaking, petrochemicals, pharmaceuticals, chemical engineering, metallurgy, and thermal power generation. The annual sample comprises 2,867 firm-year observations from HPEs and 5,088 from Non-HPEs. Regression analysis in Table 3 reveals that: *GWS* coefficient is statistically insignificant for HPEs, but remains positive and significant at the 5% level for Non-HPEs. This implies the positive correlation observed in the full sample is predominantly driven by non-heavy-polluting firms, with negligible effects in heavy-polluting sectors. Such findings contradict capital market expectations rooted in industry characteristics, as heavy-polluting firms face heightened environmental risks and greater stakeholder attention to environmental performance.

In this regard, this paper further elucidates the possible mechanism: First, as primary targets of environmental supervision, enterprises in heavy-polluting industries operate under a stricter regulatory regime with mandatory disclosure requirements. Consequently, executives of these firms face elevated compliance costs and legal risks

associated with greenwashing, manifesting in more severe regulatory penalties or compensation reductions. This stringent regulatory environment generates a dual deterrent effect: On the one hand, it directly constrains the feasibility of executives artificially inflating environmental performance evaluations through greenwashing; on the other hand, it strengthens the nexus between executive compensation and actual corporate performance, thereby attenuating incentives for greenwashing-driven compensation manipulation. Under this mechanism, heavy-polluting firms exhibit muted greenwashing-compensation gap effects, while non-heavy-polluting firms demonstrate more pronounced compensation manipulation through greenwashing.

Finally, the study employs a rolling median dynamic statistical method to capture temporal trends in the shareholding ratios of top ten shareholders. Specifically, the paper performs rolling calculations on time-series data using a 3-year window. Firms are classified as “high major shareholder concentration” if their shareholding ratio exceeds the rolling median, and “low major shareholder concentration” otherwise. This categorization yields 2,663 firm-year observations in the high-concentration enterprises group and 5,292 in the low-concentration enterprises group. The results reveal that: *GWS* coefficient is statistically insignificant for high SHR concentration firms, but exhibits a significant positive effect on the pay gap for low SHR concentration firms. In fact, shareholders with a higher proportion of holdings usually have access to more internal information and may exert greater pressure to promote transparency. These mechanisms compel firms to align public environmental claims with substantive actions, thereby reducing the motivation and possibility of using greenwashing to enhance short-term image. Conversely, low major shareholder concentration firms lack multiple major shareholders for effective supervision and pressure, creating room that enable managerial short-termism. Executives in such firms may exploit greenwashing to artificially inflate performance metrics, subsequently leveraging these inflated evaluations to negotiate compensation increases while neglecting long-term investments in human capital and sustainable development, leading to an increase in the pay disparities.

4.3.2 Results of Hypothesis 2. Based on the research hypothesis H2, the proportion of fixed assets of enterprises was taken as a moderator variable. The interaction term $G * F$ of *GWS* and *FA* was added to the main regression for analysis. Table 4 presents the main multiple regression results. As shown in column (a) of the regression results, the coefficient of the interaction term $G * F$ is negative and statistically significant at the 5% level. After adding control variables in column (b), the coefficient of $G * F$ remains negative and significant at the 1% level. This indicates that the moderator variable plays a negative moderating role in the relationship between the independent variable and the dependent variable. This evidence confirms the negative moderating effect of fixed asset ratio—as enterprise fixed asset intensity increases, the positive association between greenwashing severity and intra-firm pay dispersion is attenuated, thereby validating hypothesis H2. One plausible explanation for this phenomenon is that firms with a substantial proportion of fixed assets tend to have more robust internal oversight mechanisms designed to effectively manage and utilize these assets and mitigate operational risks. Such oversight frameworks are likely to impose constraints on executive actions, thereby discouraging tendencies toward greenwashing. Even if greenwashing is

contemplated, the stringent supervision and constraints render its execution challenging, thus precluding the possibility of gaining excessive compensatory returns through such practices to create significant salary disparities between executives and regular employees.

Table 4. Regression results for Hypothesis 2.

	Full Sample	
	(a)	(b)
<i>GWS</i>	0.8753***	0.8591***
<i>FA</i>	-0.2491	-0.0721
<i>G*F</i>	-1.8516**	-2.2877***
<i>LEV</i>		0.8134
<i>A</i>		2.1296***
<i>GROWTH</i>		1.4200
<i>ROA</i>		26.708***
<i>IDR</i>		-2.6250
<i>T10SHR</i>		-5.3616***
<i>ZS</i>		0.0231
<i>AGE</i>		0.1810***
<i>year</i>	Yes	Yes
<i>Industry</i>	Yes	Yes
<i>F</i>	22.2990	45.1890
<i>R-squared</i>	0.0754	0.1744
<i>N</i>	7955	7955

Note: The data in the table are regression coefficients of each variable, and ***, **, and * are significant at the significance level of 1%, 5% and 10% respectively.

