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# THE MULTIFACETED IMPACT OF DIRECTORS AND OFFICERS (D&O) INSURANCE ON CORPORATE GOVERNANCE AND PERFORMANCE

**Xue Chang**

*Shenzhen Institute of Technology/Shenzhen City Polytechnic, No. 1, Jiangjunmao Road, Wulian Community, Longgang Street, Longgang District, Shenzhen 518116, China*

E-mail: 350471682@qq.com

## ABSTRACT

*In the ever-evolving capital market, safeguarding shareholder rights and interests is paramount for Chinese listed companies facing escalating risks. This article explores the dynamic discourse surrounding Directors and Officers (D&O) insurance, focusing on its implications in emerging markets with lower institutional support and disclosure quality. Spanning 2000 to 2020, this study rigorously examines the impact of D&O insurance in China, investigating its associations with capital markets, regulatory frameworks, managerial practices and financial reporting. My analysis reveals that D&O insurance correlates negatively with CEO turnover and litigation risk. However, its influence on investment efficiency, earnings management, financial reporting and corporate governance is comparatively modest. I also uncover nuanced disparities between state-owned enterprises (SOEs) and non-state-owned enterprises (non-SOEs). In SOEs, where CEOs are appointed by the government and litigation risk is lower, D&O insurance's impact is less pronounced. Conversely, non-SOEs, facing higher litigation risk, find greater significance in D&O insurance as protection against legal action. In summary, this article highlights D&O insurance's role as a protective shield for CEOs and underscores its evolving dynamics in Chinese listed companies' corporate governance and risk management.*

**Keywords:** CEO turnover, Litigation risk, Financial reporting, D&O insurance, Agency problem

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## INTRODUCTION

In light of the increasing awareness among investors regarding self-protection and the growing complexity of economic activities, managers of listed companies are facing higher levels of risk. Data released by the China Securities Regulatory Commission (CSRC) indicates a rising trend in the frequency of administrative punishments imposed on listed companies. CEOs, as key decision-makers and managers in listed companies, bear substantial responsibilities that directly impact the company's operations. Directors and senior managers are legally accountable for compensating third parties for losses arising from negligence in the performance of their duties. Consequently, the procurement of liability insurance for directors, CEOs, and senior managers has become a necessity.

Provisions within company law mandate that if the CEO, manager, or directors are negligent in the performance of their duties and result in losses to the company or a third party, they are personally liable for compensation. Directors' and Officers' liability insurance (D&O insurance) is a significant corporate governance mechanism that has gained popularity worldwide. Originating in the United States in the 1930s, it experienced rapid global expansion after the 1980s. However, its adoption was slower in China, primarily due to factors such as imperfect supervision of the capital market, weak purchasing motivation, and the immaturity of local insurance products. Notably, D&O insurance primarily covers "negligent behaviour" rather than financial fraud and accounting violations (Boyer, 2005; Gutierrez, 2018). It is designed to protect directors, supervisors and senior management from liability and personal property losses arising from personal negligence or misconduct during their tenure.

D&O insurance holds three crucial values as an essential risk management tool for maintaining the stable development of enterprises. First, dispersing managers' personal responsibilities and transferring them to insurance companies. Second, providing economic compensation to investors, thereby enhancing shareholder enthusiasm for litigation and corporate supervision. Finally, introducing external oversight from insurance companies, which can optimise corporate governance. Given the independent status of insurance companies, their supervisory role can be more efficient compared to that of the board of directors.

In this study, the primary objective is to comprehensively analyse the multifaceted impact of D&O insurance on various aspects of corporate governance and performance. D&O insurance is not merely a financial protection tool for executives; it plays a pivotal role in risk management within organisations. The aim of this study is to investigate how the presence of D&O insurance influences CEO turnover, litigation rates, financial statement quality, investment efficiency,

innovation and earnings management across different types of enterprises. My particular focus will be on differentiating the impact on state-owned enterprises (SOEs) and non-state-owned enterprises (non-SOEs). By examining these dimensions, my aim to is to provide a comprehensive understanding of how D&O insurance shapes corporate behaviour and outcomes.

Furthermore, I aspire to shed light on how ownership structure and government support may interact with the effects of D&O insurance. Through this analysis, I seek to contribute valuable insights to both academic research and practical decision-making in the corporate world. A nuanced understanding of the effects of D&O insurance can aid organisations in making informed choices regarding risk management and governance practices, ultimately leading to improved corporate performance and the promotion of ethical governance.

## DEVELOPMENT OF D&O INSURANCE

D&O insurance has become an essential risk management technique, especially in common law countries such as the U.S., the U.K., Canada and Australia, where over 90% of firms have D&O insurance (Jia & Tang, 2018). In the 1920s, the U.S. faced the Great Depression and a stock market collapse, causing severe harm to investors. To salvage the securities market, protect investor interests, and restore confidence, the U.S. improved legal provisions for directors and executives. The promulgation of the Securities Act of 1933, the Securities Exchange Act of 1934, and the establishment of the Securities and Exchange Commission (SEC) in 1934 strengthened the civil liability and responsibilities of directors. To spread directors' risks, Lloyd's of London issued the world's first commercial general liability insurance product (CGL) to American enterprises in 1940. In the 1960s, amendments to American securities law, the rise of shareholder litigation, and increased penalties from securities regulators heightened responsibilities and risks for listed companies and their directors and managers. Realising the unequal balance between responsibilities and risks, more managers recognised the need for insurance to disperse the risk. Subsequently, D&O insurance rapidly developed and matured. In 2001, with the disclosure of the Enron scandal, countless investors claim for compensation. The Sarbanes-Oxley Act of 2002 elevated the responsibilities of directors and executives to unprecedented levels, boosting the sale of D&O insurance (Zhao et al., 2016). The 2008 financial crisis further increased the sale of D&O insurance. With 97% of the U.S. corporations holding D&O insurance, the number of lawsuits against management and the amount of litigation settlements dramatically rose (Shafer & Simmons, 2008). In recent years, an increasing number of firms in developing countries have started

to purchase D&O insurance (Core, 2000; Holderness, 1990). Notably, 97% of the U.S. firms and 86% of Canadian firms carry D&O insurance coverage (Zou et al., 2008). Since 2012, the Hong Kong Stock Exchange has required all listed firms to arrange appropriate insurance for directors (Han et al., 2010). In 2018, the Securities and Exchange Board of India mandated compulsory D&O policies for independent directors of the top 500 listed firms.

## INSTITUTION BACKGROUND IN CHINA

This article investigates the governance role of D&O insurance in the world's second-largest economy— China. Despite the introduction of D&O insurance in China almost 20 years ago, only 6% of Chinese listed firms carried D&O insurance in 2020 (Li et al., 2022). The Chinese D&O insurance market is still in its infancy. Following the exposure of cases like Enron and WorldCom, a series of corporate fraud scandals has led countries to pay increased attention to corporate governance and securities market regulation. Governments worldwide have enacted increasingly stringent laws to strengthen corporate governance.

On 7 January 2002, the Chinese State Economic and Trade Commission (now the Ministry of Commerce) and the CSRC jointly issued the "Guidelines for the Management of Listed Companies," permitting Chinese listed firms to purchase D&O insurance upon approval of the general meeting of shareholders. On 23 January 2002, the first Chinese D&O Insurance was issued by PingAn Insurance Company to Vanke. D&O insurance gradually gained popularity among public companies, particularly those with a higher (perceived) litigation risk (Zou & Adams, 2009). The Chinese Company Law and Securities Law, revised in 2006, strengthened the civil liability of directors, emphasising the liability of compensation aimed at strengthening investor protection. Article 148 of the Company Law requires directors, supervisors, and managers to have the obligation of loyalty and due diligence to the company. The Securities Law (revised in 2005) also stipulates that directors, senior managers, or any other persons of the issuer or the listed company directly responsible for corporate misconduct shall be subject to joint and several liabilities of compensation, increasing personal legal risks (Jia & Tang, 2018). Shareholders can take legal action against the misconduct of directors and managers, leading to a rise in civil liability lawsuits against directors and executives. Consequently, directors and managers seek D&O insurance to mitigate potential losses in case of lawsuits related to their managerial actions. The Chinese State Council also discussed the need to develop D&O insurance in 2014. However, its promotion was not very satisfactory. The reasons for this may include the following three points: first, D&O insurance in

China started late and has been promoted for less than 20 years. Second, due to the domestic macro environment, industry characteristics, and enterprise nature, there is no standardised policy format for D&O insurance, potentially hindering its promotion. Finally, an imperfect litigation system and a low litigation rate hinder the development of D&O insurance.

As can be seen from Figure 1, D&O insurance has experienced significant growth since 2002, especially doubling between 2019 and 2020. This indicates that D&O insurance is receiving increasing attention and preference from company executives.

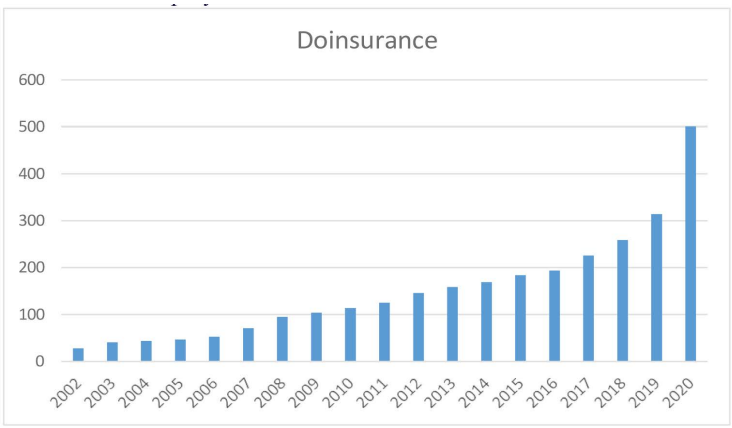


*Figure 1:* The growth of D&O insurance from 2002 to 2020

## LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

D&O insurance is a special professional liability insurance, in which the insurer is responsible for compensating the legal expenses and civil liability of the insured directors and executives when they are accused of negligence or misconduct. The earliest empirical test of insurance comes from Mayers and Smith (1990), who find that the degree of ownership concentration is positively correlated with insurance demand. They also find that company size is negatively correlated with insurance demand, and credit status is negatively correlated with insurance demand. Boubakri et al. (2008) find that the size of the company is positively correlated with the demand for directors' liability insurance, and the financial situation of the company is negatively correlated with the demand for directors' liability insurance. Stock price volatility is negatively correlated with the demand for directors' liability insurance, and the proportion of independent directors is negatively correlated with the demand for directors' liability insurance. Core

(2000) discloses that the level of litigation risk and the cost of financial distress are the most important determinants of D&O insurance demand. Gillan and Panasian (2015) demonstrate that D&O insurance premium contains useful information about the quality of corporate governance. Boyer (2007) presents that firms are more likely to purchase D&O insurance when there are few outsiders on the board. Lin et al. (2011) find that acquirers with D&O insurance have lower returns around the acquisition announcements. Boyer and Tennyson (2015) conclude that firms with stronger governance are more likely to purchase D&O insurance. Larger firms, cross-listed firms, or firms that are audited by one of the Big Four accounting firms tend to have D&O insurance because they face greater litigation risk from a broader investor base (Boyer & Tennyson, 2015; O'Sullivan, 2002). Independent directors tend to buy D&O insurance, which reduces the independent directors' financial risks (Boyer & Tennyson, 2015). Firms facing higher costs of financial distress and litigation risk are more likely to buy D&O insurance (Boyer & Tennyson, 2015).

After the gradual promotion of D&O insurance, there is a debate among researchers on the effect of D&O insurance. Some studies suggest that D&O insurance can alleviate managers' concerns in performing their duties, improve their work enthusiasm, and enhance the value of the company, aligning with the original intention of establishing D&O insurance. Other literature questions the positive effectiveness of D&O insurance, asserting that D&O insurance reduces the cost of managers' mistakes, encourages managers' selfish or short-sighted behaviour, causes moral hazard problems, and then they reduce the value of the company (Chalmers et al., 2002; Gillan & Panasian, 2015).

