An empirical study from Chinese energy firms on the relationship between executive compensation and corporate performance

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ABSTRACT

Purpose: This study investigates the relationship between executive compensation and firm performance in Chinese new energy companies.

Design/Methodology/Approach: The financial data of 122 Chinese-listed energy companies from 2010-2021 is selected for the empirical study.

Findings: Executives' monetary compensation and executives' shareholding ratio are positively related to corporate performance. Overseas background and financial background play a moderating role in the effect of executives' monetary compensation and their shareholding ratio on corporate performance.

Conclusion: The fact that executives' salaries and shareholding both have a significant positive impact on business performance demonstrates the effectiveness of pay incentives and equity-based incentive. The research additionally demonstrates that an executive's financial knowledge and experience in other countries alter the impact of cash and equity pay on company performance.

Research Limitations/Implications: The research excludes a large number of key energy businesses, especially rising ones in the clean energy sector, as it solely targets publicly traded businesses for ease of data collection.

Practical Implications: The survey results help to further understand the key factors of compensation incentives for managers in energy companies and are informative for the effectiveness of compensation incentives in energy companies.

Contribution to Literature: This study provides empirical results on the impact of managerial compensation on firm performance in energy firms in the Chinese context, adding a new step to the existing literature.

Keywords: *Corporate performance, Energy companies, Financial background, Managerial equity compensation, Managerial monetary compensation, Overseas background.*

1. INTRODUCTION

There is a substantial disparity in executives' salaries and average wage levels across established and developing countries, according to surveys done in 22 different countries. The United States, India, the United Kingdom, South Africa, the Netherlands, Switzerland, Canada, Spain, Germany, and China are among the top ten countries with the greatest pay differences between executives and lower- to mid-level workers. This demonstrates that executives in these nations are paid much more than their direct reports. The income ratio between the chief executive officer of a big U.S. corporation and the typical worker has surged from 41:1 in 1980 to over 300:1 at the moment, following Forbes Magazine's 2017 study headlined "Best Executive for a Week Earn Less Than a Typical Worker Does in a Year." Every big U.S. company's executives earn a median of $14.1 million per year, while some make hundreds of millions (Anginer, Liu, Schipani, & Seyhun, 2020). The wealth disparity is significantly smaller in Scandinavian nations, yet Swedish executives still make 60 times as much as the typical worker, or around $8.5 million. According to Forbes' 2016 list of the 25 highest-paid executives' in Russia, executives in the highest positions earn an average of $6.1 million a year, compared to the $8,050 that the typical Russian employee makes. In Mexico, it takes just four days for a manager to make the equivalent of a worker's yearly wage, compared to just

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eight days in Brazil. The extravagant executive salaries that are commonplace across the world have the potential to incite public discontent.

Executive compensation is a controversial topic of discussion. Some believe that high executive salaries drain profits and inhibit company growth, while others assert that raising executive compensation has a favorable impact on business success. According to the theory of agency, executive pay, especially when it is linked to efficiency, could mitigate problems with agency by putting managers' interests in alignment with those of shareholders (Huang, Huang, & Shih, 2012). A favorable correlation between executive salary and business success has been shown in several studies. However, empirical research has also shown that there is either no association between administration and performance or a small negative correlation.

The developing energy industry has grown more important in the past few years. China's new energy sector has expanded significantly in spite of intense international competition. However, compared with their Western counterparts, many Chinese new energy enterprises offer worse governance. This research intends to investigate the connection between executives' salaries and corporate performance among the mentioned renewable energy companies, as corporate success is a crucial indication of business problems. This study aims to improve understanding of the critical elements influencing executive pay incentives in the energy industry by illuminating the connection between executive remuneration, competence, and profitability in energy companies. The results will provide insightful improvements to executive pay incentives in the energy industry.

This article contributes in several ways. To promote the creation of efficient incentives, it first tries to analyze the influence of executive remuneration on business performance within the energy industry. This study adds to earlier studies on Chinese energy corporations. Other topics, such as the conversion of renewable energy, have been the focus of certain research in the meantime. Previous studies on the link between executives' pay and company success have only looked at certain geographic areas. This research also seeks to confirm ideas drawn from relevant interdisciplinary theories. Divergent perspectives on executive pay are presented by these ideas, with some in favor of high salaries and others against them. According to the theory of agency, substantial remuneration motivates executives to work harder for the good of the company. The tournament hypothesis postulates that a greater wage disparity might lead to improved company performance. According to social network theory, companies should pay top wages to keep connected with executives, which would help them respond to crises and achieve long-term success. On the other hand, the relative deprivation hypothesis contends that a large wage disparity might encourage employee perceptions of injustice and impede the growth of a corporation. According to a political economy theory, earnings inequalities that are too great may encourage workers to resort to illicit methods to advance their careers. The hypothesis that holds for energy businesses having Chinese listings is the subject of this essay. The remaining portions of the essay are structured as follows: The relevant literature is reviewed in Section 2, the method is explained in Section 3, the outcomes are laid out in Section 4, and the investigation is wrapped up in Section 5.

