



Study on Influence of Labor Compensation on Employee Structure

Xiwen Fan

1st Capital University of Economic and Business, No. 121, Zhangjia Lukou, Huaxiang, Fengtai District, Beijing, P.R.China

Corresponding author. Email: 1540658339@qq.com

Abstract. INTRODUCTION: In the era of knowledge-driven economy and strategic human capital management, employee structure has emerged as a core determinant of corporate competitiveness and long-term sustainable growth. While existing literature has explored the determinants of employee structure from technological innovation, corporate governance, and institutional environment perspectives, the causal link and underlying mechanism between labor compensation and employee structure remain under-investigated.

OBJECTIVES: This study aims to fill this gap by theoretically analyzing and empirically testing how employee compensation shapes employee structure.

METHODS: Using a sample of 2,833 firm-year observations of Chinese A-share listed companies spanning 2008 to 2024 sourced from the CSMAR database, this paper employs a two-way fixed-effects model for baseline regression. The findings reveal that higher labor compensation significantly improves employee structure, with a one-unit increase in compensation leading to a 0.1327-unit improvement in employee structure. A battery of robustness checks, including sample restriction, industry fixed effects, and endogeneity corrections using 2SLS and system GMM estimators, confirm the reliability of the baseline results. Heterogeneity analysis further demonstrates that the positive effect is more pronounced in firms with lower return on equity (Roe) and higher financial leverage.

CONCLUSION: This study enriches the research on the economic consequences of compensation policies and the driving factors of employee structure, and provides practical implications for enterprises to treat compensation as a strategic investment rather than a mere cost, thereby optimizing human capital allocation and sustaining long-term development under performance and financial pressures.

Keywords: Employee Compensation, Employee Structure, Heterogeneity, A-listed Companies.

1 Introduction and Literature Review

Employee compensation structure acts as a core strategic instrument that systematically determines a firm's human capital configuration by affecting talent selection,

retention, and internal labor mobility (Cullen & Pakzad-Hurson, 2023; Card et al., 2018). Recent studies in economics adopt detailed microdata and rigorous causal identification strategies to reveal multiple important transmission mechanisms.

First, wage levels and pay transparency directly determine the cross-firm allocation of talent. Higher wages and transparent pay policies attract skilled employees to higher-productivity firms, which intensifies skill divergence across enterprises (Cullen & Pakzad-Hurson, 2023; Card et al., 2018).

Second, equity incentives and performance-linked pay play a central role in retaining key human capital. Broad-based equity participation and long-term incentive structures help lower core employee departure rates, while short-term-oriented compensation arrangements can induce defensive labor cuts that damage long-term human capital and firm capability (Kruse et al., 2018).

Third, internal pay fairness strongly influences workforce stability. Pay comparison and internal inequality—especially vertical gaps between hierarchical layers—significantly increase employee turnover, particularly among high-performing staff (Breza et al., 2017; Benson et al., 2019).

Fourth, external institutional and technological shocks jointly reshape pay design and employee structure. Minimum wage policies can trigger labor substitution and reallocate low-wage tasks (Cengiz et al., 2019); simultaneously, the diffusion of remote and hybrid arrangements rearranges talent's geographic and demographic distribution and alters retention patterns (Barrero et al., 2023; Bloom et al., 2024). In addition, institutional investors' governance influence promotes performance-related pay, which can widen internal wage gaps within firms (Zhang et al., 2021; Zhu et al., 2021).

Generally, scholars have contributed a lot to the development of the analysis; there still lacks an integrated framework that explains how multidimensional compensation systems restructure overall employee composition, especially under heterogeneous institutional environments. This paper will extend the research by systematically exploring the mechanisms and boundary conditions through which compensation structure influences corporate employee configuration.

2 Data and Measurement

Following established literature, this study empirically examines the impact of labor compensation on employee structure. To ensure rigorous empirical analysis, we first define and select key research variables prior to formal regression estimation. The research sample comprises Chinese A-share listed companies over the period 2008–2024. We exclude unlisted firms, financial institutions, ST and *ST firms, as well as observations with missing values on core variables, yielding a final sample of 2,833 firm-year observations. All data are obtained from the CSMAR database. In addition to the focal variables of labor compensation and employee structure, we incorporate a set of control variables to isolate the causal effect, including return on equity (Roe), research input, leverage, and other firm-level characteristics. Detailed definitions and measurements of all variables are presented in Table 1.

Employee structure is measured as the ratio of employees with a bachelor’s degree or above to total staff, which is widely adopted in human capital studies to capture talent quality and structural optimization. This indicator directly reflects the skill level and educational composition of the workforce, matching the research focus. Compensation is operationalized as the natural logarithm of average employee compensation, which mitigates skewness, conforms to econometric norms, and enables consistent and interpretable coefficient estimation.

