

Research on the relationship between corporate philanthropy and executive hidden corruption

Abstract: Based on a sample data of A-share listed companies from 2012-2022, this paper examines the relationship between corporate philanthropy, the effectiveness of internal control and executive hidden corruption. This study finds that as corporate charitable donations increase, the likelihood of executive hidden corruption increases accordingly. Moreover, the effectiveness of internal control plays a mitigating role between the two. Multiple regression analysis shows that only in non-state-owned enterprises, corporate philanthropy is positively correlated with executive hidden corruption, and the mitigating effect of effective internal control over the relationship is more profound. Further tests show that regardless of the intensity of media attention, there is a positive correlation between corporate philanthropy and executive hidden corruption; however, when the media attention is high, both the positive correlation between the two and the impact of the effectiveness of internal control are significantly lower. In addition, we find that board independence has no impact on the relationship between corporate philanthropy and executive hidden corruption; nevertheless, in state-owned enterprises with strong board independence, the moderating effect of internal control is more pronounced. This paper contributes to the relevant research in providing insight for companies to improve their governance behavior and for regulators to strengthen their supervision in information disclosure.

【Keywords】 Corporate philanthropy; Executive corruption; Effectiveness of internal controls

1.Introduction

Corruption, as an institutional phenomenon resulting from the interaction of politics, economics, law and culture (Svensson, 2005), is prevalent in government sectors and enterprises; especially among enterprise executives, there is a large number of hidden corruption by means of excessive job-related expenditures. For example, according to Xinhua news agency, several executives of China Grain Reserve Management Company were accused of using public funds to buy lottery tickets and reward live broadcasts, totaling more than 3.66 million yuan. After committing corruption, executives often do everything they can to hide their corruption. Such corruption is usually hidden and difficult to detect; yet just like explicit corruption, it seriously damage shareholders' interests and investors' confidence. In response to these corrupt practices, the government introduced a series of policies, but they were not able to completely curb high-level corruption.

Executive corruption is closely related to the imbalance of corporate controls, shown in work-related consumption and insider trading (Dyck, 2004). The greater the power of executives, the higher the probability of explicit corruption (Cheng, 2019). But under China's special system, management tends to be more prone to hidden corruption, such as the use of external information to cover up on-the-job consumption (Zhang and Wang, 2021), a phenomenon that reflects the complex relationship between power and corruption.

Corporate charitable donation refers to enterprises providing funds or materials to government agencies or related organizations on voluntary basis. Corporate charitable donation has the characteristics of voluntariness, free of charge and public welfare. Charitable donations, as a positive behavior for enterprises to fulfill their social responsibilities, help enterprises enhance their reputation, establish corporate image and improve financial performance (Gardberg et al., 2019; Ying et al., 2024). Because the Chinese government has not mandated the disclosure of corporate social responsibility information, this type of disclosure is highly voluntary, which increases the potential risk of using social responsibility as a tool to conceal hidden corruption. In reality, corporate

philanthropy is not always motivated by public welfare consideration, but as a strategic means to achieve certain self-interest (Zhou and Liu, 2024). Some businesses even use charitable donations to cover up their violations (Yaya et al., 2023; Zhang and Li, 2024). Research shows that corporate charitable donations are not simply to give back to the society; some firms who currently report losses, such as Noble Bird and Hongxing Erke, also frequently make charitable donations, which raises questions about the motivation of their donations.

Executives may cover up potential corruption through active charitable donations, making corruption difficult to detect; therefore, high-quality corporate governance becomes crucial, and the effectiveness of internal control, as one of the essential corporate governance practices, largely determines the reliability of financial information. Therefore, it is important to further study whether effective internal controls can reduce the likelihood of hidden corruption under the cover of positive financial expenditure. Hence, this study intends to explore the following two research questions: (1) is corporate philanthropy a "cover up tool" for executive hidden corruption? (2) How does the effectiveness of internal control affect the likelihood of hidden corruption?

From the perspective of corporate philanthropy as a cover tool, this paper examines the relationship between corporate philanthropy, the effectiveness of internal control and executive hidden corruption. Our study shows that there is a significant positive correlation between corporate philanthropy and executive hidden corruption, and firms with highly effective internal controls suppress corporate executives from using charitable donations to cover up hidden corruption to some extent. Furthermore, the positive relationship between charitable donations and executive corruption is more pronounced in non-state-owned enterprises relative to state-owned enterprises, and the effectiveness of internal control has a stronger mitigating effect on the positive association between the two. Further analyses show that the intensity of media attention has no impact on the positive correlation between corporate philanthropy and executive hidden corruption; however, when the media attention is high, the positive correlation between corporate philanthropy and executive hidden corruption and the impact of internal control effectiveness on the relationship are significantly reduced. Nevertheless,

our empirical results indicate that the independence of the board of directors has no impact on the relationship between corporate philanthropy and executive hidden corruption, yet the regulatory effect of internal controls is more profound in state-owned enterprises with stronger board independence.

We believe this paper contributes to the literature in the follow aspects: first, the existing research finds that the main purpose of charitable donation is to improve reputation and influence, while this paper explores from the perspective that corporate charitable donation as a coverup tool for corruption, expands the research on corporate charitable donation, and provides a new way to prevent executive corruption from the perspective of coverup tools. Secondly, this study expands extant research on the impact of the effectiveness of internal controls, introduces the effectiveness of internal control as a regulatory factor in mitigating the relationship between charitable donations and executive hidden corruption. Third, to our knowledge, this study is the first to investigate corporate donations, executive corruption, together with the effectiveness of internal control. Our empirical results are of great significance for enterprises to improve governance behavior and strengthen internal controls. Fourthly, the result of this study improves public awareness of charitable donations in connection with executive corruption, promoting relevant government sectors to standardize corporate social responsibility information disclosure and strengthening supervision.