2. REVIEW OF THE LITERATURE

Jensen and Meckling (1976) proposed the agency hypothesis to explain the relationship between executive salaries and corporate performance. In a variety of contemporary financial structures, the principal-agent relationship is prevalent (Ullah, Irfan, Kim, & Ullah, 2021). It stands for a contractual arrangement comprising information-asymmetrical transactions. The expenditures of an agency can be classified into three distinct categories. Firstly, the principal is responsible for paying the monitoring cost, which entails encouraging the agent to act in the principals' best interests. Secondly, the confidence-building expenses shouldered by the agent ensure that their actions do not have any adverse impact on the principal. Lastly, the residual loss resulting from the agent's decision-making. The difference between the agent's choice and the principal's decision, which both attempt to maximize utility while assuming equal knowledge and capabilities, corresponds to this loss in value.

In an expert context, owners often entrust professional managers with the management of their company. In this dynamic, the management plays the role of the intermediary, and the owner embraces the position of the principal. Agency theory emphasizes the significant role that knowledge asymmetry plays in this connection. The manager has extensive knowledge of the company's activities, but the shareholders have very limited access to such data due to the manager's direct managerial power and specialized expertise. This data imbalance makes it difficult for the shareholders to assess whether management is acting in their best interests. According to agent theory's rational economic man assumption, managers may put their interests (and those of shareholders) ahead

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of the company's (and shareholders') interests to advance their own. As a result, agency expenses rise. According to Davis, DeBode, and Ketchen Jr. (2013), executives look for more pay after acquisitions due to the greater responsibilities they take on inside the combined company.

Contractual arrangements that offer managers incentives are established to ensure that they act in the best interest of shareholders while lowering agency costs. By using a reward system to connect executives' compensation to firm achievement, shareholders frequently match the goals of both parties. Three components are commonly included in the executives' salaries. Cash payments come in three forms: first, perks including pensions, insurance, and other incentives; second, salary and year-end bonuses; and third, restricted stock and options. Every aspect is taken into account holistically by shareholders when drafting executives' remuneration agreements. Many businesses and enterprises have implemented equity incentives as a result of the development of the social economy, as they promote a true alignment of interests between management and the firm. However, the concept of agency is currently under fire from multiple scholars in the fields of accounting and governance. For instance, Ghoshal (2005) argues that the high number of fraud cases in recent years shows that the actual application of agency theory has difficulty attaining its stated objective of enhancing corporate governance.

The majority of studies have repeatedly demonstrated that salary incentives and business performance have a highly important positive link. Demirer and Yuan (2013), for instance, examined data from US restaurant companies from the turn of the nineteenth century to the start of the 21st century. According to their results, non-equity remuneration and incentives had a beneficial influence on the profitability of restaurant firms. Despite garnering little academic attention, non-equity remuneration often includes sizable pensions and deferred pay. The restaurant sector frequently employs long-term financial incentives to reward leaders for their accomplishments. Contrarily, the findings imply that monetary rewards may hurt the success of restaurant businesses. In a similar vein, Gregg, Jewell, and Tonks (2012) found that, based on their analysis of 350 member businesses, company size strongly affects executives' salaries. Despite receiving higher salaries than their counterparts in other industries, banking directors are not excessively compensated owing to the financial sector's typically low compensation-performance sensitivity. Furthermore, Kato, Kim, and Lee's (2007) analysis of 246 Korean-listed businesses revealed a strong and favorable correlation between executives' cash compensation and Korean stock market success. In the Chinese media sector, there is a favorable correlation between executive compensation levels and company performance. The positive relationship between management pay and business success is still visible, irrespective of the approach employed for assessing efficiency, including the total return on equity (Gill, 2014), Tobin's Q, or whole profit/total sales revenue (Ghodrati, Jabbari, & Esfandyari, 2014). Furthermore, research regularly finds a substantial positive association between leadership compensation and company performance, either comparing differences in management salaries across many levels (Lazear & Rosen, 1981) or simply looking at executives' salaries within businesses (Brass, Galaskiewicz, Greve, & Tsai, 2004). When granted more latitude, managers are more likely to practice excessive management. However, such discretionary conduct is limited when efficient pay agreements are implemented inside organizations, which considerably improves financial performance (Ozkan, 2011).

