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Investigating Whether Employee Wage Levels and Corporate Carbon Disclosure Levels Exhibit an Inverted U-Shaped Relationship: An Empirical Analysis Based on Selected Chinese Enterprises

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Abstract. Against the backdrop of global warming, carbon emissions have increasingly become a focal point, making research on their various influencing factors a hot topic in academia. To explore the relationship between corporate carbon emissions and employee compensation, this study investigates whether an inverted U-shaped relationship exists between Chinese enterprises' carbon emissions disclosure index and their employees' wage levels. Employing empirical analysis, this study conducts regression analysis on data from selected Chinese enterprises. It utilizes Lind-Mehlum's triplet and slope tests to validate the inverted U-shaped relationship between the two variables. It also analyses industry heterogeneity to examine whether a significant inverted U-shaped relationship exists across different sectors. The findings demonstrate that the impact of employee compensation levels on carbon emissions disclosure is not monotonically increasing but follows an inverted U-shaped pattern—initially promoting disclosure before inhibiting it—with significant heterogeneity across industries. This research offers practical guidance for enterprises seeking to reduce carbon emissions and optimize their carbon disclosure indices. It also provides insights for balancing environmental pollution concerns with employee compensation issues while developing different types of enterprises.

Keywords: Carbon emissions disclosure, Corporate employee compensation levels, Carbon emissions volume, Empirical analysis

1. Introduction

In today's era of global warming, countries worldwide have established carbon reduction targets to decrease carbon emissions and are making various efforts to achieve these goals. Corporate carbon disclosure has gained significant global attention in recent years as a crucial measure for realizing carbon reduction objectives. The degree to which corporations publish carbon information is primarily determined by the carbon disclosure index. Among the components of these indices, the carbon emissions disclosure index has the greatest impact [1] and holds critical importance for studying carbon performance and reduction. The disclosure of corporate carbon emissions reflects a company's voluntary reporting of its emissions, though potential concealment or inaccuracies may exist. While

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numerous factors influence the corporate carbon emissions disclosure index, prior research has predominantly focused on aspects related to corporate carbon performance, financial performance, board composition, or executive compensation. Although these factors are essential, they primarily examine macro-level corporate performance and the influence of senior management on disclosure levels, often overlooking the impact of the interests of most employees within the company. Therefore, this study aims to investigate the significant inverted U-shaped relationship between employee wage levels and corporate carbon disclosure intensity, where disclosure intensity increases initially and then declines. Average employee wages represent employee wage levels, while the corporate carbon disclosure index measures carbon disclosure intensity. To test the proposed hypothesis, this study employs a model incorporating a quadratic term for average employee wages, robustness tests, inflection point analysis, slope analysis, and Lind-Mehlum's triplet test. The findings have significant value in the development of corporate policy, they provide critical, specific information to decision makers. Companies are advised to recognize the point at which wages begin to increase and formulate plans to reduce carbon emissions and disclose information on a personal level that is specific to their developmental situation.

2. Literature review

Much previous research on corporate carbon emissions disclosure has examined the relationship between carbon disclosure levels and carbon performance. These studies confirm a positive correlation between changes in carbon disclosure levels and subsequent changes in carbon performance [2]. However, a weak negative correlation exists between environmental performance and environmental reporting: those with poor ecological performance exhibit greater motivation to increase disclosure levels than those with good performance [3]. This implies that companies with poor carbon emissions performance generally maintain higher levels of carbon emissions disclosure. Some literature extends beyond examining the relationship between carbon disclosure levels and environmental performance/governance, also addressing areas such as finance, financial performance, and human capital investment. These studies delve into the factors influencing ecological disclosure or carbon disclosure levels. Zhiyong Zhen et al. noted that green finance can promote corporate carbon disclosure [4], while da Silva Monteiro demonstrated a positive correlation between company size and stock market listing status with environmental disclosure levels [5]. These constitute empirical analyses within broader financial and economic contexts.