The remainder of this paper is organized as follows: Section 2 reviews relevant literature; Section 3 provides the theoretical analysis and develops our research hypotheses; Section 4 outlines our research design; Section 5 reports our empirical results; Section 6 provides further analysis; finally, Section 7 concludes the paper with discussion of results, summary and implications.

2. Literature review

2.1 Research on Corporate Philanthropy

Prior research on corporate philanthropy includes the motivation of charitable donation, the role of management, the external institutional environment and economic

impact.

One stream of research focuses extensively on the motivations of charitable giving. For example, extant studies find that corporate philanthropy is mainly driven by economic motivation, aiming to enhance brand image and reputation through advertising effect, hence, to achieve the dual goals of economic interest and social responsibility (William, 1998; Porter and Kramer, 2002). Other studies document that charitable donations can also divert public attention and reduce corporate reputation damage caused by performance decline, financial restatement, litigation risk and auditors' negative impression. For example, Qu (2024) finds that when management faces a high risk of litigation, they are more likely to promote the development of Corporate Philanthropy. Zhang and Li (2024) document that environmentally polluting companies tend to use charitable donations as a strategic action to divert public attention, to reduce damage to their image and the negative impact from penalties caused by environmental pollution.

Secondly, management also plays an important role in participating in corporate philanthropy. Personal donations by the CEO may affect consumer attitudes toward the CEO's company, and the impact is stronger than that of corporate donations (Yin et al, 2019). Gao and Hafsi (2024) argue that CEOs are more likely to increase short-term accounting surplus at the expense of long-term investment and corporate philanthropy to alleviate concerns about career disruption. When CEOs turnover mechanism is linked to short-term performance, they are less likely to allocate resources to corporate philanthropy.

In addition, external institutional environment is another important factor that drives enterprises to make charitable donations (Ian and Toni, 2021; Cao and Nie, 2024). In certain specific institutional environment, enterprises may feel the pressure and role expectations of the institutional environment to donate. For example, in China's institutional context, businesses tend to use charitable giving as a strategic tool to gain government and public recognition, to increase their legitimacy, reduce institutional uncertainty, or help businesses gain some institutional convenience (Zhang et al., 2021). Cao and Nie (2024) argue that the local government's environmental concerns have a positive impact on corporate philanthropy, and that the impact is more pronounced

among large companies and companies in high pollution industries. Moreover, charitable donations are also a manifestation of corporate social responsibility, which may help enterprises quickly win the favor and trust of the government, hence establishing a more stable relationship with the government, and possibly obtaining government subsidies and other economic resources (Zhou and Liu, 2024).

In terms of economic impact, corporate philanthropy plays an important role in improving corporate reputation and financial performance (Ying et al., 2024). Based on a sample of listed companies in China, Cheng et al (2023) examine the relationship between charitable giving, exposure, and corporate performance. They find that there is a U-shaped relationship between corporate charitable donation and corporate performance, and charitable exposure has a positive impact on the relationship between the two. Lei et al (2022) summarize that corporate philanthropy has strong and positive impact on corporate innovation through four perspectives: technology network, political reputation, media attention and resource allocation. Wei and Lina (2022) find that charitable donations promote credit access for small and medium-sized enterprises; especially for those without political ties, strategic donations can reduce the disadvantage of less social capital in loan applications, and thus significantly promote corporate financing.

2.2 Research on executive corruption

Prior research on executive corruption focuses on the consequences of executive corruption and factors affecting executive corruption, including policy impact, enterprise characteristics, performance, financial information disclosure, executive leadership, and personal factors.

2.2.1 Research on the consequences of executive corruption

Existing literature has examined the potential impact of executive corruption. Prior studies find that local political corruption has a significant positive impact on CEO compensation, and corruption is more likely to drive up CEO compensation to a greater extent in companies that hold more cash, pay dividends, or have no operating losses (Chen et al., 2024).

Prior studies have reviewed the literature on corruption and innovation to explain

whether corruption reduces or increases innovation (Mohammad et al., 2024); another stream of research focuses on the relationship between corruption and morality and provides a theoretical explanation for the tension between corruption and virtuous values (Manz et al., 2008).

2.2.2 Research on factors affecting executive corruption

Extant research on factors affecting executive corruption mainly focuses on three aspects: institutional environment, corporate governance, and individual constraints. First, in terms of institutional environment, prior studies show that factors such as private ownership, secrecy, family loyalty, conflict, ethics, and social aspirations, environment with less institutional constraints contribute to the willingness to engage in corruption (Le et al., 2024). For example, Paganou et al. (2024) find that family-owned businesses, especially those with dynamics power within the organizations with ineffective internal audits are more likely associated with corruption.

Second, prior studies find that factors related to corporate governance, such as corporate characteristics, performance and financial information disclosure contribute to executives engaging in corruption behavior. For example, Liu et al. (2022) find high-quality internal audit has significant inhibitory effect on junior managers' corruption behavior in non-state-owned enterprises.

Prior studies also present evidence that executive leadership characteristics are associated with executive corruption. Executives from poor backgrounds are less likely to pursue material wealth and are less likely to have corruption (Wang et al., 2022). Based on a sample of A-share listed firms in China from 2008-2021, Qi et al. (2023) document that executives with professional experience in accounting are less likely to commit corporate fraud and corruption.

2.3 Research on the relationship between corporate philanthropy, effectiveness of internal controls, and executive corruption

Existing literature has examined the relationship between the level of internal controls corporate social responsibilities such as corporate charitable donation. For

example, Halebian and Finkelstein (1993) document that the improvement of internal control level enhances the enthusiasm of enterprises to fulfill social responsibility and increase their willingness to donate. Richard (2004) also finds that effective internal controls a positive role in helping companies better fulfill their social responsibility.