3. DATA, MODELS, AND METHODS

In 2010, the Chinese government recognized the new energy industry as a national strategic priority and implemented a range of regulations and favorable fiscal policies. Consequently, the new energy industry experienced rapid growth, making the subsequent decade a pivotal period for its development. Thus, this paper focuses on the period from 2010 to 2021 to analyze the trends and dynamics within the industry. Data for this study was sourced from the Guotaian database and specifically targeted Chinese A-share-listed companies operating in the new energy sector. To ensure data reliability, the following criteria were applied: (1) exclusion of ST* (Special Treatment) and ST (Special Treatment) enterprises; and (2) elimination of new energy firms with significant data deficiencies. Additionally, to mitigate the impact of outliers, the complete dataset underwent a 1% tailing process. As a result, a sample of 122 new energy enterprises with 1464 observations was obtained for analysis.

Tobin's Q and ROA (return on assets), two frequently used metrics, are used in this research to assess business performance. Indicating a company's profitability based on the worth of every asset it owns, ROA shows the net profit as a proportion of all its assets. Tobin's Q, however, determines the proportion between the market value of

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a company's stock and the replacement cost of the asset that it represents (Demirer & Yuan, 2013). The first equation explains that Tobin's Q (TQ) is determined using the CSMAR as follows: TQ is calculated as MV/(TA, INA, GW), where MV is the market value, which is calculated by dividing the share price by the number of existing common shares; TA is the book value of the company's total assets; INA is intangible assets; and GW is goodwill. These two metrics have been used often to evaluate business performance in literature. According to the literature (Lambert & Larcker, 1987), we employ the total asset margin ROA to assess a company's performance, and Tobin's Q is used to test for robustness.

Stock and monetary remuneration are generally the two main elements of executive compensation. The equity component represents the highest three executives' percentage ownership of the company's' stock, and the natural logarithm of their total monetary compensation serves as a measure of their total compensation. These measures allow for the calculation and comparison of the impacts of cash and non-monetary influences on company performance. According to the theory of agency, executives, working as agents, may tend to pride, which could end up in decisions that aren't best for their shareholders, the principals. High pay is seen as a way to lessen executives' incentives to take actions that may hurt the company and could reduce agency expenses (Jensen & Meckling, 1976). By bringing together the goals of executives and shareholders, equity incentives motivate executives to push themselves harder. Due to the tournament hypothesis, higher business performance may be a result of a widening pay disparity between executives and lower-level workers (Lazear & Rosen, 1987). According to social network theory, businesses should spend a lot of money trying to keep leaders who have extensive networks because they may bring a lot of value to the organization (Brass et al., 2004). Organizations all over the globe tend to mix salary incentives with equity incentives and other non-financial benefits in the current business environment. According to several academics, an executive salary improves company efficiency (Al Farooque, Buachoom, & Hoang, 2019). However, certain research has demonstrated conflicting results in particular nations and sectors (Gill, 2014), which cast doubt on the tenets of agency theory. According to critics of agency theory, the idea that managers are innately opportunistic and self-serving cannot be applied uniformly in all organizational and social situations. The following presumptions are laid out in the present investigation based on the analyses indicated above:

H1: The monetary compensation of executives is positively related to the performance of the company.

H2: The percentage of executive shareholding shows a positive relationship with corporate performance.

Cao et al. (2022) found that executives with an international background deserve better pay since they are seen as having more resources and in-depth expertise. Using the evaluation given above as a foundation, an additional suggestion is made in this paper:

H3: Overseas backgrounds can play a moderating role in the impact of executive monetary compensation as well as equity compensation on corporate performance.

Executives with financial experience have better access to outside funding, according to Custódio and Metzger's (2014) research. They also have a stronger understanding of finance-related responsibilities and rules and regulations. Additionally, Andrews and Welbourne (2000) argued that executives with financial encounters are regarded as smarter and more resourceful, thus supporting higher pay levels. This paper offers the following conclusion in light of the previous analysis:

H4: The financial context can play a moderating role in the impact of executive monetary compensation as well as equity compensation on corporate performance.

According to Desender (2009), concentrated ownership is crucial to corporate governance. Executive directors could be enticed and allowed to put their interests ahead of the business. Greater ownership concentration gives controlling shareholders the incentive they need to supervise leadership and acquire information, which improves the operation of the company. The greatest shareholder's proportion of shares is employed to determine the saturation variable.

Leverage and company size are used as controls in this research. According to several experts, scale effects enable business size to have an important effect on efficiency (Gregg et al., 2012). First off, bigger businesses have several benefits since they can devote a significant amount of time, cash, and other assets to R&D. Second, they can build marketing networks faster than smaller businesses because of their well-known brand, robust financial position, and skilled employees. Thirdly, obtaining outside capital is simpler for bigger businesses. Last but not least, in big companies, specialized divisions of labor may boost production, cut costs, and raise marginal efficiency

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(Backes-Gellner & Veen, 2013). Some academics, however, contend that there is no relationship between company size and performance.