Table 1. Table of variables.

Variables	Variable categories	Symbol for variables	Ways of calculating inlnwces
Employee Structure	Explained Variable	STRU	Number of employees with bachelor’s degree or above/ Number of total employees
Labor Compensation	Independent explanatory variable	LC	Natural log of (Total employee compensation paid/Number of Employees)
Research Input		RD	Natural log of research input
Debt-to-Asset Ratio		Lev	Debt/ Asset
Return On Equity		roe	Net profit/ total equity
Sales Revenue	Control Variables	lnsale	Natural log of sales
Growth Ability		Ga	The growth rate of revenue
Total asset turnover		TAT	Operating revenue/ Asset
Financing constraints		FC	Cash / Asset

Note: This study selects data from Chinese A-share listed companies from 2007 to 2023. It excludes financial firms, ST and *ST firms, and observations with missing key variables. It obtains a final sample of 2,833 firm-year observations. It collects all data from the CSMAR database.

3 Empirical Resultst

3.1 Regression Model

Following variable specification and data consolidation, this study develops an econometric framework to investigate the causal effect of labor compensation on corporate employee structure. Given pervasive heterogeneity in firms’ financing constraints, technological capabilities, and intrinsic attributes, unobserved time-invariant firm-level factors may generate omitted variable bias. To mitigate this concern, we employ

firm fixed effects to absorb unobservable firm-specific heterogeneity and year fixed effects to account for macroeconomic fluctuations and aggregate time-varying shocks. Consequently, a two-way fixed-effects model is estimated to identify the net impact of labor compensation on employee structure after controlling for confounding factors. The formal regression specification is presented below:

$$STRU_{it} = \beta + \beta LC_{it} + \gamma controls + m_i + \lambda_t + u_{it}$$

Where β_1 denotes the estimated coefficient of labor compensation (LC) affecting employee structure (STRU), and Controls refers to a set of firm-level control variables, whose detailed definitions and measurement formulas are presented in Table 1. Before conducting regression estimation, this paper first reports the descriptive statistics of the main variables to illustrate the distribution characteristics of the sample. As shown in Table 2, the final sample consists of 2,833 firm-year observations spanning from 2008 to 2024.

Table 2. Statistical description table.

Variable	Observed Number	Mean	Standard Deviation	Minimum Value	Maximum Value
STRU	2833	0.4061	0.2717	0.0234	0.6243
LC	2833	11.6411	0.5922	9.2497	12.1889
RD	2833	12.1815	1.3865	11.2374	15.7807
Lev	2833	0.4595	0.3510	0.0158	10.0822
roe	2833	0.3746	0.5316	-0.1954	0.7165
Insale	2833	21.8792	1.9457	15.7155	28.8304
Ga	2833	0.1865	0.6847	-0.8698	1.3350
TAT	2833	0.3697	0.1745	0.1172	0.8493
FC	2833	0.1480	0.1026	0.0245	0.3246

Note: Table 2 presents the descriptive statistics of all variables used in the regression analysis. The mean and standard deviation of employee structure (STRU) are 0.4061 and 0.2717, respectively, while those of labor compensation (LC) are 11.6411 and 0.5922. Neither key variable exhibits extreme outliers. All control variables also fall within reasonable ranges with no abnormal values. These results collectively validate that the sample data are well-conditioned and appropriate for subsequent empirical regression analysis.

3.2 Basic Regression Model

To examine the effect of labor compensation on corporate employee structure, this study first conducts a baseline multivariate regression, with results reported in Table 3. The estimated coefficient indicates that labor compensation is significantly and positively correlated with employee structure, implying that higher compensation contributes to the optimization of workforce structure. However, the baseline model does not control for firm fixed effects. We therefore introduce firm fixed effects and a two-way fixed-effects specification to enhance estimation precision. The results in

Table 3 consistently show a significantly positive impact of labor compensation, confirming that the baseline conclusion is stable and robust across alternative model settings.

Table 3. Regression results statistics table.