Prior studies have also examined the impact of effectiveness of internal controls on executive corruption. The direct impact of related research is mainly manifested in the fact that the effectiveness of internal control can directly affect the possibility of executive corruption. For example, Lu (2011) finds that effectiveness of internal control is significantly associated with the degree of restraint on executives' selfish behavior, and executives in firms with less effective internal control are more prone to fraud. Extant research shows that the power level of senior executives is positively correlated with the degree of hidden corruption. At the same time, the effectiveness of internal control is negatively correlated with the degree of executive hidden corruption. In addition, a high level of internal control can curb the excess consumption behavior of senior executives caused by excessive management power (Zhou et al., 2016; Zhao et al., 2015; Chi, 2019; Li and Yang, 2019).

3. Theoretical analysis and research assumptions

3.1 Corporate philanthropy and executive hidden corruption

Corporate charitable donations are mainly divided into two categories: for returning to society and for obtaining benefits. However, only a very small number of enterprises pay equal attention to their social responsibilities as to their economic interests; rather, most companies tend to pursue certain benefits from charitable donation, such as the halo effect. Prior research shows that the halo effect can not only enhance corporate image, but divert management's opportunistic behavior, increase stakeholder trust, and reduce the vigilance towards executives' seeking self-interest. Therefore, corporate philanthropy is often regarded as an information strategy, taking advantages of information asymmetry to shape moral image, so as to cover up the possible internal motivation conflicts and corruption, hence increase the probability of executive hidden corruption. Based on the

above discussion, we develop the following hypothesis:

H1: There is a significant positive correlation between corporate philanthropy and executive hidden corruption.

3.2 Moderating effect of internal control effectiveness

Companies with effective internal controls tend to have employees with high overall quality and self-supervision spirit. These companies often make charitable donations out of corporate mission and social responsibility, rather than the self-interest of individual executives. Therefore, effective internal controls not only improve the operational efficiency and information transparency, but also effectively curb the abuse of charitable donations by executives to cover up the risk of hidden corruption, so as to safeguard the reputation and interests of enterprises and promote the long-term development of enterprises. H2 is therefore stated as follows:

H2: The effectiveness of internal control plays a significant mitigating role in the relationship between corporate charitable donations and executive hidden corruption.

3.3 Impact of different nature of property rights

3.3.1 Impact on the relationship between corporate philanthropy and executive hidden corruption

Prior research has documented that the nature of corporate property rights has a significant impact on the relationship between charitable donations and executive hidden corruption. State-owned enterprises usually bear greater social responsibility, and the business activities of senior executives of state-owned enterprises have also attracted the attention of the public. Therefore, to fully fulfill their social responsibility, state-owned enterprises are more likely to make charitable donations than that of non-state-owned companies. Therefore, compared to state-owned enterprises, non-state-owned enterprises are more likely to cover up executive hidden corruption through intentional charitable donations. Hence, H3 is stated as follows:

H3: Compared to state-owned enterprises, the positive correlation between corporate philanthropy and executive hidden corruption in non-state-owned enterprises is more

profound.

3.3.2 Impact on the regulatory effect of internal control

According to China's characteristics of enterprise structure, there is a serious lack of ownership in state-owned enterprises, which weakens the effective supervision of management in state-owned enterprises. Compared with non-state-owned enterprises, state-owned enterprises enjoy more government support and relatively less corruption, yet it has also led to challenges for state-owned enterprises in enforcing effective internal controls. In contrast, stakeholders in non state-owned enterprises pay more attention to the protection of property rights and interests, and stricter supervision and restraint mechanisms. Therefore, effective internal control of enterprises is more likely to play a significant mitigating role in non-state-owned enterprises, especially between management charitable donations and hidden corruption. Therefore, H4 is stated as follows:

H4: Compared to state-owned enterprises, the effectiveness of internal control in non-state-owned enterprises has a more significant mitigating effect on the relationship between the two.

4. Research design

4.1 Data source

We collect our initial sample from the CSMAR database all A-share listed companies from 2012 to 2022. We exclude firms in financial industry, ST and * ST listed firms, and firms with missing data. All continuous variables are winsorized at 1% and 99th percentiles to exclude the influence of extreme values. Our final sample includes 12,477 observations. Charitable donation data is collected from the DiBo index.

In this study, we only analyze the "external donations" item in the notes to the financial statements of listed companies. Some listed companies may not be able to fully disclose their charitable donations due to factors such as policies and corporate nature. We acknowledge that the hidden corruption behavior of senior management often has a high degree of concealment and is difficult to directly observe.

4.2 Variable definition

4.2.1 Dependent variable

Executive hidden corruption (Exco). We follow the Quan et al., (2010) model for measuring hidden corruption among executives that calculates their excess on-the-job consumption as follows:

$$\frac{perk_{i,t}}{Asset_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{Asset_{i,t-1}} + \beta_2 \frac{\Delta Sales_{i,t}}{Asset_{i,t-1}} + \beta_3 \frac{PPE_{i,t}}{Asset_{i,t-1}} + \beta_4 \frac{Inventory_{i,t}}{Asset_{i,t-1}} + \beta_5 \ln Emp_{i,t} + \varepsilon_{i,t} \dots (1)$$

Among them, $perk_{i,t}$ represents on-the-job consumption, $Asset_{i,t-1}$ refers to the total assets of the previous year, $\Delta Sales_{i,t}$ represents the annual operating income change, $PPE_{i,t}$ represents the net value of fixed assets, $Inventory_{i,t}$ is the inventory amount, and $\ln Emp_{i,t}$ represents the logarithm of the total number of employees of the company. $\varepsilon_{i,t}$ is used to assess possible corruption by executives.

4.2.2 Explanatory variables

Corporate philanthropy. The data of corporate philanthropy is derived from the detailed donation items in the extraordinary expenses section of the notes to the financial statements of listed companies. We follow Zhu et al. (2019) and Cheng (2019) to process donation, and the amount is added to 1 and then taken as a logarithm to eliminate the dimensional impact and improve the fitting degree of the regression model.

