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Research on the Relationship Between CFO's Status and Firm Over-Investment

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Abstract. This paper investigates the relationship between CFO's status and firm over-investment from the unique perspective of CFO's position in Top Management Team(TMT), considering traditional cultural background of China. This paper indicates that there is a positive relationship between the rank of CFO in the TMT and the status. The study finds that CFO's status have negative impact on firm over-investment; and the negative impact only exist in non-state-owned firms. Additional tests show that the CFO's high status strengthens the effectiveness of its compensation contract; and the restraining effect of CFO's status on firm over-investment eventually will be reflected in the market, reducing its risk of stock market crashes.

Keywords. CFO; Over-investment; Rank

1. Introduction

As a member of the senior management team, the Chief Financial Officer(CFO) plays an indispensable role in the operation and development of the firm. CFO not only needs to be responsible for the majority of investors, but also needs to enhance risk awareness, strengthen the overall supervision of firm operation, and gradually become a strategic partner with the Chief Executive Officer(CEO) to promote the steady and long-term development of firms. Compared with western countries, China has only gradually established and implemented the CFO system in recent years. However, with the rapid development of market economy, corporate executives have realized the necessity and urgency of strengthening value management, and have begun to give more functions to the CFO to encourage it to play an active role in the operation and development of the company. However, it should be objectively recognized that whether the functions of CFO can be fully demonstrated and whether the CFO can promote the steady development of the company is not only strongly related to the personal characteristics and abilities of the CFO, but also largely subject to the power and status of the CFO in the senior management team. Studies have shown that the ranking of top executives in the top management team can basically synthesize and truly reflect the status and power of top executives in the top management team(Ke et al., 2018).Therefore, it is particularly important to explore the role of CFO status in firm resource allocation and organizational output.

China has long been influenced by the concept of "order of rank and inferiority" in the Confucian culture, and there are obvious hierarchical concepts and rights-oriented. Ranking is one of the most intuitive manifestations of differences in hierarchy and power. In meetings, news, public documents, dinner tables and other formal or informal occasions, the ranking hidden hierarchy and power of the members. As the most formal way for firms to disclose information, annual report will inevitably be

affected by traditional culture. Unlike the practice in the United States, where most companies are listed in alphabetical order, the ranking of executive names disclosed in the annual reports of listed companies in China usually reflects their status and power. So the higher the CFO, the higher the CFO's status.

CFOs with a higher status can better participate in the decision-making of firms, thus enhancing their financial executive power and effectively performing their management functions. Then, can the CFO with higher status better play its role to optimize the resource allocation of the firm? Taking over-investment as an example, due to the existence of agency problem, managers have the impulse to build a "manager empire" and will abuse free cash, which leads to over-investment, reduces the efficiency of resource allocation and damages the interests of shareholders. So, in the context of the imperfect development of corporate governance in China, can a high-ranking CFO curb over-investment? Is there any difference in the inhibition effect under stated-owned firms and non-stated-owned firms? Will the market react to this dampening effect? All these questions are worth our further study.

In order to answer the above questions, this article analyzes the CFO in the senior management team, the sort of disclosure is closely related to status. Our sample covers all publicly listed Chinese firms over 2013-2018. The research shows that the higher the status of CFO, the more likely it is to restrain the over-investment of firms. Secondly, the grouping results show that the inhibitory effect of CFO status only exists in non-stated-owned firms. Finally, the high status of CFO strengthens the effectiveness of its compensation contract, and the inhibiting effect of CFO on over-investment of firms can be reflected in the market eventually, reducing the risk of stock price crash of firms.

The possible contributions of this paper are as follows: First, based on China's unique traditional cultural background, this paper starts from "ranking", breaking through the inherent limitations of previous studies on the personal characteristics of CFOs and further analyzes the behavioral strategies and economic consequences of corporate management from the perspective of over-investment. Second, it provides a new supplement to the literature on the influencing factors of firm over-investment. Most of the current literature studies the influence of management's defense motivation, managers' overconfidence and risk preference on firm over-investment, but few studies are conducted from the perspective of managers' status. Third, China's corporate governance system is not perfect, so the management function of CFO should be further strengthened, which has an important enlightening effect on the development of corporate governance and CFO system in China.

2. Literature Review and Hypothesis Development

2.1. Literature review

2.1.1. Literature review of CFO status

Previous literature on the status and power of the CFO mainly studied from three perspectives: the absolute power of the CFO, the concurrent role of the CFO and the relationship between the CFO and CEO.

Rabe(1962) put forward the concept of management power for the first time, and defined it as "the motivation and ability of management to control the firm and achieve its own goals". Finkelstein(1992) identified four dimensions of managers' power, namely, organizational structure power, ownership power, expert power and prestige power, and then selected objective indicators as proxy variables of each power dimension to comprehensively measure managers' power. On the basis of Finkelstein's research, Ke(2018) added political power, seniority power and gender power to measure the status and power of CFO according to the unique background of China. Zhang et al.(2019) constructed a comprehensive scoring index to measure the power and status of the CFO by using the stock holding ratio, age, education level and other indicators of the CFO. The research shows that the power advantage of the CFO is positively correlated with the performance of the firm, but when the advantage reaches a certain critical value, the two are negatively correlated.

Finkelstein(1992) believes that the board of directors can provide power and influence to its members. When a CFO enters the board as an internal or executive director, it can have more financial influence

over the board. Sun et al.(2015) found that internal directors of CFO can help the board of directors to enhance their supervision awareness, strengthen the full play of their supervision function, and reduce the level of discretionary accrual earnings of firms. The research of Xiang(2015) also shows that CFO entry into the board of directors can not only restrain over-investment of firms, but also alleviate the negative impact of over-investment on future business performance to a certain extent.

The concurrent role of CFO as secretary of the board will also have a certain impact on the business performance of the firm. Yao et al.(2019) analyzed and tested the influence of CFO concurrently serving as secretary of the board of directors on the profitability of an firm's insider trading, and reached the conclusion that CFO concurrently serving as secretary of the board of directors would significantly inhibit the profitability of an firm's insider trading. To some extent, CFO serving as secretary of the board of directors will weaken the internal supervision of firms and give them more space for earnings manipulation, which will lead to the decline of the quality of accounting information(Wang et al., 2019).

