Pacific-Basin Finance Journal 89 (2025) 102597

Contents lists available at ScienceDirect

Pacific-Basin Finance Journal

journal homepage: www.elsevier.com/locate/pacfin

Does non-punitive regulation increase the demand for D&O insurance?

Qiankun Gu [a,1], Conggang Li [b,1,*], Yanyin Li [c,1,*], Rong Xu [c,d,1], Yize Xu [c,1]

[a] School of Business, Soochow University, Suzhou, China
[b] School of Accounting, Shanghai Lixin University of Accounting and Finance, Shanghai, China
[c] School of Finance and China Financial Policy Research Centre, Renmin University of China, Beijing, China
[d] Faculty of Business & Economics, Algoma University, Canada

ARTICLE INFO

JEL classification:
G32
G34
L51

Keywords:
Regulatory inquiry letters
Demand for D&O insurance
Non-punitive regulation

ABSTRACT

As a pivotal element in the evolution of government regulation, the economic consequences of inquiry letters have received significant attention from policymakers and academics. This study examines the impact of inquiry letters issued by stock exchanges on the demand for corporate directors' and officers' liability insurance (D&O insurance). Our findings indicate a significant positive relationship between inquiry letters and future D&O insurance demand, with main conclusions remaining robust across various robustness tests such as difference-in-differences estimation, propensity score matching, and instrumental variables. In addition, both regulatory inquiry pressure and corporate attention significantly increase D&O insurance demand, with notable variations across inquiry types. Channel tests show that inquiry letters function as effective risk warning signals, alerting companies to litigation, governance, and reputation risks. Further analysis reveals that corporate governance mechanisms and political connections dampen the facilitating effect of inquiry letters on firms' D&O insurance demand. Our study provides valuable practical insights for policymakers and corporate managers in emerging markets based on a non-punitive regulation perspective.

1. Introduction

Policymakers generally concur that a series of regulatory policies implemented after the 2008 global financial crisis have effectively standardized capital market practices and significantly improved the transparency and stability within capital markets. The practice of these punitive and non-punitive policies and regulations has attracted a growing body of research to examine their economic consequences. Previous studies have focused on the substantial regulatory effects of punitive regulation on firm performance and behavior (He and Fang, 2019; Jin et al., 2020; Ding et al., 2022). However, for non-punitive regulation, while several studies provide evidence of its effects on firm performance (Drienko and Sault, 2013; Cao et al., 2023; Lu and Qiu, 2023), there is still limited attention paid to its influence on corporate internal decision-making. This study examines the impact of non-punitive regulation on firms' internal

* Corresponding authors.
E-mail addresses: conggangli@lixin.edu.cn (C. Li), liyanyin@ruc.edu.cn (Y. Li).

[1] The order of authorship is alphabetical. Each author contributed equally. Conggang Li is funded by National Natural Science Foundation of China (72304203).

https://doi.org/10.1016/j.pacfin.2024.102597
Received 7 August 2024; Received in revised form 29 October 2024; Accepted 17 November 2024
Available online 22 November 2024

corporate risk governance decisions, specifically focusing on the purchase of directors' and officers' liability insurance (D&O insurance), as represented by inquiry letters issued by the Shanghai Stock Exchange (SSE) and Shenzhen Stock Exchange (SZSE) in China.

The regulatory inquiry mechanism in China's stock market is a typical "non-punitive regulation" (Lu and Qiu, 2023), and since the SSE initiated the information disclosure reform in 2013, the focus of capital market information disclosure supervision has gradually shifted from "ex-ante supervision" to "ex-post supervision", and the frequency of the exchange's supervisory inquiries to listed companies has been increasing, which has attracted the significant attention of investors, media and other stakeholders. Unlike the punitive regulation enforced through administrative penalties by the CSRC, inquiry letters issued by stock exchanges are neutral and do not involve any punitive measures. In particular, inquiry letters related to financial reports primarily address less severe issues, such as inadequate and inaccurate disclosures, aiming to elicit additional information and response explanations from listed companies. Considering the heightened requirements of regulatory inquiry letters on firms' information disclosure as well as external signals about corporate risks, it may lead to higher litigation risks in the subsequent operations of the firms, which in turn may lead to changes in risk management decisions by directors and executives due to risk-benefit equilibrium. Therefore, we test whether inquiry letters affect firms' risk management decisions and increase the demand for D&O insurance.