4.2.3 Moderating variable

Effectiveness of internal controls (LnIc). Because traditional methods are difficult to accurately reflect the efficiency of internal controls, we select the internal control index data of listed companies from 2012-2021 in Dibo database for logarithm processing, and build an index system to comprehensively evaluate and optimize the quality of internal control of listed companies.

4.2.4 Control variables

Following the existing research, we include in our model controls variables such as total asset turnover (Tat), company size (Size), asset liability ratio (Lev), return on equity (Roe), management shareholding ratio (Msr), and whether the chairman and general manager are one person (Dual). In addition, we control year and industry fixed effect in the model. Variables definitions are provided in Table 1.

4.3 Model building

4.3.1 The relationship between corporate philanthropy and executive hidden corruption

To test the relationship between corporate philanthropy and executive hidden corruption, we construct the following model:

$$Exco_{i,t} = \beta_0 + \beta_1 Cp_{i,t} + \beta Controls_{i,t} + \sum Year + \sum Ind + \varepsilon \quad (2)$$

Where, Exco is the explained variable of executive hidden corruption, Cp is the explanatory variable of corporate charitable donation, and ε refers to residuals. This paper predicts that the Cp regression coefficient β_1 is positive, and the two are significantly positively correlated.

4.3.2 Regulatory utility model of internal control

To examine whether the effectiveness of internal control plays a mitigating role in the relationship between the two, we develop the following model:

$$Exco_{i,t} = \beta_0 + \beta_1 LnIc_{i,t} + \beta Controls_{i,t} + \sum Year + \sum Ind + \varepsilon \quad (3)$$

$$Exco_{i,t} = \beta_0 + \beta_1 Cp_{i,t} + \beta_2 LnIc_{i,t} + \beta_3 Cp_{i,t} * LnIc_{i,t} + \beta Controls_{i,t} + \sum Year + \sum Ind + \varepsilon \quad (4)$$

Where, LnIc measures the effectiveness level of internal controls using the DiBo index. If the coefficient β_3 is negative, it indicates that the effectiveness of internal control plays a mitigating role in the relationship between the two.

5. Analysis of empirical results

5.1 Descriptive statistics

Table 2 presents the descriptive statistical results of the main variables in this study. The mean and median of executive hidden corruption are 0.002 and 0.001, which is consistent with previous research. The minimum value is -0.031 and the maximum value is 0.041, indicating that there are significant differences in the level of hidden corruption among executives, which may be related to their different status and influence. In addition, the minimum value of Cp is 0, the maximum value is 17.79, and the standard deviation is 4.114. This indicates that there are significant differences in the amount of charitable donations between companies, which may be related to the nature of the companies and the level of importance attached to charitable donations.

Internal control effectiveness, as a control variable, has a minimum value of 6.433, a maximum value of 6.551, and a standard deviation of 0.047, indicating that there is not much difference in the quality of internal controls.

5.2 Correlation analysis

Table 3 presents the Pearson correlation. The results show that the coefficient is 0.554, indicating a significant correlation between corporate philanthropy and hidden corruption among executives, at the 1% level. In the absence of specific regression analysis, there is a clear positive correlation between corporate philanthropy and hidden executive corruption. Hypothesis H1 is supported. Among the controlled variables, there is a significant positive correlation between total asset turnover, executive shareholding ratio, enterprise age, and relative compensation of management and hidden executive corruption. The asset liability ratio, company size, and whether executives also serve as chairman and general manager are significantly negatively correlated with executive hidden corruption. Although the return on equity did not show a significant correlation, it is still included in this indicator for comprehensive analysis due to the inherent correlation at the statistical level.

In addition, the variance expansion coefficient (VIF) of the main model was used for calculation and validation. The results showed that the VIF values of each major variable were between 1 and 2, far below the commonly used criterion of 10, indicating that the model did not have serious collinearity issues and was suitable for further verification of the hypothesis using the OLS regression model.

5.3 Multivariable regression analysis

In our primary analysis, we use OLS regression to examine the relationship between corporate philanthropy, hidden corruption and the effectiveness of internal controls.

5.3.1 corporate philanthropy and executive hidden corruption

This study examines the impact of corporate philanthropy on executive hidden corruption. We follow the Quan et al. (2010) model to measure executive hidden corruption behavior (Exco). The results are reported in Table 5. Column (2) indicates that

after controlling for variables such as industry and year fixed effect, the coefficient is 0.002, which is significantly positive at the 1% level, indicating that the more charitable donations a company makes, the greater the likelihood of hidden corruption among executives. Hypothesis H1 is supported.

Regarding control variables, our regression results also show that there is a significant positive correlation between asset liability ratio (lev), total asset turnover ratio (Tat), enterprise age (Age), and executive shareholding ratio (Msr) and hidden executive corruption (Exco). This indicates that when a company has a high debt ratio, fast asset turnover, a long corporate history, or a high proportion of executive shareholding, the risk of hidden corruption among executives also increases. On the contrary, there is a significant negative correlation between return on equity (Roe), company size, and hidden corruption among executives, indicating that as the company's profitability and size increase, the likelihood of hidden corruption among executives decreases, consistent with prior research findings.

5.3.2 The regulatory effect of the effectiveness level of internal control

Column (2) in Table 5 shows that the regression coefficient of the interaction term $Cp * LnIC$ is -0.012, which is significantly negative at the 1% level. This indicates that when the level of internal control effectiveness is high, the positive correlation between corporate philanthropy and hidden executive corruption is significantly reduced. Hypothesis H2 is supported. Firms with high levels of internal control usually have a good internal environment and high-quality employees, and tend to donate for non-profit purposes, thereby reducing the possibility of corporate philanthropy being abused as corruption means.