Gao et al.(2020) measured the status and power of the CFO as whether the CFO ranked second to the CEO in the top management team, discussed the relationship between the power of the CFO and abnormal audit fees, and concluded that the two had a negative impact. Liu(2015) used the absolute compensation gap between CFO and CEO in the reporting period as the index of power difference to measure the status and power of CFO.

2.1.2. Literature review of over-investment

Since Jensen(1986) proposed that the principal-agent problem would cause over-investment of firms, there have been endless studies on the impact of over-investment on firm value. Jiang et al.(2009) found in their research that there is a significant correlation between the age, education level and working background of the management and the board of directors of listed firms in China and the over-investment behavior of firms. Further research shows that the elder the average senior management team is, the lower the over-investment level of the firm is. In state-owned firms, there is a high proportion of male executives, which plays a greater role in curbing over-investment(Lu et al., 2017).The higher the level of over-investment, the lower the level of market returns, and the more likely firms are to face negative market reactions(Titman et al., 2004).Du et al.(2011) found that there is a negative correlation between over-investment and firm value in state-owned firms. Corporate over-investment significantly increases the risk of stock price collapse in the future, and the impact of such risk is long-term(Jiang et al., 2015), and market sentiment will aggravate such impact(Lin, 2016).

From the above review, it can be seen that in the existing literature on the status and power of the CFO, there is little discussion on the ranking of the CFO in the senior management team. Under the background of China's unique cultural, ranking plays a important role in the daily management of firms. In addition, there is no evidence on how the position of senior management, especially the position of CFO, plays a role in the studies on over-investment, which provides a rare opportunity for this study.

2.2. Hypothesis development

Since ancient times, China has paid attention to the difference of rank and inferiority, and people of different classes have their own specific ranking standards. Ancient officialdom was also very strict in ranking and inferiority. In the Qin and Han Dynasties, the ancients advocate for right, with right as their respect, and "moving to the left" meant that officials were demoted. Cui(2013) focused on the Lu Shi Chunqiu and found that "high and low status" was also one of the principles followed by the ranking of ancient Chinese nouns. "Preference and inferiority" is a criterion strictly observed in the process of ranking(Zhang et al., 2002).Therefore, it can be inferred that in the annual report disclosed by the firm, the higher the ranking order of the CFO in the senior management team, the higher its status will be. Finkelstein(1992) stated that status is one of the legitimate sources of power, and the size of the power possessed by individuals is directly related to whether their functions can be effectively performed and the performance results. Mao(2016) pointed out in his research that "the power distribution within the senior management team is not equal, and not all senior management team members are equally involved in strategic decision-making". Higher-ranking members can have

more say in day-to-day work discussions and thus exert greater influence on decisions. Therefore, the higher the CFO ranks, the more power it has and the more involved it is in the decision-making of the company.

Specifically, this paper will explain the role path of high-status CFO from the following three aspects: decision-making perspective, control perspective and supervision perspective. First, from the perspective of decision-making, the higher the status of CFO, the more efficient the investment will be. Firms usually adopt collective decision-making when making major decisions. According to the theory of senior management team, the more powerful the CFO is, the higher his position in the company will be. He can give more play to his financial expertise and exert greater influence on the company's decision-making(Gao et al., 2020).Investment decision, financing decision and dividend policy are related to the survival and development of firms, and investment decision, as the starting point of financial policy, is more important than financing and dividend policy. When the CFO enters the board of directors, over-investment behavior of firms can be restrained to a certain extent(Xiang, 2015).The CFO has professional financial analysis ability, and can judge the feasibility of investment projects. The higher the status of CFO, the higher the discourse power, the better the CFO can give play to his financial expertise and actively elaborate his personal opinions on unreasonable investment projects in joint discussions, so as to optimize investment decisions, improve the efficiency of capital utilization of firms and curb over-investment.

Secondly, from the perspective of control, the higher the status of CFO, the better the accounting conservatism of firms can be improved, so as to restrain the over-investment of firms. Different from CEO, CFO's performance evaluation is based on the company's financial policies, which makes CFO pay special attention to the company's financial policies(Trzeciakiewicz,2012), and the choice of accounting policies is particularly important. Wang et al.(2014) showed in their research that CFO's background would significantly affect the degree of management defense, leading to different proportions of asset impairment provisions. The choice of accounting policy will affect the quality of financial report, and conservatism is one of the standards to measure the quality of financial report. With the improvement of CFO status, CFO's experience, personal reputation and corporate resources will be more stable. Therefore, CFO will strengthen the degree of management defense, avoid risks and choose more stable accounting policies(Jiang et al., 2018).The improvement of the conservatism of accounting policies forces managers to report the losses of firms in time, which increases the possibility of managers being punished and fired by the board of directors. Managers will be more cautious in making investment decisions to avoid the damage of over-investment to shareholders and the overall interests of the firm.

Thirdly, from the perspective of supervision, the higher the status of CFO, the more able it is to strengthen its supervision function. The exertion of CFO's supervisory function is closely related to the status of CFO. The higher the status and power, the more the CFO can contain the CEO, so as to supervise the CEO(Jiang et al., 2013).CFO serving as secretary of the board of directors can better perform its supervisory function, thus reducing earnings manipulation(Sun et al., 2015).Jian(2011) found in the study that the higher the status of CFO, the less likely it is to co-operate with the CEO, which will have a negative impact on their career, and thus constrain the CEO's selfish behavior. The CFO has a low status and may be forced to conduct accounting manipulation under the pressure of the CEO(Feng,2011). The decision-making of the CFO may also be influenced by the CEO, or even lead to resignation(Zhai et al., 2012).Therefore, CFO with a high status can strengthen the operation and management of firms and reduce the possibility of financial fraud, which can improve the quality of accounting information and reduce the degree of information asymmetry to a certain extent. The decrease of the degree of information asymmetry can strengthen the supervision of shareholders on managers, reduce the impulse of management to build "manager empire" and duty consumption, so as to restrain the over-investment behavior of firms.

Based on the above analysis, this paper puts forward the following hypothesis: when other conditions remain unchanged, CFO status has a significant negative relationship with firm over-investment.