3. Research methodology

3.1. Theoretical analysis and research hypotheses

The work by Yanjiao Li et al. offers significant insights for this study. They confirmed that increases in China's minimum wage substantially elevated corporate pollution emissions [6], demonstrating that minimum wage hikes markedly deteriorate corporate environmental performance. Carbon performance constitutes a key indicator within ecological performance. This study infers that increasing China's minimum wage will deteriorate corporate carbon performance. Nevertheless, these increases are unlikely to exert a uniform effect across all Chinese enterprises; rather, they will disproportionately burden firms characterized by lower mean wage levels. Based on the previously mentioned theory that environmental performance exhibits a weak negative correlation with environmental disclosure [3], this study suggests that wage increases for enterprises with overall low wage levels are accompanied by deteriorating carbon performance and heightened carbon disclosure. Since the carbon emissions disclosure index is a key component of the carbon disclosure index and the

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two are positively correlated [1], enterprises with lower wage levels will see an increase in their carbon emissions disclosure index when raising overall wages. When examining enterprises with higher overall wage levels, this study references the research findings of Shiyi Chen et al. They argue that human capital investment significantly reduces corporate emissions through foundational channels such as industrial upgrading, clean energy adoption in production processes, and enhanced compliance with environmental regulations [7]. However, this study focuses on average wages rather than human capital investment. According to Lianfeng Ma et al., investment in higher education significantly enhances holistic development, with this impact being more pronounced in areas characterized by higher levels of human capital accumulation [8]. This implies that the greater the accumulation of human capital investment among local enterprises, the more effectively (equivalent levels of) higher education investment can promote comprehensive development. This extensive development inherently includes higher education attainment. Natalia Kyui, using simultaneous equation models and nonparametric models with basic heterogeneity, has identified strong positive returns to education in terms of employment and wages [9]. This indicates a positive correlation between corporate human capital investment and employee wage levels. Higher wages (reflecting greater corporate human capital investment) correlate with better carbon performance, suggesting that carbon disclosure indices for such firms decline as overall wage levels rise. Therefore, this study hypothesizes that corporate carbon emissions disclosure indices rise and fall as average employee wages increase, forming an inverted U-shaped relationship.

H0: An inverted U-shaped relationship exists between average employee wages and corporate carbon emissions disclosure indices

(i.e., at lower average wage levels, average wages positively influence carbon disclosure indices; beyond a certain threshold, the relationship reverses to a negative impact)

H1: No inverted U-shaped relationship exists between average employee wages and corporate carbon emissions disclosure indices.

3.2. Data sources

The independent variable examined in this study is the average employee salary of enterprises, measured as the ratio of total employee compensation payable to the number of employees [10]. This metric represents the wage level of enterprise employees and is denoted here as AvgSalary_x (in units of 100,000 yuan). Its mean is 1.981609 (100,000 yuan), with a minimum value of -1.971957 (RMB 100,000). The presence of negative values may stem from wage arrears for some employees. The maximum value is 25.39822 (RMB 100,000). The dependent variable is the corporate carbon emissions disclosure index, measuring the extent of carbon emissions disclosure. It is categorized into seventeen levels ranging from 0 to 16 based on disclosure intensity. Other dependent variables serve as control variables in the model, including the carbon governance disclosure index, carbon risk and opportunity disclosure index, carbon decomposition disclosure index, and carbon value chain and supply chain disclosure index. All data used in this study are sourced from the CSMAR database—Corporate Carbon Disclosure Index [1]. This study utilizes publicly available collaborative data from selected Chinese enterprises in CSMAR, employing 2023 data as the sample. The overall sample comprises 5,036 cases, while the effective sample size is 5,291. During the regression analysis, 15 cases (0.28%) were omitted due to missing data in either the dependent or independent variables. The exclusion of these observations exerts a minimal influence on the analytical outcomes.

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Table 1. Variable definitions and descriptions

Categoriesofvariables	name	varlab
Non-modeled variables	year	Year (all 2023)
Non-modeled variables	id	Stock symbol of the company
Non-modeled variables	AvgSalary	Average Employee Salary (RMB)
Control variables	governance	Corporate Carbon Governance Disclosure Index
Control variables	riskopportunities	Corporate Carbon Risk and Opportunity Disclosure Index
Control variables	indicator_decomposition	Corporate Carbon Disclosure Index
Control variables	indicator_valuesupply	Corporate Carbon Value Chain and Supply Chain Disclosure Index
Control variables	indicator_emissions	Corporate Carbon Emissions Disclosure Index
Primary explanatory variable	AvgSalary_x	Average Salary of Enterprise Employees (100,000 yuan)
Heterogeneity Analysis Dummy Variables	industry	Industry Category (Classified as 1, 2, 3)
Primary explanatory variable	AvgSalary_x_sq	The square of the average employee salary (the square of 100,000 yuan)