**Protection of Shareholders' Rights and Interests**

D&O insurance can provide shareholders with a certain degree of compensation (Boyer & Tennyson, 2015; Gutierrez, 2018). Protecting shareholders' rights and interests is important for the existence and development of D&O insurance, especially for small shareholders. D&O insurance can effectively ensure shareholders obtain full compensation after filing a civil lawsuit as it covers the losses caused by unintentional behaviour (Boyer & Stern, 2014). Boyer (2002) believes that D&O insurance is widely used to protect the interests of shareholders. One view is that D&O insurance can provide protection for the behaviours of directors and executives and has a "bottom line" role for management's property, which helps motivate managers to be aggressive, thereby alleviating potential agency problems, such as risk aversion. The risk-hedging mechanism of D&O insurance disperses the risk of claims caused by the manager's negligence into insurance premiums, which helps smooth the volatility of management's human

capital compensation and reduces the risk of managers' practices. Therefore, to a certain extent, it can alleviate agency problems such as risk aversion or position retention. Boyer and Stern (2014) also confirm that D&O insurance enables small and medium-sized shareholders to meet the supervision and management requirements of the company's risk cash flow and risk assets at a lower cost, thereby optimising board resolutions and improving corporate governance. Zou et al. (2008) discover the aim of the company purchasing D&O insurance is to protect the controlling shareholders and managers from the losses caused by minority shareholder litigation.

**External Supervision**

From the perspective of corporate external governance, the insurer of D&O insurance can participate in corporate governance as an independent external supervisor (Mayers & Smith, 1990; O'Sullivan, 2002). As a commercial risk management organisation, insurance companies have professional experience in corporate governance and risk management (Holderness, 1990). Insurance companies aim to pursue profit, requiring them to conduct a comprehensive assessment of the insured company before underwriting. This enables the insurance company to obtain full information about the applicant's risk factors at a negligible cost. During the underwriting process, the insurer undertakes considerable monitoring, including an extensive review of the company's financial records and governance processes, inspection of the records of directors and executives, and interviews of the management by its professional risk assessment ability (Boyer & Tennyson, 2015; Holderness, 1990). This pre-investigation will have a warning effect on the enterprise and reduce the risk of the enterprise. Insurance companies can supervise executives through the design of insurance terms such as insurance charges and claim amounts, restricting the behaviour of executives (Core, 2000). After underwriting, insurance companies pay close attention to the operation management and risk control of the client. The possible high claim settlement risk urges the insurance company to continuously supervise and regularly inspect to minimise the probability of litigation (O'Sullivan, 2002). It adds additional supervision to the company (Lee & Liu, 2011). When litigation risks occur, insurance companies can reduce the loss. The insurance companies can manage risk through before, during and after underwriting. Therefore, insurance companies play an important role in management and governance as an effective external governance organisation (Core, 2000). Insurance companies frequently negotiate changes in a firm's corporate governance as a condition for obtaining and renewing the policy (Boyer & Tennyson, 2015). Boyer and Stern (2014) find that D&O insurance is positively correlated with corporate governance risk, indicating that insurance companies can effectively assess the risk. Lee and Liu (2011) find

that D&O insurance can restrain the excess compensation of executives, effectively reducing agency costs, significantly improving the company's performance, reducing the bankruptcy risk, and enhancing the company's value (Zou & Adams, 2009). O'Sullivan (2002) find that D&O insurance is more effective in supervision and reduces the information asymmetry between enterprises and external investors. D&O insurance is beneficial to corporate governance because it allows competent professionals to serve as monitors of companies without fear of personal financial loss (Core, 2000). Moreover, scrutiny of a firm's corporate governance by insurance companies before and after D&O insurance purchase provides monitoring of directors and managers, forcing them to engage in responsible conduct and deter wrongdoing (Boyer & Stern, 2014). O'Sullivan (2002) finds that D&O insurance reduces agency costs and improves corporate governance. Core (2000) finds that D&O insurance premiums reflect a firm's corporate governance quality. Holderness (1990) argues that D&O insurance can be used to attract independent directors who are the best monitors of the officers in the corporation. D&O insurance can lower contract costs.

**Incentive Managers**

D&O insurance can encourage managers to make positive advancements, allowing them to fully display management skills and improve corporate governance. Core (2000) believes that D&O insurance can motivate managers to be aggressive and alleviate potential agency problems such as risk aversion. Jensen and Meckling (1976) propose that management is risk-averse. Risk-averse managers are afraid of being prosecuted; they perform their duties with great caution and may miss development opportunities due to fear of challenges. D&O insurance strengthens the protection of the interests of executives, transfers the compensation liability to the insurance company, and actively promotes the performance of their duties. This encourages executives to undertake investment projects with positive net income to enhance the value of the company (Jensen, 1993). D&O insurance encourages executives to take risks (Jensen, 1993; Zou et al., 2003). The purchase of D&O insurance by the company can eliminate the worries of directors and executives in performing their duties, effectively stimulating their abilities and improving the level of corporate governance (Boyer, 2002). At the same time, D&O insurance is a welfare for excellent enterprises. Gutierrez (2018) finds that enterprises can attract better talents by incorporating D&O insurance into their compensation structure. D&O insurance is an important tool in recruiting and retaining quality directors (Boyer & Tennyson, 2015). Unlike shareholders who are risk-neutral and make optimal risk-taking decisions to maximise their financial returns, directors and officers are risk-averse. Without D&O insurance, firms may be unable to recruit and retain qualified directors and fail to take appropriate business

risks (Cao & Narayanamoorthy, 2011; Green & Hwang, 2009). D&O insurance can lower directors' and officers' litigation exposures, alleviate the potential risk aversion problem, and increase their risk appetite, thereby improving their risk-taking ability.

The external supervision hypothesis is based on the assumption that the company has a perfect corporate governance mechanism. However, there are still many deficiencies in both internal and external governance in China (Alegria et al., 2012; Boubakri et al., 2008; Chung & Wynn, 2008; Gillan & Panasian, 2015; Li & Liao, 2014). The introduction of D&O insurance may not overcome the shortcomings of governance mechanisms. It further worsens the defects of governance by reducing the liability risk of managers, resulting in more serious opportunistic behaviour (Zou et al., 2008). D&O insurance undermines corporate governance as directors shift their monitoring function to insurers, and managers may pursue personal interests at the expense of shareholders because it shields directors and officers from litigation risk and personal financial liability (Boubakri et al., 2008; Chalmers et al., 2002). D&O insurance weakens the disciplining effect of litigation, creates moral hazard, and reduces directors' and officers' accountability. D&O insurance means that the insurer assumes the role of the last payer, weakening the functions of warning and punishment. This, in turn, weakens the fiduciary responsibility of managers and the supervisory responsibility of directors (Chen et al., 2016). Jia and Tang (2018) find that independent directors are negligent in performing their responsibilities after the company purchased D&O insurance. D&O insurance increases earnings management (Wang et al., 2008), increases the possibility of financial restatement, and then the audit fee increases (O'Sullivan, 2002). Cao et al. (2017) find that D&O insurance is negatively correlated with investment efficiency, and enterprises that buy insurance tend to over-invest. D&O insurance strengthens internal and external information asymmetry, significantly reduces the refinancing ability, and increases the cost of equity capital (Chen et al., 2016). Gillan and Panasian (2015) find that D&O insurance increases the company's litigation risk. Chalmers et al. (2002) find that the higher the amount of D&O insurance, the more likely the opportunistic behaviour of executives. Some research finds that insurance companies are not able to effectively evaluate the risks of the insured companies, and D&O insurance is significantly negatively correlated with corporate performance (Boubakri et al., 2008). A higher level of D&O insurance coverage is associated with greater financial reporting aggressiveness (Cao & Narayanamoorthy, 2011; Hwang & Kim, 2018), a higher cost of equity (Chen et al., 2016), higher loan spreads (Lin et al., 2011), greater risk-taking (Boyer & Tennyson, 2015), overinvestment (Cao et al., 2017), a higher likelihood of lawsuits (Gillan & Panasian, 2015), greater tax avoidance (Wang et al., 2008), higher audit fees (Chung & Wynn, 2008), poorer

post-IPO stock performance (Chalmers et al., 2002), inferior IPO performance (Chalmers et al., 2002), inefficient investments (Li & Liao, 2014), and lower earnings quality (Chung & Wynn, 2008). Jia et al. (2011) show that the self-interested behaviour of director executives is related to the degree of asylum of D&O insurance. When the cost of self-interested behaviour is greater than the level of asylum, D&O insurance plays a positive role of "encouragement" and "supervision." Chung and Wynn (2008) argue that D&O insurance could induce unintended moral hazard and information asymmetry. Chalmers et al. (2002) state that D&O insurance significantly mitigates the potential litigation risk covered by insurers, making directors and officers engage in opportunistic behaviour at the expense of shareholders.

The agency hypothesis argues that D&O insurance creates moral hazard and exacerbates the agency problem because the insurance policy weakens the disciplining effect of litigation and reduces D&O accountability (Cao & Narayanamoorthy, 2011; Chalmers et al., 2002). Because of the potential disincentives created by D&O insurance, many continental European countries forbade firms from purchasing D&O insurance until recently (Boyer & Tennyson, 2015).

I conclude that managers are willing to diversify risks and reduce their responsibilities by purchasing D&O insurance, regardless of the positive or negative effects. Previous studies have noted that the existence of D&O insurance can provide a "bottom line" effect for the management of the company in terms of behaviour and personal property. However, the 'bottom line' effect may either positively or negatively impact the management of the company.

Therefore, I obtained the following test hypotheses:

H1: The "bottom line" effect of D&O insurance will reduce the likelihood of CEO turnover and litigation.

H2: D&O insurance will improve the quality of financial statements.

H3: D&O insurance will increase investment efficiency and innovation.

In contrast, the negative impact of D&O insurance is manifested in its "bottom line" effect that can trigger management's moral hazard, leading to self-interested behaviour (Zou & Adams, 2009). Chung and Wynn (2008) argue that D&O insurance could induce unintended moral hazard and diminish the incentive of

managers to act in the best interest of stakeholders. D&O insurance reduces the disciplining effect of shareholder litigation, which may consume or waste corporate resources and have a negative long-term impact on business management, causing firms to reduce long-term investments. In turn, it may have a negative impact on corporate innovation.

Therefore, another competitive hypothesis is as follows:

H4: D&O insurance will increase earnings management.

**SOEs and Non-SOEs**

Different ownership leads to different effects on business objectives and has varying effects on insurance decision-making. According to the nature of property rights, Chinese enterprises are divided into SOEs and non-SOEs (Kim & Jiang, 2020). The responsibility of SOEs is to provide products for the macro-economy.

First, due to the absence of the owner of SOEs, there is less risk of civil litigation. D&O insurance has a less restrictive effect on managers, and the rewards and punishments are determined by the government. Directors and managers do not need the protection of D&O insurance because they are unlikely to be sued by shareholders. Once they are punished by government agencies, the amount of punishment is usually small and cannot reach bankruptcy. So, the insurance Company cannot effectively supervise. Besides, SOEs have strong political connections and little demand for D&O insurance. The incentive and supervision role of D&O insurance are limited by the government (Jia et al., 2019). Second, the governance controls the governance of SOEs rather than markets. The government assesses business performance, supervises business behaviour, and issues policies, etc. The executives are appointed and dismissed by the government, which is a political promotion and is unlikely to be dismissed. Non-SOEs are willing to purchase liability insurance for their senior managers to enhance the attractiveness of the company and win the battle for talent. So, there is no need for insurance. Third, SOEs are supported by the government and enjoy various preferential policies, such as government assistance, bank credit and market access policies (Chung & Wynn, 2008; Dewatripont & Maskin, 1995; Piotroski et al., 2015; Preuss & Königsgruber, 2021; Qian & Roland, 1999).

Companies are eager to establish close ties with the government because these relationships are valuable – benefits include superior access to debt financing, a lower cost of bank loans, lighter taxation, stronger market ownership and relaxed regulatory oversight, among others (Chaney et al., 2011; Faccio et al., 2016; Fisman et al., 2014). Political connections provide business opportunities,

preferential access to financing, lower tax rates (Cao et al., 2017), secure favourable regulatory conditions and access to resources such as bank loans (Chaney et al., 2011). Ultimately, these factors increase the value of firms and improve performance (Daily & Johnson, 2016), government subsidies and bailout (Cao et al., 2017; Chaney et al., 2011; Fisman et al., 2014). Firms with political ties to the government enjoy legal protection – they are not only less likely to be sued, but even in the event of a lawsuit, they tend to receive favourable treatment from the courts and have a higher probability of winning (Correia, 2014; Jia et al., 2019; Luo et al., 2016). Because political connections provide an "invisible" layer of protection for affiliated firms and can shield their managers and directors from litigation risk, I expect these firms to have a lower demand for D&O insurance. Jia et al. (2019) find that politically connected companies are unlikely to buy D&O insurance.