3. Research Design

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3.1. Data and sample selection

Our initial sample consists of all firms listed in Shanghai and Shenzhen stock exchanges from 2013-2018. To ensure the representativeness and accuracy of the research data, samples were processed as follows:(1) samples of financial industry were excluded;(2) samples of ST and *ST firms were excluded; and(3) samples with missing data were excluded. Our final sample contains 2060 unique firms covering 4610 firm-years data. In this paper, CFO characteristic data were collected manually from the annual reports, and financial and other data were collected from China Stock Market and Accounting Research(CSMAR)database. In order to reduce the influence of outliers on the research conclusions, the continuous variables used in the study were processed with Winsorize at the beginning and end of 1%.

3.2. Variables

3.2.1. Measure of the likelihood of over-investment

This paper draws on Richardson's(2006) model to describe the likelihood of over-investment in firms. The calculation model is as follows:

$$Inv_{i,t} = \alpha_0 + \alpha_1 Size_{i,t-1} + \alpha_2 Lev_{i,t-1} + \alpha_3 Growth_{i,t-1} + \alpha_4 Ret_{i,t-1} + \alpha_5 Age_{i,t-1} + \alpha_6 Cash_{i,t-1} + \alpha_7 Inv_{i,t-1} + \sum industry + \sum year + \varepsilon_{i,t} \quad (1)$$

In model(1), $Inv_{i,t}$ is the sum of new investment in machinery equipment, vehicles, land, buildings and development expenditures, less the sale of fixed assets and scaled by lagged total assets.

3.2.2. The CFO status

This paper draws on the research of Markoczy(2016) to measure the status of CFO in the senior management team

$$Status = 1 - Rank/TMT_{size} \quad (2)$$

Where, Rank represents the order in which CFO information is disclosed in the "senior management" information in the annual report, and TMT_{size} represents the total number of senior management. The minimum value of Rank is 1(ranking the first), and the maximum value is the total number of executives(ranking the last). Therefore, the higher the ranking of CFO is, the higher the status of CFO is.

3.2.3. The Character of CFO

This paper draws on the research of existing literature(Zhang et al., 2011; Li et al., 2012; Mao et al. 2013), the background of the control to the CFO characteristic variables, including the age of the CFO(CFOage), gender(Sex), education background(Ebackg) work background(Wbackg), internal promotion(Ipromotion), concurrently chairman Secretary(Secretary), as a part-time Director(Director), Deputy general manager(Deputy), the remuneration(Compensation), term(Tenure) in addition, this article also control the number of senior management staff(TMT).

3.2.4. Control variables

In this paper, based on the existing literature at home and abroad, the following control variables, including company Size(Size), the financial leverage(Lev), the firm Growth(Growth), stock return(Ret), Age(Age), companies operating Cash flow(Cash), the joining together of two position(Dual), board independence(Indp), major shareholders holdings(Fst) and Year(Year) and industry(Ind) fixed effects. Variables are defined in Table 1.

Table 1. Variable definitions

Variable types	Variable symbol	Definition
Dependent variable	$OverInv_{i,t}$	Richard's model was used for regression, using the parts with residuals greater than 0.
Independent variables	$Status_{i,t-1}$	The CFO's ranking among senior management teams

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CFO characteristic variable	$CFOage_{i,t-1}$	The natural log of the CFO's age
	$Sex_{i,t-1}$	If the CFO is female, the value is assigned to 1, otherwise it is 0
	$Ebackg_{i,t-1}$	If the CFO has a graduate degree or above, the value is 1; otherwise, it is 0
	$Wbackg_{i,t-1}$	A CFO who has worked in finance, accounting or economic management is assigned a value of 1, otherwise it is 0
	$Ipromotion_{i,t-1}$	The CFO assigns a value of 1 for internal selection and 0 otherwise
	$Secretary_{i,t-1}$	If the CFO is also the secretary of the board, the value is 1, otherwise it is 0
	$Director_{i,t-1}$	If the CFO is also a director, the value is 1; otherwise, it is 0
	$Deputy_{i,t-1}$	If the CFO is also deputy general manager, the value is 1; otherwise, it is 0
	$Compensation_{i,t-1}$	The natural log of current CFO compensation
	$Tenure_{i,t-1}$	The natural log of CFO tenure
	$TMT_{i,t-1}$	The natural logarithm of the number of people on the executive team
Control variables	$Size_{i,t-1}$	The natural log of the total assets of an firm at the end of the year
	$Lev_{i,t-1}$	Total liabilities/total assets at the end of the year
	$Growth_{i,t-1}$	Tobin Q value at the end of the year
	$Ret_{i,t-1}$	The annual return on an individual stock taking into account the reinvestment of cash dividends
	$Age_{i,t-1}$	The natural logarithm of the years between the financial reporting year and the IPO year +1
	$Cash_{i,t-1}$	(monetary funds + net short-term investments)/total assets
	$Dual_{i,t-1}$	If the chairman is also the general manager, the value is 1, otherwise it is 0
	$Indp_{i,t-1}$	Number of independent directors/total number of board members
	$Fst_{i,t-1}$	Number of shares held by the largest shareholder/total number of shares
	$BM_{i,t-1}$	Business book-to-market ratio
	$ROA_{i,t-1}$	Total profit/total assets of the firm
	$Oturnover_{i,t-1}$	Average monthly excess turnover rate of individual stocks
	$Wreturn_{i,t-1}$	The annual average weekly yield of individual stocks
	$Sigma_{i,t-1}$	Standard deviation of annual weekly returns of individual stocks
	$Absacc_{i,t-1}$	Correct the absolute value of the Jones model residuals

3.3. Research model

In order to test the influence of CFO status on over-investment, We estimate the following model:

$$OverInv_{i,t} = \alpha_0 + \alpha_1 Status_{i,t-1} + \alpha_2 CFO_{i,t-1} + \alpha_3 ControlV_{i,t-1} + Year + Ind + \varepsilon_{i,t-1} \quad (3)$$

In Model(3), $\mathrm{OverInv}_{i,t}$ is the likelihood of over-investment in period t;$\mathrm{Status}_{i,t-1}$ is CFO status variable of period t-1;$\mathrm{CFO}_{i,t-1}$is the CFO characteristic variable in period t-1;$\mathrm{ControlV}_{i,t-1}$ refers to

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the corresponding control variables of period t-1, as shown in Table 1. Year and Ind represent dummy variables of Year and industry respectively.