VARIABLES	(1) Structure	(2) Structure	(3) Structure
LC	0.1041*** (0.0089)	0.0903*** (0.0119)	0.1327*** (0.0146)
RD	-0.0289*** (0.0036)	-0.0153*** (0.0055)	0.0016 (0.0068)
Lev	-0.0214 (0.0147)	-0.0107 (0.0145)	-0.00997 (0.0143)
roe	-0.0093 (0.0093)	-0.0050 (0.0081)	-0.0039 (0.0080)
lnsale	0.0072** (0.0030)	0.0086* (0.0048)	0.0040 (0.0048)
Ga	-0.0017 (0.0071)	-0.0039 (0.0064)	-0.0055 (0.0063)
TAT	0.0022*** (0.0007)	0.0033*** (0.0010)	0.0030*** (0.0010)
FC	0.0226*** (0.0057)	0.0583*** (0.0068)	0.0434*** (0.0069)
Constant	-0.8201*** (0.1033)	-0.6003*** (0.1460)	-1.0821*** (0.1701)
Observations	2,833	2,833	2,304
R-squared	0.076	0.076	0.604
Company control	N	Y	Y
Year control	N	N	Y

Note: Standard errors in parentheses, *, ** and *** indicate significance at the 10%, 5% and 1% levels respectively.

Based on the empirical findings and variable characteristics, this study adopts the two-way fixed-effects model as the benchmark specification, using regression (3) in Table 3 for the baseline estimation. The results show that the coefficient of labor compensation is 0.1327, suggesting that a one-unit increase in compensation significantly improves employee structure by 0.1327 units. By comparison, model (1) ignores both firm and year fixed effects, while model (2) only controls for firm fixed effects. In contrast, model (3) accounts for both dimensions and thus yields more credible and consistent estimates. These findings verify that reasonable compensation arrangements effectively enhance human capital efficiency and help enterprises optimize their employee structure.

3.3 Robustness Analysis

To verify the robustness of the impact of labor compensation on corporate employee structure, this study implements two complementary robustness checks. First, we introduce the Herfindahl-Hirschman Index (HHI) and narrow the sample scope to enhance estimation reliability, with results reported in Column (1) of Table 4. Second, we add industry fixed effects to the regression to further control for unobservable industry heterogeneity, with results presented in Column (2) of Table 4. Both tests consistently confirm that the positive influence of labor compensation remains stable and statistically significant.

Table 4. Robust Regression.

VARIABLES	(1) Structure	(2) Structure
LC	0.1329*** (0.0146)	0.1160*** (0.0153)
RD	0.0014 (0.0068)	0.0058 (0.0067)
Lev	-0.0099 (0.0143)	-0.0146 (0.0139)
roe	-0.0038 (0.0080)	0.0019 (0.0080)
Insale	0.0035 (0.0049)	0.0164*** (0.0055)
Ga	-0.0054 (0.0063)	-0.0049 (0.0061)
TAT	0.0030*** (0.0010)	0.0026*** (0.0010)
FC	0.0433*** (0.0069)	0.0498*** (0.0069)
hhi	0.0216 (0.0420)	
Constant	-1.0791*** (0.1713)	-1.1371*** (0.1822)
Observations	2,304	2,298
R-squared	0.604	0.650
Company control	Y	Y
Year control	Y	Y

Note: Standard errors in parentheses, *, ** and *** indicate significance at the 10%, 5% and 1% levels respectively.

As presented in Table 4, the coefficient of labor compensation under the restricted sample is 0.1329, which is only marginally different from the baseline coefficient of 0.1327, verifying the robustness of the estimated effect after incorporating the Herfindahl index and controlling for the same set of firm-level covariates. The coefficient of labor compensation added to the two-way fixed-effects model is 0.1160, which

retains the same positive direction and 1% statistical significance as the baseline result. These findings collectively confirm that the positive impact of labor compensation on corporate employee structure is stable and robust across different model specifications and sample settings.

3.4 Endogeneity Analysis

The baseline regression may face endogeneity issues arising from reverse causality: while labor compensation (LC) can shape corporate employee structure, the quality of employee structure may in turn affect firms' compensation-setting decisions. To mitigate this concern, this study employs the two-stage least squares (2SLS) method, using the one-period lag of LC as the instrumental variable. This lagged term satisfies the relevance condition by being highly correlated with contemporaneous LC, and meets the exogeneity requirement as it is predetermined and uncorrelated with the current error term. The 2SLS estimation yields an LC coefficient of 0.1439, which remains consistent in sign and statistical significance with the baseline estimate in Column (3) of Table 3. This result confirms that the baseline model is not subject to severe endogeneity bias, and the positive effect of LC on employee structure is robust.

In addition to reverse causality, omitted variables constitute another key source of endogeneity, as unobserved persistent firm characteristics may simultaneously influence compensation policies and employee structure. To address this issue, this study adopts the system generalized method of moments (system GMM) model, which introduces the one-period lag of employee structure as an additional control. This lagged variable can capture unobserved time-invariant firm heterogeneity, contains historical information of workforce structure, and has no direct strong correlation with contemporaneous LC, thus satisfying the exogeneity condition. The system GMM estimation produces an LC coefficient of 0.1501, which maintains the same positive direction and 1% significance level as the baseline result. These findings further verify that the baseline regression is free from critical endogeneity problems, and the positive impact of labor compensation on employee structure remains stable and reliable.