SOEs tend to buy D&O insurance. More than 70% of the companies that have purchased D&O insurance are SOEs (Zou & Adams, 2006; Zou, Adams, et al., 2003; Zou, Wong, et al., 2008). SOEs buy D&O insurance for political needs, aiming to support insurance companies and respond to government initiatives to promote the development of D&O insurance in China, rather than improving the value of enterprises and risk dispersal. In addition, non-SOEs lack government financial support, have a weak ability to handle risks, and face the risk of being eliminated by the market at any time. There is great competition pressure for managers in non-SOEs. Performance and profits are the main evaluation criteria for their promotion. Therefore, the introduction of D&O insurance can transfer risks in non-SOEs and encourage them to make a profit.

H5: The impact of D&O insurance is different between SOEs and non-SOEs.

## SAMPLE, VARIABLES AND MODEL

### Data Sources and Sample Selection

This article takes Chinese enterprises listed on the Shanghai Stock Exchange (SHSE) and the Shenzhen Stock Exchange (SZSE) from 2000 to 2020 as initial samples. According to the following criteria, I exclude:

1. Firms flagged ST or *ST.
2. Financial services firms due to their industry uniqueness.
3. Samples with missing financial data.

To avoid outliers, I winsorised at the 1% level in both tails (Jin et al., 2016; Meng et al., 2011). Additionally, I control for year and industry fixed effects. As seen in Table 1, China first introduced D&O insurance in 2002. Subsequently, many companies purchased D&O insurance year by year, and as of 2020, there are 2,874 observations. The D&O insurance data are obtained from Chinese Research Data Services (CNRDS) and are cross-referenced with a manual search of annual shareholders' meetings from WIND. CNRDS is a leading data provider specialising in technologies such as textual analysis and machine learning to collect data on Chinese financial markets and firms that have historically been difficult to gather or are missing from traditional databases. The identities of D&O policy providers are manually collected from corporate annual reports and minutes of board and shareholders' meetings. Other financial data are from the China Stock Market and Accounting Research (CSMAR) database. This article finally obtains 36,502 data points and D&O insurance accounts for about 6% of the total sample.

Table 1
*Variables definition*

| Variables | Notation | Definition |
|---|---|---|
| Independent variables | CEOturnover | CEOturnover is a dummy variable that equals to 1 when a CEO has forced turnover and 0 otherwise. |
| | Lawsuit | Lawsuit means the number of lawsuits which the firm face in year *t.* |
| | ICindex | Score of internal control ranging. Source: Dibo Internal Control and Risk Management Database. |
| | KV | The methods proposed by Verrecchia and Kim (2001) have been implemented to measure information quality. |
| | IE | The residual of the Richardson model regression result, the larger the absolute value, the lower the investment efficiency of the enterprise. Total investment expenditure, calculated as the sum of fixed assets, construction in process, intangible assets and long-term investments, all scaled by total assets. The residual of the Richardson model regression result, the larger the absolute value, the lower the investment efficiency of the enterprise. |
| | RD | R&D expenditure scaled by total assets. |
| | Restate | Restate equals to 1 if the company require/disclose to restate the financial statement. |
| | Perks | Perks represent the residual value of administrative expenses from regression on firm characteristics. |

(*Continued on next page*)

Table 1 (*Continued*)

| Variables | Notation | Definition |
|---|---|---|
| | Chairmanturnover | Chairmanturnover is a dummy variable that equals to 1 when a chairman has forced turnover and 0 otherwise. |
| | Violation | Violation is a dummy variable that equals to 1 when the stock exchange issues the violation issues. |
| Control variables | DOI | DOI equals to 1 if the firm purchase D&O insurance in year $t + 1$, 0 otherwise. |
| | Ln (DOI + 1) | The natural logarithm of one plus years since the company purchase D&O insurance. |
| | Size | The natural logarithm of total assets. |
| | Lev | Total liability scaled by total assets. |
| | ROE | Return on equity (ROE) is the measure of a company's net income divided by its shareholders' equity. |
| | BM | The book-to-market ratio (BM) equals firm's book value of equity divided by market value of equity. |
| | ListAge | The natural logarithm of one plus years since listed. |
| | Indep | Indep is the proportion of independent directors on the board to total board size. |
| | STATE | STATE is a dummy variable that equals to 1 if the firm is a state-owned enterprise, and 0 otherwise. |
| | Board | The number of directors is taken as the natural logarithm. |
| | Dual | Coded "1" if chairman also holds the position of CEO and "0" otherwise. |
| | Inst | Institutional ownership (INST) is the dependent variable which stands for the shareholding percentage of institutional investors (the total shares held by institutions divided by the total shares outstanding at the year-end). |
| | Tobin's Q | Firm value is measured using Tobin's Q, defined as the book value of assets minus the book value of equity plus the market value of equity, divided by the book value of assets. |
| | Mshare | Mshare measures the shares held by managers. |
| | Occupy | Occupy stands for the degree of expropriation on minority shareholders. It is the ratio of net account receivable of related parties and total asset. |
| | Big4 | Dummy variable. Equal to 1 if the firm is audited by a Big 4 auditor, and 0 otherwise. |

## Model

Comment letters have been examined if it affect the likelihood of forced CEO turnover using the linear probability model (LPM). LPM simplifies the interpretation of coefficients, although it may produce fitted values outside the 0 to 1 range (Wooldridge, 2002). According to Chyz and Gaertner (2017), LPM is suited for this test. In the robustness tests, a logit model is used as shown in Table 9. All of the above variables are explained in Table 1. This article controls the firm and year fixed effects.

$$Consequence_{i,t+1} = \alpha_0 + \alpha_1 DOinsurance_{i,t} + \alpha_k ControlS_{i,t} + \sum Yearfe + \varepsilon_{i,t} \quad (1)$$

## Key Variables

### *CEO turnover*

The dummy variable *TO_FORCE* is equal to 1 for a turnover event in year *t*, and 0 otherwise (Cao et al., 2017). *TO_FORCE* is measured at *t* + 1 period, while all other variables are measured at *t* period (Cao et al., 2017).

There are 2,532 CEO turnover events that occurred during the sample period. In Table 1, the reasons for CEO turnover are provided by the CSMAR database. Change of job is taking up the highest percentage, accounting for 33.45% of the total turnover. The second one is the completion of acting duties, representing 26.42%, and the third is personal reasons (14.97%). Only 0.79% fall into the dismissal category. I reclassify reasons as job changes, resignations, personal reasons and reasons not given (Firth et al., 2006). Other turnover is classified as normal with one exception: if the CEO is less than 60 years old and the stated reason is retirement, I classify this turnover as forced.

### *Lawsuits*

The number of lawsuit in year *t* is measured to represent the litigation risk that a company faces (Xu, 2020; Zhang, 2020).

### *D&O insurance*

Existing research mainly adopts the following four ways of measuring D&O insurance: (1) D&O insurance (DOI) is a dummy variable indicating if the enterprise purchases D&O insurance (Lin et al., 2011); (2) the purchase period of D&O insurance; (3) the premium or insurance fee of D&O insurance;

(4) the proportion of directors and senior executives who have purchased insurance among all directors and senior executives. Information about D&O insurance is disclosed in the announcements of shareholders' meetings. This article manually searches the shareholders' meeting announcements and supplements the information with the database of the CNRDS platform. The insurance premium, insurance fee, and the number of insured executives have not been disclosed, and this article cannot use them. Therefore, a dummy variable (D&O insurance) is adopted to measure D&O insurance, which equals to 1 if a firm purchases D&O insurance in a given year and 0 otherwise (Boyer, 2002, 2005; Mayers & Smith, 1990; O'Sullivan, 2002).

In addition, unless the company's announcement clearly declares that it will stop purchasing D&O insurance, it is considered that the company will purchase D&O insurance in the following years. This article also takes the length of time to purchase D&O insurance [Ln (DOI + 1)] as a substitute variable for DOI. Ln (DOI + 1) is the length of time represented by the natural logarithm of "1 + years of purchasing D&O insurance for listed companies."

***IE (investment efficiency)***

This article follows Richardson (2006) to measure investment efficiency. Richardson (2006) divided corporate total investment into expected investment and non-expected investment. The determinants of investment include measures of growth opportunities, leverage, firm age, firm size, cash balance, industry-fixed effects and annual fixed effects. Non-expected investment is measured by residuals between total investment and expected investment (He et al., 2019; Richardson, 2006). In this article, I use Richardson's model and develop the expected investment as follows:

$$\begin{aligned} IE_{i,t} &= \alpha_0 + \alpha_1 Growth_{i,t} + \alpha_2 Lev_{i,t-1} + \alpha_3 Cash_{i,t-1} + \alpha_4 Age_{i,t-1} \\ &+ \alpha_5 Size_{i,t-1} + \alpha_6 Return_{i,t-1} + \alpha_7 Investment_{i,t-1} + \sum Industryfe + \varepsilon_{i,t} \end{aligned} \quad (2)$$

where *IE* is total investment expenditure in current year *t*, calculated as the sum of fixed assets, construction in process, intangible assets and long-term investments, all scaled by total assets; $Growth_{i,t}$ is growth opportunities in the previous year, represented by Tobin's Q; $Cash_{i,t\text{-}1}$ is the balance of cash and short-term investments deflated by total assets measured at the start of the year; $Age_{i,t-1}$ is the company's age since being listed; $Size_{i,t\text{-}1}$ is the size of the company, measured by natural logarithm of total assets at the beginning of the year; $Lev_{i,t\text{-}1}$ is the financial leverage in the previous year, expressed by total debt ratio; and $Return_{i,t-1}$ is the rate of stock returns for the year before the investment year. Industry and year are the dummy variables for industry and year.

***KV***

I implement the KV methods proposed by Verrecchia and Kim (2001) to measure KV, which are calculated from the following model.

$$\ln\left|\frac{\Delta P_t}{\Delta P_{t-1}}\right| = \alpha + \beta(vol_t - vol_0) + \varepsilon_{i,t} \tag{3}$$

Where $P_t$ is the company's closing price on day $t$, $vol_t$ is the company's trading volume on day $t$ and $vol_0$ is the company's average trading volume of the year. I ran the regression for each firm annually and assigned KV to be the regression coefficient $\beta$ multiplied by 10,000,000. Larger KV index means lower quality of information disclosure.

***Innovation***

Innovation is defined using research expenditures divided by total assets (Yongming & Yini, 2017; Zhang et al., 2020).

***Internal control index***

The Dibo Internal Control Index is a measure of the efficiency of the company's internal control. The data is obtained from the Shenzhen Dibo Internal Control database, which is widely used in China.

The index is based on five aspects: internal control environment, risk assessment, internal monitoring, control activities, and information and communication. It ranges from 1 to 1,000, with a higher index value representing higher internal control quality (Li, Shu, et al., 2017; Li, Wang, et al., 2021; Yongming & Yini, 2017).

***Restatement***

This study utilises the WIND database (https://www.wind.com.cn/en/edb.html) for annual report restatement information. In accordance with capital market requirements, restatements refer to changes in information disclosed in annual reports (Ma et al., 2018; Su & Alexiou, 2022).

***Excess perks***

According to Xu et al. (2014) regarding perks, I use Equation (4) to regress by year and industry, with the residual representing excess perks: Perks denote the residual value of administrative expenses from regression on firm characteristics.

$$\frac{Perks_{i,t}}{TA_{i,t-1}} = \alpha_0 + \alpha_1 \frac{1}{TA_{i,t-1}} + \alpha_2 \frac{\Delta Sale_{i,t-1}}{TA_{i,t-1}} + \alpha_3 \frac{PPE_{i,t}}{TA_{i,t-1}} + \alpha_4 \frac{Inventory_{i,t}}{TA_{i,t-1}} + \alpha_5 lnEmp_{i,t} + \varepsilon \quad (4)$$

In Equation (4), $Perks_{i,t}$ is total perks and I measure it in two ways:

1. The sum of the eight expenses under the "Management Expenses" item in the notes of the annual financial report, which includes office expenses, travel expenses, business entertainment expenses, communication fees, overseas training fees, board fees, car fees, and conference fees.
2. The sum of business entertainment expenses and travel expenses.