4. Empirical results

4.1. Descriptive statistics

Table 2. Descriptive statistics

Variable	N	Mean	Std	Min	P25	Med	P75	Max
$OverInv_{i,t}$	4610	0.058	0.080	0	0.011	0.029	0.069	0.399
$Status_{i,t-1}$	4610	0.307	0.272	0	0.000	0.250	0.500	0.857
$CFOage_{i,t-1}$	4610	3.822	0.131	3.497	3.738	3.829	3.912	4.111
$Sex_{i,t-1}$	4610	0.307	0.461	0	0	0	1	1
$Ebackg_{i,t-1}$	4610	0.287	0.453	0	0	0	1	1
$Wbackg_{i,t-1}$	4610	0.999	0.036	0	1	1	1	1
$Ipromotion_{i,t-}$	4610	0.766	0.423	0	1	1	1	1
$Secretary_{i,t-1}$	4610	0.120	0.325	0	0	0	0	1
$Director_{i,t-1}$	4610	0.279	0.448	0	0	0	1	1
$Deputy_{i,t-1}$	4610	0.290	0.454	0	0	0	1	1
$Compensation$	4610	12.960	0.741	10.921	12.506	12.955	13.408	14.979
$Tenure_{i,t-1}$	4610	3.500	1.114	0	2.944	3.738	4.331	5.124
$TMT_{i,t-1}$	4610	1.817	0.350	1.099	1.609	1.792	2.079	2.708
$Size_{i,t-1}$	4610	22.304	1.274	19.976	21.393	22.161	23.027	26.086
$Lev_{i,t-1}$	4610	0.436	0.203	0.059	0.271	0.436	0.590	0.868
$Growth_{i,t-1}$	4610	0.233	0.565	0.473	0.003	0.125	0.296	4.370
$Ret_{i,t-1}$	4610	0.106	0.503	0.634	0.219	0.009	0.286	2.207
$Age_{i,t-1}$	4610	2.217	0.751	0.693	1.609	2.398	2.890	3.219
$Cash_{i,t-1}$	4610	0.224	0.183	0.022	0.104	0.169	0.283	1.089
$Dual_{i,t-1}$	4610	0.299	0.458	0	0	0	1	1
$Indp_{i,t-1}$	4610	0.392	0.964	0.143	0.333	0.375	0.444	0.667
$Fst_{i,t-1}$	4610	0.338	0.143	0.873	0.228	0.319	0.434	0.729

Table 2 lists the descriptive statistical results of the main variables in the paper. The average over-investment index quoted in the paper is 0.058, indicating that the average net over-investment of the sample companies accounts for 5.8% of the total assets. The minimum value of status is 0, and the maximum value is 0.857, indicating that the CFO ranks at both the top and the bottom in the senior management team. The mean value is 0.307, indicating that the sample company's CFO ranks at the bottom in the senior management team in general. The distribution of other variables is within a reasonable range. Table 3 lists the correlation coefficients of the likelihood of over-investment, CFO status and the main control variables. The lower triangle is Pearson's correlation coefficient and the upper triangle is Spearman's correlation coefficient. The correlation coefficients of CFO status($Status_{i,t-1}$) and $OverInv_{i,t}$ are -0.086 and -0.068 respectively, both of which are significant at the 1% level, indicating that the higher the CFO status of an firm is, the more likely it is to restrain the over-investment of the firm without controlling the influence of other factors, which is in line with the theoretical prediction in the paper.

Table 3. Correlation coefficients of major variables

	$OverI_i$	$Status$	$Size_{i,t-}$	$Lev_{i,t-}$	$Growt$	$Ret_{i,t-}$	$Age_{i,t-}$	$Cash_{i,}$	$Dual_{i,}$	$Indp_{i,}$	$Fst_{i,t-}$
$OverI$	1	0.068 ***	0.216 ***	0.165 ***	0.037 **	0.090 ***	0.207 ***	0.085 ***	0.068 ***	0.082 ***	0.013
$Status_{i,t}$	0.086	1	0.150	0.112	0.010	0.013	0.096	0.036	0.058	0.026	0.010

	***		***	***			***	**	***	*	
$Size_{i,t}$	0.235***	0.158***	1	0.563***	0.050***	0.036**	0.445***	0.177***	0.141***	0.131***	0.137***
$Lev_{i,t-}$	0.152***	0.111***	0.559***	1	0.003	0.017	0.421***	0.290***	0.119***	0.040***	0.072***
$Growt$	0.018	0.001	0.052***	0.052***	1	0.101***	0.119***	0.178***	0.089***	0.039***	0.043***
$Ret_{i,t-}$	0.108***	0.026*	0.074***	0.009	0.113***	1	0.033**	0.091***	0.025*	0.063***	0.011
$Age_{i,t}$	0.153***	0.094***	0.427***	0.433***	0.017	0.072***	1	0.216***	0.189***	0.147***	0.033**
$Cash_i$	0.080***	0.040***	0.151***	0.276***	0.313***	0.136***	0.197***	1	0.069***	0.035**	0.003
$Dual_i$	0.064***	0.057***	0.129***	0.119***	0.052***	0.008	0.193***	0.067***	1	0.022	0.020
$Indp_i$	0.083***	0.022	0.112***	0.038**	0.039***	0.073***	0.140***	0.029**	0.011	1	0.032**
$Fst_{i,t-}$	0.009	0.007	0.184***	0.076***	0.003	0.023	0.035**	0.002	0.024*	0.035**	1

Note: The lower triangle is Pearson coefficient, and the upper triangle is Spearman coefficient.*, ** and *** indicate that the coefficient is significant at the level of 10%, 5% and 1%, respectively

4.2. Regression results for all publicly

Table 4. The influence of CFO status on over-investment

VARIABLES	Full sample (1)	SOE sample (2)	Non-SOE sample (3)
$Status_{i,t-1}$	-0.0242***	-0.0172	-0.0318***
	(-2.983)	(-1.646)	(-2.593)
$CFOage_{i,t-1}$	-0.0183	-0.0372	3.59e-05
	(-0.995)	(-1.484)	(0.00134)
$Sex_{i,t-1}$	0.00376	0.00990	9.11e-06
	(0.723)	(1.434)	(0.00115)
$Ebackg_{i,t-1}$	-0.00657	0.000474	-0.0123
	(-1.189)	(0.0630)	(-1.546)
$Wbackg_{i,t-1}$	-0.00233	0.0194	-0.0331
	(-0.0482)	(0.380)	(-0.367)
$Ipromotion_{i,t-1}$	0.000589	-0.0180**	0.00628
	(0.101)	(-2.132)	(0.756)
$Secretary_{i,t-1}$	0.00309	0.000459	0.00234
	(0.466)	(0.0530)	(0.235)
$Director_{i,t-1}$	0.0115**	0.0133*	0.0135*
	(2.111)	(1.715)	(1.662)
$Deputy_{i,t-1}$	0.00565	-0.00111	0.0105
	(1.132)	(-0.17)	(1.40)
$Compensation_{i,t-1}$	-0.00678**	-0.00397	-0.00704
	(-2.001)	(-0.927)	(-1.307)
$Tenure_{i,t-1}$	0.00347**	0.00355	0.00292
	(2.057)	(1.562)	(1.181)
$TMT_{i,t-1}$	0.00473	-0.00309	0.0115
	(0.661)	(-0.336)	(1.048)
$Size_{i,t-1}$	-0.0561***	-0.0583***	-0.0522***

