Political Connection and the Executive-employee Pay Gap: An Institutional Economics Perspective

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ABSTRACT

Increasingly huge executive-employee pay gap has attracted wide attention, hence it is therefore crucial to control it at a reasonable level. Using a sample of 23,563 firm-year observations in China covering 2010-2021, we examine the U-shape relationship between the political connection, an informal institution, and the executive-employee pay gap. The U-curve reveals that political connections are beneficial whereas excessive can be harmful, and the best measure controlling the executive-employee pay gap is to keep political connections between the district level and the city level. Under different institutional environments, on the one hand, firms with higher percentages of overseas experienced CEOs are more motivated to narrow the pay gap and promote equity, on the other hand, media attention could also help reduce the pay gap, especially for traditional newspaper media. Our findings have important implications for the local government that rational political connection helps reduce excessive executive-employee pay inequity, as well as the significant role of media by creating an open and permissive environment.

KEYWORDS

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1. Introduction

Institutional economics stresses the need for government to safeguard private property rights and contracting practices to facilitate market exchanges (North andInstitutions,1990). In Western, an important form of political connection is that government officials are shareholders of firms, or the children of politicians are executives of enterprises (Fisman,2001, Faccio,2006). However, in China, this form of political connection does not exist explicitly, one form of political connection of firms in China is the government background of the firm's executives (Heitzet al.,2023), and the other is entrepreneurs participate in politics by being elected as deputies (Schweizeret al.,2023). These two channels are built on laws and institutions, which enable the stable institutional connection between the government and firms (Allenet al.,2005, Dong；et al.,2015), also make political connections irreplaceable informal institutions in China (Ji andZhang,2024, Miaoet al.,2024).

Different institutions shape differentiated organizational behavior (Marquis andRaynard,2015). Studies have pointed out that the political connection of firms, being an informal institution, is just like the "nerve endings" of the government in the grassroots economic field (Akcigitet al.,2023, Easton,2024), it can effectively convey government requests (Easton,2024), provide political promotion to those executives with political identities (Ishmaev,2021), and promote the infusion of social equity inner firms, thus narrow the executive-employee pay gap (Zhanget al.,2023a). However, these studies may overlook the negative effects that excessive political power could bring, like power rent and corruption, thus widening the executive-employee pay gap (Jianget al.,2018, Al-Mohammadet al.,2022). Then, what does the relationship between political connection and the executive-employee pay gap be like? What is the rational level should political connection be controlled to best promote common prosperity?

Political connections can serve as substitutes for laws and regulations, yet institutional contingencies are difficult to avoid. Firms experience varying pay gaps influenced by political connections across different institutional contexts. Institutionalists commonly argue that there are two primary elements in diverse institutional settings: normative and cognitive institutional elements (North andInstitutions,1990, Scott,2013). Thus, we further explore how the influence of political connection on the executive-employee pay gap varies as normative and cognitive institutional elements change?

The questions above motivate us to examine the impact of political connections, a distinctive Chinese feature and a prevalent informal institution. Drawing on institutional economics, we consider political connections as an informal institution (North andInstitutions,1990), and theoretically analyze how it shapes the firms' executive-employee pay gap. Furthermore, we delve into a specific type of institutional contingency, examining it from the vantage points of normative and cognitive elements. Normative elements, often referred to as moral and ethical views, are ubiquitous in newspaper articles and tweets; hence, we focus on media attention (Burke,2021). Regarding cognitive elements, Chinese culture differs significantly from foreign cultures. Foreign experiences shape distinct cognitive concepts; therefore, we concentrate on the overseas experience of CEOs (Xu,2024).

Our study makes three contributions to the literature. First, we contribute to the business compensation literature by revealing a positive "U-shaped" relationship between political connection and the executive-employee pay gap. It is concerning that while political connections can narrow the pay gap, excessive power may lead to detrimental effects such as rent-seeking and corruption. Second, we examine the role of media attention in exerting political normative pressure, extending previous research that primarily focuses on how media influences firm's investment decisions (Heet al.,2024, Qinget al.,2024). Third, building on studies that show how CEO overseas study or work experience influences firm's major economic decisions (Xu,2024), we enrich the literature by viewing CEO overseas experience as a cultural cognitive institution that moderates the effect of political connections on the executive-employee pay gap within institutional contexts.

Our findings provide policy implications. We suggest that local governments regulate political connections at the district/county and city levels to strengthen informal institutions, by pinpointing the inflection point of the U-curve. To narrow the pay gap across different institutional settings, we propose a novel approach: promoting vigorous media oversight and hiring experienced foreign CEOs, with a focus on traditional media like newspapers rather than internet platforms.

2. Hypothesis Development Framework

2.1. Effect of political connection on the executive-employee pay gap

Previous studies primarily argue that a firm's political connection, as an informal institution, negatively impacts the executive-employee pay gap (Zhanget al.,2023a). Political connection is an institutional innovation that supports firm development, ensuring compliance with national policies and integrating political and cultural norms within organizations. Three perspectives explain its adverse effects. First, political connection deepens government embeddedness in firms, facilitating policy dissemination and decision execution (Zhanget al.,2023a). Social relations and networks influence decision-making and economic management, creating a social link between firms and the government that imposes unique constraints on firm behavior (Faisalet al.,2020). This leads the government to reassess intra-firm fairness and efficiency, implementing policies like salary caps to uphold social equity. Second, executives may voluntarily constrain their salaries for political advancement. Amid marketization reforms, China's personnel evaluation and promotion mechanisms remain largely unchanged, with the government retaining authority over politically affiliated executives (Ishmaev,2021). These executives prioritize political advancement over salary, actively complying with salary control measures to enhance promotion chances. Third, political connections can infuse political culture into firms, subtly influencing executives and employees. As a product of long-term social organization development, culture represents shared values and norms (Guisoet al.,2006). The government disseminates political culture to firms, integrating it with corporate culture and reinforcing the value of equality through theoretical learning and training activities. This cultural concept subtly influences executives and employees, prompting firms to actively reduce the executive-employee pay gap.

