

# The Impact of Institutional Investors' Holdings on Performance Sensitivity to Management Compensation in China

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## Abstract

In recent years, institutional investors have developed rapidly, and have gradually developed into a trend of growing multi-type institutional investors. Management compensation system, as an important part of corporate governance, is a system that institutional investors often pay attention to. And the performance sensitivity to management compensation can precisely measure the improvement of corporate governance of corporate investors, showing the convergence of management and shareholders' goals. Therefore, it is meaningful to discuss the relation between institutional investor's shareholding and company management compensation-performance sensitivity. This paper combines normative research and empirical research, combs and summarizes domestic and foreign literature, and puts forward some research hypotheses. In terms of empirical research, this paper selects Chinese listed companies as research samples to study the influence of overall institutional investors and different types of institutional investors on the performance sensitivity to listed companies' management compensation. There is a positive correlation between the overall institutional investor's shareholding and performance sensitivity to management compensation. Compared with trading institutional investors, stable institutional investors are more able to increase the performance sensitivity to management compensation in Chinese listed companies.

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**Keywords:** Institutional investors, management compensation, performance sensitivity, corporate governance

## 1. Introduction

In modern joint-stock enterprises, under normal circumstances, the owner of the company will hire a professional manager from outside to take charge of the daily operation and management of the company in order to

achieve better operating results. But in this case, it will inevitably bring about the separation of ownership and management rights, which will lead to a series of agency problems such as information asymmetry and principal-agent conflicts. Enterprises generally adopt two methods to solve the above problems, one is to motivate management, and the other is to strengthen the daily supervision of management by shareholders themselves. However, there are few shareholders who are both independent and have strong supervisory capabilities. Institutional investors have long played a leading role in Western markets. Since the 1980s, the shareholding structure of listed companies has gradually developed from a decentralized trend to a centralized trend, and has gradually occupied a certain share in the market. Data show that in the short period of thirty years of the development of capital markets in Western countries, the proportion of institutional investors has increased from 30% to 70%, and they have become the backbone of the market. As their shareholdings continue to increase, they participate in corporate governance more actively. They began to engage in corporate governance through private consultations and holding shareholders' meetings. Among them, the company's management compensation system is an important exhibition of corporate governance policy. Institutional investors can constrain management by participating in and supervising the company's management compensation system, thereby better exerting the effectiveness of corporate governance.

Compared with developed countries in Europe and the United States, the growth rate of institutional investors in China is relatively slow. With the improvement of the environment and institutional system of Chinese capital market, institutional investors have more advantages than individual investors in terms of professional knowledge and funds, so they can better play the monitoring role of shareholders, actively participate and gradually improve corporate governance. The pace of growth of institutional investors in China is constantly accelerating and gradually forming a new pattern. After referring to the relevant conclusions of foreign scholars and considering the actual situation of the country's current economy, it is not difficult to see that institutional investors should actively participate in corporate governance. The performance sensitivity to management compensation can effectively measure whether management is working hard, and it will certainly be valued by shareholders. Against the background of the lack of external control of the domestic securities market and the special ownership structure, whether institutional investors are intensifying their development of corporate governance, especially performance sensitivity to management compensation of listed company? Whether different types of institutional investors have different impact on them? These issues are worth exploring.

After more than 20 years of development, Chinese institutional

investors continue to go deep into corporate governance. To a certain degree they have formed a binding force on invested companies. From the perspective of management compensation-performance sensitivity, this article combines theoretical analysis and empirical research methods to explore whether Chinese institutional investors can play the role of corporate governance, which has certain theoretical and practical significance in Chinese special institutional background. As for theoretical significance of this article, on the one hand, it expands the research of Chinese institutional investors in corporate governance. On the other hand, it improves the domestic research on the performance sensitivity to corporate management compensation. Regarding the effectiveness of institutional investors in corporate governance, most domestic scholars have studied from the perspective of corporate ownership structure, earnings management, performance, etc. The literature from the perspective of institutional investor heterogeneity has also been studied. In addition, although there have been related studies abroad, based on the special market characteristics of our country, foreign studies' results are only for reference and cannot explain Chinese market characteristics. So it is necessary to discuss the role of institutional investors in conjunction with Chinese special market conditions. China not only has to alleviate the conflicts that have always existed between the majority controlling shareholders and corporate management, but also needs to deal with the difficulties that exist between the controlling shareholders and the small and medium shareholders. Therefore, this paper has two theoretical significances: one is to broaden the research of institutional investors on corporate governance at a certain level; the other is to resolve the above-mentioned contradictions from a completely new perspective, strengthen the monitoring of institutional investors on corporate governance, which restrict controlling shareholders' rights of seizing private benefits, thereby promoting the vigorous growth of Chinese capital market. The significance of this article on the practical application level is to take actual situation of Chinese development as the starting point, and provide practical instructions for institutional investors to actively participate in corporate governance. Chinese institutional investors are constantly developing and their participation in corporate governance is gradually deepening. Although some scholars have shown that institutional investors can promote improvement of corporate governance mechanism, there are still some historical problems in China as a developing country. Nowadays, the phenomenon of speculation still occurs seriously in capital market, so it needs to be analyzed in accordance with the special market circumstances of the country. As an important part of Chinese listed companies, state-owned enterprises have their particularities in terms of governance structure and compensation system. Ownership concentration is relatively high. As Chinese main controlling shareholder, the government restricts the compensation of

senior managements of state-owned enterprises. These phenomena indicate that there are still many areas for improvement in corporate governance. Therefore, the topic of whether institutional investors can promote corporate governance requires more studies and analysis.