5.3.3 The impact of different property rights of enterprises

To further explore the impact of differences in property rights on the relationship between corporate philanthropy, internal control effectiveness, and executive hidden corruption, we divide our sample data into two groups: state-owned and non-state-owned enterprises. Columns (3) and (4) of Table 5 show regression results based on the two sets of sub-samples. The results show that the coefficient is significantly positive in non-state-owned enterprises, while it is not significant in state-owned enterprises. This indicates

that in the non-state-owned enterprise environment, corporate philanthropy is more likely to lead to hidden corruption among executives. Hypothesis H3 is supported. In addition, we add internal control effectiveness as a moderating variable in the model. Columns (5) and (6) in Table 5 show that the interaction coefficient of non-state-owned enterprises, which is negative and significant, while the significance of state-owned enterprises is not high. This shows that the effectiveness of internal control moderates the relationship between corporate philanthropy and hidden corruption of executives in non-state-owned enterprises. Hypothesis H4 is supported.

5.4 Robustness test

5.4.1 Alternative measure for executive hidden corruption

To ensure the reliability of the above results, we follow Zhao et al. (2015) and use corporate hospitality expenses as an alternative measure of executive hidden corruption, denote as COO, for corporate hospitality expenses. Results are presented in Table 6. The coefficient between corporate philanthropy and business entertainment expenses is significantly positive at the 1% level, which is consistent with the regression coefficient between corporate philanthropy and hidden executive corruption.

In addition, Table 6 also shows that the regression coefficient of the interaction term between corporate philanthropy and effective internal control is significantly negative at the 5% level. Columns (3) to (6) of Table 6 show the regression analysis and conclusions of different property rights groups after replacing the dependent variable measurement method. The results indicate that in the non-state-owned enterprise group, the coefficient of the interaction term between the core explanatory variable and $Cp * LnIC$ is significant, consistent with the previous results. Putting together, these results indicate that our primary results are robust with the new measure of executive hidden corruption.

5.4.2 Control individual fixed effects

Due to unknown factors at the firm level that may affect the regression results, we use a fixed effects model to control for individual fixed effects for robustness check. Results are presented in in Table 7. The coefficient of corporate philanthropy is 0.000, which is significant at the 1% level; Meanwhile, the coefficient of interaction term

between the effectiveness of internal controls and corporate philanthropy is -0.001, which is significant at the 10% level, indicating our primary results are robust after controlling for individual fixed effects.

5.4.3 The dependent variable lead by one period

In addition, we rerun the regression analysis between corporate philanthropy and executive hidden corruption (Exco) while adjust the dependent variable by lead one period. Results are presented in column (3) of Table 7. The correlation coefficient between corporate philanthropy (Cp) and executive hidden corruption (Exco) remains significantly positive even after controlling for one period, at 1% significance level. These results are consistent with the primary test results.

5.4.4 Endogenous test

Following Zhang and Ke (2002), we use the regional trust index as an instrumental variable for corporate philanthropy, and conduct a two-stage least squares regression analysis, where IS is the logarithm of the regional trust index plus 1. As shown in columns (4) and (5) of Table 7, the regression coefficient between corporate philanthropy (Cp) and hidden executive corruption (Exco) is 0.007, significant at the 1% level. The instrumental variable is tested using weak tool variable test, and the F value was 17.65, far exceeding the common judgment standard 10. We further conduct a heteroscedasticity test, results show that the p value rejects the original hypothesis at the 1% level, confirming that corporate philanthropy is an endogenous explanatory variable. Therefore, adopting the instrumental variable method is reasonable. After two-stage least squares regression analysis, we find that the results obtained by the instrumental variable method are consistent with the baseline regression results, further confirming the reliability of the primary results.

6. Further analysis

6.1 Media attention analysis

Media attention may have a significant impact on the regression analysis results. This study draws on existing research (Zhang et al., 2019; Yang and Zhang, 2021) to

construct a media supervision index using the Janis Fadner coefficient (J-F), with a value range from -1 to 1. The closer to 1, the smaller the media supervision pressure, and the closer to -1, the greater the pressure. We conduct grouped regression analysis based on the mean of the data, and the results are represented in Table 8. Results in columns (1) and (2) show that in the group with an average J-F coefficient or above, corporate philanthropy and executive hidden corruption are significantly positive at the 1% level. In contrast, the group below the average J-F coefficient has a regression coefficient of 0.002, which is significant at the 10% level. Our results indicate that firms with less media supervision pressure have a more prominent positive correlation between charitable donations and hidden executive corruption.

In addition, columns (4) and (5) report the moderating effect of internal control effectiveness on the relationship between corporate philanthropy and hidden executive corruption under different levels of media supervision. The results show that for groups with an average J-F coefficient or higher, the $Cp * LnIc$ coefficient was -0.015, which was significant at the 1% level. The regression coefficient for groups below the average J-F coefficient is -0.011, which is significant at the 10% level. The results further indicate that for firms under greater pressure from media supervision, the effectiveness of internal controls has a limited moderating effect on the relationship between charitable donations and hidden corruption among executives.

6.2 Analysis of Board Independence

Independent directors play an important role in corporate governance. The higher the proportion of independent directors in the board of directors, the more significant the independence and supervisory effect. To further explore this issue, we divide our sample into two groups based on the median proportion of independent directors. A group with a proportion of independent directors below the median is considered to have poor board independence; The other group with an independent director ratio equal to or higher than the median is the group with strong board independence. We run a regression analysis based on the two groups, and the results are reported in Table 9.

The Cp coefficient with low independence is 0.003, which is significant at the 1%

level; The Cp coefficient with high independence is 0.001, which is significant at the 1% level. This indicates that regardless of the level of independence of the board of directors, there is a positive correlation between charitable donations and hidden corruption among executives.