3.3. Experimental design

To investigate the impact of average employee salary on corporate carbon emissions disclosure indices, both the linear and quadratic terms of AvgSalary_x were incorporated into the model. The nonlinear regression model was set as follows:

$$\text{indicator\_emissions} = \alpha_0 + \alpha_1 \text{AvgSalary\_x} + \varepsilon_1 \tag{1}$$

$$\text{indicator\_emissions} = \alpha_0 + \alpha_1 \text{AvgSalary\_x} + \alpha_2 \text{AvgSalary\_x\_sq} + \varepsilon_2 \tag{2}$$

$$\text{indicator\_emissions} = \alpha_0 + \alpha_1 \text{AvgSalary\_x} + \alpha_2 \text{AvgSalary\_x\_sq} + \alpha_3 \text{governance} + \varepsilon_3 \tag{3}$$

$$\text{indicator\_emissions} = \alpha_0 + \alpha_1 \text{AvgSalary\_x} + \alpha_2 \text{AvgSalary\_x\_sq} + \alpha_3 \text{governance} + \alpha_4 \text{riskopportunities} + \varepsilon_4 \tag{4}$$

$$\begin{aligned} \text{indicator\_emissions} = {} & \alpha_0 + \alpha_1 \text{AvgSalary\_x} + \alpha_2 \text{AvgSalary\_x\_sq} + \\ & \alpha_3 \text{governance} + \alpha_4 \text{riskopportunities} + \alpha_5 \text{indicator\_decomposition} + \varepsilon_5 \end{aligned} \tag{5}$$

$$\begin{aligned} \text{indicator\_emissions} = {} & \alpha_0 + \alpha_1 \text{AvgSalary\_x} + \alpha_2 \text{AvgSalary\_x\_sq} + \\ & \alpha_3 \text{governance} + \alpha_4 \text{riskopportunities} + \alpha_5 \text{indicator\_decomposition} + \alpha_6 \text{indicator\_valuesupply} + \varepsilon_6 \end{aligned} \tag{6}$$

The dependent variable indicator_emissions represents the disclosure index for corporate carbon emissions. The core explanatory variables are the average employee salary (100,000 yuan) and the squared term AvgSalary_x_sq. α_0 denotes the intercept term, while $\alpha_1 + 2\alpha_2$ represents the change in

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the corporate carbon emissions disclosure index per unit increase in the average employee salary (in 100,000 yuan). ε is the residual term, with all other variables serving as control variables.

Table 2. Correlation analysis

	AvgSalary_x	AvgSalary_x_sq	governance	riskopportunities	indicator_decomposition	indicator_valuesupply	indicator_emissions
AvgSalary_x	1	.7932066	.1537536	.1220302	.1406486	.0607911	.1975629
AvgSalary_x_sq	.7932066	1	.0718019	.0452757	.055278	.0283832	.0948032
governance	.1537536	.0718019	1	.6600696	.4545743	.5230731	.585079
riskopportunities	.1220302	.0452757	.6600696	1	.5921166	.5619161	.5531835
indicator_decomposition	.1406486	.055278	.4545743	.5921166	1	.4414044	.4491015
indicator_valuesupply	.0607911	.0283832	.5230731	.5619161	.4414044	1	.510087
indicator_emissions	.1975629	.0948032	.585079	.5531835	.4491015	.510087	1

The core explanatory variable, AvgSalary_x, exhibits a significant positive correlation with indicator_emissions at the 1% level (r=0.198). Its squared term, AvgSalary_sq, also shows a significant positive correlation with the dependent variable (r=0.095). This provides preliminary support for the research hypothesis H0: that an inverted U-shaped relationship exists between a company's average employee salary and its carbon emissions disclosure index. A strong correlation exists between AvgSalary_x and its squared term, AvgSalary_sq (r=0.793*), consistent with mathematical principles. Subsequent regression analyses will employ VIF tests to diagnose further potential multicollinearity issues arising from this relationship. All control variables showed significant correlations with indicator_emissions (correlation coefficients ranging from 0.449 to 0.585). This indicates that controlling for corporate governance, risk management, and other indicators (indicator_decomposition, indicator_value_supply) is necessary to avoid potential omitted variable bias.