This article mainly analyzes the relationship between institutional investor and management compensation-performance sensitivity. After collating the current research results of scholars, we put forward some hypothesis and verified it. This article mainly uses a combination of normative research and empirical analysis to analyze the relationship between the institutional investor and the performance sensitivity to management compensation in listed companies. The innovations of this paper are as follows: (1) it enriches the research on the correlation between institutional investors and the performance sensitivity to management compensation. Among the current articles on institutional investors' participation in corporate governance in China, most of them are discussed from the perspectives of institutional investor and management compensation and corporate performance. There are relatively few articles that use the performance sensitivity to management compensation as the research perspective. Therefore, referring to previous studies, the article discusses the above relationship, and then explores from the perspective of overall institutional investors and the heterogeneity of institutional investors, thereby complementing the research results in this area. (2) The article distinguishes between different types of institutional investors, and studies how different investment behaviors of institutional investors affect the performance sensitivity to management compensation. At present, domestic discussions about the performance sensitivity to institutional investors and management compensation are mainly studied from the perspective of the overall shareholding ratio, and few scholars have classified institutional investors into categories. This paper draws on the practices of Niu Jianbo (2013) and classifies institutional investors into stable and trading types based on investment behavior. It explores the impact of institutional investors and their heterogeneity on management compensation-performance sensitivity in listed companies from a new perspective.

## **2. Literature review**

As capital market is developing, institutional investors are also developing and their participation in corporate governance and management activities is deepening. As an important part of institutional investors' participation in corporate governance, the compensation system of managers will surely attract the attention of shareholders. In general, institutional investors can use different methods to participate in the design of management compensation systems in enterprises to improve the compensation

mechanism. Many scholars have analyzed the relationship between institutional investors and management compensation from different aspects.

## **2.1. Correlation between institutional investors and management compensation**

Useem (1990) found that in the enterprise, when the institutional investor's shareholding is relatively high, it will suppress the excessive compensation level of the managements and keep it within a reasonable or even lower range. Andres (2005), Ozkan (2007), etc. also reached similar conclusions. These scholars believe that with the increase of the institutional investors' shareholding ratio, their participation in corporate governance and management has gradually deepened, and in the process of actively participating in corporate governance, it will help alleviate the problem of excessive corporate agency costs, thereby improving management compensation to some extent. However, it is worth noting that some foreign researchers have reached conclusions that are completely different from the above analysis. Clay (2000) analyzed the data of listed companies in the United States from 1991 to 1997 and found that the shareholding ratio of institutional investors was significantly positively related to management compensation. Feng and Ghosh (2010) and others also reached the same conclusion that as institutional investors' shareholding ratio rises, management compensation will also increase significantly. The main reason is that corporate management's risk will gradually increase with the deepening of institutional investors' participation in corporate governance. In view of this, management generally requires companies to pay more as additional compensation for their risks.

On the basis of referring to some foreign literatures, most domestic scholars have proved through analysis that there is a clear relationship between institutional investment and shareholdings and the compensation level of enterprise management. Chen Yanyan (2006) used the data of listed companies in the manufacturing industry in China in 2004 as a research sample. After empirical research, it was found that the effect of the institutional investors' shareholding ratio on management compensation level will change with time. For a short period of time, management compensation will increase with the gradual increase in the shareholding ratio of institutional investors. But from a long-term perspective, institutional investors have not significantly improved the level of management compensation. After analysis, Li Yingzhao and Wang Hui (2011) found that the shareholding ratio of institutional investors has significantly improved management compensation, and it can also improve corporate governance and management. The reason is that in order to meet standards and expectations by institutional investors, managers have to devote more effort to improving the company's operating

conditions. So companies have to pay higher wages to make up for the efforts of senior management. Zhang Chi (2013) analyzed the data of listed companies in China from 2004 to 2010 and concluded that institutional investors will make the corporate governance mechanism more reasonable, and thus promote the compensation mechanism more in line with the efforts and performance of management. After empirical research, Liu Yuan and Sun Hongmei (2013) also concluded that the higher the institutional investor's shareholding ratio, the higher the management compensation will be.

In addition to discussing the correlation between the overall shareholding of institutional investors and management compensation, scholars have also studied the relationship between heterogeneity and management compensation. Shin (2005) found that the length of time of institutional investors' shareholding affects its relationship with management compensation. The reason is that as institutional investors' shareholding time elapses, their exit costs will increase significantly. Institutional investors will have to strengthen management supervision to avoid paying high exit costs. Participation in the compensation system is an important method set to strengthen effective supervision. Borokhovich (2006) and Cornett et al. (2007) classify institutional investors with reference to the early Brickley (1988) and other methods. Based on the potential business relationships between institutional investors and their investment companies, they are divided into pressure-sensitive and pressure-resistant types. Pressure-sensitive institutional investor and the invested company have strong commercial relevance, so institutional investors often cannot make relatively independent decisions, and the pressure-resistant type is just the opposite of the above situation. After classification, it was found that institutional investors of pressure-resistant type can significantly affect corporate compensation level, while Pressure-sensitive institutional investors have not played a relevant role. The main reason is that there are not too many commercial interests involved in pressure-resistant institutional investors and holding companies, so professional judgment can be made when engaging in corporate supervision without interference from the invested companies.