	(-12.32)	(-9.095)	(-7.825)
$Lev_{i,t-1}$	-0.0445***	-0.0312	-0.0609***
	(-2.790)	(-1.363)	(-2.712)
$Growth_{i,t-1}$	-0.00383	-0.00600	-0.00328
	(-1.432)	(-1.474)	(-0.891)
$Ret_{i,t-1}$	0.00554*	0.00169	0.00750*
	(1.862)	(0.379)	(1.764)
$Age_{i,t-1}$	0.0223**	0.0457**	0.0128
	(2.302)	(2.227)	(0.908)
$Cash_{i,t-1}$	0.0194*	0.0125	0.0208
	(1.875)	(0.801)	(1.481)
$Dual_{i,t-1}$	-0.00227	-0.0104*	0.00279
	(-0.485)	(-1.671)	(0.399)
$Indp_{i,t-1}$	-9.69e-05	-0.000178	-8.25e-05
	(-0.535)	(-0.727)	(-0.313)
$Fst_{i,t-1}$	0.000214	0.000182	0.000304
	(0.811)	(0.490)	(0.772)
Year/Ind	CONTROL	CONTROL	CONTROL
Constant	1.395***	1.451***	1.264***
	(11.00)	(7.681)	(6.654)
Observations	4610	1847	2,763
Adj.R^2	0.132	0.129	0.143

*, ** and *** indicate that the coefficient is significant at the level of 10%, 5% and 1%, respectively

Table 4 of column(1) shows the regression results of corporate over-investment on CFO status. As can be seen from the results, the regression coefficient of CFO status is -0.0242, which is significant at the 1% statistical level. The research conclusion preliminarily verifies the theoretical prediction of the paper, and shows that the higher the CFO status, the lower the degree of over-investment.

4.3. Regression results for SOES and non-SOES separately

Considering that corporate governance models with different ownership properties are different, there may be differences in the function positioning of CFO and in the inhibition effect on over-investment of firms. Chen(2012) on the basis of predecessors' research achievements for reference, the investment through in-depth analysis of state-owned firms, said in the process of its investment, economic efficiency maximization is not the ultimate goal, there are a lot of factors, local government intervention of local economic growth and employment and so on will largely influence the investment efficiency of state-owned firms. On the contrary, the resource allocation of non-stated-owned firms is mainly realized through the differentiated authority related to identity and status(Li, 2001).Therefore, it can be inferred that the role of CFO should be more significant in non-stated-owned firms.

According to the differences in the nature of firm property rights, this paper divided the samples into state-owned firms and non-stated-owned firms, and conducted grouping regression. The results are shown in Table 4 of column(2) and(3).The results show that the regression coefficient of CFO status is negative in both the state-owned firms and the non-stated-owned firm, but only the non-stated-owned firms group is significant at the statistical level of 1%, while in the state-owned firms group, the inhibition effect of CFO status on over-investment is not significant. The regression results support the inference of this paper. In non-stated-owned firms whose authority differentiation is mainly reflected by status, CFO with high status is more able to restrain over-investment.

4.4. Further research

If the high status of a CFO can curb over-investment, are there incentives for high-ranking CFOs to curb over-investment? What are the economic consequences of the CFO's ability to curb corporate over-investment? This is an important issue worth paying attention to. This paper analyzes the incentive mechanism of CFO and empirical tests the possible influence of over-investment on the

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market as a transmission path.

4.4.1. CFO incentive mechanism

Current studies show that when the CEO and other senior executives have financial background or the firm has set up a special financial decision-making committee, the CEO will greatly reduce the dependence on the CFO and thus reduce the incentive to the CFO, which is objectively manifested as a decrease in the sensitivity of compensation and performance(Gore,2011).On the contrary, the greater the power of CFO, the higher the degree of its participation in decision-making, indicating that the more dependent the firm is on it, the stronger the incentive will be given to it. The performance-based compensation incentive mechanism has been widely used, and the higher status of CFO will strengthen the effectiveness of its compensation incentive mechanism, thus enhancing its sensitivity to compensation. Therefore, this paper predicts that the higher the CFO status is, the higher the sensitivity of the CFO's compensation performance will be. According to principal-agent theory, performance-based executive compensation contracts are conducive to motivating executives to make greater contributions to the firm. Over-investment due to the abuse of cash flow will eventually damage the value of the firm, so the CFO has an incentive to curb the over-investment.

In order to test whether there is an incentive mechanism for CFO to restrain over-investment, that is, whether high status can improve their sensitivity to pay and performance, the following model is established in this paper:

$$Lncomp_{i,t} = \alpha_0 + \alpha_1 ROA_{i,t} + \alpha_2 Status_{i,t} + \alpha_3 Status_{i,t} \times ROA_{i,t} + \alpha_4 ControlV_{i,t} + Year + Ind + \varepsilon_{i,t} \quad (4)$$

Where, $\mathrm{Lncomp}_{i,t}$ is the natural logarithm of CFO compensation in the current period; $\mathrm{ROA}_{i,t}$ is the business performance of the firm; $\mathrm{Status}_{i,t}$ is CFO status variable; $\mathrm{ControlV}_{i,t}$ is the control variable, as shown in Table 1.

Table 5 shows the results of the CFO status and compensation performance sensitivity test. In column(1), the operating performance variable($\mathrm{ROA}_{i,t}$) is significantly positive, indicating that the design of corporate CFO compensation contracts is based on performance appraisal. In column(2), when the multiplier of business performance and CFO status is added, the coefficient of the multiplier is 1.017, and it is significant at the level of 5%. This indicates that the high status of CFO enhances the effectiveness of its compensation contract, and the sensitivity of compensation performance is higher. CFO motivation analysis is supported.