4. Empirical findings and analysis

4.1. Analysis of benchmark regression results

This study employs a mixed OLS regression model to examine the relationship between employee salary levels and corporate carbon emissions disclosure. Benchmark regression results are presented in Table 2. Column (1) regresses only AvgSalary_x, column (2) regresses AvgSalary_x and its squared term, AvgSalary_x_sq. Columns (3), (4), (5), and (6) sequentially incorporate the control variables governance, risk-opportunities, indicator_decomposition, and indicator_valuesupply, respectively. The coefficients for AvgSalary_x and its squared term, AvgSalary_x_sq, show slight declines but remain statistically significant at the 1% level.

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Table 3. Benchmark regression results

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	indicator_emissions	indicator_emissions	indicator_emissions	indicator_emissions	indicator_emissions	indicator_emissions
AvgSalary_x	0.733***	1.224***	0.678***	0.612***	0.553***	0.611***
	(14.66)	(14.99)	(9.97)	(9.34)	(8.49)	(9.59)
AvgSalary_x_sq		-0.054***	-0.029***	-0.024***	-0.021***	-0.025***
		(-7.58)	(-4.99)	(-4.35)	(-3.85)	(-4.52)
governance			1.857***	1.235***	1.187***	1.009***
			(50.36)	(26.39)	(25.52)	(21.59)
riskopportunities				1.136***	0.856***	0.601***
				(20.41)	(14.00)	(9.74)
indicator_decomposition					0.385***	0.300***
					(10.55)	(8.32)
indicator_valuesupply						1.028***
						(16.13)
Constant	1.501***	0.811***	-0.913***	-1.666***	-2.087***	-2.391***
	(13.06)	(5.55)	(-7.30)	(-13.24)	(-15.96)	(-18.52)
Observations	5,291	5,291	5,291	5,291	5,291	5,291
R-squared	0.039	0.049	0.358	0.404	0.417	0.444
r2_a	0.0388	0.0490	0.357	0.404	0.416	0.443
N	5291	5291	5291	5291	5291	5291
F	214.8	137.3	980.8	897.6	755.3	703.6

t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The Breusch-Pagan test for heteroskedasticity applied to Model (6) yielded a chi-squared value of 2265.76, indicating a rejection of the homoscedasticity assumption. This confirms the model exhibits significant heteroskedasticity, necessitating robust standard errors. Employing robust standard errors mitigates the impact of heteroskedasticity on the model's validity.

Table 4. Robust standard errors

indicator_emissions	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
AvgSalary_x	.611	.068	9.02	0	.478	.744	***
AvgSalary_x_sq	-.025	.004	-6.23	0	-.032	-.017	***
governance	1.009	.052	19.36	0	.907	1.112	***
riskopportunities	.601	.055	10.88	0	.493	.709	***
indicator_decompos~n	.3	.027	11.17	0	.247	.352	***
indicator_valuesup~y	1.028	.052	19.61	0	.926	1.131	***

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Table 4. (continued)

Constant	-2.391	.119	-20.01	0	-2.625	-2.156	***
Mean dependent var		2.953		SD dependent var		4.333	
R-squared		0.444		Number of obs		5291	
F-test		521.548		Prob > F		0.000	
Akaike crit. (AIC)		27436.424		Bayesian crit. (BIC)		27482.441	
*** p<.01, ** p<.05, * p<.1							

This paper examines the null hypothesis of mean equality by plotting residuals against fitted values, confirming that model (6) satisfies the null hypothesis of mean equality. A Q-Q plot visually inspects a good fit when testing normality, approximating a straight line sloping upward to the right. Quantitative validation using the Shapiro-Wilk test confirms that model (6) meets the normality assumption.