In recent years, the rule of law system in China's capital market has seen notable advancements, especially with the enactment of the new Securities Law in 2020 and the landmark special representative lawsuit in securities disputes represented by the false statement made by Kangmei Pharmaceuticals. The litigation risk faced by directors and executives of listed companies has been increasing, and D&O insurance has gradually attracted extensive attention in both academia and industry (Yuan et al., 2016; Jia et al., 2019; Kong et al., 2023). D&O insurance is a liability insurance for company directors and managers to protect them from claims arising from decisions and actions within their daily duties. A company's decision to purchase D&O insurance has become a new form of corporate governance to mitigate agency conflicts. This type of insurance covers corporate governance risks and can be seen as a benefit that helps firms attract and retain top management (Feng et al., 2023).

This paper focuses on the impact of regulatory inquiry letters on the demand for D&O insurance of Chinese listed companies. We choose China as our research sample for two main reasons. First, the regulatory framework surrounding inquiry letters in China is characterized by a unique institutional background that differs significantly from developed markets. For instance, the U.S. Securities and Exchange Commission conducts cyclical reviews of annual reports, examining each listed company at least once every three years (Cassell et al., 2013), while the Australian Stock Exchange primarily issues inquiry letters in response to unusual stock activities and discloses the content only after receiving a reply. In contrast, the Chinese exchange conducts ex-post audits of all listed companies' annual reports on a review basis, potentially encompassing a broader range of firms. Furthermore, inquiry letters issued by the Chinese exchange emphasize not only the authenticity and completeness of financial information disclosure but also non-financial aspects such as business models, industry trends, and risk disclosure, which will provide investors with richer and multi-layered information (Lu and Qiu, 2023). Second, despite the progress in financial development, the adoption rates of D&O insurance among firms remain lower than those in developed markets. The Corporate Governance Guidelines for Listed Companies issued in 2002 allow listed companies to purchase D&O insurance. However, the underdeveloped legal system in China resulted in a relatively low incidence of lawsuits against listed companies, which has hampered the development of the D&O insurance market (Jia et al., 2019). It was not until the amendment of the Securities Law in 2019 that the legal framework in China began to improve, leading to a notable rise in civil damage lawsuits within the capital market and creating opportunities for the development of the D&O insurance market. Our study provides valuable insights for other emerging markets, highlighting its broader significance.

Specifically, we conduct a regression analysis using a probit model to examine the impact of regulatory inquiry letters on the demand for D&O insurance in China. Our results show that inquiry letters are significantly and positively related to the demand for D&O insurance of listed companies, this finding remains robust after difference-in-differences analysis (DID), PSM tests, instrumental variables and changing the measure of D&O insurance. Moreover, this effect is more pronounced when firms receive inquiry letters that are frequent and comprehensive, as well as when their responses are detailed and thorough. Specifically, non-financial inquiry letters exert a stronger positive influence on firms' demand for D&O insurance. Channel tests show that inquiry letters can exert an effective risk warning effect by providing ex-ante warnings of litigation, governance, and reputational risks faced by firms, which can help to change the risk-benefit equilibrium of directors and executives in their risk management decisions, thereby increasing their demand for risk management tools, including D&O insurance. Further analysis indicates that corporate governance mechanisms and political connections significantly reduce the demand-enhancing effect of regulatory inquiries on D&O insurance.