In addition, we also examine the effectiveness of internal control in this setting. Results are presented in columns (3) and (4) of Table 9. The Cp * LnIc coefficient with low independence is -0.011, which is significant at the 10% level; The Cp * LnIc coefficient with high independence is -0.019, which is significant at the 1% level. When the independence of the board of directors is high, the negative moderating effect of internal control effectiveness on the relationship between the two is more pronounced, emphasizing the importance of board independence and internal control effectiveness in managing charitable behavior and preventing corruption.

7. Summary discussion and implications

Based on a sample of A-share listed companies from 2012 to 2022, this paper explores the relationship between corporate philanthropy and executive hidden corruption, and we examine the effectiveness of internal control for its mitigating effect in the relationship between the two. Our empirical analysis shows that there is a significant positive correlation between corporate philanthropy and executive hidden corruption; that is, the more corporate philanthropy, the greater the possibility of executive corruption. This indicates that some corporate philanthropy is likely being deviated from the original intention of fulfilling social responsibility and benefiting society, but become a cover for executives to seek their own interests.

The effectiveness of internal control plays a mitigating role in the relationship between corporate philanthropy and executive hidden corruption. Specifically, the effectiveness of internal control curbs the positive association between corporate philanthropy and executive hidden corruption. When the effectiveness of internal control is very high, the owner's control over the company is stronger, reducing the principal agent problem, information asymmetry and information barriers between the inside and outside. Consequently, it makes executives more difficult to use corporate philanthropy as

a cover for corruption, thus curbing the positive relationship between the two.

The positive correlation between corporate philanthropy and executive hidden corruption is only significant in non-state-owned companies. This suggests that compared with state-owned companies, more charitable donations from non-state-owned firms are used as a cover for executive corruption. The mitigating effect of internal control effectiveness on the relationship between corporate charitable donation and executive hidden corruption is only significant in non-state-owned companies. Effective internal control in non-state-owned companies can curb the correlation between corporate charitable donation and executive hidden corruption.

The positive association between corporate philanthropy and executive hidden corruption becomes less significant in firms with strong media attention. Similarly, for firms with strong media attention, the mitigating effect of internal control effectiveness between corporate philanthropy and executive hidden corruption becomes less significant, indicating that media attention does work. At the same time, the degree of independence of the board of directors has the same impact on the relationship between corporate philanthropy and executive hidden corruption, but in the regulatory effect of the effectiveness of internal control on the relationship between the two, the state-owned companies with strong independence of the board of directors have a higher level of significance.

We believe that our findings from this study have several implications. Pay attention to the role of media supervision, improve the reward and punishment mechanism for senior executives, and achieve "do not want corruption" and "dare not corrupt". The second is to change management thinking and adopt the management concept of the new era. Attach importance to humanistic construction, implement empowerment, stimulate employees' sense of belonging and responsibility, and reduce the occurrence of corruption. At the regulatory level, the first is to establish and improve the regulatory system. Improve the social responsibility supervision system to make it standardized and transparent. It is important to pay attention to the role of media and reduce information asymmetry. In the information age, the media plays an indispensable role in enterprise supervision, encouraging enterprises to disclose independently and improving

information transparency. At the personal level, the first is to enhance the discrimination of information authenticity. Prudently understand relevant information to reduce the possibility of hidden corruption among senior executives; The second is to trust the relevant regulatory authorities. Based on the relevant systems of regulatory authorities, the risk of enterprises seeking benefits by spreading false information is reduced. Future research can increase diversified data measurement methods, such as case study method, verify the applicability of conclusions in unlisted enterprises, and establish a complete evaluation index system of hidden corruption in senior management.

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Table 1 Variable definition

Variable Properties	Variable	Symbol	Definition
Explained Variable	Executive hidden corruption	Exco	Excess on the job consumption of enterprises
Explanatory variable	Corporate philanthropy	Cp	Ln (Annual donation expenditure+1)
Moderating variable	Effectiveness of internal controls	LnIc	Ln (DIB internal control index+1)
Control variables	Total Asset turnover	Tat	Operating income/total assets
	Firm size	Size	Ln (total assets+1)
	Return on equity	Roe	Net profit/net assets
	Asset liability ratio	Lev	Total liability/total assets
	Management shareholding ratio	Msr	Number of shares held by management/total number of shares of the company
	Is the chairman and CEO in one	Dual	If the chairman and CEO are one, take 1, otherwise take 0.
	Relative compensation of management	Con	Sum of top three executive salaries/sum of executive salaries
	Enterprise age	Age	Ln (enterprise age+1)
	Year	Year	Annual virtual variable, which belongs to the year, takes 1, otherwise takes 0.
	Industry	Ind	Annual industry variable, which belongs to the industry, takes 1, otherwise takes 0.
Variables for further analysis	Dedia supervision	J-F	According to the mean of j-f coefficient, the subjects were divided into two groups: above mean and below mean
	Board Independence	Ind	According to the average independence of the board of directors, the subjects were divided into two groups: above the average and below the average

Table 2 Descriptive statistics of main variables

variable	Number of samples	Mean	Median	Standard deviation	Minimum	Maximum
Exco	12477	0.002	0.001	0.017	-0.031	0.041
Cp	12477	11.65	12.64	4.114	0	17.79
LnIc	12477	6.493	6.497	0.047	6.433	6.551
Tat	12477	0.584	0.518	0.309	0.172	1.371
Msr	12477	0.151	0.033	0.190	0	0.564
Roe	12477	0.068	0.068	0.069	-0.099	0.201
Size	12477	22.16	22.03	1.042	20.61	24.57
Lev	12477	0.416	0.409	0.188	0.115	0.763
Dual	12477	0.699	1	0.459	0	1
Con	12477	0.471	0.455	0.125	0.271	0.772
Age	12477	2.842	2.791	0.341	1.942	3.236