4.4 Robustness Test

The study employs the variable substitution method for robustness testing. The two core variables were respectively replaced as follows: (1) The dependent variable *WGAP*, defined as “average compensation of top three executives / average compensation of other employees”, was substituted with *WGAP2*, calculated as “(total compensation of top three executives - total compensation of ordinary employees) / total compensation”, thus the regression test was conducted by redefining the compensation gap as the ratio of the compensation difference to the total compensation; (2) Following another approach by Hu et al. (2023), the paper constructed a dummy variable *GWS2* for greenwashing behavior, coded as 1 if greenwashing exists and 0 otherwise. Specifically, the occurrences of four keywords — “Green”, “Environmental Protection”, “Environment”, “Low-carbon” — in corporate annual reports were calculated. These frequencies were compared to the industry median to construct a binary variable, “Oral”, which represents the extent of environmental protection rhetoric employed by the company. Additionally, the paper utilizes environmental penalty data from the China Research Data Service Platform (CNRDS) to construct another binary variable, “Actual”,

which reflects the actual environmental performance of the company. The product of Oral and Actual results in a composite binary variable, *GWS2* [18]. When both “Oral” and “Actual” are equal to 1, *GWS2* takes the value of 1, thereby serving as an indicator for redefining the degree of greenwashing. This composite measure, *GWS2*, is subsequently used for regression analysis to evaluate the extent of greenwashing behavior among firms.

The results of the robustness test using multiple regression indicate that substituting the dependent variable salary gap with *WGAP2* and incorporating additional control variables still yields a positive and statistically significant coefficient for the greenness score (*GWS*) at the 1% significance level (p -value=0.0002). Furthermore, when the explanatory variable *GWS* was replaced with *GWS2*, the regression coefficient related to the dependent variable *WGAP* remains positive and significant at the 10% level (p -value=0.0877). These outcomes are consistent with the baseline regression results and affirm the robustness of the model.

5 Conclusion

Against the backdrop of the accelerating rise in ESG demands while China’s legal regulatory system remains immature, the problems of corporate greenwashing and social responsibility have become increasingly prominent. Yet, scholarly gaps remain regarding the nexus between corporate greenwashing and executive-employee pay disparities. Leveraging a panel dataset of Chinese A-share listed firms spanning 2012–2023, this paper explores the relationship between greenwashing practices and intra-firm pay gaps, examines heterogenous effects across firms differentiated by enterprise nature, industrial sector, and shareholder concentration, and conducts an analysis of the moderating effects. The study yields three key findings:

(1) Greater corporate greenwashing correlates with wider internal pay disparities, as resources are redirected toward superficial environmental propaganda rather than employee development, and managers prioritize short-term gains over long-term workforce welfare. (2) In state-owned enterprises, greenwashing exacerbates pay gaps due to regulatory loopholes and compensation controls; in heavily polluting sectors, stricter environmental enforcement neutralizes this effect; and the effect is stronger in firms with lower major shareholder ownership due to weaker oversight. (3) Higher fixed-asset ratios weaken the positive association between greenwashing and pay gaps, as limited liquidity compels management to pursue sustainable, long-term competitive strategies.

The result reveals its varied impacts across enterprise types, fills an academic gap and provides evidence to improve China’s environmental regulations and ESG assessments. Combining the current policies of the government with existing theoretical frameworks, the essay derives the following policy implications.

From a legislative perspective, the government should expedite the development of a comprehensive legal framework for greenwashing governance, integrate the existing scattered regulations to form systematic constraints with enhanced supervision in multiple aspects such as definitional clarity, monitoring, penalties, and rectification. For

institutional design, the government may reference the established legal mechanisms of the EU and other developed Western countries, particularly through strengthening the joint liability of senior executives and publicly disclosing greenwashing penalty cases, build a more orderly ESG investment ecosystem characterized by virtuous cycles.

From the perspective of ESG assessment, governmental agencies and related organizations should collaborate to establish a more multi-dimensional and comprehensive ESG assessment system. On the one hand, standardize information disclosure standards and promote the introduction of mandatory ESG disclosure guidelines. On the other hand, incorporate social equity indicators such as salary gaps into the ESG rating system, strengthen the interactive assessment of the three dimensions, consider the inter-linked effects of corporate violations, and promote the adoption of three-dimensional “Environment-Society-Governance” assessment models with dynamic weighting mechanisms. Concurrently, ESG value investors also need to make value judgments from a more comprehensive perspective, thereby facilitating the development of China’s ESG investment market value discovery function.

From the perspective of enterprise management, the government can incorporate relevant indicators such as greenwashing risks into the negative list for executive performance evaluations, while establishing environmental performance-linked compensation weighting requirements specifically for state-owned enterprises and non-heavy-polluting industry firms. It can also attempt to substitute cash-based incentives with equity incentives to balance short-term interests with long-term sustainable development commitments. Furthermore, enterprise managers also should optimize the logic of resource allocation within the company and seek sustainable development that conforms to market trends during the Chinese ESG concept upswing.

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