In China, a developing country characterized by weaker economic institutions, the government's "visible hand" frequently plays a more practical role compared to the market's "invisible hand," particularly as the political influence of senior executives grows significantly. Consequently, companies with strong political connections often experience unexpected advantages in debt financing, loan maturities, and tax rates. Firstly, firm performance typically exhibits a notably positive correlation with political connections (Schoenherr,2019). As a vital resource, firms are willing to offer higher salaries to executives with substantial political ties (Caoet al.,2019). These high political rights also bring unimaginable potential welfare benefits to firms (Jianget al.,2018), such as increased access to political rent, which is largely captured by senior management. Thus, firms are more inclined to pay higher salaries to highly politically connected executives (Blagoevaet al.,2020) , thereby widening the pay gap between executives and employees. Secondly, the relationship between management and the board of directors exceeds the contractual expectations of the company, with power emerging as a significant factor influencing salary arrangements and diminishing the effectiveness of salary contracts (Al-Mohammadet al.,2022). Consequently, executives leverage political connections to seek rent, enabling them to secure higher explicit and implicit compensation.

Above all, political connections exhibit both a "government intervention" effect and a "benefit" effect. Serving as a link between firms and the government, political associations also yield various advantages when they undertake policy tasks. Furthermore, the intensity of political connections differentially influences the executive-

employee pay gap. Specifically, the "benefit" effect prevails in firms with strong political connections, whereas the "government intervention" effect is more prominent in firms with weak political connections.

Therefore, according to the above literature and theoretical analysis, we put forward our first hypothesis:

Hypothesis 1: The relationship between political connection and the executive-employee pay gap is nonlinear (positive U-shaped).

2.2. Moderating role of institutional environment

Since a firm's executive-employee pay gap is shaped by different institutions (Songet al.,2024), under different circumstances the pay gap would also change. From the perspective of normative institutional elements and cultural-cognitive institutional elements, we test different institutional elements' influence.

As a normative institutional element, the level of media attention affects the social environment in which firms are located, which also has an important impact on the executive-employee pay gap (Burke,2021).

As previously explained, the executive-employee pay gap will garner widespread attention. From an institutional economics perspective, the media can draw substantial public focus to executives and directors, thereby exerting public pressure on firms (Kubin andVon Sikorski,2021). Under this pressure, firms will prudently plan executive compensation to mitigate reputation costs. Particularly when media reports pertain to executive compensation, generating significant social pressure, firms will adjust unreasonable compensation structures to some extent (Chen andZhang,2022). Additionally, the media plays a role in mitigating information asymmetry, effectively regulating corporate behavior. Historically, firms primarily disclosed information through financial statements and audit reports, which, laden with professional jargon, could be misunderstood by general information users. With the rapid advancement of information technology, news media has become more standardized (Zhanget al.,2023b). Reports on listed companies enable information users to accurately comprehend necessary information. Furthermore, media coverage of firms serves as a form of external oversight. The emergence of social media has expanded channels for information exchange between firms and the outside world (Heet al.,2024). External stakeholders now access real-time firm information through social media, exerting oversight on executives. Frequent media reports on listed companies attract public attention, prompting firms to prioritize information disclosure, which further reduces information asymmetry. Based on this analysis, Hypothesis 2 is proposed:

Hypothesis 2: The positive U-shape relationship between political connection and the executive-employee pay gap could be smoother with the influence of media attention.

As a cultural-cognitive institutional factor, the proportion of CEOs with overseas experience influences firms' internal governance, which in turn significantly affects the executive-employee pay gap (Caoet al.,2024). From a social capital perspective, CEOs with overseas experience possess unique social and skill capital. Their international experience enables them to establish valuable social networks (Xu andHou,2024), although they may lack proficiency in navigating certain Chinese contexts, particularly interactions with the government. Thus, in addition to a firm's level of political connection, the international experience of its CEO also plays a role in shaping the pay gap.

According to institutional economics, an organization comprises numerous unique resources, and a firm's reliance on these resources influences its behavior and strategy. CEOs with overseas experience bring irreplaceable skills (Le andKroll,2017). Additionally, their international experience confers competitive advantages on the company, enhancing the value of executives (Xu andHou,2024). A higher proportion of overseas CEOs correlates with greater knowledge of the company and industry, necessitating higher executive pay to attract and retain talent. Furthermore, valuable social capital boosts executives' bargaining power in the labor market. In China, political connections are crucial for listed companies to secure resources. A high proportion of overseas CEOs may struggle

with complex political ties. As corporate political connections grow in number and complexity, CEOs must handle more information and tasks. Consequently, executives with more overseas experience may be less adept at managing these challenges. Based on this theoretical analysis, we propose another hypothesis:

Hypothesis 3: A high percentage of CEO's overseas experience could relieve the U-shape relationship that political connection on the executive-employee pay gap, thus, indirectly narrowing the pay gap.

According to the above analysis and the institutional theory, the influence mechanism of political connection on the executive-employee pay gap is shown in **Figure 1.**
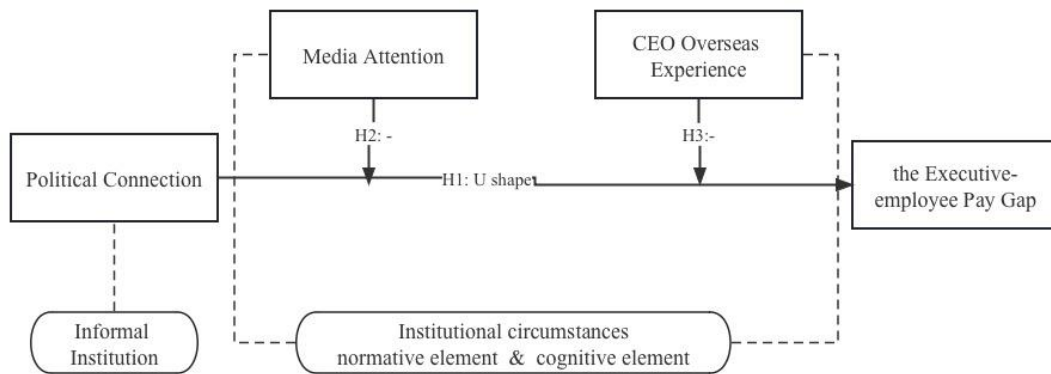
Figure 1. The influence mechanism of political connection on the executive-employee pay gap.

3. Method

3.1. Sample Design and Data Collection

We selected A-share listed companies spanning the years from 2010 to 2021 for our analysis, since 2010 was the time when 'Management Measures for Salary Review of Central Financial Firm Leaders' was released[1], and thus executives' compensation is regulated by the government. Next, we excluded financial firms and ST & PT firms. Then, missing data was also eliminated. Finally, we got 23,563 firm-year observations.