The possible research contributions of this paper are as follows:

First, this paper enriches the literature on the economic impact of non-punitive regulation. While previous literature has focused on the impact of non-punitive regulation on the information environment and governance effects, such as the role of regulatory inquiry letters in improving the quality of corporate disclosure (Cunningham et al., 2020; Johnson et al., 2023; Wang, 2016), reducing stock price synchronization (Xu et al., 2022), curbing tax avoidance (Wu and Zhang, 2023), and reducing excess compensation (Hong and Yao, 2024), we extend the study of nonpunitive regulation to the field of enterprise risk management, revealing the effects and mechanisms through which inquiry letters influence firms' internal risk management decisions, and enriching the literature on the economic consequences of nonpunitive regulation.

Second, this paper contributes to the literature on the economics of regulation by providing empirical evidence from emerging market countries. Distinguished from the punitive regulation of enforcement by regulators, inquiry letters, as non-punitive regulation, embody a complementary approach that integrates public and private enforcement, which can improve the effectiveness of enforcement (Hong and Yao, 2024). However, most existing research on regulatory inquiry letters focuses on developed markets, such as the United States and Australia, while emerging market countries, such as China, are characterized by weak corporate governance mechanisms, low information transparency, and inefficient enforcement (Pistor and Xu, 2005), which has led to the need for in-depth research on the effectiveness of regulatory inquiry letters in emerging market countries. This paper extends the study of non-punitive regulation from developed countries to emerging market countries, offering new insights into internal corporate governance and risk management decisions, and affirming the generalized significance of non-punitive regulation on a global scale.

Finally, the paper contributes to the literature on D&O insurance. The D&O insurance market in China has been developing slowly, with only 9.36 % of the capital market participants acquiring D&O insurance in 2019. Prior studies on the demand for D&O insurance have focused on internal governance risk and external litigation risk (Core, 1997; Egger et al., 2015; Park, 2018; Kong et al., 2023), emphasizing the influence of internal corporate mismanagement and external litigation threats on D&O insurance demand. This paper not only enriches the literature on D&O insurance but also offers significant policy implications for enterprise risk management.

2. Literature review and hypothesis development

2.1. Research background

China's regulatory inquiry letters have a fundamentally different institutional background compared to other capital markets. In the U.S., comment letters are adopted by the Securities and Exchange Commission (SEC) in accordance with the Sarbanes-Oxley Act of 2002 (SOX), which requires the SEC to review public company filings (10Q, 10 K, and 8 K) at least once every three years. Meanwhile, the Australian Securities Exchange (ASX) primarily issues inquiry letters concerning unusual share activity, with the contents disclosed only after a response is received.

In contrast, the regulatory inquiry letter system in China's capital market requires the China Stock Exchange (Shanghai Stock Exchange (SSE) and Shenzhen Stock Exchange (SZSE)) to conduct ex-post reviews based on the annual reports of all listed companies. This system emphasizes not only the authenticity and completeness of financial information disclosure but also non-financial information such as business models, industry trends, and risk disclosures. The primary objective is to address potential problems and risks related to insufficient and inaccurate information disclosure by listed companies, seeking supplementary information and explanations from these companies. For unresolved or unclear issues, the exchange will issue further inquiries.

China's inquiry letter system is closely linked to the reform of the information disclosure express train. On July 1, 2013, SSE issued the "SSE Through-train Business Guidelines", officially launching the information disclosure through-train reform. Subsequently, On January 3, 2014, SZSE broadened the scope of companies and announcement categories for information disclosure. With the implementation of the information disclosure through-train reform measures, the regulatory focus of China's stock exchanges has gradually shifted to ex-post supervision, becoming the frontline of information disclosure. Consequently, the number and frequency of inquiry letters issued to Chinese-listed companies have gradually increased.