Similarly, some domestic scholars have studied the role of different types of institutional investors on management compensation level from the perspective of institutional investors' heterogeneity. Yi Zhihong, Gao Wei (2010) used the classification methods of Brickley (1988), etc., and the conclusions obtained through empirical research are consistent with foreign scholars. Compared with pressure-sensitive institutional investors, only pressure-resistant institutional investors can have a significant impact on the level of management's compensation. At the same time, such institutional investors are conducive to the design of management's compensation mechanism to develop in a more rational direction. Zhenhai (2011) used the

shareholding period as the classification standard, and divided institutional investors into two categories: long-term and short-term. Through specific analysis, they concluded that the longer the holding period of institutional investors, the higher corporate management's compensation level. Wang Zongjun, Mao Lei, and Wang Lingling (2011) analyzed the listed companies in China and found that, as a whole, the increase in the institutional investor's shareholding is conducive to the improvement of management compensation level. But if it is classified according to the organizational form, the types of institutional investors' influence of different types on management compensation vary greatly, and only institutional investors of funds type can have a significant impact on the level of management compensation. Wenwen Wang (2012) reached the same conclusion through empirical research.

## **2.2 Correlation between Institutional Investors' Shareholding and Performance Sensitivity to Management Compensation**

Due to different corporate governance frameworks domestically and abroad, or for different reasons for analysis, domestic and foreign articles have not reached a relatively consistent conclusion on the relationship between institutional investors and the performance sensitivity to management compensation. Cosh and Hughes (1997) based on a large amount of data. After analysis, it was found that institutional investors could not significantly improve the performance sensitivity to management compensation in listed companies. In China, Li Shanmin and Wang Caiping (2007) used the data of listed companies in China from 2000 to 2003 as a sample and took the salary contract as the theoretical analysis basis for their research. They found that institutional investors could not significantly improve performance sensitivity to management compensation. Li Chao, Cai Qingfeng, Chen Jiao et al. (2012) also reached similar conclusions through empirical research. They found that institutional investors in China could not effectively restrict the management's equity incentives and the growth of fixed compensation. Because the existence of agency costs made them Lack of initiative to participate in the establishment of the compensation system, accordingly institutional investors will not be able to improve managements' equity incentives and compensation design.

With the increasing shareholding of institutional investors, their participation in the design and implementation of management compensation systems has gradually deepened. More and more articles have proved that institutional investors were significantly upgrading their effect on performance sensitivity to management compensation. Based on listed companies in the United States from 1992 to 1997, Hartzell and Starks (2003) found that with the increase of institutional investors' ownership concentration, the performance sensitivity to management compensation in invested companies will also increase accordingly. Almazan (2005), after

classifying institutional investors as potentially positive and potentially negative, concluded that the increase in the shareholding ratio of the former can significantly improve the performance sensitivity to corporate managements' compensation, but the latter has not reached the conclusion of institutional investors' role. Feng (2010) and others analyzed the impact of real estate investment trust funds on the management compensation of listed companies from 1998 to 2007 and found that institutional investors can significantly promote the performance sensitivity to management compensation.

Chinese research on the relationship between institutional investors and the performance sensitivity to management compensation started relatively late, but has also accumulated some significant results. Zhang Min and Jiang Fuxiu (2010) divided the enterprises into state-owned and non-state-owned, and then studied the correlation between institutional investors and the performance sensitivity to management compensation in different types of enterprises. The performance sensitivity to management compensation has increased significantly, but institutional investors have not played a similar role in state-owned holding companies. Yi Zhihong, Li Yanli (2011), etc. based on the marketization process, and refer to the classification method of Brickley (1988) to classify institutional investors into pressure-resistant and pressure-sensitive. The study concluded that all institutional investors can significantly improve the performance sensitivity to management compensation, and the speed of the marketization process will have different impacts on this effect. Wang Hui (2012) came to a similar conclusion after performing the same classification. Because pressure-resistant institutional investors do not have too much interest in business with the holding company, they actively engage in corporate governance and effectively increase the performance sensitivity to management compensation. According to certain criteria Mao Lei, Wang Zongjun (2011), etc. screened the data of 847 listed companies in Shanghai and Shenzhen from 2005 to 2009 in China as analysis samples, and divided them into funds, comprehensive brokers, and qualified overseas investments based on the organizational structure. There are a total of six categories of investors, social security funds, insurance companies, and trust companies. Through empirical research, it is found that overall institutional investors are conducive to improving the performance sensitivity to corporate managements' compensation. In specific categories, only funds can significantly improve the above indicators, while the other five categories of institutional investors have not shown the same governance effect.

### **2.3 Literature review**

Regarding the relationship between institutional investors and management compensation, foreign articles do not hold a relatively unified



view. From the perspective of agency costs, some scholars hold the view that institutional investors can reduce management compensation because corporate performance after participating in corporate governance shows a significant improvement effect, which is conducive to the implementation of the goal of maximizing corporate value, thereby reducing agency Costs and management compensation have also fallen accordingly. But some scholars hold opposite opinions after analysis. The reason is that from the perspective of risk-benefit, the strengthening of institutional investors' supervision of the invested company will lead to increased risks faced by managements. Therefore, management generally requires companies to pay more salaries as an additional burden for them to bear higher risks.