4.2. Verification of the inverted U-shaped relationship

To demonstrate an inverted U-shaped relationship between average employee salary and corporate carbon emissions disclosure index, we first examine the critical points. The inflection point is calculated using the inflection point formula:

$$\text{AvgSalary\_x}^* = -\frac{\alpha_1}{2*\alpha_2}$$

The calculated inflection point is AvgSalary_x* = 12.419845. Although the inflection point is relatively close to the upper limit of the interval (indicating sparse data for high-wage enterprises), it remains within the sample range of AvgSalary_x. This preliminarily confirms that model (6) is a nonlinear regression model with an inflection point. However, to establish its inverted U-shape, Lind-Mehlum's triplet test and slope test are required. In the left-tail test, near x = -0.1971957, the slope is positive (0.6206247) with a t-value of 9.00712. The corresponding p-value is extremely close to zero (1.45e-19), indicating a statistically significant upward trend at the left end of the data range. In the right-tail test, near x = 25.39822, the slope is negative (-0.6383994), the t-value is -4.119853, and the P-value is 0.0000192 (far below 0.001). Thus, the curve exhibits a statistically significant downward trend at the right end of the data range. In the overall test, t-value = 4.12, P > |t| = 0.0000192. The overall test P-value is also far less than 0.001. This indicates that at an extremely high confidence level (e.g., 99.999%), the null hypothesis (H0) is accepted and the alternative hypothesis (H1) is rejected. The existence of an inverted U-shaped relationship is formally confirmed statistically.

Table 5. Lind-mehlum's triplet test

Inspection Items	Values/Results	statistical measure	P-value
Inflection Point (X)*	12.419845		
	Left-tailed test (lower limit)		
Inspection point	-0.1971957		
Slope	0.6206247		
t-value		9.00712	1.45e-19
Right-sided test (upper limit)			
Inspection point	25.39822		

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Table 5. (continued)

Slope	-0.6383994		
t-value		-4.119853	0.0000192
Overall inspection			
t-value		4.12	0.0000192

4.3. Industry heterogeneity analysis

The benchmark regression above revealed an inverted U-shaped relationship between AvgSalary_x and indicator_emissions. However, does this nonlinear relationship hold universally across enterprises in different industries? Based on research by He, P et al., listed companies with higher carbon disclosure levels tend to be state-owned enterprises operating in heavily polluting industries [11]. This study posits that, relative to industries such as finance, retail, agriculture, and new energy, the manufacturing sector—characterized by elevated carbon emissions—encounters more significant obstacles in mitigating the transitional difficulties linked to organizational restructuring and regulatory changes. Consequently, the inverted U-shaped relationship may be less pronounced in manufacturing. To test this hypothesis, this paper first categorizes enterprises in the sample into three major industry groups based on their industry codes. It creates a dummy variable named "industry" with values 1, 2, and 3 representing the industry categories. Industry 1 encompasses sectors such as agriculture, transportation, and new energy, which are highly dependent on natural environments but do not generate significant pollution (or are highly resource-intensive). Industry 2 represents manufacturing (industrial sectors), while Industry 3 encompasses finance, retail, culture/sports, and services—sectors that depend neither on natural resources nor major polluters.

Industry 3 is selected as the reference group. Using the interaction term method, we test for coefficient differences between groups. First, we examine whether there is a significant difference in the AvgSalary_x coefficient between Industry 1 and Industry 3. The p-value for Industry 1 is 0.542 > 0.05, indicating no significant difference in the AvgSalary_x_sq coefficient between Industry 1 and the reference group (Industry 3). Next, testing the difference in the squared term coefficient between Industry 2 and Industry 3 yielded a P-value of 0.054, marginally significant at the 10% significance level. This indicates that Industry 2's AvgSalary_x_sq coefficient may differ from the benchmark group. Finally, the joint F-test for all industry-squared interaction terms yielded a P-value of 0.1488 > 0.05, indicating that the combined interaction effects of all industries with AvgSalary_x_sq are not significant. Therefore, industry type does not significantly moderate the nonlinear relationship between AvgSalary_x and indicator_emissions.