2.2. Economic consequences of non-punitive regulation

In developed economies, research on non-punitive regulation in capital markets has primarily focused on the comment letters from the U.S. Securities and Exchange Commission (SEC) and the inquiry mechanisms of the Australian Securities Exchange (ASX). These studies have extensively explored the impacts of non-punitive regulation on capital markets. In the U.S., the SEC regularly reviews public company documents and issues comment letters to enhance the quality of information available to investors and improve oversight, ensuring compliance with applicable disclosure requirements (Cunningham et al., 2020). A growing body of literature has discussed the economic implications of SEC comment letters in terms of the information environment, audit pricing, and corporate merger and acquisition behavior. Research indicates that comment letters primarily reflect optimization effects within the information environment, such as inhibiting corporate surplus management behaviors (Cunningham et al., 2020), enhancing the robustness of accounting practices (Johnson et al., 2023), and reducing misinformation (Johnston and Petacchi, 2017). Bozanic et al. (2017) found that comment letters significantly improve the quality of corporate disclosures. Changes in the corporate information environment effectively reduce information asymmetry in the capital market, as demonstrated by Wang (2016), who reported that comment letters decrease analysts' forecast errors, disagreements, and optimism biases. Additionally, the improvement in disclosure quality generates peer effects; for instance, Brown et al. (2018) found that when industry leaders or competitors receive comment letters, other firms adjust their risk disclosures accordingly. Moreover, comment letters have significant effects on the merger and acquisition behaviors of listed companies (Lu and Qiu, 2023) and influence auditor pricing (Gietzmann and Isidro, 2013). In Australia, the ASX monitors share price volatility and abnormal trading volumes of listed companies through inquiries. Gong (2007) found that responses from listed companies to such inquiries can significantly reduce the average trading volume and bid-ask spread of their shares. Drienko and Sault (2013) reported significant reversals in share prices following the announcement of inquiries.

As the world's second-largest economy, China, despite its remarkable achievements in economic scale, retains certain institutional characteristics typical of emerging market countries, which are primarily reflected in the imperfections of the legal system, weak corporate governance, and non-transparent information disclosure environment (Yao and Hong, 2023). To promote the development of the capital market, Chinese regulators have been exploring and optimizing their regulation in recent years, among which non-punitive regulatory tools represented by regulatory inquiry letters have gradually emerged in the Chinese capital market and garnered widespread attention. The economic impacts of regulatory inquiry letters in China have been studied in terms of improving the information environment and governance effects. First, in terms of improving the information environment, regulatory inquiry letters help to reduce stock price synchronization (Xu et al., 2022), reduce the risk of stock price crashes (Lu and Qiu, 2023), reduce the mispricing of R&D expenses (Yu and Lee, 2023), and reducing the level of institutional investor quotes (Yu et al., 2024). Second, non-punitive regulation can exert positive governance effects, such as curbing corporate tax avoidance (Wu and Zhang, 2023), reducing excess compensation (Hong and Yao, 2024), avoiding overinvestment by lowering excess cash holdings (Yao and Hong, 2023), and enhancing CSR performance (Hou et al., 2023).

Existing studies examining the economic impacts of inquiry letters have primarily concentrated on their role in improving the information environment and their effects on corporate governance. This study broadens the discussion to enterprise risk management. Additionally, while much of the current literature is rooted in the context of developed capital markets, this research shifts the focus to emerging markets, specifically China, offering valuable insights and guidance for the development and optimization of non-punitive regulations in these regions.

2.3. Demand for D&O insurance

Prior research has shown that the impact of firms' demand for D&O insurance as an enterprise risk management tool stems mainly from internal governance risk and external litigation risk (Core, 1997; Gillan and Panasian, 2015).

On the one hand, the more serious the internal governance problem or the greater the agency conflict, the greater the firm's demand for D&O insurance. Firm management's defensive behavior is positively correlated with the need for D&O insurance, with senior directors and executives more inclined to extend insurance coverage to protect themselves from lawsuits (Core, 1997). In addition, high-risk situations within the firm, such as management's self-interested behavior (Chalmers et al., 2002) and CEO overconfidence (Lai and Tai, 2019), may also lead to an increase in D&O insurance demand. In addition, the worse the quality of governance is, the stronger the demand for D&O insurance and the greater the willingness to pay higher premiums(Baker and Griffith, 2007). Zou et al. (2008) find that the degree of incentive conflict between controlling and minority shareholders is positively correlated with the purchase behavior of D&O insurance.