Another management variable involves the gear ratio, which gauges the firm's capital structure. In capital-intensive businesses, utilities, and consumer products, debt ratios are often greater; in contrast, they are often lower in service sectors. The firm may be subject to higher financial risk if its gearing ratio surpasses the norm in the sector (Huynh, Shahbaz, Nasir, & Ullah, 2022). On the other hand, a debt-to-income ratio that is excessive could be a sign of timid management. According to Mansor Wan Mahmood and Zakaria (2007), ratios of debt may have complex impacts on how well a business does. Although scholars' views vary, many believe that too much leverage hurts business operations (Ullah & Nasim, 2021).

In the present study, the ordinary least-squares (OLS) method was employed. A series of tests were carried out to address any potential endogeneity worries, and the findings demonstrated that there were no significant endogeneity issues, particularly among the variables that explained the results (Ullah, Zaefarian, & Ullah, 2021). The regression model used in this study has the following structure of organization:

$$Performance_{i,t} = a_0 + a_1 P_{i,t} + \sum a_k Control_{i,t} + \sum year + \sum Industry + \varepsilon_{i,t} \quad (1)$$

Where $Performance_{i,t}$ represents the performance of firm I at time $P_{i,t}$ represents the compensation level of executives of the firm I at time t. $Control_{i,t}$ measures a series of control variables, including firm size, gearing, equity concentration, firm growth, board size, and the proportion of independent directors year-over-year fixed effects, Industry control variables, and $\varepsilon_{i,t}$ denotes the disturbance term.

$$Performance_{i,t} = a_0 + a_1 cur_{i,t} + a_2 cur_{i,t}^2 + a_3 cur_{i,t} \times Adj_{i,t} + a_6 cur_{i,t}^2 \times Adj_{i,t} + \sum a_k Control_{i,t} + \sum year + \sum Industry + \varepsilon_{i,t} \quad (2)$$

$$Performance_{i,t} = a_0 + a_1 sto_{i,t} + a_2 sto_{i,t}^2 + a_3 sto_{i,t} \times Adj_{i,t} + a_6 sto_{i,t}^2 \times Adj_{i,t} + \sum a_k Control_{i,t} + \sum year + \sum Industry + \varepsilon_{i,t} \quad (3)$$

The moderating variable, $Adj_{i,t}$, indicates whether the executives have financial or international backgrounds. Model (1) tests hypotheses 1 and 2. Model (2) tests hypothesis three, whereas Model (3) tests hypothesis four. Table 1 displays the variables.

4. RESULTS AND DISCUSSION

To give a comprehensive evaluation of the variables' qualities and impacts, the following table provides the variables' descriptive statistical characteristics. It's important to note the following observations: The mean value of the performance variable is 30.0707, which shows that the sampled companies' overall performance is subpar and requires improvement. With a maximum value of 0.414 and the lowest value of -0.774, the results variable also displays a wide range. This range shows that there is a significant difference in the performance of the firms, including instances of negative profits. The top three executives' mean salary was 0.64, which indicates that they were paid well compared to other executives in the sample. It's important to note that the range of executive financial remuneration in terms of maximum and lowest values is considerable. This finding suggests that executives' salary levels across the firms under study vary greatly. Executive equity compensation averages 0.059 with a 0.128 standard deviation. This suggests that there are variations in the magnitude of incentives linked to executives' stock remuneration across businesses. The degree of incentives offered via stock remuneration varies among the organizations under analysis when looking at the highest and lowest levels of executive ownership.

Table 2 presents summary statistics for the key variables.

The correlation coefficients between the variables are shown in Table 3, which gives us a thorough grasp of their connection. It's worth noting the following observations: Each of the variables has coefficients of correlation that are mostly smaller than 0.5. This shows that the factors' correlation is not significantly out of control, guaranteeing the accuracy of the future regression analysis. Both executive monetary remuneration and executive ownership stakes have a significant association with company performance. This suggests that the efficiency of the business increases as these compensation levels rise. Executives with economic or international experience often get greater cash and stock remuneration. As a result, keeping the most senior managers on board improves the performance of the organization. The research's hypothesis is tentatively backed up by this data.

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Table 1. Adjustable table.