In China, the development history of institutional investors is relatively short, and there are relatively few studies on the above relations. Only a few scholars have concluded that institutional investors can effectively improve management compensation. The main reason for the inconsistency of research results domestically and abroad is that scholars have different definitions and classification methods for institutional investors. Various types of institutional investors have different investment goals, styles, and methods, etc., and the impact on management compensation is very different. Therefore, if the institutional investors can be comprehensively and systematically classified, the results will be more convincing. . Summarizing relevant literature domestically and abroad, most scholars believe that institutional investors who hold shares for a long time and actively participate in corporate governance can generally play a role in increasing compensation of senior managements. For institutional investors, it is more difficult to significantly improve the management compensation level. Because there are few related domestic researches, and most of the classifications of institutional investors are based on the methods of foreign literature, a systematic analysis and summary of previous research is needed.

Earlier in the world, some scholars obtained the result that institutional investors have no significant correlation with the performance sensitivity to management compensation through data analysis. However, as the size of institutional investors has gradually grown, more and more scholars have taken empirical analysis. It is concluded that the overall institutional investors can significantly affect the level of management compensation, and that there are differences in the impact of different types of institutional investors on the performance sensitivity to management compensation. In China, scholars generally analyze the role played by institutional investors in corporate governance from the perspective of ownership structure, earnings management, and management compensation. Few scholars use the performance sensitivity to management compensation as the research perspective. Performance sensitivity to management compensation is an

important indicator for measuring the efforts of managements of listed companies. This indicator can show the positive role of institutional investors in corporate governance. At the same time, domestic literature generally distinguishes the heterogeneity of institutional investors from a qualitative perspective. There is no specific analysis of the institutional investors of listed companies. The classification methods are relatively general and cannot show the role played by institutional investors.

### **3. Hypothesis development**

As institutional investors continue to increase their shareholdings, their effectiveness in corporate governance is gradually increasing. The main reasons why institutional investors can play an effective role are as follows: First, institutional investors have stronger professional capabilities than private investors. They can obtain important information from multiple channels. The strategies and methods used in investment operations are also more effective. They exert scientific and rational investments, and at the same time pay more attention to risks management. Institutional investors have a stronger supervision of the invested company, thereby reducing the probability of speculative behavior. Second, as institutional investors continue to increase their holdings in invested companies; institutional investors have changed from simple price takers to one of the factors affecting stock price volatility. In this case, if institutional investors still devote themselves to corporate governance in the form of "free-rider", then the company's stock price can easily fall significantly, and the losses suffered by institutional investors will deepen. Therefore, in order to ensure that their own interests are not harmed, they generally implement strong supervision. Third, there is a scale effect on the benefits of institutional investors and the cost of supervision. When institutional investors' shareholding ratio is increased, the average regulatory cost will decrease, so that institutional investors can gain an advantage in cost-benefit tradeoff. Some scholars have found through research that when the institutional investor's shareholding ratio is increased to a certain degree, the benefits they receive are sufficient to cover their costs, and the growth rate of the benefits is considerable. The main way to effectively alleviate the principal-agent problem is to encourage management and shareholders to strengthen their own supervision. As one of the main controlling shareholders, institutional investors will inevitably adopt the method of intervening remuneration to motivate the management in order to improve corporate performance. Kubo (2012) analysis found that the performance sensitivity to management compensation can determine the amount of managements' effort in listed companies. Based on this, this article proposes the first hypothesis:

H1: The overall shareholding of institutional investors is positively related to the performance sensitivity to management compensation.

With the rapid development of institutional investors, various types of institutions have shown significant differences in the size and source of funds, management styles, and the formulation of compensation mechanisms has also shown greater differences. Brickley (1988) and others divided institutional investors into "pressure-sensitive" and "pressure-resistant" according to the different goals, management styles, and risk resistance capabilities of institutional investors. The impact of institutional investors on performance sensitivity to management compensation varies widely. Tang Yuejun (2010) and Mao Lei (2012) subdivided institutional investors according to their organizational structure, specifically funds, securities firms, insurance companies, social security funds, QFII, and other types of institutional investors. After further research and analyses, it is found that the impact of these six types of institutional investors on the performance sensitivity to management compensation is very different. From this, it can be seen that if only the institutional investors are considered as a whole to discuss their role in the performance sensitivity to management compensation, it is likely to cause conclusions to be biased.

The above analysis of institutional investors is mainly from the perspective of their shareholding ratio. However, it is worth noting that the indicator of shareholding ratio cannot fully show the increase or decrease of the performance sensitivity of institutional investors to management compensation. Because this indicator does not include other factors other than shareholding level in its reference to the impact on the performance sensitivity, such as investment duration and turnover rate. The enthusiasm of institutional investors for supervision of corporate management will fluctuate depending on the investor's investment objectives. Some institutional investors will monitor corporate daily operations and management with a positive outlook. Other institutional investors are only concerned about how much profit the company can make in a short period of time and the fluctuations in stock prices. The main factor that determines the strength of institutional investors' supervision and whether to implement trading strategies within a short period of time is the stability of institutional investors. On the one hand, relatively stable institutional investors have a higher shareholding ratio during a specific investment period, and have more opportunities and capabilities to carefully analyze holding companies, which can prevent or reduce the occurrence of behaviors that harm shareholders' interests in advance. On the other hand, as the investment period of institutional investors continues to increase, the exit cost of investment is getting higher and the cost of management and supervision is getting lower. It can be inferred that institutional investors generally will participate in corporate governance more actively. Institutional

investors will step up efforts to supervise corporate management, which has promoted the performance sensitivity to management compensation. Compared with stable institutional investors, trading institutional investors have a strong tendency to trade stocks, and they are pinning their hopes to increase returns through multiple trading strategies. From this, it can be inferred that stable institutional investors belong to effective supervisors of enterprises, while trading institutional investors belong to ineffective supervisors.