3.5 Heterogeneity Analysis

To explore the heterogeneous impact of labor compensation on corporate employee structure, this study conducts subgroup regression analysis based on firm profitability and financial risk characteristics. First, we examine the heterogeneity across firms with different return on equity (ROE), a core indicator of operating performance that shapes corporate strategic decisions, resource allocation, and human capital management. Firms with lower ROE typically face stronger performance pressure and have greater incentives to optimize workforce structure through competitive compensation to enhance efficiency. Based on the sample distribution, we use 0.07 as the threshold to divide the full sample into high-ROE and low-ROE subgroups. The regression results in Columns (1) and (2) of Table 5 show that the coefficient of labor compensation is 0.1070 in the high-ROE group and 0.1280 in the low-ROE group, indicating

that the positive effect of labor compensation on employee structure is significantly more pronounced in firms with lower ROE.

Next, we investigate the heterogeneity across firms with different financial leverage levels, as leverage not only reflects corporate financial risk but also directly affects human resource allocation strategies and workforce structure decisions. Firms with higher leverage face tighter financial constraints and stronger market supervision, and thus have a stronger motivation to attract high-quality talent through reasonable compensation arrangements to improve corporate governance and alleviate financing pressure. According to the sample descriptive statistics, we adopt 0.4594 as the cutoff value to classify firms into low-leverage and high-leverage subgroups. The regression results in Columns (3) and (4) of Table 5 reveal that the coefficient of labor compensation is 0.0987 in the low-leverage group and 0.1420 in the high-leverage group, confirming that the promoting effect of labor compensation on employee structure is significantly stronger for enterprises with higher financial leverage.

Table 5. Heterogeneity Regression.

VARIABLES	(1) Structure High ROE	(2) Structure Low ROE	(3) Structure Low LEV	(4) Structure High LEV
LC	0.1070*** (0.0257)	0.1280*** (0.0215)	0.0987*** (0.0260)	0.1420*** (0.0202)
RD	-0.0005 (0.0108)	-0.0061 (0.0101)	-0.0129 (0.0107)	-0.0014 (0.009)
Lev	0.0002 (0.0644)	-0.0069 (0.0141)	-0.211** (0.0922)	0.0035 (0.0171)
roe	0.0008 (0.141)	0.0031 (0.0079)	-0.151 (0.115)	0.0033 (0.0081)
lnsale	0.0093 (0.0083)	0.0142* (0.0073)	0.0140 (0.0091)	0.0024 (0.0086)
Ga	0.0102 (0.0158)	-0.0055 (0.0069)	-0.0048 (0.0196)	-0.0077 (0.0066)
TAT	0.0059** (0.0024)	0.0041*** (0.0013)	0.0019 (0.0015)	0.0056*** (0.0016)
FC	0.0641*** (0.0097)	0.0348 (0.0231)	0.0717*** (0.0098)	-0.0055 (0.0133)
Constant	-0.8721*** (0.2822)	-1.2413*** (0.2671)	-0.6902** (0.2911)	-1.3023*** (0.2491)
Observations	1,475	1,358	1,456	1,377
R-squared	0.164	0.110	0.168	0.152
Company control	Y	Y	Y	Y
Year control	Y	Y	Y	Y

Note: Standard errors in parentheses, *, ** and *** indicate significance at the 10%, 5% and 1% levels respectively.

4 Conclusions

This study empirically confirms that labor compensation has a significant positive effect on the optimization of corporate employee structure, with this effect exhibiting notable heterogeneity: it is more pronounced in enterprises with low return on equity (ROE) and high financial leverage. Based on the core findings, this paper proposes the following targeted policy recommendations:

First, enterprises should regard labor compensation as a strategic human capital investment rather than a mere operating cost. For high-leverage firms facing financial pressure, they should avoid blind extensive salary cuts and increase targeted compensation investment to stabilize core employees, as such investment can yield higher marginal returns under financial distress.

Second, implement differentiated compensation strategies tailored to corporate operating conditions. Low-ROE enterprises can adopt performance-based pay, equity incentives and profit-sharing schemes to attract and retain high-quality talent; while high-ROE firms should focus more on internal pay equity and long-term incentives to improve human capital allocation efficiency.

Third, integrate the compensation system with performance appraisal, career development and corporate culture construction. Linking salary growth with employees' skill upgrading and value contribution can clarify employee development expectations, improve talent matching efficiency, and optimize employee structure in line with enterprises' long-term sustainable development goals.

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