I obtain excess perks by regression, where $TA_{i,t-1}$ is lagged total assets; $\Delta Sale_{i,t-1}$ is sales minus lagged sales; $PPE_{i,t}$ is net value of fixed assets; $Inventory_{i,t}$ is net inventory value and $lnEmp_{i,t}$ is the natural log of the number of employees (Cheng et al., 2018; Liu & Shu, 2022; Luo et al., 2011).

***Control variables***

I added the set of control variables included in the model used by Chyz and Gaertner (2017), which captures variables shown in prior accounting research to influence executive turnover (Cao et al., 2017; Chyz & Gaertner, 2017; Deng et al., 2019; Guo & Masulis, 2015; Tran et al., 2016; Zhang, 2016). The following variables are controlled in the model: Size, Lev, ROE, BM, ListAge, STATE, Board, Dual, INST, Tobin's Q, Mshare, Occupy, Big4 (Cassell et al., 2013), INST (Li & Lu, 2015), Mshare (Wei, 2017), and Indep (Kong et al., 2019). Additionally, I control the dummy variables for industry and year. Details of variable definitions are shown in Table 1.

## EMPIRICAL RESULTS

### Descriptive Statistics and Correlation Analysis

The descriptive statistics of the main variables are presented in Table 2. The average DOI is 0.006, and companies with DOI still constitute a relatively small proportion compared to those in the U.S. Through the correlation analysis in Table 3, it is evident that DOI has a negative correlation with Perks, Restate, RD, IE, Lawsuits and CEO turnover. DOI can enhance corporate governance, inhibit enterprise innovation, diminish investment efficiency, and mitigate corporate risk. Simultaneously, the positive correlation between DOI and KV and ICindex indicates that DOI can enhance corporate financial reporting and internal control.

Table 2
*Describe statistics*

| Variable | N | Mean | SD | P50 | Min | Mix |
|---|---|---|---|---|---|---|
| Perks | 36,502 | 0.044 | 0.033 | 0.037 | –0.184 | 0.248 |
| Restate | 36,502 | 0.399 | 0.908 | 0 | 0 | 34 |
| RD | 36,502 | 0.016 | 0.021 | 0.011 | 0 | 0.410 |
| IE | 36,502 | 0.043 | 0.057 | 0.027 | 0.034 | 0.964 |
| KV | 36,502 | 0.466 | 0.191 | 0.442 | 0.001 | 1.789 |
| ICindex | 36,502 | 639.135 | 149.994 | 670.555 | 0 | 999.750 |
| Lawsuit | 36,502 | 0.134 | 0.341 | 0 | 0 | 1 |
| CEOturnover | 36,502 | 0.111 | 0.315 | 0 | 0 | 1 |
| Size | 36,502 | 21.980 | 1.365 | 21.786 | 12.3143 | 30.732 |
| Lev | 36,502 | 0.459 | 4.594 | 0.429 | 0.007 | 877.256 |
| ROE | 36,502 | 0.048 | 1.144 | 0.0757 | –174.895 | 33.831 |
| Board | 36,502 | 2.148 | 0.206 | 2.197 | 1.099 | 3.045 |
| Indep | 36,502 | 0.369 | 0.061 | 0.333 | 0 | 0.800 |
| Dual | 36,502 | 0.259 | 0.438 | 0 | 0 | 1 |
| BM | 36,502 | 1.089 | 3.770 | 0.654 | 0.001 | 386.810 |
| TobinQ | 36,502 | 2.140 | 10.244 | 1.566 | 0.153 | 1739.055 |
| ListAge | 36,502 | 1.996 | 0.907 | 2.197 | 0 | 3.434 |
| INST | 36,502 | 0.337 | 0.246 | 0.322 | 0 | 3.267 |
| Mshare | 36,502 | 0.125 | 0.257 | 0.001 | 0 | 22.568 |
| Occupy | 36,502 | 0.028 | 1.250 | 0.008 | 0 | 238.644 |
| Big4 | 36,502 | 0.058 | 0.234 | 0 | 0 | 1 |
| DOI | 36,502 | 0.061202 | 0.239704 | 0 | 0 | 1 |
| Ln (DOI + 1) | 36,502 | 0.108 | 0.456 | 0 | 0 | 2.996 |

Table 3
*Correlation*

| Variables | Perks | Restate | RD | IE | KV | ICindex | Lawsuit | CEOturnover | DOinsurance | Ln (DOI + 1) |
|---|---|---|---|---|---|---|---|---|---|---|
| Perks | 1 | | | | | | | | | |
| Restate | –0.070*** | 1 | | | | | | | | |
| RD | 0.327*** | 0.050*** | 1 | | | | | | | |
| IE | 0.178*** | –0.012** | –0.038*** | 1 | | | | | | |
| KV | 0.024*** | 0.024*** | 0.156*** | 0.013** | 1 | | | | | |
| ICindex | 0.065*** | –0.118*** | 0.033*** | 0.026*** | 0.052*** | 1 | | | | |
| Lawsuit | –0.116*** | 0.101*** | –0.048*** | –0.034*** | 0.127*** | –0.097*** | 1 | | | |
| CEOturnover | –0.00100 | 0.037*** | –0.035*** | 0.021*** | –0.00600 | –0.056*** | 0.047*** | 1 | | |
| DOinsurance | –0.045*** | –0.017*** | –0.061*** | –0.015** | 0.023*** | 0.040*** | –0.079*** | –0.012** | 1 | |
| Ln (DOI + 1) | –0.045*** | –0.014*** | –0.063*** | –0.015** | 0.023*** | 0.035*** | –0.063*** | –0.00800 | 0.924*** | 1 |

## Empirical Analysis

Table 4 presents the OLS regression results. I employ the two-way cluster method to control the industry fixed effects and year fixed effects, enhancing the robustness of the results. I observe a significant negative correlation between DOI and CEO turnover and lawsuits, but no significant correlation with other variables. These results indicate that the primary role of DOI is to reduce the risk of CEO turnover and litigation in China, supporting H1.

Given the diverse ownership structures of listed companies in China, substantial variations exist in their operations and management. SOEs and non-SOEs are differentiated and are presented in Table 5. The results show that the impact of DOI on CEO turnover is more pronounced for non-SOEs, as CEOs in SOEs are less likely to change. Columns (2) and (5) present the results for SOEs, while columns (3) and (6) depict the relationship in non-SOEs. It is evident that DOI has different effects on SOEs and non-SOEs, providing support for H5.

The low realisation of $R^2$ in Table 4 suggests limited explanatory power. However, as noted by Brickley (2003), a low $R^2$ is common in CEO turnover literature.

## Robustness

In order to mitigate potential sample selection bias resulting from the possible endogeneity of D&O insurance purchases, this article employs various methods to address the endogeneity issue and conducts robustness tests. While incorporating techniques such as lag, substitution variables, and Propensity Score Matching (PSM), the article acknowledges that, due to the constraints on the number of research samples, the endogeneity problem persists.

## Heckman Two-Stage Model

The D&O insurance sample might not be random, introducing an endogeneity issue related to self-selection deviation. To address this, the article utilises the Heckman two-stage method in Table 6. Chairman turnover and violations are introduced as exogenous tools in the first-stage model, and the regression results calculate the Inverse Mills Ratio (IMR). The IMR is then fitted into the second model. The results in columns (3) to (5) are significant, supporting H1 and H5.

Table 4
*Empirical results*

| Variables | (1) CEOturnover | (2) Lawsuit | (3) ICindex | (4) KV | (5) IE | (6) RD | (7) Restate | (8) Perks |
|---|---|---|---|---|---|---|---|---|
| DOI | –0.0279** | –0.0276* | 2.3874 | 0.0014 | –0.0018 | –0.0001 | 0.0178 | 0.0001 |
| | (–2.3633) | (–1.8492) | (0.2772) | (0.1460) | (–0.5907) | (–0.1412) | (0.5740) | (0.0389) |
| Size | 0.0082** | –0.0015 | 23.4970*** | 0.0406*** | –0.0136*** | 0.0005* | 0.0385*** | –0.0179*** |
| | (2.0209) | (–0.2790) | (6.2981) | (13.4842) | (–10.4706) | (1.6637) | (3.5419) | (–24.7949) |
| Lev | 0.0220** | 0.0009 | –117.6428*** | 0.0094 | –0.0024 | –0.0017 | –0.0366 | –0.0012 |
| | (2.0638) | (0.0597) | (–8.2853) | (0.8400) | (–0.4673) | (–1.5636) | (–0.6682) | (–0.5009) |
| ROE | –0.0013 | –0.0005 | 3.0411 | 0.0005 | 0.0087*** | 0.0000** | 0.0047 | 0.0072*** |
| | (–1.1311) | (–0.7116) | (1.4978) | (0.8278) | (2.6149) | (2.1627) | (1.6146) | (3.5969) |
| Board | –0.0228 | –0.0036 | –7.1018 | –0.0000 | –0.0017 | 0.0008 | 0.0629 | 0.0054*** |
| | (–1.2663) | (–0.1731) | (–0.5871) | (–0.0020) | (–0.4575) | (0.5901) | (1.4544) | (2.6710) |
| Indep | 0.0346 | 0.0274 | 2.7844 | 0.0328 | 0.0019 | –0.0014 | 0.1652 | 0.0090 |
| | (0.6262) | (0.4763) | (0.0912) | (1.0490) | (0.1868) | (–0.4783) | (1.3112) | (1.3725) |
| Dual | 0.0721*** | 0.0083 | 2.1583 | 0.0011 | 0.0018 | –0.0002 | 0.0081 | 0.0008 |
| | (9.4975) | (1.1300) | (0.5714) | (0.2953) | (1.2207) | (–0.4702) | (0.5267) | (1.1649) |
| BM | –0.0041*** | –0.0010 | –4.0728* | –0.0255*** | –0.0027*** | –0.0006** | –0.0058* | 0.0019*** |
| | (–2.7613) | (–0.8648) | (–1.8315) | (–12.2593) | (–3.8307) | (–2.2626) | (–1.8536) | (6.6797) |
| TobinQ | –0.0002 | –0.0001 | 0.1745 | 0.0014 | 0.0010*** | 0.0000 | –0.0020*** | 0.0003** |
| | (–0.7463) | (–0.5105) | (0.5604) | (1.5500) | (3.3627) | (0.9659) | (–4.6815) | (2.3268) |
| ListAge | 0.0046 | 0.0313*** | 10.1135*** | –0.0041 | –0.0031 | –0.0007** | 0.2248*** | 0.0009 |
| | (0.8823) | (4.6709) | (3.0027) | (–1.0874) | (–1.6150) | (–1.9742) | (20.7640) | (0.9080) |
| INST | 0.0053 | –0.0246* | 32.7380*** | 0.0086 | 0.0146*** | –0.0010 | 0.0153 | 0.0074*** |
| | (0.4694) | (–1.8592) | (5.6072) | (1.2318) | (5.6173) | (–1.4854) | (0.5926) | (6.0200) |
| Mshare | 0.0113* | –0.0106 | 12.6298** | 0.0231*** | 0.0009 | 0.0021*** | –0.0042 | –0.0004 |
| | (1.7719) | (–1.1750) | (2.2696) | (5.0462) | (0.5985) | (4.6114) | (–0.2097) | (–0.0095) |

(*Continued on next page*)