From the definition of institutional investor stability by Niu Jianbo (2013), it can be seen that the share of stable institutional investors is high and stable, and the share of trading institutional investors is low and fluctuates frequently. Therefore, compared with trading institutional investors, stable institutional investors have a stronger willingness to monitor the daily behavior of managers, and have greater opportunities to promote better corporate governance and increase the performance sensitivity to management compensation.

Based on this, this article proposes a second hypothesis:

H2: Compared with trading institutional investors, stable institutional investors impact more on performance sensitivity to management compensation.

#### **4. Research design**

##### **4.1 Data source and sample selection**

This article uses the Shanghai and Shenzhen A-share listed companies on the main board from the five years from 2014 to 2018 as the initial sample. In order to ensure the comprehensiveness of the data and the reliability of the research, this article screens the initial sample according to the following principles:

1. According to the classification standards of the CSRC industry, the financial and insurance companies are excluded first. Financial and insurance companies have been removed due to their significant differences in financial treatment and accounting policies from general listed companies.
2. Exclude listed companies with ST and \* ST. This type of company is removed because it has abnormal financial conditions or is in a state of continuous loss, and its inclusion in the study may affect the results.
3. Exclude listed companies that issue B shares and H shares at the same time. The main reason is that the securities environment of the B-share and H-share markets is quite different from the A-share market. Because this article mainly studies the A-share listed companies in Shanghai and Shenzhen, for the purpose of research independence, it is not affected by other markets, so it is eliminated.

4. In order to ensure the comparability of the research, companies listed after 2012 are excluded.
5. Exclude listed companies with missing data, incomplete data, errors or extreme values. For example, companies with negative management pay in the company's financial report or companies that did not disclose specific management income.
6. In the end, companies were selected from the CSMAR and WIND databases according to the above criteria, and a total of 8387 samples were obtained.

#### **4.2 Dependent variables**

The dependent variable in this article is management compensation. In corporate annual report, listed companies will publicly disclose the top three managements' highest compensation. Because the research in this paper mainly involves the performance sensitivity performance to management compensation, referring to the practice of Xin Qingquan et al. (2009), the natural logarithm of the total compensation of the top three managements with the highest annual compensation in corporate annual financial report is taken as the dependent variable. Its symbol is indicated as LnPay.

#### **4.3 Explanatory variables**

When measuring the performance sensitivity to management compensation, this paper refers to the practice of Lu Rui (2011), and uses the correlation coefficient of corporate performance indicators to represent the performance sensitivity to management compensation. Therefore, there are two explanatory variables in this article, which are the company performance (Perf) and the institutional investor's shareholding ratio (Inst).

1. Company performance (Perf).

There are three main criteria for measuring the performance of listed companies. The first is based on accounting indicators, which intuitively reflects corporate profitability, operating level, management and other indicators, which generally include the rate of return on assets, price-earnings ratio, net Return on assets, earnings per share, etc. The second is based on market value; measured by economic value added, stock returns and other indicators. Through this indicator, shareholders can understand the level of the corporate operations. However, due to weak-effective Chinese securities market, the rationality of the system on the market is still not perfect. If market indicators are used, it cannot fully reflect actual corporate performance. The third is Tobin Q. Tobin Q is the ratio between a corporate market value and its asset replacement cost. However, in many cases, the replacement cost of corporate assets is difficult to obtain, and the required data and processes are

also complicated.

To sum up, this article adopts the ROE adopted by most scholars as an indicator to measure corporate performance. There are two main reasons for this: First, the indicator is comprehensive and not only reflects the profitability of the enterprise, but also comprehensively reflects its corporate financing structure, capital operation, cost control and other information; second, the indicator can also reflect the corporate profitability and investment return of shareholders. Therefore, it is used as an index to evaluate corporate performance. At the same time the ROA is replaced by the ROA in the robustness test.

## 2. Shareholding ratio of institutional investors (Install).

The shareholding ratio of all institutional investors in the article is measured by the shareholding ratio of all institutional investors in the tradable A shares of listed companies. The shareholding ratios of different types of institutional investors are based on the six categories mentioned above. The shareholdings of classified institutions in the database show that the number of shares held by funds, securities dealers, social security funds, qualified foreign investors, insurance companies and trust companies in the A shares of listed companies is measured.

## 3. Stable for institutional investors.

With reference to the classification method of institutional investors by Niu Jianbo et al. (2013), institutional investors are classified into stable institutional investors and trading institutional investors based on investment industry and time. First we calculate the standard deviation of the institutional investor's shareholding ratio of enterprise  $i$  in the previous three years; Then we obtain the ratio of the standard deviation to the institutional investor's shareholding ratio for three years. The larger the ratio, the more stable the institutional investment; the dummy variable *Stable* is the standard for institutional investor stability. With a value of 1, it indicates that the institutional investor is stable, and it is a stable institutional investor in year  $t$ ; otherwise, it is 0, indicating that the institutional investor of enterprise  $i$  in year  $t$  is trading corporate investor.