Table 5. The influence of CFO status on corporate over-investment: compensation incentive analysis

VARIABLES	$\mathbf{Lncomp_{i,t}}$	
	(1)	(2)
$ROA_{i,t}$	1.521***	1.147***
	(6.809)	(3.992)
$Status_{i,t}$		0.0455*
		(1.879)
$Status_{i,t} \times ROA_{i,t}$		1.017**
		(1.969)
$CFOage_{i,t}$	-0.0372	0.00166
	(-1.484)	(0.0155)
$Sex_{i,t}$	-0.0541*	-0.0531*
	(-1.786)	(-1.752)
$Ebackg_{i,t}$	0.0718**	0.0685**
	(2.234)	(2.129)
$Wbackg_{i,t}$	0.509*	0.559**
	(1.812)	(1.987)
$Ipromotion_{i,t}$	-0.0414	-0.0433

	(-1.220)	(-1.276)
$Secretary_{i,t}$	0.0757*	0.0749*
	(1.960)	(1.940)
$Director_{i,t}$	0.0493*	0.0209
	(1.725)	(0.659)
$Deputy_{i,t}$	0.0795***	0.0699**
	(2.776)	(2.408)
$Tenure_{i,t}$	0.205***	0.203***
	(22.99)	(22.62)
$TMT_{i,t}$	-0.103**	-0.120***
	(-2.504)	(-2.868)
$Size_{i,t}$	0.266***	0.268***
	(10.19)	(10.26)
$Lev_{i,t}$	-0.122	-0.131
	(-1.312)	(-1.411)
$Growth_{i,t}$	0.00747	0.00704
	(0.478)	(0.451)
$Ret_{i,t}$	0.0175	0.0171
	(0.998)	(0.980)
$Age_{i,t}$	-0.0283	-0.0240
	(-0.500)	(-0.425)
$Cash_{i,t}$	0.0235	0.0217
	(0.388)	(0.358)
$Dual_{i,t}$	-0.00604	-0.00513
	(-0.221)	(-0.188)
$Indp_{i,t}$	0.00205*	0.00203*
	(1.945)	(1.926)
$Fst_{i,t}$	-0.000386	-0.000432
	(-0.250)	(-0.281)
Firm×year FE	Yes	Yes
Constant	5.778***	5.767***
	(7.917)	(7.894)
Observations	4,610	4,610
Adj.R^2	0.361	0.363

*, ** and *** indicate that the coefficient is significant at the level of 10%, 5% and 1%, respectively

4.4.2. The economic consequences of the inhibiting effect of CFO status on over-investment

The above analysis has drawn the conclusion that the higher the CFO status is, the more likely it is to restrain the over-investment of the firm. So will curbing corporate over-investment prevent market extremes such as stock crashes? Wang et al.(2015) found that stock crash would seriously damage the interests of shareholders, shake investors' confidence in the capital market, and more seriously cause the misallocation of resources, thus affecting the development of the economy. The development of corporate governance system in China is not perfect, which makes over-investment exist in listed companies. The existence of the separation of power and responsibility makes managers have the impulse to build a "manager empire" and make over-investment. A large amount of investment will bring a certain degree of rapid development to the firm in the short term. But in the long run, the gains from over-investment are just false bubbles, and will not bring any real development to firms. Once bad news hits the market, the fake bubble collapses, causing share prices to fall and shareholders' rights to suffer. Jiang et al.(2015) empirically analyzed that corporate over-investment would significantly aggravate the risk of stock price crash in the future. In conclusion, this paper puts forward the following hypothesis: Can CFO status affect the stock crash risk of firm by restraining over-investment?

In order to test the economic consequences of CFO status restraining over-investment, that is,

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whether high status can reduce the risk of stock price crash, this paper establishes the following model:

$$CrashR_{i,t} = \alpha_0 + \alpha_1 Status_{i,t-1} + \alpha_2 ControlV_{i,t-1} + Year + Ind + \varepsilon_{i,t-1} \quad (5)$$

Where, $\mathrm{CrashR}_{i,t}$ is the risk of stock price crash, which is measured by negative return skewness coefficient(NCSKEW). $\mathrm{Status}_{i,t-1}$ is CFO status variable; $\mathrm{ControlV}_{i,t-1}$ is the control variable, see Table 1 for details.

Table 7 lists the regression results of stock price crash risk on CFO status. The regression coefficient of CFO status $\mathrm{Status}_{i,t-1}$ is -0.375, which is significant at the statistical level of 1%.It also verifies the theoretical inference above that the inhibiting effect of CFO status on over-investment will reduce the risk of stock price crash of firms.

Table 6. The influence of CFO status on over-investment: economic consequence analysis

VARIABLES	$NCSKEW_{i,t}$
$Status_{i,t-1}$	-0.375***
	(-4.192)
$CFOage_{i,t-1}$	0.0139
	(0.0648)
$Sex_{i,t-1}$	-0.0496
	(-0.834)
$Ebackg_{i,t-1}$	-0.0111
	(-0.241)
$Wbackg_{i,t-1}$	-0.262
	(-0.437)
$Ipromotion_{i,t-1}$	-0.0111
	(-0.202)
$Secretary_{i,t-1}$	0.0997
	(1.338)
$Director_{i,t-1}$	0.117*
	(1.902)
$Deputy_{i,t-1}$	0.0646
	(1.147)
$Compensation_{i,t-1}$	0.0505
	(1.390)
$Tenure_{i,t-1}$	-0.00565
	(-0.298)
$TMT_{i,t-1}$	0.0348
	(0.446)
$Size_{i,t-1}$	0.217***
	(4.164)
$Lev_{i,t-1}$	-0.615***
	(-3.518)
$BM_{i,t-1}$	-0.829***
	(-5.400)
$ROA_{i,t-1}$	-0.288
	(-0.745)
$Oturnover_{i,t-1}$	-0.000875
	(-1.570)
$Sigma_{i,t-1}$	1.652
	(1.513)
$Wreturn_{i,t-1}$	8.631***
	(3.567)
$Absacc_{i,t-1}$	0.782***

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	(3.292)
Firm×year FE	Yes
Constant	-4.746***
	(-3.243)
Observations	4,199
Adj.R^2	0.110