Table 3 Correlation Analysis of main variables

	Exco	Cp	LnIc	Tat	Msr	Roe	Size
Exco	1						
Cp	0.554***	1					
LnIc	-0.376***	-0.234***	1				
Tat	0.032***	-0.00700	0.127***	1			
Msr	0.172***	0.165***	-0.220***	-0.067***	1		
Roe	0.00500	0.033***	0.203***	0.213***	0.100***	1	
Size	-0.192***	-0.108***	0.227***	0.043***	-0.364***	0.108***	1
Lev	-0.100***	-0.095***	0.148***	0.156***	-0.298***	-0.125***	0.525***
Dual	-0.083***	-0.080***	0.096***	0.041***	-0.228***	-0.00800	0.174***
Con	0.038***	0.020**	-0.044***	-0.00100	-0.025***	-0.031***	-0.155***
Age	0.025***	-0.026***	0.108***	0.022**	-0.218***	-0.026***	0.178***
	Lev	Dual	Con	Age			
Lev	1						
Dual	0.118***	1					
Con	-0.079***	-0.101***	1				
Age	0.157***	0.074***	0.057***	1			

Table 4 VIF values of main variables

Variables	VIF	1/VIF
Size	1.640	0.611
Lev	1.530	0.653
Msr	1.300	0.772
Roe	1.210	0.829
LnIc	1.190	0.840
Tat	1.110	0.903
Cp	1.080	0.925
Dual	1.080	0.928
Con	1.040	0.959
Age	1.040	0.959
Mean VIF	1.240	0.806

Table 5 OLS regression results

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Full sample	Full sample	state-owned enterprises	Non state-owned enterprises	state-owned enterprises	Non state-owned enterprises
	Exco	Exco	Exco	Exco	Exco	Exco
Cp	0.002*** (6.718)	0.080*** (4.922)	0.001 (1.487)	0.003*** (7.321)	0.114 (1.122)	0.039*** (6.823)
LnIc		0.038*** (5.490)			0.088 (1.428)	-0.021** (-2.221)
Cp*LnIc		-0.012*** (-21.339)			-0.017 (-1.490)	-0.006*** (-4.675)
Tat	0.002*** (5.604)	0.003*** (8.418)	0.002*** (3.755)	0.003*** (4.220)	0.003*** (5.512)	0.004*** (6.213)
Msr	0.000*** (6.999)	0.000 (1.541)	0.000*** (6.372)	0.000*** (3.368)	0.000*** (3.389)	0.000 (0.663)
Roe	-0.002 (-1.023)	0.013*** (6.702)	0.001 (0.324)	-0.008** (-2.477)	0.019*** (8.149)	0.002 (0.739)
Size	-0.002*** (-14.608)	-0.002*** (-11.547)	-0.002*** (-9.188)	-0.003*** (-12.117)	-0.001*** (-7.210)	-0.003*** (-11.046)
Lev	0.002** (2.512)	0.003*** (3.644)	0.001 (0.767)	0.004*** (3.185)	0.002* (1.686)	0.005*** (3.800)
Dual	-0.000* (-1.738)	-0.000 (-0.767)	-0.001* (-1.849)	-0.000 (-0.550)	-0.001* (-1.825)	-0.000 (-0.356)
Con	0.001 (0.542)	-0.000 (-0.220)	0.002* (1.825)	-0.005*** (-2.847)	0.003** (2.364)	-0.005*** (-3.030)
Age	0.004*** (9.436)	0.004*** (9.696)	0.002*** (4.099)	0.011*** (12.489)	0.002*** (4.087)	0.012*** (13.251)
_cons	0.010*** (2.897)	-0.248*** (-5.503)	0.009** (1.989)	0.004 (0.636)	-0.572*** (-8.922)	0.134** (2.127)
N	12477.000	12477.000	8410.000	3666.000	8410.000	3666.000
r2_a	0.333	0.413	0.260	0.460	0.377	0.501

Table 6 Measurement of replacement executive hidden corruption

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Full sample	Full sample	state-owned enterprises	Non state-owned enterprises	state-owned enterprises	Non state-owned enterprises
	COO	COO	COO	COO	COO	COO
Cp	0.002*** (4.457)	0.033** (2.085)	0.000 (1.314)	0.001*** (3.581)	-0.024 (-1.244)	0.037* (1.831)
LnIc		-0.113*** (-10.257)			-0.172 (-1.125)	-0.069*** (-3.447)
Cp*LnIc		-0.006** (-2.041)			0.004 (1.230)	-0.006* (-1.790)
Tat	0.003*** (5.261)	0.004*** (8.050)	0.002*** (3.446)	0.004*** (3.986)	0.003*** (5.247)	0.005*** (5.335)
Msr	0.011*** (12.430)	0.005*** (6.131)	0.010*** (9.653)	0.040*** (5.053)	0.005*** (5.910)	0.021*** (2.628)
Roe	0.001 (0.293)	0.020*** (8.650)	0.004 (1.537)	-0.006 (-1.347)	0.027*** (10.155)	0.005 (1.096)
Size	-0.002*** (-13.457)	-0.002*** (-10.744)	-0.002*** (-9.538)	-0.003*** (-8.295)	-0.002*** (-6.941)	-0.002*** (-7.891)
Lev	0.001 (1.023)	0.003*** (2.993)	0.001 (1.202)	0.000 (0.155)	0.002** (2.087)	0.002 (1.012)
Dual	-0.001*** (-3.805)	-0.001*** (-2.855)	-0.001*** (-3.009)	-0.001 (-1.208)	-0.001*** (-3.013)	-0.001 (-1.165)
Age	0.003*** (9.835)	0.003*** (9.825)	0.004*** (13.019)	0.011*** (6.241)	0.005*** (7.182)	0.012*** (11.381)
Con	0.000 (0.178)	0.000 (0.150)	0.000 (0.043)	0.000 (0.032)	0.000 (0.315)	-0.000 (-0.125)
_cons	0.003** (2.167)	0.002 (1.494)	0.003* (1.734)	-0.001 (-0.262)	0.003** (2.027)	-0.000 (-0.175)
N	12477.000	12477.000	8410.000	3666.000	8410.000	3666.000
r2_a	0.053	0.170	0.037	0.045	0.197	0.092