**Table 1.** Variable definition

	Variable	Symbol	Definition
Dependent variables	Management compensation	Ln Pay	The natural logarithm of the total compensation of the top three managements
Explanatory variables	Corporate performance	Perfl	Return on equity

	Institutional investor shareholding	InstAll	The proportion of institutional investors' holding shares at the end of the year
	Institutional investor holding stability	Stable	Dummy variable. When the value is 1, it represents a stable institutional investor; when the value is 0, it represents a trading institutional investor
	Company size	Size	Natural logarithm of total assets at the end of the year
Control variables	Financial leverage	Lev	Debt ratio
	Equity concentration	H1	Shareholding ratio of the largest shareholder
	Type of controlling shareholder	Type	Dummy variable, state-owned takes 1, non-state-owned takes 0
	Commit and Appraisal Committee	Commit	Number of committees set up by listed companies
	Duplicate roles overlap	Dual	if the chairman of the listed company and the general manager are held by the same person, take 1; otherwise take 0
	Independent Directors	Indep	Ratio of Independent Directors to Board of Directors
	Growth capability	Growth	Growth rate of main business income
	Management expense ratio	Meff	Management expenses / Main business income
	Year	Year	control
	Industry	Industry	control

#### 4.4 Research Model

In order to discuss the role of institutional investors in the performance sensitivity to management compensation, this article refers to the methods of Leone (2006), Firth (2006), and Lu Rui (2011), and makes appropriate additions based on them.

According to Hypothesis 1, the model 1 constructed in this paper is as follows:

$$\begin{aligned} LnPay_{i,t} = & a_0 + a_1 Perf_{i,t} + a_2 Perf_{i,t} \times int All_{i,t} + a_3 instAll_{i,t} \\ & + a_4 size_{i,t} + a_5 Lev_{i,t} + a_6 H5_{i,r} + a_7 Type_{i,t} + a_8 Commit_{i,t} \\ & + a_9 Dual_{i,t} + a_{10} ln dep_{i,t} + \sum industry + \sum year + \varepsilon_{i,t} \end{aligned}$$

Model 1 is used to test whether the overall institutional investor's shareholding has an impact on the performance sensitivity to the listed company's management compensation. This article expects that the cross-term coefficient  $\alpha_2$  of the overall institutional investor's shareholding and company performance is significantly positive, indicating that with institutional shareholding ratio is constantly rising, the performance sensitivity to management compensation will also increase to a certain extent.

In order to test the impact of different types of institutional investors on the performance sensitivity to management compensation, this paper classifies institutional investors into stable institutional investors and trading institutions based on the stability of investment industry and time. Investors use this to test for differences. According to Hypothesis 2, the model 2 constructed in this paper is as follows:

$$\begin{aligned} \ln Pay_{i,t} = & a_0 + a_1 Perf_{i,t} + a_2 Perf_{i,t} + stable_{i,t} + a_3 stable_{i,t} \\ & + a_4 size_{i,t} + a_5 Lev_{i,t} + a_6 HS_{i,r} + a_7 Type_{i,t} + a_8 Commit_{i,t} \\ & + a_9 Dual_{i,t} + a_{10} \ln dep_{i,t} + \sum industry + \sum year + \varepsilon_{i,t} \end{aligned}$$

This article expects that the cross-sectional coefficient  $\alpha_2$  of stable institutional investors and company performance is significantly positive. It indicates compared with trading institutional investors, stable institutional investors have a more significant role in improving the performance sensitivity to management compensation.

## 5. Empirical results

### 5.1 Descriptive analyses

The companies listed on the main board of Shanghai and Shenzhen A-shares from 2014 to 2018 were the research objects. After screening, there were a total of 8,387 samples. It can be seen from the above table: (1) the maximum value of the management compensation level of listed companies,  $\ln Pay$ , is 16.19, and the minimum value is 12.71. Different companies have different compensation levels, which may be due to the industry and profitability of different companies. The average salary level of managements is 14.31, and the median is 14.29, indicating that the salary levels of managements in most listed companies are lower than the average level; (2) Corporate performance  $Perf_1$  is measured by ROE, with a maximum value of 0.308 and a minimum value -0.444, with an average value of 0.063. It can be seen that there is still a large difference in performance between different companies. (3) The average value of institutional investors' shareholding in listed companies is 6.935%, the median is 4.37%, of which the maximum reaches 56.12%, while the minimum value is only 0.2%, which indicates that more than half of institutional investors' shareholding ratio that is lower than the average level; (4) There are also large differences in the shareholding ratios



of different types of institutional investors, which shows that the development of various types of institutional investors in China is uneven; based on institutional investors, the average value of Stable is 0.498, and the median is 0, indicating that the proportion of trading institutional investors in Chinese capital market are above 50%. Investment funds account for the majority of institutional investors in China.