Table 4 (*Continued*)

| Variables | (1) CEOturnover | (2) Lawsuit | (3) ICindex | (4) KV | (5) IE | (6) RD | (7) Restate | (8) Perks |
|---|---|---|---|---|---|---|---|---|
| Occupy | –0.0809** | –0.0029 | –408.2939*** | –0.0624** | –0.0123 | –0.0015 | 0.1510 | –0.0394*** |
| | (–2.0617) | (–0.0543) | (–8.7268) | (–2.1398) | (–0.8670) | (–0.6949) | (0.7483) | (–3.5124) |
| Big4 | –0.0214 | –0.0032 | 7.5636 | 0.0136 | –0.0031 | –0.0005 | –0.0511 | –0.0010 |
| | (–1.4007) | (–0.1907) | (0.8444) | (1.1728) | (–0.8983) | (–0.5759) | (–1.4843) | (–0.4199) |
| _cons | –0.1128 | 0.1512 | 321.7601*** | –0.5927*** | 0.3357*** | 0.0138** | –0.8854*** | 0.4047*** |
| | (–1.1225) | (1.1645) | (3.7986) | (–8.3632) | (12.0785) | (2.0251) | (–3.4235) | (23.2617) |
| Industry | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| N | 36,502 | 36,502 | 36,502 | 36,502 | 36,502 | 36,502 | 36,502 | 36,502 |
| Adj. $R^2$ | 0.020 | 0.128 | 0.115 | 0.250 | 0.065 | 0.116 | 0.234 | 0.332 |
| F | 74.6761 | 37.7976 | 22.2944 | 182.3968 | 16.3744 | 17.9391 | 135.0518 | 65.2794 |

*Notes*: *t*-statistics in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 5
*SOEs and non-SOEs*

| Variables | (1) FCEOturnover | (2) FCEOturnover | (3) FCEOturnover | (4) FFLawsuit | (5) FFLawsuit | (6) FFLawsuit |
|---|---|---|---|---|---|---|
| DOI | –0.0279** | –0.0059 | –0.0610*** | –0.0340** | –0.0330* | –0.0370* |
| | (–2.3633) | (–0.3651) | (–3.1081) | (–2.4861) | (–1.7364) | (–1.9185) |
| Size | 0.0082** | 0.0093 | 0.0105* | 0.0053 | –0.0048 | 0.0171** |
| | (2.0209) | (1.2231) | (1.8437) | (1.0991) | (–0.5464) | (2.5271) |
| Lev | 0.0220** | 0.0068 | 0.0382*** | 0.0011 | –0.0176 | 0.0169 |
| | (2.0638) | (0.2545) | (2.7452) | (0.0834) | (–0.4940) | (1.0444) |
| ROE | –0.0013 | –0.0002 | –0.0018 | –0.0008 | –0.0031 | –0.0003 |
| | (–1.1311) | (–0.1279) | (–1.2444) | (–1.1036) | (–0.7303) | (–0.7048) |
| Board | –0.0228 | –0.0355 | –0.0169 | 0.0133 | 0.0088 | 0.0091 |
| | (–1.2663) | (–1.2013) | (–0.6285) | (0.6982) | (0.3047) | (0.3092) |
| Indep | 0.0346 | –0.0229 | 0.0870 | 0.0550 | 0.0110 | 0.0881 |
| | (0.6262) | (–0.2485) | (1.0389) | (0.9835) | (0.1361) | (0.9750) |
| Dual | 0.0721*** | 0.1422*** | 0.0568*** | 0.0025 | –0.0082 | 0.0002 |
| | (9.4975) | (8.8642) | (6.1144) | (0.3646) | (–0.6200) | (0.0245) |
| BM | –0.0041*** | –0.0036** | –0.0096*** | –0.0028** | –0.0006 | –0.0106*** |
| | (–2.7613) | (–2.2232) | (–2.6916) | (–2.3294) | (–0.4220) | (–2.6583) |
| TobinQ | –0.0002 | 0.0013 | –0.0001 | –0.0002 | –0.0009 | –0.0000 |
| | (–0.7463) | (0.4173) | (–0.6215) | (–1.1516) | (–0.2647) | (–0.2212) |
| ListAge | 0.0046 | 0.0071 | 0.0028 | 0.0470*** | 0.0478*** | 0.0443*** |
| | (0.8823) | (0.6314) | (0.4101) | (7.5462) | (3.3802) | (5.4508) |
| INST | 0.0053 | –0.0029 | 0.0023 | –0.0253** | –0.0054 | –0.0371** |
| | (0.4694) | (–0.1461) | (0.1557) | (–2.0539) | (–0.2371) | (–2.4989) |
| Mshare | 0.0113* | –0.0426 | 0.0078 | 0.0002 | –0.0202 | –0.0045 |
| | (1.7719) | (–1.2884) | (0.8914) | (0.0256) | (–0.3422) | (–0.4354) |
| Occupy | –0.0809** | –0.0431 | –0.1407*** | –0.0023 | 0.3444*** | –0.0612 |
| | (–2.0617) | (–0.4685) | (–2.7536) | (–0.0466) | (2.7981) | (–1.0305) |
| Big4 | –0.0214 | –0.0439** | 0.0077 | –0.0226 | –0.0460** | –0.0038 |
| | (–1.4007) | (–1.9684) | (0.3002) | (–1.4831) | (–2.1908) | (–0.1352) |
| _cons | –0.1128 | –0.1586 | –0.1850 | –0.0851 | –0.0389 | –0.3778* |
| | (–1.1225) | (–0.8371) | (–1.1924) | (–0.7047) | (–0.1769) | (–1.7849) |
| Industry | Yes | Yes | Yes | Yes | Yes | Yes |
| Year | Yes | Yes | Yes | Yes | Yes | Yes |
| N | 36,502 | 13,680 | 22,109 | 36,502 | 13,680 | 22,109 |
| Adj. $R^2$ | 0.020 | 0.025 | 0.019 | 0.142 | 0.148 | 0.146 |

*Notes*: *t*-statistics in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 6
*Heckman analysis*

| Variables | (1) FCEOturnover | (2) FCEOturnover | (3) FCEOturnover | (4) FLawsuit | (5) FLawsuit | (6) FLawsuit |
|---|---|---|---|---|---|---|
| DOI | –0.0337 | –0.0139 | –0.0911** | –0.0525* | –0.0801** | –0.0166 |
| | (–1.6130) | (–0.5240) | (–2.2247) | (–1.8410) | (–2.1490) | (–0.3511) |
| Size | 0.0066 | 0.0185* | 0.0067 | –0.0066 | –0.0053 | –0.0088 |
| | (1.0716) | (1.6940) | (0.7050) | (–0.8304) | (–0.4085) | (–0.7805) |
| Lev | 0.0273 | –0.0473 | –0.0009 | –0.0605* | –0.1877*** | 0.0294 |
| | (0.4112) | (–0.5417) | (–0.0065) | (–1.7443) | (–3.0093) | (0.6699) |
| ROE | –0.0027 | 0.0018 | –0.0053 | –0.0073*** | –0.0116** | –0.0018 |
| | (–0.6897) | (0.6594) | (–0.8330) | (–2.9036) | (–2.3427) | (–0.1996) |
| Board | –0.0291 | –0.0574 | –0.0077 | –0.0266 | –0.0334 | –0.0570 |
| | (–1.2519) | (–1.4627) | (–0.2171) | (–0.9978) | (–0.9064) | (–1.2821) |
| Indep | 0.0970 | 0.0375 | 0.1545 | –0.0221 | –0.0127 | –0.0091 |
| | (1.3087) | (0.3060) | (1.3202) | (–0.3037) | (–0.1225) | (–0.0722) |
| Dual | 0.0810*** | 0.1746*** | 0.0574*** | 0.0062 | –0.0024 | 0.0068 |
| | (8.1921) | (8.5500) | (4.7411) | (0.6224) | (–0.1406) | (0.5367) |
| BM | –0.0041** | –0.0044** | –0.0107* | 0.0012 | 0.0020 | 0.0028 |
| | (–2.5363) | (–2.5771) | (–1.7932) | (0.7405) | (1.0817) | (0.3632) |
| TobinQ | –0.0003 | 0.0032 | 0.0014 | 0.0005 | –0.0033 | 0.0011 |
| | (–0.1254) | (0.6361) | (0.3581) | (0.5517) | (–0.9570) | (1.3112) |
| ListAge | –0.0130 | –0.0243 | –0.0330 | –0.0569*** | –0.0284 | –0.0715*** |
| | (–0.5835) | (–0.7560) | (–0.7646) | (–4.7685) | (–1.1740) | (–4.7056) |
| INST | 0.0154 | 0.0310 | 0.0350 | 0.0367* | 0.0501 | 0.0247 |
| | (0.5113) | (0.7322) | (0.6138) | (1.9546) | (1.5716) | (1.0611) |
| Mshare | 0.0187 | 0.0824 | 0.0393 | –0.0468 | 0.5019 | –0.0597 |
| | (0.4681) | (0.3571) | (0.4947) | (–1.1400) | (0.9947) | (–1.4174) |
| Occupy | –0.0568 | –0.0558 | –0.1836 | –0.1693* | –0.0602 | –0.1438 |
| | (–0.6577) | (–0.3820) | (–1.3375) | (–1.9315) | (–0.3580) | (–1.3564) |
| Big4 | –0.0182 | –0.0502 | 0.0244 | 0.0089 | –0.0305 | 0.0610 |
| | (–0.8691) | (–1.6198) | (0.6673) | (0.3886) | (–1.1074) | (1.1535) |
| IMR | –0.0934 | –0.2809 | –0.3400 | –0.2297*** | –0.2729*** | –0.1840*** |
| | (–0.3362) | (–0.7895) | (–0.5951) | (–6.1180) | (–3.8167) | (–4.0896) |
| _cons | 0.1062 | 0.3760 | 0.5692 | 0.8438*** | 1.1462*** | 1.1455*** |
| | (0.1820) | (0.6029) | (0.6186) | (4.3676) | (3.4746) | (3.4832) |
| Industry | Yes | Yes | Yes | Yes | Yes | Yes |
| Year | Yes | Yes | Yes | Yes | Yes | Yes |
| N | 27,844 | 10,410 | 16,802 | 27,783 | 11,358 | 15,742 |
| Adj. $R^2$ | 0.010 | 0.019 | 0.006 | 0.101 | 0.112 | 0.096 |

**Substitute Variables**

The article also employs Ln (DOI + 1) as an alternative variable for DOI, representing the natural logarithm of "1 + years of introduction of D&O insurance." Ln (DOI + 1) exhibits a significantly negative correlation with CEO turnover and lawsuits, supporting H1, as shown in Table 7.

**Logit Model**

The logit model is applied in Table 8. The results support H1 and H5, revealing differences in the impact of DOI on SOEs and non-SOEs. CEOs in SOEs are unlikely to experience turnover due to the nature of these companies, and the effect of DOI is not significant. However, concerning litigation, the effect of DOI is more pronounced in SOEs.

**Lag Variables**

In Table 9, CEO turnover and lawsuits are lagged by two periods, and the results still significantly support H1 and H2. The findings indicate that DOI plays a significant role in executive turnover and litigation.

**PSM**

Using the OLS method alone may not effectively resolve the endogeneity problem and sample selection error. Given the small number of samples introducing D&O insurance (only 6% of the sample companies have purchased it), potential results deviation due to sample selection is a concern. This article treats enterprises that have purchased D&O insurance as the treatment group, matching them with enterprises that have not purchased D&O insurance but share the same year, industry, and other control variables as the control group (Rosenbaum & Rubin, 2012). Figure 3 illustrates that the matching effect is satisfactory. The regression results for matched samples are presented in Table 10, using the 1:1 matching method. Columns (1) and (4) represent the full sample, columns (2) and (5) are SOEs, and columns (3) and (6) are non-SOEs. The significantly negative coefficient between D&O insurance and CEO turnover demonstrates that D&O insurance can reduce CEO turnover. Similarly, the significantly negative coefficient between D&O insurance and litigation indicates that D&O insurance can mitigate litigation risks.

Using the PSM method, we paired the treatment group with the control group. Figure 2 shows the situation before matching, while Figure 3 displays the situation after matching. Evidently, the matching effect has improved significantly.