Table 6. Regression results by industry

(1)indicator~ns	(2)indicator~ns	(3)indicator~ns	
AvgSalary x (3.11)	0.621** (1.08)	0.284 (6.04)	0.690***
vgSala-x_sq (-3.29)	-0.0282** (-0.19)	-0.00954 (-5.18)	-0.0285***
Governance (5.30)	0.830*** (18.04)	1.088*** (5.11)	0.684***
riskopport-s (5.72)	1.116*** (8.55)	0.516*** (5.22)	0.799***

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Table 6. (continued)

indicator~n	0.592***	0.296***	0.236**
	(6.12)	(9.62)	(3.85)	
indicator_~y	1.128***	0.869***	1.685***
	(6.44)	(15.37)	(10.34)	
_cons	-3.731***	-1.832***	-2.415***
	(-8.74)	(-6.55)	(-10.15)	
N	476	3670	1145

t statistics in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Next, we conduct industry-specific regressions (see Table 6). Directly comparing the coefficients of the squared terms reveals a significant inverse U-shaped relationship in Industry 1, where the coefficient for AvgSalary_x_sq is -0.0282 (P<0.01). In Industry 2, the coefficient for AvgSalary_x_sq is -0.00954 (P>0.05), indicating a non-significant nonlinear relationship; in Industry 3, the coefficient is -0.0285 (P<0.001), confirming a significant inverted U-shaped relationship. It can be observed that the coefficients for AvgSalary_x_sq in Industry 1 and Industry 3 are significantly negative at the 1% level and pass the Lind-Mehlum (2010) test, indicating a clear inverted U-shaped relationship between AvgSalary_x and indicator_emissions. In Industry 2, however, the absolute value of the AvgSalary_x_sq coefficient is small and insignificant, suggesting no clear inverted U-shaped relationship between AvgSalary_x and indicator_emissions in this industry.

Therefore, this study concludes that the inverted U-shaped relationship between AvgSalary_x and indicator_emissions exhibits heterogeneity across industries, though it remains generally weak. While Industry 2 displays a distinct nonlinear relationship pattern compared to other sectors, the statistical evidence for this divergence is insufficiently robust overall. Nonetheless, this result offers theoretical implications for policy refinement concerning employee compensation structures and corporate carbon emissions reporting across various sectors. Organizations within non-manufacturing industries may, throughout their developmental stages, prioritize the interplay between wage levels and critical thresholds when implementing wage increases. In the early and growth phases, wage increases should be accompanied by high investment in carbon emission management. Upon reaching maturity, wage increases can be pursued while moderately reducing carbon emission management investments, redirecting these funds toward AI, digitalization, and other areas to promote high-quality, balanced corporate development. For most manufacturing enterprises, however, substantial financial and human resources should be allocated to carbon emission management regardless of wage levels to achieve sustainable development.

5. Conclusion

This empirical analysis confirms an inverted U-shaped relationship between average employee wages and corporate carbon emissions disclosure indices. It demonstrates that rising wages initially boost carbon disclosure levels before eventually suppressing them. However, this inflection point occurs at relatively high wage levels, indicating that carbon disclosure declines only when enterprises reach advanced development stages with elevated overall wages. Consequently, once enterprises reach a particular developmental stage, investments in carbon emission management can be relatively reduced. Conversely, as the enterprise expands and overall wage levels rise during the initial growth phase, investments in carbon emission management should progressively increase. Through industry heterogeneity analysis, this study finds that the relationship between average employee wages and

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corporate carbon emissions disclosure indices in the manufacturing sector does not exhibit a highly significant inverted U-shape. However, for enterprises in other industries (finance, culture/sports, new energy, etc.), the empirical analysis of this U-shaped relationship holds certain guiding significance for formulating policies on carbon emissions management and wage adjustments.

Although the empirical methodology employed in this study is rigorous, it has limitations. The identified inflexion point tends toward the upper end of the sample range, where the average salary reaches one million yuan annually—a level achievable only by a few highly efficient enterprises. However, this outcome is not entirely implausible based on the sample characteristics. China's economic ascent spans merely four decades, with many enterprises still far from maturity. As the nation progresses toward per capita GDP levels comparable to developed economies, numerous firms will reach the salary threshold at this inflection point, rendering this study's conclusions increasingly relevant. During the heterogeneity analysis, the diverse industry classifications of the sample companies made it challenging to categorize certain sectors uniformly with others. While the industry classifications employed in this study represent the author's best effort, some inaccuracies may have influenced the results of the industry heterogeneity analysis. Furthermore, the inverted U-shaped relationship between average employee wages and corporate carbon emissions disclosure indices lacks sufficient theoretical support from existing literature. Academic research in this area remains underdeveloped, leaving numerous unexplored domains requiring further investigation.

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