Variable type	Variable name	Variable symbols	Variable meaning	Variable provenance
Explained variables	Corporate performance	ROA	Net income / Total assets	Lambert and Larcker (1987)
Explanatory variables	Executive currency compensation	Cur	The logarithm of the top three executives' combined monetary remuneration	Cao et al. (2022)
	Executive shareholding	Sto	The proportion of executive shareholdings to the overall number of shares	
Adjustment variables	Overseas background	Oversea	1 for executives with overseas background, 0 otherwise	
	Financial background	Fin	1 for chief executives with a background in finance; 0 else	Andrews and Welbourne (2000)
Control variables	Enterprise size	Size	The logarithm of the total assets at year's end	Jensen and Murphy (1990) and Core, Holthausen, and Larcker (1999)
	Gearing ratio	Lev	Gearing ratio = total assets/total liabilities	
	Shareholding concentration	Top	Percentage of the biggest shareholder's shares outstanding	
	Business growth	Grow	Operating income growth rate is calculated as (Operating income for the current year minus operating income for the preceding year)/(Operating income for the past year).	
	Board size	Dsize	Number of directors on the board	
	Independent directors percentage	Ind	The proportion of independent directors to total board members	
	Industry	Industry	This study follows the SEC's 2012 classification criteria. Excluding the financial sector, a total of 18 industry dummy variables	
	Year	Year	Dummy variables for a total of 12 years, from 2010 to 2021	

Table 2. Summary statistics for the key variables.

Variables	Observed values	Average value	Standard deviation	Minimum value	Maximum value
ROA	1464	0.071	0.123	-0.774	0.414
Cur	1464	0.640	0.592	0.023	4.005
Sto	1464	0.059	0.128	0	0.800
Lev	1464	0.438	0.203	0.051	0.938
Dsize	1464	8.784	1.777	5	15
Ind	1464	0.371	0.053	0.286	0.571
Top	1464	35.300	14.921	8.760	75
Cash	1464	0.835	1.492	0.014	11.091
Grow	1464	0.195	0.459	-0.629	3.866
Size	1464	22.050	1.272	19.311	27.001

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Table 3. Correlation of key variables.

Variables	ROA	Cur	Sto	Lev	Dsize	Ind	Top	Cash	Grow	Size
ROA	1									
Cur	0.195***	1								
Sto	0.045***	-0.038***	1							
Lev	-0.152***	0.095***	-0.275***	1						
Dsize	0.039***	0.046***	-0.182***	0.179***	1					
Ind	-0.017***	0.035***	0.117***	-0.029***	-0.461***	1				
Top	0.113***	-0.023***	-0.064***	0.068***	0.031***	0.030***	1			
Cash	0.066***	-0.045***	0.197***	-0.536***	-0.082***	0.018***	-0.022***	1		
Grow	0.228***	0.032***	0.041***	0.045***	-0.014**	0.002	0.008*	-0.031***	1	
Size	0.119***	0.449***	-0.253***	0.479***	0.241***	0.030***	0.190***	-0.259***	0.054***	1

Note: * p< 0.1, ** p < 0.05, *** p <0.001.

In order to make the regression results of model 1 more complete, this paper first regressed only the explanatory and explanatory variables, on the basis of which control variables, control industry year, heteroskedasticity test, and cluster regression were used, respectively, to provide more sufficient evidence on the reliability of the results. According to column 3 of Table 4, we can see that the regression results of Model 1 show that corporate performance is significantly positively related to the primary term of executive monetary compensation at the 1% level and negatively related to the second term of executive monetary compensation at the 1% level, and the results of the regression of only the explanatory and explanatory variables in column 1 are different from the regression results of adding control variables but not controlling for industry year in column 2 and the regression results of the heteroskedasticity test in column 4. The regression results and the test results of the clustering regression in column 5 are consistent with column 3, indicating that executive monetary compensation is positively related to corporate performance, fully testing hypothesis 1.

Table 4. Executive monetary compensation and corporate performance.

Variables	(1)	(2)	(3)	(4)	(5)
	ROA	ROA	ROA	ROA	ROA
Cur	0.086***	0.065***	0.085***	0.085***	0.090***
	(-15.89)	(-11.28)	(-15.92)	(-16.46)	(-7.63)
Lev		-0.151***	-0.195***	-0.195***	-0.178***
		(-33.99)	(-41.50)	(-23.58)	(-12.13)
Dsize		0.003***	0.000*	0.000	0.000
		(6.15)	(0.92)	(0.86)	(0.07)
Ind		-0.059***	-0.058***	-0.058***	-0.066**
		(-4.04)	(-4.01)	(-3.68)	(-2.63)
Top		0.001***	0.001***	0.001***	0.001***
		(19.44)	(16.53)	(16.71)	(7.43)
Cash		-0.002***	-0.004***	-0.004***	-0.004***
		(-3.52)	(-7.94)	(-9.17)	(-6.56)
Grow		0.061**	0.057***	0.057***	0.058***
		(40.81)	(39.28)	(26.65)	(9.29)
Size		0.011***	0.017***	0.017***	0.015***
		(14.52)	(20.91)	(16.39)	(9.56)
Sto		0.019***	0.050***	0.050***	0.045***
		(3.39)	(8.70)	(10.17)	(5.67)
_cons	0.027***	-0.180***	-0.273***	-0.273***	-0.215***
	(17.71)	(-11.75)	(-5.64)	(-9.28)	(-5.08)
Industry	No	No	Yes	Yes	No
Year	No	No	Yes	Yes	Yes
N	1464	1464	1464	1464	1464
r2	0.047	0.156	0.209	0.209	0.188

Note: * p< 0.1, ** p < 0.05, *** p <0.001.