Table 7
*Substitute variables*

| | (1) CEOturnover | (2) Lawsuit | (3) ICindex | (4) FKV | (5) IE | (6) RD | (7) Restate | (8) Perks |
|---|---|---|---|---|---|---|---|---|
| Ln (DOI + 1) | –0.0133* | –0.0313*** | 7.2871 | 0.0064 | –0.0001 | –0.0000 | –0.0166 | –0.0012 |
| | (–1.7737) | (–2.6069) | (1.3489) | (1.1901) | (–0.0545) | (–0.0292) | (–0.7762) | (–1.1698) |
| Size | 0.0080** | –0.0015 | 23.5117*** | 0.0406*** | –0.0136*** | 0.0005* | 0.0387*** | –0.0179*** |
| | (1.9823) | (–0.2868) | (6.2951) | (13.5049) | (–10.4792) | (1.6633) | (3.5746) | (–24.7671) |
| Lev | 0.0220** | 0.0007 | –117.7938*** | 0.0092 | –0.0024 | –0.0017 | –0.0368 | –0.0011 |
| | (2.0602) | (0.0489) | (–8.2925) | (0.8265) | (–0.4693) | (–1.5645) | (–0.6708) | (–0.4745) |
| ROE | –0.0014 | –0.0006 | 3.0758 | 0.0006 | 0.0087*** | 0.0000** | 0.0046 | 0.0072*** |
| | (–1.1616) | (–0.8966) | (1.5172) | (0.9011) | (2.6161) | (2.1498) | (1.5687) | (3.5989) |
| Board | –0.0232 | –0.0047 | –6.8970 | 0.0002 | –0.0017 | 0.0008 | 0.0623 | 0.0054*** |
| | (–1.2875) | (–0.2235) | (–0.5698) | (0.0186) | (–0.4556) | (0.5897) | (1.4385) | (2.6510) |
| Indep | 0.0344 | 0.0244 | 3.8901 | 0.0338 | 0.0020 | –0.0014 | 0.1614 | 0.0089 |
| | (0.6225) | (0.4249) | (0.1273) | (1.0799) | (0.1970) | (–0.4776) | (1.2821) | (1.3516) |
| Dual | 0.0721*** | 0.0079 | 2.2643 | 0.0012 | 0.0018 | –0.0002 | 0.0077 | 0.0008 |
| | (9.4944) | (1.0811) | (0.6000) | (0.3218) | (1.2291) | (–0.4688) | (0.4978) | (1.1362) |
| BM | –0.0041*** | –0.0009 | –4.1355* | –0.0256*** | –0.0027*** | –0.0006** | –0.0057* | 0.0019*** |
| | (–2.7452) | (–0.7165) | (–1.8372) | (–12.3078) | (–3.8311) | (–2.2607) | (–1.8417) | (6.7459) |
| TobinQ | –0.0002 | –0.0001 | 0.1760 | 0.0014 | 0.0010*** | 0.0000 | –0.0020*** | 0.0003** |
| | (–0.7597) | (–0.5461) | (0.5623) | (1.5490) | (3.3613) | (0.9660) | (–4.7142) | (2.3293) |
| ListAge | 0.0044 | 0.0303*** | 10.4265*** | –0.0038 | –0.0030 | –0.0007** | 0.2238*** | 0.0008 |
| | (0.8360) | (4.5208) | (3.0815) | (–1.0013) | (–1.5942) | (–1.9665) | (20.5712) | (0.8306) |
| INST | 0.0055 | –0.0233* | 32.3502*** | 0.0083 | 0.0146*** | –0.0010 | 0.0168 | 0.0075*** |
| | (0.4847) | (–1.7610) | (5.5319) | (1.1809) | (5.5968) | (–1.4880) | (0.6459) | (6.0709) |

(*Continued on next page*)

Table 7 (*Continued*)

| | (1) CEOturnover | (2) Lawsuit | (3) ICindex | (4) FKV | (5) IE | (6) RD | (7) Restate | (8) Perks |
|---|---|---|---|---|---|---|---|---|
| Mshare | 0.0115* | –0.0104 | 12.6094** | 0.0231*** | 0.0010 | 0.0021*** | –0.0045 | –0.0004 |
| | (1.8101) | (–1.1653) | (2.2724) | (5.0457) | (0.6069) | (4.6184) | (–0.2244) | (–0.0997) |
| Occupy | –0.0807** | –0.0023 | –408.5578*** | –0.0626** | –0.0123 | –0.0015 | 0.1516 | –0.0394*** |
| | (–2.0576) | (–0.0423) | (-8.7190) | (–2.1529) | (–0.8653) | (–0.6949) | (0.7511) | (–3.5120) |
| Big4 | –0.0217 | –0.0025 | 7.2251 | 0.0134 | –0.0031 | –0.0005 | –0.0495 | –0.0010 |
| | (–1.4185) | (–0.1467) | (0.8049) | (1.1544) | (–0.9109) | (–0.5769) | (–1.4317) | (–0.4152) |
| _cons | –0.1080 | 0.1542 | 321.0759*** | –0.5941*** | 0.3357*** | 0.0138** | –0.8909*** | 0.4057*** |
| | (–1.0749) | (1.1897) | (3.7869) | (–8.3851) | (12.0822) | (2.0238) | (–3.4568) | (23.2318) |
| Industry | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| N | 36,502 | 36,502 | 36,502 | 36,502 | 36,502 | 36,502 | 36,502 | 36,502 |
| Adj. $R^2$ | 0.020 | 0.129 | 0.115 | 0.250 | 0.065 | 0.116 | 0.234 | 0.332 |
| F | 74.4031 | 37.7944 | 22.3222 | 182.1680 | 16.3047 | 17.8890 | 135.0551 | 65.3361 |

*Notes*: *t*-statistics in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 8
*Logit*

| Variables | (1) FCEOturnover | (2) FCEOturnover | (3) FCEOturnover | (4) FLawsuit | (5) FLawsuit | (6) FLawsuit |
|---|---|---|---|---|---|---|
| DOI | –0.293** | –0.105 | –0.696*** | –0.340* | –0.531** | –0.105 |
| | (–1.97) | (–0.51) | (–2.74) | (–1.85) | (–2.03) | (–0.33) |
| Size | 0.045 | 0.071 | 0.055 | –0.080 | –0.072 | –0.083 |
| | (1.09) | (1.02) | (0.92) | (–1.64) | (–0.79) | (–1.19) |
| Lev | 0.235** | 0.164 | 0.457*** | 0.012 | –0.305 | 0.175 |
| | (2.13) | (0.56) | (3.04) | (0.10) | (–0.84) | (1.03) |
| ROE | –0.019 | 0.014 | –0.021 | –0.010 | –0.040 | –0.021 |
| | (–0.67) | (0.20) | (–0.54) | (–0.22) | (–0.66) | (–0.30) |
| Board | –0.258 | –0.387 | –0.200 | –0.177 | –0.565 | 0.009 |
| | (–1.49) | (–1.38) | (–0.81) | (–0.79) | (–1.44) | (0.03) |
| Indep | 0.359 | –0.524 | 0.966 | 0.628 | 0.572 | 0.918 |
| | (0.69) | (–0.65) | (1.26) | (0.96) | (0.53) | (0.96) |
| Dual | 0.556*** | 1.131*** | 0.405*** | 0.119 | –0.032 | 0.142 |
| | (10.21) | (10.41) | (6.24) | (1.56) | (–0.20) | (1.54) |
| BM | –0.045** | –0.042 | –0.101** | 0.004 | 0.002 | 0.061 |
| | (–1.97) | (–1.56) | (–1.99) | (0.34) | (0.14) | (1.07) |
| TobinQ | –0.014 | 0.018 | –0.017 | –0.023** | –0.033 | –0.012 |
| | (–1.13) | (0.70) | (–1.11) | (–2.04) | (–0.88) | (–0.98) |
| ListAge | 0.023 | 0.111 | –0.018 | 0.420*** | 1.135*** | 0.197* |
| | (0.36) | (0.78) | (–0.22) | (4.45) | (4.33) | (1.73) |
| INST | 0.018 | –0.085 | –0.019 | –0.424*** | –0.292 | –0.573*** |
| | (0.15) | (–0.42) | (–0.12) | (–2.74) | (–1.07) | (–2.85) |
| Mshare | 0.154 | –0.404 | 0.196 | –0.529* | 7.841** | –0.587** |
| | (0.69) | (–0.19) | (0.86) | (–1.88) | (2.39) | (–1.98) |
| Occupy | –0.785** | –0.582 | –1.573*** | 0.115 | 2.689*** | –0.562 |
| | (–1.98) | (–0.60) | (–2.89) | (0.26) | (2.78) | (–0.91) |
| Big4 | –0.198 | –0.363* | 0.058 | –0.063 | –0.425 | 0.054 |
| | (–1.29) | (–1.71) | (0.21) | (–0.31) | (–1.33) | (0.18) |
| N | 25,399 | 10,646 | 13,316 | 18,685 | 6,843 | 10,684 |
| r2_p | 0.063 | 0.064 | 0.070 | 0.341 | 0.338 | 0.364 |

Table 9
*Lag variable 2 periods*

| Variables | (1) CEOturnover | (2) CEOturnover | (3) CEOturnover | (4) Lawsuit | (5) Lawsuit | (6) Lawsuit |
|---|---|---|---|---|---|---|
| DOI | –0.0246** | –0.0153 | –0.0547*** | –0.0340** | –0.0330* | –0.0370* |
| | (–1.9625) | (–0.9008) | (–2.6978) | (–2.4861) | (–1.7364) | (–1.9185) |
| Size | 0.0073* | 0.0066 | 0.0118* | 0.0053 | –0.0048 | 0.0171** |
| | (1.6945) | (0.8443) | (1.9219) | (1.0991) | (–0.5464) | (2.5271) |
| Lev | 0.0154 | 0.0258 | 0.0268* | 0.0011 | –0.0176 | 0.0169 |
| | (1.3282) | (0.8886) | (1.6941) | (0.0834) | (–0.4940) | (1.0444) |
| ROE | –0.0012 | –0.0012 | –0.0004 | –0.0008 | –0.0031 | –0.0003 |
| | (–0.7566) | (–0.6839) | (–0.2755) | (–1.1036) | (–0.7303) | (–0.7048) |
| Board | –0.0403** | –0.0397 | –0.0216 | 0.0133 | 0.0088 | 0.0091 |
| | (–2.1300) | (–1.3124) | (–0.7720) | (0.6982) | (0.3047) | (0.3092) |
| Indep | 0.0372 | –0.0013 | 0.1124 | 0.0550 | 0.0110 | 0.0881 |
| | (0.6258) | (–0.0130) | (1.2785) | (0.9835) | (0.1361) | (0.9750) |
| Dual | 0.0643*** | 0.1474*** | 0.0455*** | 0.0025 | –0.0082 | 0.0002 |
| | (8.1913) | (8.9154) | (4.7698) | (0.3646) | (–0.6200) | (0.0245) |
| BM | –0.0031** | –0.0033** | –0.0082** | –0.0028** | –0.0006 | –0.0106*** |
| | (–2.2335) | (–2.0489) | (–2.0662) | (–2.3294) | (–0.4220) | (–2.6583) |
| TobinQ | –0.0001 | 0.0020 | –0.0001 | –0.0002 | –0.0009 | –0.0000 |
| | (–0.6657) | (0.5983) | (–0.3937) | (–1.1516) | (–0.2647) | (–0.2212) |
| ListAge | 0.0087 | 0.0078 | 0.0098 | 0.0470*** | 0.0478*** | 0.0443*** |
| | (1.6107) | (0.6564) | (1.3761) | (7.5462) | (3.3802) | (5.4508) |
| INST | 0.0049 | 0.0039 | -0.0037 | -0.0253** | -0.0054 | -0.0371** |
| | (0.4178) | (0.1839) | (-0.2404) | (-2.0539) | (-0.2371) | (-2.4989) |
| Mshare | 0.0122* | –0.0467 | 0.0122 | 0.0002 | –0.0202 | –0.0045 |
| | (1.9486) | (–1.2328) | (1.3877) | (0.0256) | (–0.3422) | (–0.4354) |
| Occupy | –0.0568 | –0.0030 | –0.0990* | –0.0023 | 0.3444*** | –0.0612 |
| | (–1.3288) | (–0.0316) | (–1.7042) | (–0.0466) | (2.7981) | (–1.0305) |
| Big4 | –0.0306* | –0.0394* | –0.0086 | –0.0226 | –0.0460** | –0.0038 |
| | (–1.8826) | (–1.6898) | (–0.3245) | (–1.4831) | (–2.1908) | (–0.1352) |
| _cons | –0.0716 | –0.1428 | –0.2168 | –0.0851 | –0.0389 | –0.3778* |
| | (–0.6600) | (–0.7313) | (–1.2948) | (–0.7047) | (–0.1769) | (–1.7849) |
| Industry | Yes | Yes | Yes | Yes | Yes | Yes |
| Year | Yes | Yes | Yes | Yes | Yes | Yes |
| N | 36,502 | 13,680 | 22,109 | 36,502 | 13,680 | 22,109 |
| Adj. $R^2$ | 0.020 | 0.027 | 0.019 | 0.142 | 0.148 | 0.146 |
| F | 59.9580 | - | 45.6528 | 34.7496 | - | 25.9477 |