Our data came from multiple sources. First, to measure the political connection, we got the names of all A-share list company's executives from annual reports, then googled their now and used political status, also, we used the detailed and overall pay data to calculate the executive-employee pay gap. Secondly, the provincial economic data utilized in our study was sourced from the National Bureau of Statistics of China (NBS). Thirdly, we obtained additional corporate statistics from the Chinese Securities Market and Accounting Research (CSMAR) database and the Chinese Research Data Services Platform (CNRDS).

Table 1 presents the descriptive statistics and correlation matrices of the variables. As can be seen, the average executive-employee pay gap is 13.121, with a maximum of 15.32 and a minimum of 10.297, meaning that the executive-employee pay gaps in the samples are generally at an average level. In our sample, approximately 31.99% of the observations are influenced by political connections, and the mean of PCLevel is 1.006, revealing that firms that own high political connections are not rare. Our samples cover 33% state-owned firms, which is consistent with Chinese characteristics, and thus we made the heterogeneity test below.

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[1] After the promulgation of this policy in 2010, the Ministry of Finance and the government began to conduct inspections on the compensation management of corporate heads.

3.2. Measurement of Variables

3.2.1. Dependent variable

We measured the *executive-employee pay gap* by using the average compensation of the top three executives minus the average employee compensation (Shengbao,2014), executives account for boards and top executives, and employees represent other staff. Further, we take the natural logarithm of the above and form the executive-employee pay gap to eliminate the impact on the dimension of the pay gap and thus make the statistic distribution more normal.

3.2.2. Independent variable

If the executives have been or are currently serving as a Party representative, a deputy to the People's Congress, or a member of the CPPCC, then the firm can be described as own political connection(Jianjun and Zhixue, 2005, Wenfeng et al.,2008). More precisely, we measured the *PCLevel* according to the four grades of political status and political connection (Schoenherr,2019, Zhenget al.,2015): we marked *PCLevel* as 1 when political connection is at the district and county level, marked *PCLevel* as 2 when political connection is at the city level, marked the value of *PCLevel* as 3 when political connection is at the provincial level, marked the value of *PCLevel* as 4 when political connection at the national level, and when the firm has no political connection, marked the *PCLevel* as 0.

3.2.3. Moderating variables

We measured *media attention* by using the total number of online news and offline news which included statements about the companies (Zyglidopouloset al.,2012). Also, we defined the variable *CEO overseas experience* as the percentage of CEOs who have overseas working and/or studying (Conyonet al.,2019).

3.2.4. Control variables

Apart from regulative, normative, and cognitive institutional elements, related activities and resources are also included in the whole institutional synthesis (Scott,2013). As for activities and resources, there are three main dimensions: corporate structure, corporate governance structure, and corporate performance. As for corporate structure. *Company size* is the most indispensable (Conyonet al.,2019), and *company growth* (Konget al.,2023). Other basic characteristics of firms like the *asset-liability ratio* and the *years*, *state-owned firms* have a strong preference for fairness (Lianshenget al.,2010, Konget al.,2023).The second is the corporate governance structure. We choose the *separation rate of two rights* (Blagoevaet al.,2020), the *proportion of independent directors* (Konget al.,2023), the *shareholding ratio of major shareholders* (Sarhanet al.,2019). The last is corporate performance (Conyonet al.,2019).

Table 1. Descriptive statistics.

Category	Variables	Specific Measurement	Obs	Mean	S.D.	Min	Max
Dependent variable	Executive-employee pay gap	Inner pay gap	23563	13.121	0.876	10.297	15.32
Independent variable	PCLevel	Political connection level	23563	1.006	1.556	0	4
	PC	Political connection	23563	0.3199	0.4665	0	1
Moderating variables	Media attention	Total number of news	23563	1371.314	14636.258	2	924075
	CEO overseas experience	(number of overseas experience CEOs)/ (number of total CEOs)	23563	0.078	0.087	0	0.412
Control variables: corporate structure	Size	ln(asset+1)	23563	22.26134	1.43812	14.75859	30.8672
	Growth	Sustainable Growth Rate (SGR)	23563	0.011	3.701	-494.745	98.694
	Lev	Total Debts/ Total Assets (Debt ratio)	23563	0.451	0.563	0.008	63.971
	ListAge	Current Year - Establishment Year + 1	23563	17.463	6.04	1	53
	SOE	If it is state-owned, SOE=1; or =0.	23563	0.33	0.47	0	1

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	Sep	Degree of separation of ownership and control (SEP)	23563	4.743	7.567	-69.493	59.45
Control variables: corporate governance structure & corporate performance	Indep	Proportion of independent directors	23563	0.376	0.057	0	0.8
	First	The shareholding ratio of the largest shareholder	23563	34.486	14.947	2.197	89.99
	Profit	Net profit	23563	7.497e+08	5.149e+09	-6.874e+10	2.692e+11
Control variables: Fixed effect	Industry	Industry fixed effect	23563	4.836	3.547	1	19
	Year	Year fixed effect	23563	2015.864	3.248	2010	2021

3.3. Empirical Model and Estimation Technique

The descriptive statistics alone fail to reveal the correlation between political connections and the executive-employee pay gap; therefore, we conducted additional tests to identify the most suitable empirical model.