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To ensure the completeness of the results, regressions were initially conducted separately for the explanatory and explained variables. Subsequently, control variables were included in the analysis, along with industry and year effects, to account for their potential impact. In addition, heteroskedasticity tests and cluster regressions were used to improve the robustness of the findings.

The regression findings from Model 1, which are shown in Table 5, provide thorough explanations of the connection between business performance and executive equity pay. In the analysis, it's important to highlight a few things: At the 1% threshold for importance, the regression's findings, particularly those highlighted in column 3, show a statistically favorable relationship between company performance and executives' equity salary. This result supports the theory and implies that better business performance is linked to executives' stock remuneration at higher levels. Control variables, industry, and year effects, as well as statistical analyses, were employed to produce the regression results in the last four columns. These results are consistent with the underlying regressions. This consistency increases the trustworthiness of the prompt information and strengthens Hypothesis 2 further.

Table 5. Executive equity compensation and corporate performance.

Variables	(1)	(2)	(3)	(4)	(5)
	ROA	ROA	ROA	ROA	ROA
Sto	0.045***	0.023***	0.050***	0.050***	0.047***
	(7.77)	(4.05)	(8.75)	(10.23)	(5.63)
Lev		-0.158***	-0.200***	-0.200***	-0.183***
		(-35.58)	(-42.56)	(-24.18)	(-12.04)
Dsize		0.003***	-0.001*	0.001	0.000
		(5.68)	(1.27)	(1.18)	(0.22)
Ind		-0.057***	-0.056***	-0.056***	-0.063**
		(-3.89)	(-3.83)	(-3.53)	(-2.48)
Top		0.001***	0.001***	0.001***	0.001***
		(18.87)	(16.49)	(16.66)	(7.10)
Cash		-0.002***	-0.004***	-0.004***	-0.004***
		(-3.74)	(-8.13)	(-9.46)	(-6.54)
Grow		0.061***	0.058***	0.058***	0.058***
		(40.82)	(39.33)	(26.58)	(9.37)
Size		0.013**	0.019***	0.019***	0.017***
		(17.29)	(23.51)	(18.41)	(10.83)
Cur		0.032***	0.036***	0.036***	0.039***
		(24.23)	(26.41)	(25.35)	(11.80)
_cons	0.068***	-0.202***	-0.318***	-0.318***	-0.253***
	(83.69)	(-13.25)	(-6.54)	(-10.86)	(-5.96)
Industry	No	No	Yes	Yes	No
Year	No	No	Yes	Yes	Yes
N	1464	1464	1464	1464	1464
r2	0.002	0.152	0.202	0.202	0.180

Note: * p< 0.1, ** p < 0.05, *** p <0.001.

Interaction factors are included in the regression analysis to examine the moderating impact. The product term of overseas background and executive monetary compensation came first, then the product term of financial background and executive monetary compensation. In addition, the interaction terms between overseas background, financial background, and executive equity compensation are also included in the analysis.

Both an overseas background and financial expertise show a favorable correlation with success in business, as shown by the data in Table 6.

The correlation coefficients of the relationship between factors between executive financial pay and abroad background as well as between executive salary and financial background are notably unfavorable after the addition of the interaction term at the 1% level.

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This suggests that the executive with financial and international backgrounds moderate the relationship between financial compensation and performance. The results support the initial theory and imply that the executive backdrop influences the efficacy of monetary reward. The interaction factors between executive equity pay and financial background, as well as executive equity compensation and foreign background, are both substantially positive at the 1% level, as shown in Table 7.

This result supports the idea that executives' stock remuneration interacts favorably with overseas experience, financial history, and business success. These managers increase the effect of stock rewards on performance. The third and fourth hypotheses were examined.

Table 6. Moderating effect of the overseas background, financial background (Monetary remuneration).

Variables	(1) Overseas background	(2) Financial background
Cur	0.107*** (-12.49)	0.105*** (-11.91)
Adj	0.000*** (6.44)	0.000*** (6.20)
Adj*cur	-0.000*** (-5.38)	-0.000*** (-5.08)
Lev	-0.194*** (-41.37)	-0.194*** (-40.66)
Dsize	0.000 (0.67)	0.000 (0.80)
Ind	-0.060*** (-4.18)	-0.057*** (-3.84)
Top	0.001*** (16.44)	0.001*** (16.05)
Cash	-0.004*** (-7.91)	-0.004*** (-8.03)
Grow	0.058*** (39.39)	0.057*** (38.22)
Size	0.016* (20.63)	0.017** (20.57)
Sto	0.050*** (8.73)	0.049*** (8.57)
_Cons	-0.275*** (-5.68)	-0.276*** (-5.70)
Industry	Yes	Yes
Year	Yes	Yes
N	1464	1464
r2	0.211	0.210

Note: * p< 0.1, ** p< 0.05, *** p< 0.01.