Table 10
*PSM*

| Variables | (1) CEOturnover | (2) CEOturnover | (3) CEOturnover | (4) Lawsuit | (5) Lawsuit | (6) Lawsuit |
|---|---|---|---|---|---|---|
| DOinsurance | –0.0279** (–2.3633) | –0.0059 (–0.3651) | –0.0610*** (–3.1081) | –0.0276* (–1.8492) | –0.0254 (–1.1931) | –0.0268 (–1.3627) |
| Industry | Yes | Yes | Yes | Yes | Yes | Yes |
| Year | Yes | Yes | Yes | Yes | Yes | Yes |
| N | 36,502 | 13,680 | 22,109 | 36,502 | 13,680 | 22,109 |
| Aadj. $R^2$ | 0.020 | 0.025 | 0.019 | 0.128 | 0.137 | 0.129 |

*Notes*: *t*-statistics in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

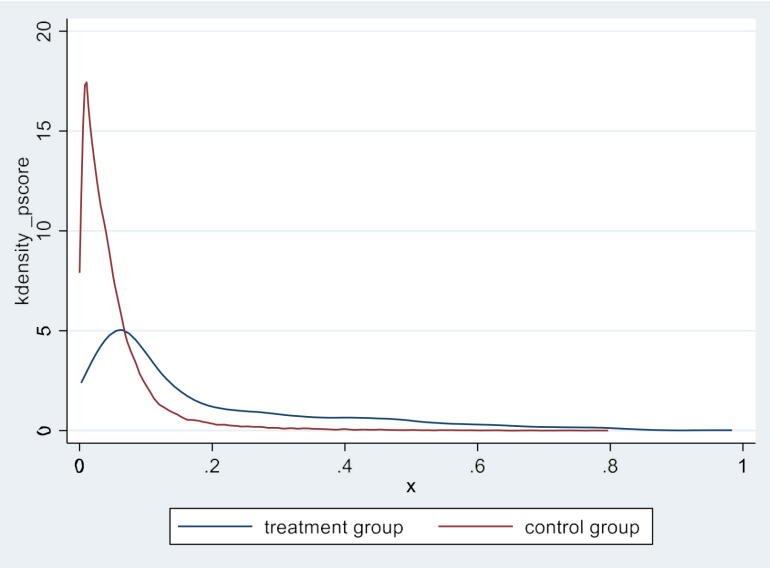


*Figure 2:* Before matching

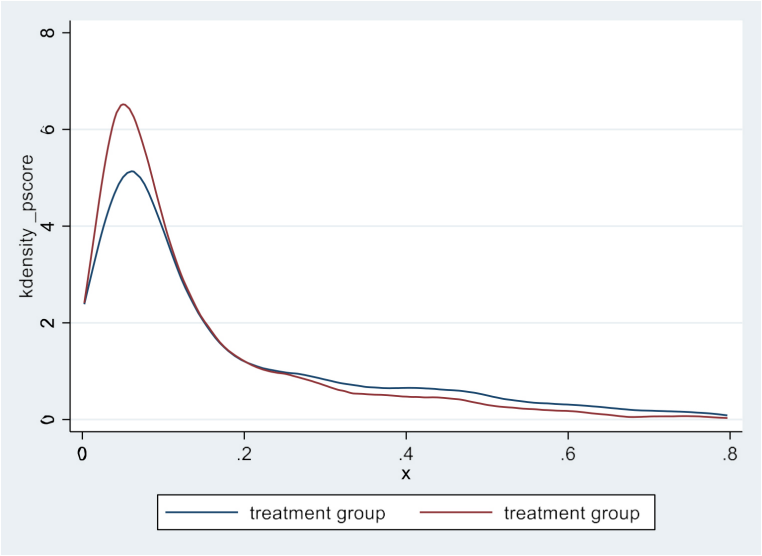


*Figure 3:* After matching

## CONCLUSIONS AND CONTRIBUTION

In conclusion, this study comprehensively examined the multifaceted impact of D&O insurance on various aspects of corporate governance and performance. I formulated several hypotheses to investigate the effects of D&O insurance on CEO turnover, litigation, financial statement quality, investment efficiency, innovation and earnings management. Additionally, I explored how these effects differ between SOEs and non-SOEs.

The findings have revealed several significant insights. Firstly, D&O insurance serves as a protective shield for executives, effectively reducing the likelihood of legal actions against them. This protection incentivises CEOs to make long-term strategic decisions without the constant fear of personal financial liability, thereby contributing to stability in corporate leadership. Secondly, this research supports the notion that D&O insurance fosters responsible management practices and discourages unethical behaviour that could negatively impact financial reporting. The safeguarding of personal assets encourages executives to uphold ethical standards, ultimately benefiting the financial integrity of the organisation.

Furthermore, the findings affirm that D&O insurance has a positive impact on investment efficiency and innovation. The security provided by D&O insurance

creates an environment conducive to innovation and efficient resource allocation within the organisation, leading to improved corporate performance. It is important to note that our study also corroborates the idea that D&O insurance may lead to increased earnings management due to potential self-interested behaviour. This highlights the need for vigilant monitoring of executive behaviour when D&O insurance is in place. Additionally, this research underscores the differential impact of D&O insurance on SOEs and non-SOEs. SOEs, with their government support and political connections, are less likely to purchase D&O insurance as they face lower litigation risk and enjoy government backing. In contrast, non-SOEs are more inclined to adopt D&O insurance to mitigate risks and attract talent in a competitive market, further emphasising the role of ownership structure in this context.

This study makes a significant contribution by addressing critical aspects often overlooked in existing research. Firstly, it effectively problematises the topic of D&O insurance, emphasising its multifaceted implications in the corporate context. By delving into the complex interplay between D&O insurance, CEO turnover, litigation, financial statement quality, investment efficiency, innovation and earnings management, I shed light on previously unexplored dimensions. Secondly, this research seeks to bridge specific gaps in knowledge that have persisted in the literature. It strives to provide a comprehensive understanding of D&O insurance's impact on corporate governance and performance, particularly within the distinctive backdrop of China from 2000 to 2020. By dissecting the associations with capital markets, regulatory frameworks, managerial practices, and financial reporting, the aim was to fill these critical knowledge gaps. Furthermore, this study distinguishes itself by unveiling the differentiated effects of D&O insurance on SOEs and non-SOEs. This distinction underscores the nuanced role of D&O insurance, with SOEs benefiting from government support and political connections, and non-SOEs relying on it for risk mitigation and talent attraction in a competitive environment.

In summary, this study provides valuable insights into the nuanced effects of D&O insurance on the corporate landscape, with implications for both risk management and ethical governance. I hope that this research contributes to a better understanding of the role of D&O insurance in shaping corporate behaviour and outcomes, especially in the unique context of emerging economies such as China.

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## REFERENCES

Alegria, M., Lin, J., Chen, C. N., Duan, N., Cook, B., & Meng, X. L. (2012). The impact of insurance coverage in diminishing racial and ethnic disparities in behavioral health services. *Health Services Research, 47*(3 Pt 2), 1322–1344. https://doi.org/10.1111/j.1475-6773.2012.01403.x

Boubakri, N., Ghalleb, N., & Boyer, M. M. (2008). Managerial opportunism in accounting choice: Evidence from directors' and officers' liability insurance purchases. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.1109254

Boyer, M. M. (2002). Insurance taxation and insurance fraud. *Journal of Public Economic Theory, 2*(1), 101–134. https://doi.org/10.1111/1097-3923.00031

Boyer, M. M. (2005). Directors' and Officers' insurance and shareholder protection. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.886504

Boyer, M. M. (2007). Directors' and officers' insurance in Canada. *Corporate Ownership and Control, 4*(4), 154–159. https://doi.org/10.22495/cocv4i4p13

Boyer, M. M., & Stern, L. H. (2014). D&O insurance and IPO performance: What can we learn from insurers? *Journal of Financial Intermediation, 23*(4), 504–540. https://doi.org/10.1016/j.jfi.2014.05.001

Boyer, M. M., & Tennyson, S. (2015). Directors' and officers' liability insurance, corporate risk and risk taking: New panel data evidence on the role of directors' and officers' liability insurance. *Journal of Risk and Insurance, 82*(4), 753–791. https://doi.org/10.1111/jori.12107

Brickley, J. A. (2003). Empirical research on CEO turnover and firm-performance: A discussion. *Journal of Accounting and Economics, 36*(1–3), 227–233. https://doi.org/10.1016/j.jacceco.2003.09.003

Cao, X. P., Pan, X. F., Qian, M. J., & Tian, G. G. (2017). Political capital and CEO entrenchment: Evidence from CEO turnover in Chinese non-SOEs. *Journal of Corporate Finance, 42*, 1–14. https://doi.org/10.1016/j.jcorpfin.2016.11.003

Cao, Z., & Narayanamoorthy, G. S. (2011). The effect of litigation risk on management earnings forecasts. *Contemporary Accounting Research, 28*(1), 125–173. https://doi.org/10.1111/j.1911-3846.2010.01045.x

Cassell, C. A., Dreher, L. M., & Myers, L. A. (2013). Reviewing the SEC's review process: 10-K comment letters and the cost of remediation. *Accounting Review, 88*(6), 1875–1908. https://doi.org/10.2308/accr-50538

Chalmers, J. M. R., Dann, L. Y., & Harford, J. (2002). Managerial opportunism? Evidence from directors' and officers' insurance purchases. *The Journal of Finance, 57*(2), 609–636. https://doi.org/10.1111/1540-6261.00436

Chaney, P. K., Faccio, M., & Parsley, D. (2011). The quality of accounting information in politically connected firms. *Journal of Accounting and Economics, 51*(1–2), 58–76. https://doi.org/10.1016/j.jacceco.2010.07.003

Chen, Z. H., Li, O. Z., & Zou, H. (2016). Directors' and officers' liability insurance and the cost of equity. *Journal of Accounting and Economics, 61*(1), 100–120. https://doi.org/10.1016/j.jacceco.2015.04.001

Cheng, L. T. W., Chan, R. Y. K., & Leung, T. Y. (2018). Impact of perk expenditures and marketing expenditures on corporate performance in China: The moderating role of political connections. *Journal of Business Research, 86*, 83–95. https://doi.org/10.1016/j.jbusres.2018.01.046

Chung, H. H., & Wynn, J. R. (2008). Managerial legal liability coverage and earnings conservatism. *Journal of Accounting and Economics, 46*(1), 135–153. https://doi.org/10.1016/j.jacceco.2008.03.002

Chyz, J. A., & Gaertner, F. B. (2017). Can paying "too much" or "too little" tax contribute to forced CEO turnover? *The Accounting Review, 93*(1), 103–130. https://doi.org/10.2308/accr-51767

Core, J. E. (2000). The directors' and officers' insurance premium: An outside assessment of the quality of corporate governance. *Journal of Law Economics & Organization, 16*(2), 449–477. https://doi.org/10.1093/jleo/16.2.449

Correia, M. M. (2014). Political connections and SEC enforcement. *Journal of Accounting and Economics, 57*(2–3), 241–262. https://doi.org/10.1016/j.jacceco.2014.04.004

Daily, C. M., & Johnson, J. L. (2016). Sources of CEO power and firm financial performance: A longitudinal assessment. *Journal of Management, 23*(2), 97–117. https://doi.org/10.1177/014920639702300201

Deng, S. Y., Intintoli, V. J., & Zhang, A. (2019). CEO turnover, information uncertainty, and debt contracting. *Quarterly Journal of Finance, 9*(2), Article 1950001. https://doi.org/10.1142/S2010139219500010

Dewatripont, M., & Maskin, E. (1995). Credit and efficiency in centralized and decentralized economies. *Review of Economic Studies, 62*(4), 541–555. https://doi.org/10.2307/2298076

Faccio, M., Marchica, M. T., & Mura, R. (2016). CEO gender, corporate risk-taking, and the efficiency of capital allocation. *Journal of Corporate Finance, 39*(3), 193–209. https://doi.org/10.1016/j.jcorpfin.2016.02.008