In terms of control variables, we can get these results by descriptive analyses: (1) the maximum value of the company size is 26.15, the minimum value is 19.92, and the average value is 22.42, and the gap between different company sizes is obvious; (2) the corporate debt leverage ratio is significantly higher, the largest value is 0.896, and the average value reaches 0.461. (3) The maximum sum of the squared H1 of the largest shareholder's shareholding ratio is 5621, the minimum value is 82.56, and the median value of 1116 is lower than its average value of 1474. It indicates ownership concentration is high; (5) The average coincidence of dual positions of the chairman and general manager in the sample is 0.238, and the median is 0, indicating that most companies have fewer overlaps of the two positions and the independence of the board of directors is higher; (6) The average value of independent director ratio Indep is 0.373, which is more than one-third, reflecting the requirement that the ratio of independent directors to the total number of directors of listed companies in China should not be less than one-third.

**Table 2.** Variable descriptive statistics

variable	Mean	Medium	Sd	min	max	N
Ln Pay	14.31	14.29	0.669	12.71	16.19	8387
Perfl	0.0630	0.0640	0.100	-0.444	0.308	8387
InstAll	6.935	4.370	9.029	0.200	56.12	8387
Stable	0.498	0	0.500	0	1	8387
Size	22.42	22.23	1.260	19.92	26.15	8387
Lev	0.461	0.458	0.207	0.0670	0.896	8387
H1	1474	1116	1203	82.56	5621	8387
Type	0.469	0	0.499	0	1	8387
Commit	3.937	4	0.460	2	5	8387
Dual	0.238	0	0.453	0	1	8387
Indep	0.373	0.333	0.0530	0.313	0.571	8387
Growth	0.183	0.0830	0.528	-0.511	3.724	8387
Meff	0.100	0.0800	0.0840	0.00900	0.526	8387

## 5.2 Regression results

According to the model 1 constructed for H1 above, and in order to obtain more robust results, this paper also performs regression analysis on two independent variables. By summarizing and sorting, we can get the following results. It can be seen from the table 3, when ROE is used as corporate performance index for regression, the adjusted  $R^2$  of the equation is 0.294 and

the F value is 125.5; when we use the return on net assets and the shareholding ratio of the overall institutional investor for regression, the adjusted  $R^2$  is 0.291 and 0.251. Considering the large sample size in this paper, model 1 is considered to have a good degree of fit and strong interpretation ability.

The correlation coefficient between company performance measured by ROE and management compensation Ln Pay is 1.414, and it is significant at the level of 1%, indicating that corporate performance has a positive impact on the management compensation of listed companies.

That institutional investors' shareholding ratio InstAll multiply corporate performance Perf1 is the cross-term Perf1 \* InstAll. The correlation coefficient of cross-term Perf1 \* InstAll is 0.013, significant at the level of 10%, indicating that the higher the overall institutional investor's shareholding ratio, the higher the performance sensitivity to management compensation. The earlier hypothesis 1 is verified.

From the regression of the control variables, it can be seen that the coefficient between corporate size and management compensation Ln Pay is significantly positive, indicating that the larger the corporate size, the higher the management compensation. The control variables that are also significantly positive also have management Expense ratio Meff and dual roles of chairman and general manager, indicating that if the positions of chairman and general manager are held by the same person, management compensation will increase; financial leverage Lev, ownership concentration H1, controlling shareholder type Type, corporate growth Growth and management compensation Ln Pay are significantly negative at the level of 1%; the independent director's coefficient of Indep is significantly negative at the level of 5%, indicating that the higher the proportion of independent directors in the board of directors, the lower the management compensation level. The coefficient of the total number of committees established by the Commission and management compensation is -0.013, but not significant. In general, most of the control variables show a certain significance in the model, so it is considered that the control variables exert a reasonable control effect.

The article also divides institutional investors into stable and trading types based on stability. The following table 4 shows the relationship between the stability of institutional investors and the performance sensitivity to management compensation. As it can be seen from the table 4, the cross term perf1 \* Stable of the company's performance Perf1 and the stability of institutional investors Stable is significant at the level of 1%, with a coefficient of  $0.62 > 0$ . When Stable = 1, for stable institutional investors, the positive impact of corporate performance Perf1 on management compensation Ln Pay is higher than trading investors when Stable = 0. Thus, the regression results support Hypothesis 2. In terms of control variables, except that the coefficient of the compensation committee is not significant, other control variables are

significantly related to management compensation to varying degrees.

**Table 3.** Regression results of the stability of institutional investors on sensitivity to management pay performance

VARIABLES	Ln Pay	Ln Pay	Ln Pay
Constant	8.318*** ( 51.09)	8.093*** (48.45)	8.340*** (51.29)
Perf1	1.518*** (22.80)		1.414*** (17.85)
InstAll		0.005*** (6.64)	0.003*** (3.09)
Perf1*InstAll			0.013* (1.83)
Size	0.280*** (42.56)	0.299*** (44.55)	0.278*** (42.07)
Lev	-0.246*** (-6.46)	-0.442*** (-11.62)	-0.245*** (-6.44)
H1	-0.000*** (-5.08)	-0.000*** (-3.44)	-0.000*** (-4.90)
Type	-0.085*** (-5.97)	-0.122*** (-8.34)	-0.091*** (-6.42)
Commit	-0.016 (-1.21)	-0.011 (-0.79)	-0.013 (-0.99)
Dual	0.041*** (2.89)	0.043*** (3.00)	0.041*** (2.90)
Indep	-0.281** (-2.39)	-0.349*** (-2.89)	-0.257** (-2.19)
Growth	-0.057*** (-4.76)	-0.016 (-1.28)	-0.057*** (-4.77)
Meff	0.545*** (6.42)	0.257*** (2.97)	0.529*** (6.22)
Ind	control	control	control
Year	control	control	control
Observations	8,387	8,387	8,387
R-squared	0.294	0.254	0.296
r <sup>2</sup> _a	0.291	0.251	0.294
F	133.6	109.2	125.5