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Table 7. Reconciliation effect of the overseas background, financial background (Equity compensation).

Variables	(1) Overseas background	(2) Financial background
Sto	0.023** (2.49)	0.023** (2.38)
Adj	0.000*** (2.59)	0.000*** (2.98)
Adj*sto	0.000*** (3.91)	0.000*** (3.63)
Lev	-0.200*** (-42.57)	-0.200*** (-42.57)
Dsize	0.001 (1.17)	0.001 (1.16)
Ind	-0.057*** (-3.90)	-0.057*** (-3.91)
Top	0.001*** (16.37)	0.001*** (16.37)
Cash	-0.004*** (-7.82)	-0.004*** (-7.86)
Grow	0.058*** (39.39)	0.058*** (39.40)
Size	0.019* (23.54)	0.019** (23.51)
Cur	0.0363*** (26.44)	0.0363*** (26.45)
_Cons	-0.320*** (-6.59)	-0.320*** (-6.59)
Industry	Yes	Yes
Year	Yes	Yes
N	1464	1464
r2	0.203	0.203

Note: * p < 0.1, ** p < 0.05, *** p < 0.01.

The first technique used in this research for assessing business performance is the ROA measure. Tobin's Q, a different performance metric, is also used to guarantee the reliability of the results. The relationship between executive monetary remuneration and Tobin's Q, as well as the relationship between executive equity compensation and Tobin's Q, are the main topics of discussion. To ensure that the results are reliable, extra explanations are included.

According to the data in Table 8, executive monetary remuneration, or ROI, shows an important beneficial association. According to this result, higher executive salary levels are linked to better equity returns. This finding confirms the strength of the connection even after controlling for extra explanations. The findings additionally indicate a positive relationship between executive equity pay and return on investment. According to this conclusion, a company's return on stock is higher the more stock remuneration is given to executives. The fact that this relationship continues even after other explanatory factors have been considered further supports the discovered link.

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Table 8. The explanatory variable is replaced with Tobin's Q.

Variables	(1) Tobin's Q	(2) Tobin's Q
	X=cur	X=sto
Cur	0.045*** (24.47)	0.018*** (23.73)
Sto	0.036*** (11.52)	0.036*** (11.56)
Lev	-0.152*** (-59.82)	-0.155*** (-60.85)
Dsize	0.000* (1.94)	0.001** (2.29)
Ind	-0.027*** (-3.47)	-0.026*** (-3.30)
Top	0.000*** (16.63)	0.000*** (16.59)
Cash	-0.001*** (-3.40)	-0.001*** (-3.62)
Grow	0.029*** (36.93)	0.029*** (36.99)
Size	0.008*** (18.94)	0.009*** (21.56)
_cons	-0.111*** (-4.22)	-0.135*** (-5.14)
Industry	Yes	Yes
Year	Yes	Yes
N	1464	1464
r2	0.263	0.256

Note: * p < 0.1, ** p < 0.05, *** p < 0.01.

We used a one-period lag approach with the goal of addressing the issue of endogeneity. The research explored the association between explanatory and explanatory factors by adding chronological delays, thus decreasing the impact of endogeneity.

The connection between executive salary and corporate performance was examined using regression analysis, which took the delayed era into account. Assessing the accuracy and uniformity of the results was the main goal. When endogeneity is taken into account with a one-period delay, the results shown in Table 9 show the connection between executive earnings and business performance.

The findings repeatedly show that greater executive salaries correspond with higher standards of business performance, which supports the original premise. The fact that this association is still strong serves to further support the reliability of the findings.

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Table 9. A lagged test of executive monetary compensation on corporate performance.

Variables	(1) ROA	(2) ROA
	X=cur	X=sto
L.cur	0.082*** (20.78)	0.039*** (23.61)
L.sto	0.037*** (5.63)	0.037*** (5.62)
L.lev	-0.075*** (-13.65)	-0.080*** (-14.53)
L.dsize	0.000 (0.45)	0.000 (0.72)
L.ind	-0.028* (-1.67)	-0.026 (-1.54)
L.top	0.000*** (14.64)	0.001*** (14.73)
L.cash	-0.000 (-0.50)	-0.000 (-0.65)
L.grow	0.033*** (19.69)	0.033*** (19.74)
L.size	0.003** (3.69)	0.005*** (5.65)
_cons	-0.058 (-0.81)	-0.099 (-1.40)
industry	Yes	Yes
year	Yes	Yes
N	1464	1464
r2	0.114	0.109

Note: * p < 0.1, ** p < 0.05, *** p < 0.01.