Firth, M., Fung, P. M. Y., & Rui, O. M. (2006). Firm performance, governance structure, and top management turnover in a transitional economy. *Journal of Management Studies, 43*(6), 1289–1330. https://doi.org/10.1111/j.1467-6486.2006.00621.x

Fisman, R. J., Khurana, R., Rhodes-Kropf, M., & Yim, S. (2014). Governance and CEO turnover: Do something or do the right thing? *Management Science, 60*(2), 319–337. https://doi.org/10.1287/mnsc.2013.1759

Gillan, S. L., & Panasian, C. A. (2015). On lawsuits, corporate governance, and directors' and officers' liability insurance. *Journal of Risk and Insurance, 82*(4), 793–822. https://doi.org/10.1111/jori.12043

Green, T. C., & Hwang, B. H. (2009). Price-based return comovement. *Journal of Financial Economics, 93*(1), 37–50. https://doi.org/10.1016/j.jfineco.2008.09.002

Guo, L. X., & Masulis, R. W. (2015). Board structure and monitoring: New evidence from CEO turnovers. *Review of Financial Studies, 28*(10), 2770–2811. https://doi.org/10.1093/rfs/hhv038

Gutierrez, C. M. (2018). The institutional determinants of health insurance: Moving away from labor market, marriage, and family attachments under the ACA. *American Sociological Review, 83*(6), 1144–1170. https://doi.org/10.1177/0003122418811112

Han, L.-M., MacMinn, R. D., & Ren, Y. (2010). Directors, directors and officers insurance and corporate governance. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.1722289

He, Y., Chen, C., & Hu, Y. (2019). Managerial overconfidence, internal financing, and investment efficiency: Evidence from China. *Research in International Business and Finance, 47*, 501–510. https://doi.org/10.1016/j.ribaf.2018.09.010

Holderness, C. G. (1990). Liability insurers as corporate monitors. *International Review of Law and Economics, 10*(2), 115–129. https://doi.org/10.1016/0144-8188(90)90018-O

Hwang, J. H., & Kim, B. (2018). Directors' and officers' liability insurance and firm value. *Journal of Risk and Insurance, 85*(2), 447–482. https://doi.org/10.1111/jori.12136

Jensen, M. C. (1993). The modern industrial-revolution, exit, and the failure of internal control-systems. *Journal of Finance, 48*(3), 831–880. https://doi.org/10.1111/j.1540-6261.1993.tb04022.x

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3*(4), 305–360. https://doi.org/10.1016/0304-405x(76)90026-x

Jia, J., Adams, M., & Buckle, M. (2011). The strategic use of corporate insurance in China. *European Journal of Finance, 17*(8), 675–694. https://doi.org/10.1080/1351847X.2011.554281

Jia, N., Mao, X., & Yuan, R. (2019). Political connections and directors' and officers' liability insurance: Evidence from China. *Journal of Corporate Finance, 58*, 353–372. https://doi.org/10.1016/j.jcorpfin.2019.06.001

Jia, N., & Tang, X. S. (2018). Directors' and officers' liability insurance, independent director behavior, and governance effect. *Journal of Risk and Insurance, 85*(4), 1013–1054. https://doi.org/10.1111/jori.12193

Jin, Y., Hou, Z., & Zhang, D. (2016). Determinants of health insurance coverage among people aged 45 and over in China: Who buys public, private and multiple insurance. *PLoS One, 11*(8), e0161774. https://doi.org/10.1371/journal.pone.0161774

Kim, K. A., & Jiang, F. (2020). Corporate governance in China: A survey. *Review of Finance, 24*(4), 733–772. https://doi.org/10.1093/rof/rfaa012

Kong, D. M., Xiang, J. Y., Zhang, J., & Lu, Y. Y. (2019). Politically connected independent directors and corporate fraud in China. *Accounting and Finance, 58*(5), 1347–1383. https://doi.org/10.1111/acfi.12449

Lee, D. W., & Liu, M. H. (2011). Does more information in stock price lead to greater or smaller idiosyncratic return volatility? *Journal of Banking and Finance, 35*(6), 1563–1580. https://doi.org/10.1016/j.jbankfin.2010.11.002

Li, K. F., & Liao, Y. P. (2014). Directors' and officers' liability insurance and investment efficiency: Evidence from Taiwan. *Pacific-Basin Finance Journal, 29*, 18–34. https://doi.org/10.1016/j.pacfin.2014.03.001

Li, P., Shu, W., Tang, Q., & Zheng, Y. (2017). Internal control and corporate innovation: Evidence from China. *Asia-Pacific Journal of Accounting and Economics, 26*(5), 622–642. https://doi.org/10.1080/16081625.2017.1370380

Li, T., Yang, T., & Zhu, J. (2022). Directors' and officers' liability insurance: Evidence from independent directors' voting. *Journal of Banking and Finance*, *138*, 106425. https://doi.org/10.1016/j.jbankfin.2022.106425

Li, W., & Lu, X. (2015). Institutional interest, ownership type, and environmental capital expenditures: Evidence from the most polluting Chinese listed firms. *Journal of Business Ethics, 138*(3), 459–476. https://doi.org/10.1007/s10551-015-2616-2

Li, Z., Wang, B., Wu, T., & Zhou, D. (2021). The influence of qualified foreign institutional investors on internal control quality: Evidence from China. *International Review of Financial Analysis, 78*, 101916. https://doi.org/10.1016/j.irfa.2021.101916

Lin, C., Officer, M. S., & Zou, H. (2011). Directors' and officers' liability insurance and acquisition outcomes. *Journal of Financial Economics, 102*(3), 507–525. https://doi.org/10.1016/j.jfineco.2011.08.004

Liu, L., & Shu, H. (2022). Mandatory dividend policy and perk consumption: Evidence from state-owned business groups in China. *Journal of International Financial Markets, Institutions and Money, 77*, 101536. https://doi.org/10.1016/j.intfin.2022.101536

Luo, J. H., Gong, M. N., Lin, Y. L., & Fang, Q. F. (2016). Political connections and stock price crash risk: Evidence from China. *Economics Letters, 147*(3), 90–92. https://doi.org/10.1016/j.econlet.2016.08.024

Luo, W., Zhang, Y., & Zhu, N. (2011). Bank ownership and executive perquisites: New evidence from an emerging market. *Journal of Corporate Finance, 17*(2), 352–370. https://doi.org/10.1016/j.jcorpfin.2010.09.010

Ma, C., Du, H., & Zhang, J. R. (2018). Chinese accounting restatement and the timeliness of annual report. *Applied Economics, 50*(50), 5436–5453. https://doi.org/10.1080/00036846.2018.1486995

Mayers, D., & Smith, C. W. (1990). On the corporate demand for insurance: Evidence from the reinsurance market. *Journal of Business, 63*(1), 19–40. https://doi.org/10.1086/296481

Meng, Q., Yuan, B., Jia, L., Wang, J., Yu, B., Gao, J., & Garner, P. (2011). Expanding health insurance coverage in vulnerable groups: A systematic review of options. *Health Policy Plan, 26*(2), 93–104. https://doi.org/10.1093/heapol/czq038

O'Sullivan, N. (2002). The demand for directors' and officers' insurance by large UK companies. *European Management Journal, 20*(5), 574–583. https://doi.org/10.1016/s0263-2373(02)00096-8

Piotroski, J. D., Wong, T. J., & Zhang, T. Y. (2015). Political incentives to suppress negative information: Evidence from Chinese listed firms. *Journal of Accounting Research, 53*(2), 405–459. https://doi.org/10.1111/1475-679X.12071

Preuss, S., & Königsgruber, R. (2021). How do corporate political connections influence financial reporting? A synthesis of the literature. *Journal of Accounting and Public Policy, 40*(1), 106802. https://doi.org/10.1016/j.jaccpubpol.2020.106802

Qian, Y., & Roland, G. (1999). Federalism and the soft budget constraint. *SSRN Electronic Journal.* https://doi.org/10.2139/ssrn.149988

Richardson, S. (2006). Over-investment of free cash flow. *Review of Accounting Studies, 11*(2–3), 159–189. https://doi.org/10.1007/s11142-006-9012-1

Rosenbaum, P. R., & Rubin, D. B. (2012). Constructing a control group using multivariate matched sampling methods that incorporate the propensity score. *The American Statistician, 39*(1), 33–38. https://doi.org/10.1080/00031305.1985.10479383

Shafer, W. E., & Simmons, R. S. (2008). Social responsibility, Machiavellianism and tax avoidance. *Accounting, Auditing and Accountability Journal, 21*(5), 695–720. https://doi.org/10.1108/09513570810872978

Su, Z., & Alexiou, C. (2022). The impact of anti-corruption measures and risk effects on equity incentives and financial misreporting in China. *China Journal of Accounting Research*, *15*(1), 100218. https://doi.org/10.1016/j.cjar.2021.100218

Tran, Q. T., Nguyen, X. M., & Nguyen, T. H. (2016). CEO duality, state shareholder and CEO turnover: Evidence from Vietnamese stock market. *Business and Economic Horizons, 12*(3), 113–120. https://doi.org/10.15208/beh.2016.09

Verrecchia, R. E., & Kim, O. (2001). The relation among disclosure, returns, and trading volume information. *The Accounting Review, 76*(4), 633–654. https://doi.org/10.2308/accr.2001.76.4.633

Wang, J. L., Chung, C. F., & Tzeng, L. Y. (2008). An empirical analysis of the effects of increasing deductibles on moral hazard. *Journal of Risk and Insurance, 75*(3), 551–566. https://doi.org/10.1111/j.1539-6975.2008.00274.x

Wei, C. (2017). Determinants of equity incentive plans in Chinese companies listed on the growth enterprise market. *China Journal of Accounting Studies, 5*(3), 379–394. https://doi.org/10.1080/21697213.2017.1383060

Wooldridge, Jr. M. (2002). *Econometric analysis of cross section and panel data*. The MIT Press.

Xu, J. (2020). The role of corporate political connections in commercial lawsuits: Evidence from Chinese courts. *Comparative Political Studies, 53*(14), 2321–2358. https://doi.org/10.1177/0010414020919962

Xu, N. H., Li, X. R., Yuan, Q. B., & Chan, K. C. (2014). Excess perks and stock price crash risk: Evidence from China. *Journal of Corporate Finance, 25*, 419–434. https://doi.org/10.1016/j.jcorpfin.2014.01.006

Yongming, Z., & Yini, S. (2017). The impact of coupling interaction of internal control and CSR on corporate performance-based on the perspective of stakeholder. *Procedia Engineering, 174*, 449–455. https://doi.org/10.1016/j.proeng.2017.01.165

Zhang, D., Guo, Y., Wang, Z., & Chen, Y. (2020). The impact of US monetary policy on Chinese enterprises' R&D investment. *Finance Research Letters, 35*, 101301. https://doi.org/10.1016/j.frl.2019.09.016

Zhang, H. (2020). Internal control quality and litigation risk -evidence from China. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3514825

Zhang, X. (2016). Income smoothing, idiosyncratic risk: CEO turnover. *Journal of Mathematical Finance, 6*(1), 1–13. https://doi.org/10.4236/jmf.2016.61001

Zhao, Y., Hu, J., & Shu, X. (2016). Litigation risk, judicial transparency and directors' and officers' liability insurance. *Journal of Financial Risk Management, 5*(4), 213–228. https://doi.org/10.4236/jfrm.2016.54021

Zou, H., & Adams, M. B. (2006). The corporate purchase of property insurance: Chinese evidence. *Journal of Financial Intermediation, 15*(2), 165–196. https://doi.org/10.1016/j.jfi.2004.06.007

Zou, H., & Adams, M. B. (2009). Debt capacity, cost of debt, and corporate insurance. *Journal of Financial and Quantitative Analysis, 43*(2), 433–466. https://doi.org/10.1017/S0022109000003586

Zou, H., Adams, M. B., & Buckle, M. J. (2003). Corporate risks and property insurance: Evidence from the People's Republic of China. *Journal of Risk and Insurance, 70*(2), 289–314. https://doi.org/10.1111/1539-6975.00061

Zou, H., Wong, S., Shum, C., Xiong, J., & Yan, J. (2008). Controlling-minority shareholder incentive conflicts and directors' and officers' liability insurance: Evidence from China. *Journal of Banking & Finance, 32*(12), 2636–2645. https://doi.org/10.1016/j.jbankfin.2008.05.015