First, from the perspective of the average pay gap, just as shown in **Figure 2.**, the executive-employee pay gap has shown a tremendously continuous expansion till now, meaning that it is still indispensable for the government to narrow the pay gap. Second, we used a bar chart to plot the average executive-employee pay gap at each level of political connection in **Figure 3.** and found that the pay gap showed a trend of first decreasing and then increasing with the strengthening of political connection, we logarithmically processed the dependent variable, which does not change the nature and correlation of the data, but expands the scale of the variable, making the graph more intuitive.
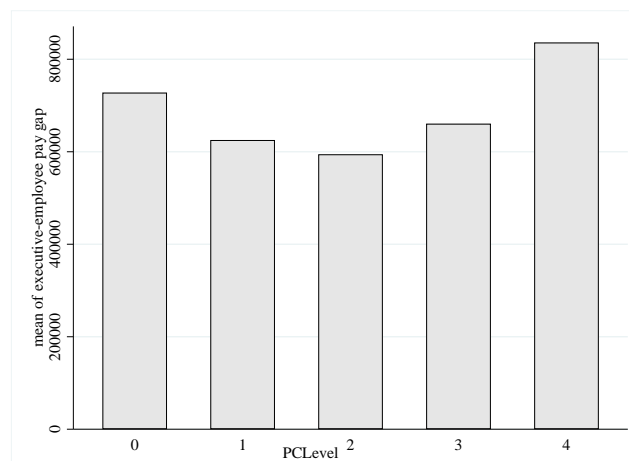
Figure 2. Time linear of pay gap.
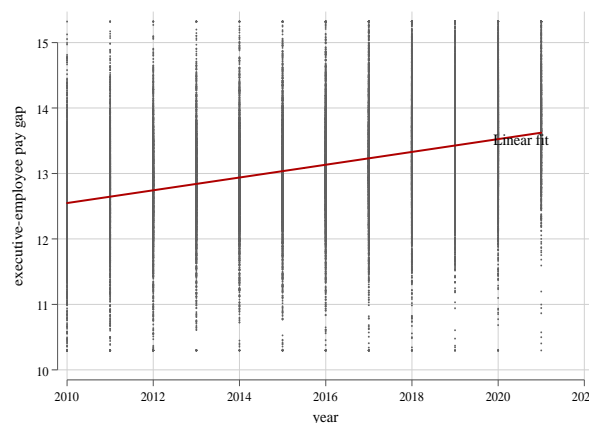
Figure 3. Bar chart of the mean pay gap.

To more precisely choose whether linear or quadratic fitting, we set up model (1) to test the best-fitted relationship.

$$Gap_{i,t} = \beta_0 + \beta_1 * PCLevel_{i,t} + \beta_2 * PCLevel_{i,t}^2 + \sum Controls_{i,t} + \sum Ind_i + \sum Year_t + \varepsilon_{i,t} \qquad (1)$$

4. Result

4.1. Main effect

We present our findings in Table 2, where column (1) presents the results with only the independent variable, and column (2) incorporates control variables. Additionally, columns (3) and (4) analyze the quadratic term.

In both columns (1) and (2), we observe a positive correlation between the degree of political connection and the executive-employee pay gap. However, upon including control variables in column (2), this correlation becomes statistically insignificant. This raises the question of whether political connections indeed contribute to widening the pay gap.

Table 2. The influence of political connection on the executive-employee pay gap.

	(1)	(2)	(3)	(4)
PCLevel	0.031**	0.003	-0.153***	-0.080***
	(0.013)	(0.007)	(0.021)	(0.016)
PCLevel²			0.050***	0.023***
			(0.008)	(0.006)
Size		0.287***		0.285***
		(0.014)		(0.014)
Growth		0.001		0.001
		(0.001)		(0.001)
Lev		-0.070***		-0.070***
		(0.008)		(0.008)
ListAge		0.000		0.000
		(0.001)		(0.001)
Sep		0.005***		0.005***
		(0.001)		(0.001)
Indep		-0.413***		-0.413***
		(0.138)		(0.141)
First		-0.002		-0.002*
		(0.001)		(0.001)
SOE		-0.180***		-0.176***
		(0.031)		(0.032)
Profit		-0.000		-0.000
		(0.000)		(0.000)
_cons	13.090***	6.990***	13.103***	7.042***
	(0.013)	(0.275)	(0.012)	(0.283)
Year	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
Obs	23,563	23,563	23,563	23,563
R-squared	0.1694	0.3149	0.1693	0.3158
Utest			5.22***	3.25**
Extreme point			1.529008	1.756701

*Notes：***P<0.01，** P<0.05，* P<0.1*

Thus, we made further analysis and found that just as columns (3) and (4) show, the square term of corporate political connection is significantly positively correlated with the executive-employee pay gap, thus, it can be

inferred that there is a positive U-shaped relationship between the degree of corporate political relevance and the pay gap. After adding the control variables, just as the model (2) represents, columns (4) show that the coefficient of PCLevel[2] reduced to 0.023 but still significant at 1%. R-squared shows a deep rise from 0.1693 to 0.3158, which means that the fit degree of the model has been greatly improved. Some people may doubt that the significance of the quadratic coefficient of regression is not a sufficient condition to ensure the existence of a U-shaped relationship.

Referring to the test method of the U-shaped relationship used (Lind andMehlum,2010), the "Utest" command of STATA is used to further detect the curve effect. After "Utest", columns (3) and (4) have both verified that the nonlinear relationship exists. Meanwhile, in **Figure 4.**, We can find that, firstly, the U-shape is significantly positive, which is consistent with the theoretical analysis above; secondly, when the political connection is 0 and 4, the slope of the function is steep; thirdly, the extreme point is clearly in the range [0,4]. Therefore, the U-shaped relationship of political connection affecting the executive-employee pay gap is valid.

Above all, hypothesis 1 is verified.

Further, the extreme point is 1.529 in the benchmark fixing effects regression, then moved to 1.757 after adding the control variables. Both extreme points are located in the range of 1 to 2, representing a reality that when the company's political status is beyond the district level and below the city level, the executive-employee pay gap will be minimized, and this level is the nearest to common prosperity. Also, we suppose that with political connections dramatically increasing and even beyond the city level, the pay gap would also increase rapidly since political rent and management power could cover the influence of government leadership.
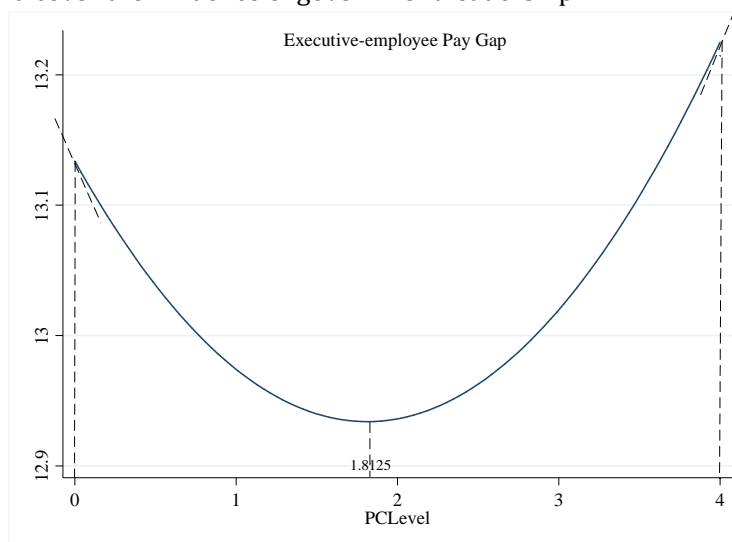
Figure 4. qfit U-shape.