When there is a bidirectional link between the variables of interest, the endogeneity issue arises. The endogeneity dilemma suggests that the connection between executives' compensation and company success might be influenced by one another. We added variables to the instrument to overcome this issue. Instrumental variables are extraneous elements that are connected to the variables that explain them but do not directly affect them. We can get reliable and impartial assessments of the causal connection between executive salaries and company success by employing instrumental variables.

We used instrumental variables as an approach when dealing with the issue of endogeneity. As an instrumental variable, the average of both executive salary and equity awards within the same industry was used. Regression analysis was used in the first step to regress the explanatory factors on the instrumental variables. As a result, values were obtained that were fit to represent the modifications in the explanations that the instruments were describing. The second step encompassed regressing the factors that explained the results on the variables that explained them using the values that were fitted as stand-ins. We can get reliable and impartial estimations of the connection in the problem thanks to this two-stage procedure.

Tables 10 and 11 below represent the results of the investigation of the instrumental variables. This research tackles the endogeneity problem and generates precise projections of the association between executives' salaries and company performance through the use of the instrumental factors method. The deductions made from the results are still noise, as they provide further evidence in favor of the initial hypotheses.

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Table 10. Test for instrumental variables of executive monetary compensation.

Variables	(1)	(2)
	cur X= outcur	Tobin's Q x= y_hat
Outcur	0.599*** (47.95)	
Y_hat		0.141*** (9.39)
Lev	-0.299*** (-14.90)	-0.181*** (-30.51)
Dsize	-0.001* (-0.49)	0.001** (2.00)
Ind	-0.166** (-2.48)	-0.038** (-2.52)
Top	-0.004*** (-16.85)	0.001*** (15.88)
Cash	0.007*** (2.84)	-0.005*** (-8.56)
Grow	0.007 (1.01)	0.056*** (36.79)
Size	0.217*** (70.10)	0.009*** (3.25)
Stol	0.108*** (4.25)	0.040*** (6.78)
Cons	-4.205*** (-65.16)	-0.179*** (-2.60)
Industry	Yes	Yes
Year	Yes	Yes
N	1464	1464
r2	0.300	0.184

Note: * p < 0.1, ** p < 0.05, *** p < 0.01.

Table 11. Executive equity compensation instrumental variables test.

Variables	(1)	(2)
	sto X=outsto	Tobin's Q X=y_hat
Outsto	0.593*** (36.37)	
Y_hat		0.248*** (9.49)
Lev	-0.059*** (-12.26)	-0.182*** (-35.85)
Dsize	-0.002*** (-5.01)	0.001*** (2.62)
Ind	0.192*** (12.16)	0.003 (0.18)
Top	0.000** (2.35)	0.001*** (17.40)
Cash	0.006*** (10.23)	-0.000* (-0.66)

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Variables	(1)	(2)
	sto X=outsto	Tobin's Q X=y_hat
Grow	0.015*** (9.34)	0.064*** (41.10)
Cur	-0.016*** (-20.69)	0.008*** (9.25)
Cons	0.005*** (3.58)	0.035*** (25.46)
Industry	Yes	Yes
Year	Yes	Yes
N	1464	1464
r2	0.164	0.153

Note: * p < 0.1, ** p < 0.05, *** p < 0.01.

5. CONCLUSION

Global consumers are increasingly concerned about executive salaries in modern society. Executives' wages are often tens or hundreds of times more than those of regular workers, which infuriates people in developed as well as developing nations. The goal of the study is to investigate the connection between executive pay and performance in the Chinese energy sector. The following are the study's primary conclusions: The efficacy of pay incentives and equity-based incentives is demonstrated by the fact that executives' salaries and shareholding both have a significant positive impact on business performance. In finance, accounting, and economics, the outcome corresponds with prevailing views. The research additionally demonstrates that an executive's financial knowledge and experience in other countries alter the impact of cash and equity pay on company performance.

However, it's critical to recognize this article's constraints. The research excludes a large number of key energy businesses, especially rising ones in the clean energy sector, as it solely targets publicly traded businesses for ease of data collection.

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INSTITUTIONAL REVIEW BOARD STATEMENT

The Ethical Committee of the International College, Krirk University, Thailand has granted approval for this study on 15 November 2022 (Ref. No. 2022-1115).

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are openly available in [CSMAR] at [https://www.gtarsc.com/], reference number [Management governance capacity 223029938, Financial indicators 001929762]. The authors confirm that the data supporting the findings of this study are available within the article [and/or] its supplementary materials.

CONFLICT OF INTEREST

The authors declare that they have no competing interests.

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AUTHORS' CONTRIBUTIONS

The ideas, concepts, and design of the research, instruments development and data analysis, L.H.; the data analysis and formatting, H.H.Y. All authors have read and agreed to the published version of the manuscript.

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