*, ** and *** indicate that the coefficient is significant at the level of 10%, 5% and 1%, respectively

4.5. Robustness tests

4.5.1. Endogenous control

One of the most important problems affecting the research conclusions of this paper is endogeneity. The following methods are adopted in this paper to control endogeneity: the predictive model is used to estimate residual values ($StatusRes_{i,t-1}$) that cannot be explained by CFO characteristics as substitution variables. Since the ranking of CFO is also closely related to its own characteristics, the following model is used to estimate the residual value:

$$Status_{i,t-1} = \alpha_0 + \alpha_2 CFO_{i,t-1} + \varepsilon_{i,t-1} \quad (6)$$

In Model(6), $Status_{i,t-1}$ is the CFO status variable and $CFO_{i,t-1}$ is the CFO characteristic variable. See Table 1 for details. Residuals($StatusRes_{i,t-1}$) are estimated according to the model and then put into the following model:

$$OverInv_{i,t} = \alpha_0 + \alpha_1 StatusRes_{i,t-1} + \alpha_3 ControlV_{i,t-1} + Year + Ind + \varepsilon_{i,t-1} \quad (7)$$

Where, $OverInv_{i,t}$ is the over-investment variable, $ControlV_{i,t-1}$ is the control variable, Year and Ind are the control variables of Year and industry respectively, as shown in Table 1.

The regression results are shown in Table 7.The results show that the CFO's age, working background, concurrent director, concurrent deputy general manager, salary, tenure, the number of senior management team and CFO's ranking are significantly positively correlated. The residual is used for regression of the over-investment variable, and the visible coefficient $StatusRes_{i,t-1}$ is negative and statistically significant at the 1% level. After controlling for endogeneity, the results are also basically valid.

Table 7. The effect of CFO status on firm over-investment: endogenous control

VARIABLES	$Status_{i,t-1}$	$OverInv_{i,t}$
$Status_{i,t-1}$		-0.0242***
$(StatusRes_{i,t-1})$		(-2.983)
$CFOage_{i,t-1}$	0.150***	-0.0220
	(3.343)	(-1.195)
$Sex_{i,t-1}$	-0.0114	0.00404
	(-0.900)	(0.776)
$Ebackg_{i,t-1}$	0.0167	-0.00698
	(1.241)	(-1.263)
$Wbackg_{i,t-1}$	-0.408***	0.00754
	(-3.454)	(0.156)
$Ipromotion_{i,t-1}$	0.0263*	-4.65e-05
	(1.849)	(-0.00799)
$Secretary_{i,t-1}$	0.0136	0.00276
	(0.842)	(0.416)
$Director_{i,t-1}$	0.294***	0.00440
	(24.63)	(0.897)
$Deputy_{i,t-1}$	0.102***	0.00317
	(8.564)	(0.644)
$Compensation_{i,t-1}$	0.0195**	0.00309*
	(2.414)	(1.839)

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$Tenure_{i,t-1}$	0.0156***	0.00308*
	(3.806)	(1.807)
$TMT_{i,t-1}$	0.171***	0.000603
	(9.976)	(0.0858)
$Size_{i,t-1}$		-0.0561***
		(-12.32)
$Lev_{i,t-1}$		-0.0445***
		(-2.790)
$Growth_{i,t-1}$		-0.00383
		(-1.432)
$Ret_{i,t-1}$		0.00554*
		(1.862)
$Age_{i,t-1}$		0.0223**
		(2.302)
$Cash_{i,t-1}$		0.0194*
		(1.875)
$Dual_{i,t-1}$		-0.00227
		(-0.485)
$Indp_{i,t-1}$		-9.69e-05
		(-0.535)
$Fst_{i,t-1}$		0.000214
		(0.811)
Firm×year FE	Yes	Yes
Constant	-0.619***	1.410***
	(-2.715)	(11.13)
Observations	4,610	4,610
Adj.R^2	0.298	0.132

*, ** and *** indicate that the coefficient is significant at the level of 10%, 5% and 1%, respectively

4.5.2. Change of CFO status variable measure

This paper uses the measure of changing CFO status variable to conduct robustness test, that is, the negative number of CFO ranking in the senior management team($StatusR_{i,t-1}$) is used as the explanatory variable to regression. Table 8 shows the regression results, showing that the conclusion that CFO status has a negative impact on corporate over-investment is still true.

Table 8. Impact of CFO status on corporate over-investment: change of status variable measure

VARIABLES	$OverInv_{i,t}$
$StatusR_{i,t-1}$	-0.00292***
	(-2.688)
$CFOage_{i,t-1}$	-0.0198
	(-1.077)
$Sex_{i,t-1}$	0.00395
	(0.759)
$Ebackg_{i,t-1}$	-0.00659
	(-1.193)
$Wbackg_{i,t-1}$	0.00157
	(0.0325)
$Ipromotion_{i,t-1}$	0.000493
	(0.0846)
$Secretary_{i,t-1}$	0.00323
	(0.486)
$Director_{i,t-1}$	0.0102*

	(1.908)
$Deputy_{i,t-1}$	0.00534
	(1.071)
$Compensation_{i,t-1}$	-0.00683**
	(-2.016)
$Tenure_{i,t-1}$	0.00349**
	(2.068)
$TMT_{i,t-1}$	-0.00829
	(-1.066)
$Size_{i,t-1}$	-0.0563***
	(-12.37)
$Lev_{i,t-1}$	-0.0449***
	(-2.813)
$Growth_{i,t-1}$	-0.00386
	(-1.443)
$Ret_{i,t-1}$	0.00552*
	(1.855)
$Age_{i,t-1}$	0.0228**
	(2.354)
$Cash_{i,t-1}$	0.0195*
	(1.878)
$Dual_{i,t-1}$	-0.00218
	(-0.465)
$Indp_{i,t-1}$	-9.38e-05
	(-0.518)
$Fst_{i,t-1}$	0.000219
	(0.830)
Firm×year FE	Yes
Constant	1.405***
	(11.08)
Observations	4,610
Adj.R^2	0.132

*, ** and *** indicate that the coefficient is significant at the level of 10%, 5% and 1%, respectively

4.5.3. Change of over-investment variable measure

This paper also uses new investment($Inv_{i,t}$) as the substitution variable of over-investment to measure the robustness of the conclusion. Table 9 shows the results of the test, showing that the conclusion that CFO status negatively affects over-investment remains true.