As guessed above, control variables also have an important impact on the pay gap. The influence of variables like Size, Growth, Lev, ListAge, Indep, First, and SOE on the executive-employee pay gap in Table 2 confirms the views mentioned above. It Is easy to understand that executives in large-scale and high-growth companies get paid more, and the investment difference between executives and employees is larger, which usually leads to a larger salary difference between executives and employees. What's surprising is that the correlation data shows that when the separation degree of two rights is higher, the executive-employee pay gap is larger and the relationship is significant at 1%. Unlike common sense, firms do not narrow the pay gap due to the decentralization of power caused by the separation of power. On the contrary, the compensation distribution system is distorted in a certain sense. Behind the decentralization of power, firms often ignore basic guarantees such as fairness out of their own operational needs. Stata also shows that after the decentralization of power in listed companies, the compensation distribution of firms still flows more to the senior rather than the basic staff. In addition, the research results show

that the higher the net profit of the firm, the smaller the pay gap, which is inconsistent with the above inference. However, considering that the coefficient is not significant, it cannot completely negate the previous statement.

4.2. Endogeneity test

4.2.1. Variable omitted and reverse causality

In this study, we investigate the impact of political connections, considered as both a regulatory and informal institution, on the executive-employee pay gap from an institutional economics perspective. To isolate this effect, we control for various institutional factors, including corporate structure, governance structure, and performance. Nonetheless, acknowledging the potential influence of unmeasurable factors such as subjective judgments and emotional elements, we cannot definitively rule out the presence of omitted variables that might affect our regression outcomes.

To address this concern, we employ an analysis of missing variables, a methodology that assesses the impact of unobservable omitted variables on our estimation results (Cinelliet al.,2020). This analysis involves selecting a contrast variable and utilizing the 'Sensemakr' command in STATA. As illustrated in **Figure 5.**, the contour lines represent the regression coefficient values, with the red line indicating a coefficient of zero. The four data points located at the lower left of the coordinate axis correspond to scenarios without any contrast variable, with missing variables of equal intensity to the contrast variable, twice the intensity, and three times the intensity, respectively.

Our findings reveal that, except for the variable 'company Size' at three times its intensity, all other instances of 'Size,' as well as 'Growth,' 'Lev,' 'ListAge,' 'Sep,' 'Indep,' 'First,' 'SOE,' 'Profit,' and other control variables, exhibit data points that lie to the left of the red zero line. This indicates that even when missing variables of up to three times the intensity are introduced, the estimated coefficients from our benchmark regression remain unchanged. Consequently, we conclude that omitted variables do not contribute to endogeneity in our model.
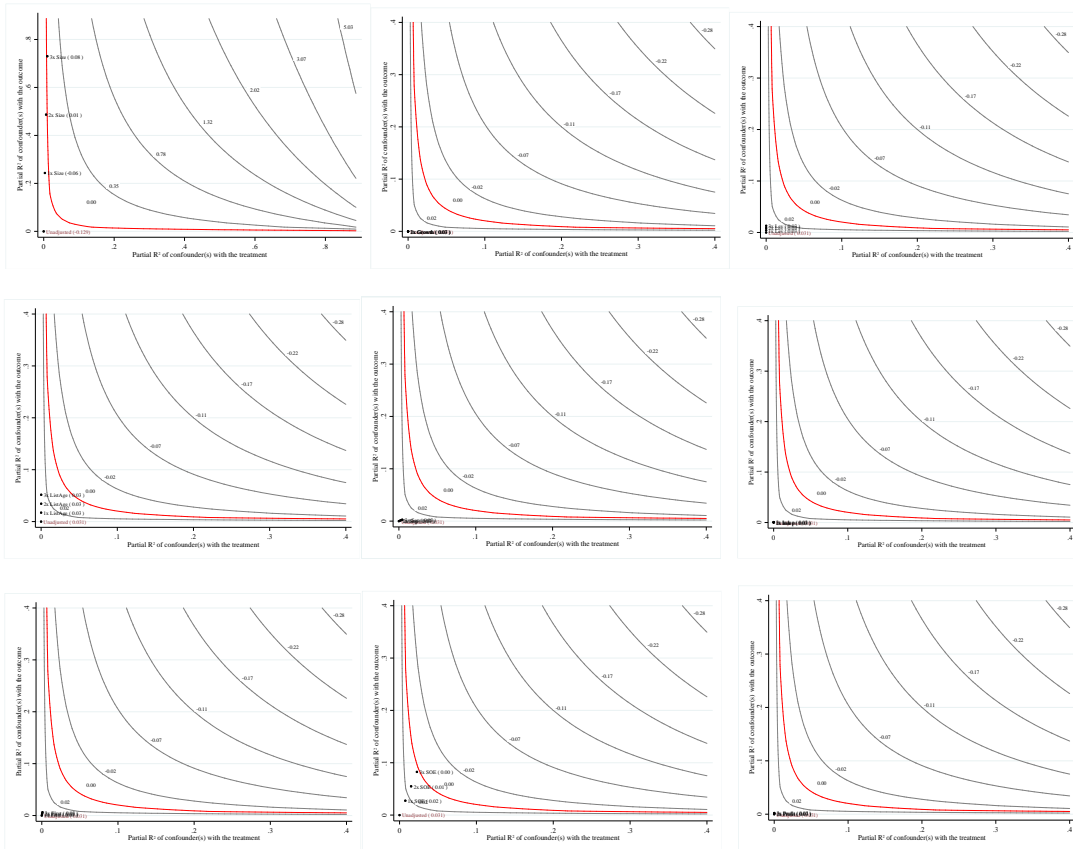

Figure 5. Sensitivity analysis of missing variables: control variables.

Although the endogeneity caused by the explanatory variable omitted is excluded, there may be simultaneity which may affect the estimated results, which is also defined as reverse causality. Therefore, we take the level of political connection as the explained variable to investigate whether the executive-employee pay gap has a reverse causal effect on it, and the pooled OLS and the fixed effect panel model are used for regression test respectively, outcomes are shown in Table 3. The results of column (1) and column (2) both show that the executive-employee pay gap influence on political connection is not significant, so the endogenous problem induced by reverse causation can also be excluded.