Table 7 Control individual fixed effect and dependent variable lag one phase

	(1)	(2)	(3)	(4)	(5)
Variables	Fixed effect	Fixed effect	Dependent variable leading phase I	Two-stage least squares regression	Two-stage least squares regression
	Exco	Exco	Exco	Phase-1	Phase-2
Cp	0.000*** (2.952)	0.006** (2.561)	0.002*** (6.213)		0.007*** (2.955)
IS				0.008*** (2.331)	
LnIc		-0.006* (-1.649)			
Cp*LnIc		-0.001** (-2.301)			
Tat	-0.000 (-0.038)	0.000 (1.079)	0.002*** (2.748)	0.081 (0.651)	0.002*** (2.744)
Msr	-0.001* (-1.648)	0.001** (2.113)	-0.003* (-1.734)	0.028*** (13.410)	-0.010 (-1.403)
Roe	0.001 (0.934)	0.002** (1.973)	-0.000 (-0.914)	1.180*** (2.101)	-0.008* (-1.738)
Size	-0.001*** (-4.645)	-0.001*** (-8.696)	-0.000 (-0.197)	-0.155*** (-3.512)	-0.001*** (-3.126)
Lev	0.001* (1.721)	0.001 (1.287)	0.007*** (8.515)	-0.620*** (-2.613)	0.005*** (2.651)
Dual	-0.000 (-0.484)	-0.000* (-1.659)	0.002*** (4.195)	-0.361*** (-4.418)	0.001 (1.253)
Age	0.001*** (6.521)	0.001*** (7.915)	0.009*** (3.826)	0.008*** (12.289)	0.011*** (9.565)
Con	-0.000 (-0.151)	0.000 (0.627)	-0.003*** (-17.257)	0.445 (1.490)	-0.001 (-0.321)
_cons	0.014*** (4.725)	0.059* (1.907)	0.032*** (9.294)	15.145*** (15.443)	-0.052 (-1.440)
N	12477.000	12477.000	12477.000	12477.000	12477.000
r2_a	0.219	0.179	0.328	0.108	0.108

Table 8 Regression results grouped according to different levels of media supervision

Variables	(1)	(2)	(3)	(4)
	Above average	Less than average	Above average	Less than average
	Exco	Exco	Exco	Exco
Cp	0.002*** (5.136)	0.002* (1.721)	0.096*** (5.569)	0.072* (1.699)
Cp*LnIc			-0.015*** (-4.166)	-0.011* (-1.674)
Tat	0.002*** (3.467)	0.003*** (4.416)	0.003*** (5.215)	0.004*** (6.516)
Msr	0.005*** (5.248)	0.003*** (2.718)	0.001 (1.520)	-0.001 (-1.250)
Roe	-0.003 (-1.025)	-0.001 (-0.437)	0.012*** (4.592)	0.013*** (4.765)
Size	-0.002*** (-8.658)	-0.002*** (-10.598)	-0.001*** (-6.563)	-0.002*** (-8.219)
Lev	0.004*** (2.895)	0.001 (1.281)	0.003*** (2.925)	0.003** (2.419)
Dual	-0.001 (-1.331)	-0.000 (-0.966)	-0.000 (-1.085)	-0.000 (-0.000)
Con	-0.000 (-0.131)	0.003* (1.800)	-0.001 (-0.663)	0.002 (1.208)
Age	0.008*** (5.313)	0.012*** (7.602)	0.006*** (6.508)	0.017*** (4.354)
_cons	0.014*** (2.767)	0.025*** (5.084)	-0.405*** (-6.273)	-0.185*** (-2.945)
N	6073.000	6404.000	6073.000	6404.000
r2_a	0.339	0.319	0.436	0.386

Table 9 Regression results grouped by board independence level

	(1)	(2)	(3)	(4)
Variables	The independence of the board of directors is poor	The board of directors has strong independence	The independence of the board of directors is poor	The board of directors has strong independence
	Exco	Exco	Exco	Exco
Cp	0.003*** (3.355)	0.001*** (6.485)	0.128* (1.842)	0.084*** (6.865)
Cp*LnIc			-0.011* (-1.912)	-0.019*** (-4.307)
Tat	0.001 (0.066)	0.002*** (5.600)	0.005 (0.458)	0.003*** (8.335)
Msr	-0.019 (-0.675)	0.004*** (5.510)	-0.042 (-1.572)	-0.000 (-0.027)
Roe	0.072 (1.206)	-0.002 (-1.044)	0.090 (1.685)	0.013*** (6.538)
Size	-0.008** (-2.225)	-0.002*** (-13.855)	-0.006* (-1.930)	-0.002*** (-10.797)
Lev	0.063** (2.162)	0.002*** (2.912)	0.047* (1.775)	0.003*** (4.022)
Dual	-0.003 (-0.390)	-0.000 (-1.608)	0.000 (0.016)	-0.000 (-0.669)
change	0.011* (1.805)	0.000 (0.559)	0.009 (1.544)	0.000 (0.609)
con	0.017 (0.637)	0.001 (1.217)	0.014 (0.598)	0.000 (0.470)

Table 9 regression results grouped by board independence level (Continued)

	(1)	(2)	(3)	(4)
Variables	The independence of the board of directors is poor	The board of directors has strong independence	The independence of the board of directors is poor	The board of directors has strong independence
	Exco	Exco	Exco	Exco
Age	0.013*** (7.605)	0.002*** (6.312)	0.016*** (11.895)	0.008*** (10.311)
_cons	0.121 (1.622)	0.020*** (5.807)	-0.596 (-0.760)	-0.288*** (-6.382)
N	5757.000	6720.000	5757.000	6720.000
r2_a	0.449	0.328	0.578	0.408