\*\*\*significant at the 1% level \*\*significant at the 5% level \*significant at the 10% level

**Table 3.** Regression results of the stability of institutional investors on sensitivity to management compensation performance

	(1)	(2)	(3)
Constant	8.191*** (49.51)	8.340*** (51.29)	8.375*** (51.50)
Perf1		1.414*** (17.85)	1.220*** (13.69)
Stable	0.044*** (3.20)		-0.016 (-0.99)
Perf1*Stable			0.620*** (4.50)
Size	0.292*** (43.63)	0.278*** (42.07)	0.276*** (41.79)
Lev	-0.383*** (-10.11)	-0.245*** (-6.44)	-0.240*** (-6.33)
H1	-0.000*** (-3.97)	-0.000*** (-4.90)	-0.000*** (-4.92)
Type	-0.112*** (-7.76)	-0.091*** (-6.42)	-0.090*** (-6.36)
Commit	-0.012 (-0.85)	-0.013 (-0.99)	-0.012 (-0.88)
Dual	0.042*** (2.91)	0.041*** (2.90)	0.041*** (2.90)
Indep	-0.334*** (-2.80)	-0.257** (-2.19)	-0.265** (-2.26)
Growth	-0.026** (-2.15)	-0.057*** (-4.77)	-0.056*** (-4.67)
Meff	0.336*** (3.91)	0.529*** (6.22)	0.533*** (6.28)
Ind	control	control	control
Year	control	control	control
Observations	8,387	8,387	8,387
R-squared	0.270	0.296	0.298
r <sup>2</sup> _a	0.268	0.294	0.296
F	110.5	125.5	118.3

\*\*\*significant at the 1% level \*\*significant at the 5% level \*significant at the 10% level

### 5.3 Analysis of robustness results

In order to ensure the conservatism of the research results, this paper also performs a robustness test on the basis of regression. The method adopted is the variable substitution method. This paper chooses the return on total assets Perf2 instead of the return on assets Perf1 as the explanatory variable. The ROA index shows corporate income, corporate competitiveness and its future development prospects. Regression was then performed on the relevant variables. The results of the robustness test are basically in line with expectations. Therefore, the conclusion of this article is reliable.

## Conclusion

Based on the analysis of domestic and foreign literature and related theories, this paper proposes two hypotheses. The data of A-share listed companies in Shanghai and Shenzhen stock markets from 2014 to 2018 is selected for analysis. The sample data was subjected to descriptive statistics and correlation analysis. Then, from the three aspects of the institutional investor's overall shareholding ratio, organizational form, and stability, regression analysis was performed to examine their impact on performance sensitivity to management compensation.

1. There is a significantly positive correlation between the overall shareholding ratio institutional investors and performance sensitivity to management performance. As the influence scope of Chinese institutional investors has gradually expanded, their shareholding ratio has also gradually increased. Because institutional investors have advantages that individual investors cannot match in terms of funds and professions, they can play a more effective role in governance and supervision.
2. Compared with trading institutional investors, stable institutional investors can better promote performance sensitivity to management compensation, that is, the more stable the institutional investor, the more performance sensitive to management compensation can be. The reason for the above conclusion is that stable institutional investors have more motivating factors to encourage them to actively participate in corporate governance, monitor management in real time, and then pay attention to whether management compensation matches corporate performance. As for trading institutional investors, their shareholding ratio is low and fluctuates frequently, and they lack the motivation to actively participate in corporate governance. Therefore, their impact on performance sensitivity to management compensation is not as significant as that of stable institutional investors.

According to the theoretical and empirical analysis of this paper, we can see that institutional investors play a good role in corporate governance, promote the rationalization of management compensation mechanism, and thus improve the performance sensitivity to management compensation. In order to better promote institutional investors to play effective corporate governance role, this article proposes the following suggestions:

1. Develop an effective management compensation incentive mechanism to reasonably match corporate performance and compensation levels. According to the incentive theory extended by the principal-agent theory, in order to maximize the interests of shareholders, it is necessary to design a scientific compensation incentive policy to

promote the convergence of the ultimate benefits of management and shareholders, so as to promote management's enthusiasm for work and bring more rewards. Therefore, in order to make the incentive system work better, senior managers or corporate shareholders should take risky compensation into consideration when designing the remuneration system. Since the compensation of senior management and corporate performance have a stronger positive correlation, currency and equity incentives take the combination of short-term and long-term incentives. So that appropriately increase the proportion of long-term equity incentives in the compensation system according to the actual situation can improve the loyalty of managers and help companies achieve their goals.

2. Vigorously cultivate stable institutional investors and encourage them to actively participate in corporate governance. It can be seen from the final conclusion of the article that the more stable the institutional investors, the more conducive to the performance sensitivity to corporate management compensation. Stable institutional holdings can actively participate in corporate governance, exercise strong supervision of management, and affect the matching of management compensation mechanisms with corporate performance, thereby promoting the goal convergence between managements and corporate shareholders. Therefore, more efforts must be made to support the development of stable institutional investors so that they can better play the role of facilitator in capital market.

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