Table 3. Reverse causality test.

	(1) OLS	(2)fixed effect
Pag Gap	0.014	0.014
	(0.167)	(0.032)
Control Variables	Yes	Yes
_cons	-1.701***	-2.608***
	(0.233)	(0.730)
Year	Yes	Yes
Industry	Yes	Yes
Obs	23,563	23,563
R-squared	0.0585	0.0585

*Notes：***P<0.01，***P<0.05，* P<0.1*

4.2.2. Measurement error

The political connection cannot be measured by precise variables, nor is it the actual value that exists in the real world; thus, we use the above proxy number to represent it. Whereas this method may lead to discrepancies between the values of explanatory variables and the real statistics. Therefore, we use the instrumental variable method and 2sls method to investigate the existence and influence of endogeneity. First, we use the natural logarithm of the average compensation of corporate directors and supervisors to conduct 2sls regression (Yan Xuet al.,2019). Then, we use the average number of political associations of local firms as an instrumental variable for regression (WANG andSHENG,2012). The results are shown in Table 4. In column (1), the Under-identification test result was 85.774, and the p-value was 0; The value of the Weak-identification test is 83.336, which is greater than the value of 10% maximal IV size: 16.38, it shows that the average salary of directors and supervisors is strongly correlated with the political association of firms and is not a weak instrumental variable. In column (2), the results of instrumental variable regression support the above hypothesis and are still significant at the 1% level. Above all, we can infer that though we cannot measure political connection precisely, measurement errors in explanatory variables do not lead to endogeneity.

Table 4. Measurement error test.

	(1)2sls	(2)IV
City.PCLevel		-0.080***
		(0.016)
City.PCLevel^2		0.022***
		(0.005)
PCLevel	-39.168***	
	(4.206)	
PCLevel^2	10.245***	
	(1.099)	
Control Variables	Yes	Yes
_cons	20.939	7.041***
	(1.430)	(0.283)

Year			Yes		Yes
Industry			Yes		Yes
Obs			23,557		23,563
R-squared		Kleibergen-Paap rk LM		Cragg-Donald Wald	0.3158
			85.774	83.336	

*Notes：****** P<0.01，** P<0.05，* P<0.1*

4.3. Robustness & Heterogeneity tests

To further verify whether the above conclusions are robust or not, we conducted three robustness tests.

First, we simulate the model further with three times, as shown in column (1), the cubic term of political correlation is 0.004 but not significant, even the fitting degree of the model does not get better, so we can conclude that the nonlinear relationship is quadratic rather than cubic.

Second, since the proportion of equity payment in executive compensation in China is rare, we exclude equity payment in the compensation calculation when measuring the pay gap. To avoid the possible impact of equity payment on the regression results, we add management shareholding in defining the executive-employee pay gap. Though adding equity compensation and regression results are shown in column (2), the coefficient of political connection square term is 0.197 and still significant at 1% level.

Third, we substitute the proportion of party executives for political connection for further testing (Lianfuet al.,2013).

Fourth，we remove the data before 2015, and samples before the second "salary limit order", since this policy narrowed the pay gap significantly. By shortening the time span, we further investigate whether the original conclusions in recent years still hold. As can be seen in columns (3) and (4), the U-shape relationship remains positive and significant.

There exists a special component of China's listed companies: state-owned firms (Wanet al.,2024). The government issued a "salary limit order" and stipulated that state-owned firms should follow the implementation, whereas most studies believe that the policy did not achieve the expected goal (Suet al.,2023). So, would the political connection be the same for the state-owned firms?

Thus, we divide the sample into two groups according to state-owned firms and non-state-owned firms, results shown in columns (5) and (6). Results show that relationships are both U-shape and significant at 1%. What surprises us is that state-owned firms are even more sensitive than non-state-owned firms, though state-owned firms seem to be inherently politically connected, slight changes may still lead to a huge influence in the pay gap (Table 5).

Table 5. Robust & Heterogeneity Tests.

	Robust Tests				Heterogeneity Test	
	(1)	(2)	(3)	(4)	(5) SOE	(6) nonSOE
PCLevel	-0.043	-0.448***	-0.031**	-0.086**	-0.158***	-0.059***
	(0.036)	(0.160)	(0.031)	(0.034)	(0.039)	(0.011)
PCLevel^2	-0.003	0.197***	-0.029***	0.024**	0.054***	0.013***
	(0.023)	(0.050)	(0.023)	(0.011)	(0.010)	(0.003)
PCLevel3	0.004					
	(0.004)					
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
_cons	7.041***	7.361***	7.432***	7.240***	7.400***	6.077***
	(0.283)	(0.533)	(0.533)	(0.254)	(0.508)	(0.276)
Year& Industry	Yes	Yes	Yes	Yes	Yes	Yes
Obs	23,563	23,563	21,563	13,251	7,784	15,778
R-squared	0.3158	0.0622	0.2012	0.2643	0.3366	0.3361

*Notes：****** P<0.01，** P<0.05，* P<0.1*

4.4. Additional analysis

To test the regulating effects of the normative institution and cultural-cognitive institution on the U-shaped relationship, we adopted the test procedure proposed by HAANS (Haanset al.,2016), and constructed the following models (2) and (3).

$$Gap_{i,t} = \gamma_0 + \gamma_1 * \text{PCLevel}_{i,t} + \gamma_2 * \text{PCLevel}_{i,t}^2 + \gamma_3 * \text{C}_{\text{Media}_{i,t}} * \text{PCLevel}_{i,t}$$
$$+\gamma_4 * \text{C}_{\text{Media}_{i,t}} * \text{PCLevel}_{i,t}^2 + \gamma_5 * \text{C}_{\text{Media}_{i,t}} + \sum Controls_{i,t} + \sum Ind_i + \sum Year_t + \varepsilon_{i,t} \qquad (2)$$

$$Gap_{i,t} = \alpha_0 + \alpha_1 * \text{PCLevel}_{i,t} + \alpha_2 * \text{PCLevel}_{i,t}^2 + \alpha_3 * \text{C}_{\text{CEO}_{i,t}} * \text{PCLevel}_{i,t}$$
$$+\alpha_4 * \text{C}_{\text{CEO}_{i,t}} * \text{PCLevel}_{i,t}^2 + \alpha_5 * \text{C}_{\text{CEO}_{i,t}} + \sum Controls_{i,t} + \sum Ind_i + \sum Year_t + \varepsilon_{i,t} \qquad (3)$$