Table 9. Influence of CFO status on corporate over-investment: measure change of over-investment variable

VARIABLES	$Inv_{i,t}$
$Status_{i,t-1}$	-0.0355***
	(-3.415)
$CFOage_{i,t-1}$	-0.0169
	(-0.716)
$Sex_{i,t-1}$	0.00468
	(0.702)
$Ebackg_{i,t-1}$	-0.0113
	(-1.591)
$Wbackg_{i,t-1}$	-0.0105
	(-0.169)

$Ipromotion_{i,t-1}$	-0.00182
	(-0.244)
$Secretary_{i,t-1}$	0.00627
	(0.737)
$Director_{i,t-1}$	0.0155**
	(2.209)
$Deputy_{i,t-1}$	0.00835
	(1.305)
$Compensation_{i,t-1}$	-0.00649
	(-1.493)
$Tenure_{i,t-1}$	0.00443**
	(2.046)
$TMT_{i,t-1}$	0.00876
	(0.954)
$Size_{i,t-1}$	-0.0924***
	(-15.84)
$Lev_{i,t-1}$	-0.0618***
	(-3.018)
$Growth_{i,t-1}$	-0.00650*
	(-1.899)
$Ret_{i,t-1}$	0.00596
	(1.563)
$Age_{i,t-1}$	0.0258**
	(2.076)
$Cash_{i,t-1}$	0.0489***
	(3.673)
$Dual_{i,t-1}$	-0.00242
	(-0.402)
$Indp_{i,t-1}$	-0.000251
	(-1.082)
$Fst_{i,t-1}$	0.000253
	(0.747)
Firm×year FE	Yes
Constant	2.249***
	(13.82)
Observations	4,610
Adj.R^2	0.198

*, ** and *** indicate that the coefficient is significant at the level of 10%, 5% and 1%, respectively

4.5.4. Matching of PSM samples

In order to better investigate the importance of CFO status, this paper tests whether the change of CFO's personal status will affect the over-investment behavior of firms. Specifically, the change of CFO's personal status can be divided into three types: status increase, status constant and status decrease. The rising status will enable the CFO to better participate in decision-making and perform the functions of supervision and control. Individuals are risk-averse when faced with profits, and over-investment is essentially a risky behavior. Therefore, the rising status of the CFO can better restrain the over-investment behavior of firms. In this paper, the samples of CFO rising status are screened out, and the influence on corporate over-investment is investigated by controlling the matching samples.

Firstly, the samples of CFO's rising status were selected as the treatment group. Secondly, the CFO samples with no change in personal status were selected as the control group. Finally, propensity score matching(PSM) was used to match the control group according to the dimensions of firm size, financial leverage and business performance. In the end, the 982 samples from which the status of

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CFO rose were matched to 674 samples from which the status of CFO did not change, and the total regression samples were 1656.Table 10 lists the regression results. CFO status is also negative at the significance level of 1%, which confirms the robustness of the research conclusion.

Table 10. The influence of CFO status on over-investment: PSM matching

VARIABLES	$OverInv_{i,t}$
$Status_{i,t-1}$	-0.0511***
	(-2.788)
$CFOage_{i,t-1}$	0.00864
	(0.149)
$Sex_{i,t-1}$	0.0356**
	(2.317)
$Ebackg_{i,t-1}$	-0.0209
	(-1.460)
$Ipromotion_{i,t-1}$	-0.0476**
	(-2.376)
$Secretary_{i,t-1}$	0.00660
	(0.422)
$Director_{i,t-1}$	0.0199*
	(1.711)
$Deputy_{i,t-1}$	0.00293
	(0.264)
$Compensation_{i,t-1}$	-0.0213**
	(-2.039)
$Tenure_{i,t-1}$	0.00557
	(0.829)
$TMT_{i,t-1}$	0.0309*
	(1.911)
$Size_{i,t-1}$	-0.0713***
	(-6.670)
$Lev_{i,t-1}$	-0.0818**
	(-2.367)
$Growth_{i,t-1}$	-0.00869
	(-1.535)
$Ret_{i,t-1}$	0.00824
	(1.508)
$Age_{i,t-1}$	0.0471*
	(1.788)
$Cash_{i,t-1}$	0.0211
	(1.030)
$Dual_{i,t-1}$	-0.0139
	(-1.514)
$Indp_{i,t-1}$	-0.000215
	(-0.576)
$Fst_{i,t-1}$	0.000302
	(0.475)
Firm×year FE	Yes
Constant	1.774***
	(5.169)
Observations	1,656
Adj.R^2	0.266

*, ** and *** indicate that the coefficient is significant at the level of 10%, 5% and 1%, respectively

5. Conclusion

CFO plays an important role in corporate governance and daily operation management, which has been widely paid attention by academic circles. Under the influence of traditional Confucian culture, China has obvious hierarchy concept and right orientation. How does the ranking of CFO in the executive team affect the behavior of management? How will this impact be reflected in the markets and the economic consequences? All these issues are worthy of discussion. This paper focuses on the "inhibiting effect of CFO status and over-investment", that is, through empirical test, it analyzes the objective performance, influencing factors and economic consequences of CFO status affecting corporate over-investment. The following conclusions are drawn:(1) There is a significant negative relationship between CFO status and over-investment, which indicates that CFO status has a significant inhibiting effect on over-investment, that is, the higher the CFO status, the more it can inhibit over-investment;(2) According to the property right nature of firms, we find that the inhibition effect only exists in non-stated-owned firms, but not in state-owned firms.(3) CFO status enhances the validity of contracts, and the sensitivity of compensation performance is higher;(4) The over-investment inhibition effect of CFO status can reduce the risk of stock price crash of firms to a certain extent.

The conclusion of this paper provides some empirical evidence for the management of firms. In the improvement of the financial system, if the CFO cannot give full play to its functions because of its low status, it may bring negative effects to the firm and eventually damage the interests of the firm. In addition, firms should formulate CFO compensation contracts in a more reasonable way, so that CFO can give better play to their financial expertise to enhance corporate value. However, this paper as a preliminary attempt, there are many shortcomings. Follow-up research should also be further extended to the impact of financial policies such as mergers and acquisitions, taxation and financing. On the other hand, this paper fails to delve into the negative impact of the high status of CFO on the firm, which will be further discussed in the follow-up research.

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