Column (1) of **Table. 6.** verifies the regulating effect of media attention. The coefficient of political connection square is positive and significant (γ_2=0.022, p<0.01), the coefficient of the interaction term between media attention and political connection square is negative and significant at the level of 1% (γ_4=-6.18e-07, p<0.01), and the inflection point moves to the left ($\gamma_1\gamma_4$-$\gamma_2\gamma_3$<0) with the increase of media attention. The above two conditions are satisfied, and hypothesis 2 gets the verification. Column (2) of **Table. 6.** verifies the regulating effect of CEO overseas experience. The coefficient of political connection square is still positive and significant (α_2=0.021, p<0.01), the coefficient of the interaction term between CEO overseas experience and political connection square is negative and significant at the level of 10% (α_4=-0.094, p<0.1), and the inflection point moves to the right ($\alpha_1\alpha_4$-$\alpha_2\alpha_3$>0) with the increase of media attention. Thus hypothesis 3 is verified.

Media attention and CEO overseas experience both could smooth the positive U-shape. However, the CEO's overseas experience itself requires firms to spend more on salaries, greatly increasing firms' costs. Above all, though it can be found that higher media attention and a higher percentage of CEO overseas experience are conducive to smoothing the relationship between the pay gap and the executive-employee pay gap, we should consider more about how to enhance media attention rather than promote CEO overseas experience.

With the convenience of information dissemination, types of media are also diversified, and the different media types may have different effects on the U-shape. Besides, positive media attention can help firms establish a good image, neutral media attention can objectively convey corporate information to the audience and reduce information asymmetry, but negative media attention will bring public pressure on firms and then affect their activities. Then, how does the difference in media types affect the pay gap? What kind of emotional media attention can indeed reduce the pay gap?

Just as discussed above, according to the media communication channels, we divided into traditional newspaper media and odd network media (Shehata andStrömbäck,2021). Second, since there is obvious information asymmetry between the two sides of firm information disclosure when reporting news, the media will modify and delete the original information to present the emotional information, the media attention will inevitably own a certain emotional tendency, which can be divided into positive attention, neutral attention, and negative attention categories (Yiend,2010).

Thus, we propose the models below to make further analysis.

$$Gap_{i,t} = \gamma_0 + \gamma_1 * \text{PCLevel}_{i,t} + \gamma_2 * \text{PCLevel}_{i,t}^2 + \gamma_3 * \text{Emotion}_{i,t} * \text{PCLevel}_{i,t}$$
$$+\gamma_4 * \text{Emotion}_{i,t} * \text{PCLevel}_{i,t}^2 + \gamma_5 * \text{Emotion}_{i,t} + \sum Controls_{i,t} + \sum Ind_i + \sum Year_t + \varepsilon_{i,t} \qquad (4)$$

$$Gap_{i,t} = \gamma_0 + \gamma_1 * \text{PCLevel}_{i,t} + \gamma_2 * \text{PCLevel}_{i,t}^2 + \gamma_3 * \text{Types}_{i,t} * \text{PCLevel}_{i,t}$$
$$+\gamma_4 * \text{Types}_{i,t} * \text{PCLevel}_{i,t}^2 + \gamma_5 * \text{Types}_{i,t} + \sum \text{Controls}_{i,t} + \sum \text{Ind}_i + \sum \text{Year}_t + \varepsilon_{i,t} \tag{5}$$

Table 6. Additional analysis.

	Model (3)	Model (4)	Model (5) Emotional Media Attention			Model (6) Media Types	
	(1)	(2)	(1) Positive	(2) Neutral	(3)Negative	(1)Newspaper	(2)Network
PCLevel	-0.077***	-0.076***	-0.082***	-0.082***	-0.086***	-0.081***	-0.075***
	(0.016)	(0.015)	(0.016)	(0.016)	(0.019)	(0.016)	(0.022)
PCLevel^2	0.022***	0.021***	0.023***	0.023***	0.024***	0.023***	0.021**
	(0.006)	(0.005)	(0.006)	(0.006)	(0.007)	(0.006)	(0.008)
PCLevel*	2.50e-06***		5.38e-06***	6.26e-06***	0.000*	2.27e-06***	-0.000
C_Media	(0.000)		(1.37e-06)	(1.50e-06)	(0.000)	(6.57e-07)	(0.000)
PCLevel^2*	-6.18e-07***		-1.35e-06***	-1.55e-06***	-7.49e-06	-5.62e-07***	4.00e-06
C_Media	(0.000)		(3.85e-07)	(4.35e-07)	(4.51e-06)	(1.91e-07)	(6.53e-06)
PCLevel*		0.315*					
C_CEO		(0.155)					
PCLevel^2*		-0.094*					
C_CEO		(0.052)					
C_Media	-6.44e-07		-1.08e-06	-2.46e-06	-2.30e-06	-9.24e-07*	0.000***
	(0.000)		(9.75e-07)	(1.25e-06)	(5.53e-06)	(4.98e-07)	(0.000)
C_CEO		1.658***					
		(0.083)					
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
_cons	7.037***	7.365***	7.040***	7.037***	7.047***	7.038***	7.246***
	(0.281)	(0.305)	(0.282)	(0.281)	(0.278)	(0.282)	(0.261)
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	23,563	23,563	23,563	23,563	23,563	23,563	23,563
R-squared	0.3160	0.3407	0.3159	0.3160	0.3160	0.3160	0.3189
Utest	3.16**	3.21**	3.26***	3.26***	2.90***	3.27***	1.98**
Extreme point	1.74903	1.775483	1.762263	1.76162	1.768482	1.760441	1.797748

*Notes： *** P<0.01， ** P<0.05， * P<0.1*

In Table 6, model (5), we can draw the conclusion that compared with negative media attention, positive media attention and neutral media attention have a more significant impact on the U-relation. Positive attention is an appreciation of the firm; thus, firms have been affirmed to have greater motivation to narrow the pay gap to continue to maintain this halo. Neutral attention refers to reports without clear emotional inclination, which can objectively convey corporate information, also diffusion reduces the asymmetry of information, improves the exposure of firms, and effectively improves the quality of information disclosure through the function of an information intermediary. Neutral attention also indicates the uncertainty of the media's attitude toward firms, and the management of firms will disclose small salary gaps to the outside world for the purpose of career development to gain media recognition. Negative attention sends an unfavorable signal and is a condemnation of corporate misconduct or problems. Compared with negative attention, positive attention and neutral will bring more pressure on firms, thus narrowing the pay gap.

From another sight, since newspaper media has been playing an irreplaceable value in information dissemination, its information is subject to more control and supervision. The quality of information disclosure is guaranteed. The data from column (1) of Model (6) show that the supervision effect of paper media reports is effective in the executive-employee pay gap. The coefficient of the interaction term between newspaper media and political connection square is negative and significant at the level of 1% (-5.62e-07,), and with the increase of newspaper media attention, the executive-employee pay gap decreased. Though the rapid development of the Internet has made the emerging network media a much more important channel for corporate information disclosure, the relatively loose regulatory environment of the Internet has not only reported from the official background of the government but also voices from the people, those all make network media reports extensive

and pluralistic. Column (2) of Table 6 in Model (6) shows that the supervision effect of network media reports is not effective, whereas the coefficient of the interaction between network media and the executive-employee pay gap is positive and significant.

Above all, we can draw the conclusion that though the Internet era has made, it much more difficult to distinguish between true and false information, these all make newspapers still hold an authoritative position.

5. Discussion

5.1. Theoretical contributions

From a political connection perspective, this study investigates how informal institutions affect the executive-employee pay gap. After confirming a U-shaped relationship, we delve into the formation of this U-shape and its extreme point. We also introduce institutional contingencies, comprising normative and cognitive elements, which we measure using media attention and CEO overseas experience, respectively. Our results indicate that both media attention and CEO overseas experience can flatten the U-curve, making them effective strategies for narrowing the pay gap. Given the high cost of hiring CEOs with overseas experience, we suggest prioritizing the enhancement of media attention. In the current Internet era, we further differentiate media attention into two categories: media types (traditional newspaper media and online media) and emotional media attention (positive, neutral, and negative).

All the tests and findings contribute in three significant ways.

First, although no unified conclusion has been reached on the measurement of the rationality and fairness of pay, existing studies have verified that the pay gap representing fairness is usually a more concerned issue within corporations (Hoet al.,2024). As the most sensitive part, the pay gap of staff at different levels within a firm is a typical internal problem (Konget al.,2023). However, we innovatively discuss the U-shape relationship between the political connection and the executive-employee pay gap from the perspective of informal institutions, instead of studying from the perspective of internal firms. Further, we study the influence of the institutional environment on the U-shape relationship from two aspects, which are normative and cultural-cognitive elements.

Second, we verified the positive U-shape relationship between political connections and the executive-employee pay gap. In China, there exists a widespread phenomenon of political connectedness (Zhanget al.,2023a). Political connection, being a widespread informal and regulative institution, plays an important regulatory role in the operation and growth process of firms (Zhanget al.,2023a). Political connection enhances the degree of embedding of government in firms, promotes the communication of various national policies to firms, and ensures the implementation of decisions and deployments, promotes the infusion of political culture into firms, thus when the government drives down the executive-employee pay gap the politically connected firms usually lead the way. However, it is inevitable that with the increase in political power and executive ability, firms need to pay more compensation accordingly (Al-Mohammadet al.,2022). In addition, we may overlook the rent-seeking caused by "government-business corruption". Now is in the initial development stage of China's market economy, also in the period of institutional transformation, during which market functions and the rule of law are not perfect enough (Xixiong；et al.,2020), then it occurs that certain government officials take advantage of policy loopholes, even put the rent-seeking behavior of power on firm restructuring to seek corruption. Besides, the extreme point counts of all the U-shape figures are in the range of 1 to 2, meaning that controlling the degree of political connection between the district level and the city level is the best, which could best balance between reducing the government-business corruption and giving play to the regulatory role of the government.

Third, we confirmed that both media attention and CEO overseas experience smooth the U-shaped relationship, indicating that normative and cultural-cognitive factors can narrow the executive-employee pay gap to some extent.

However, considering costs, it is more practical to focus on media attention rather than increasing the proportion of CEOs with overseas experience. Firstly, traditional newspaper media not only significantly smooths the U-shaped relationship but also substantially reduces the pay gap, whereas the impact of online media is less pronounced. Online media excels in immediacy, interactivity, and personalized information, enabling instant news publication and reader feedback. However, newspaper media offers unique advantages: it has high authority and credibility. As a long-standing traditional media form, it adheres to reporting standards and news quality, earning reader trust. Thus, despite online media's dominance, newspaper media provides in-depth reporting and reliable information, enhancing its regulatory role. Secondly, positive and neutral media attention have more significant negative moderating effects on the executive-employee pay gap compared to negative attention. Positive media attention conveys forward-looking information, bolstering the company's image and investor confidence. Neutral attention objectively discloses company information, increasing pay transparency and constraining salary distribution. Conversely, negative media attention highlights operational and management issues, but its impact is short-lived as companies quickly respond and negative reports are removed, resulting in minimal reduction in the pay gap.

5.2. Limitations

Two main limitations need further consideration.

First, we only made a preliminary analysis from the perspective of the political connection, revealing the influence of the informal institution, rather than laws or regulations, and further analysis of the influence in different institutional circumstances. Whereas the institutional environment covers a wide range of contents (North andInstitutions,1990), including cultural environment factors, trust environment factors, etc. We haven't analyzed in the wider scope mainly due to the lack of access to the relevant data, thus, to further enrichment and improvement, we can consider the influence of environmental factors. In addition, we just select the most representative characters to represent each institution rather than use a series of variables.

Second, we did not consider non-monetary compensation such as equity incentives for executives for the reason of China's low coverage ratio (Xixiong；et al.,2020). Thus, including equity incentives in future research is innovative and encouraged, and on this basis, we can study the impact of certain Chinese-style compensation on pay fairness. In addition, it is a common phenomenon in China that the executives own unimaginable hidden income that is not noted, then there may be another way that study excessive on-the-job consumption which could enrich the study of compensation.

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Conflict of interest

All the authors claim that the manuscript is completely original. The authors also declare no conflict of interest.

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