On the other hand, the higher the risk of external litigation faced by firms, the greater the demand for D&O insurance. Based on a quasi-natural experimental setup of judicial reforms regarding class action lawsuits in South Korea, Park (2018) verifies that legal revisions significantly increase firm-level litigation risk and the demand for D&O insurance by listed firms significantly increases. In contrast, politically connected firms face lower litigation risk due to "intangible protection" and have weaker demand for D&O insurance, and this "intergenerational relationship" is even more pronounced in markets with relatively backward and immature legal environments (Jia et al., 2019).

In summary, internal governance risk and external litigation risk are the main factors affecting firms' demand for D&O insurance, with poorer governance structure quality and higher litigation risk leading to greater demand for D&O insurance. However, further research is needed to examine whether regulatory inquiries issued by stock exchanges with a "neutral" bias have an impact on firms' demand for D&O insurance.

2.4. Hypothesis

According to the economics of regulation, the primary purpose of government regulation is to mitigate the adverse effects of market failures on society, enhance the efficiency of resource allocation, and ultimately protect the public interest from infringement (Keynes, 1973). In emerging markets, where the legal environment is not yet underdeveloped, government regulation of the capital market is particularly important, serving as a vital force for capital market development (Pistor and Xu, 2005). However, government regulation can also produce negative externalities, such as rent-seeking behavior, which may result in detrimental economic consequences (Stigler, 1971). As a non-punitive regulation, the regulatory inquiry letter provides early warnings of potential risks, effectively balancing the complementary aspects of public and private enforcement (Hong and Yao, 2024), and plays a crucial role in enhancing the information environment and governance structure of the capital market.

First, regulatory inquiry letters can have an effective risk warning effect, especially by highlighting a company's risk in information disclosure. According to agency theory, management will make selective information disclosure, preferring to publish self-interested information to the outside world, making it difficult for stakeholders to directly access key information related to the company's operations and risks (Bozanic et al., 2017). The regulatory inquiry letter mainly focuses on the company's deficiencies in information disclosure, which can effectively capture the company's internal hidden risk information and provide early warning of potential problems and deficiencies in the company (Gietzmann and Isidro, 2013), which sends outward signals that there are potential problems or even serious problems with the disclosure of the company, which can help the company's executives assess their own litigation risks as an effective information supplement. Since disclosure issues are not only the focus of regulators' attention, but also a major source of shareholder lawsuits (Cao and Narayanamoorthy, 2014), this will encourage companies to pay attention to their own potential disclosure risks, adjust their assessment of future litigation risks, and purchase D&O insurance more actively.

Second, regulatory inquiry letters increase public and stakeholder oversight. Regulatory inquiry letters have significant regulatory spillover effects (Brown et al., 2018). It takes several trading days or even half a month from the issuance of the inquiry letter to the response, during which it can trigger the continuous attention and close tracking of investors, the media, the public, and other stakeholders, which will lead to greater political and public opinion pressure and the public's "cost of anger" in the company's subsequent operations (Lu and Qiu, 2023), and thus more active purchase of D&O insurance, which in turn negatively affects the firm's reputation and increases the uncertainty of the firm's production and operation. Specifically, once a company receives a regulatory inquiry letter, investors tend to regard it as "bad news", triggering a negative market reaction, and institutional investors will reduce their stock holdings (Gietzmann and Isidro, 2013).

Third, regulatory inquiry letters may result in firms facing stricter regulatory attention. China's inquiry letter system is essentially a prompt warning mechanism. If a company fails to respond on schedule or effectively explain the issues involved in the inquiry letter, the company will face being questioned again, or even be issued a warning letter, being investigated by the SEC, or being handed over to the judiciary. Once investigated by the SEC, the company will face serious negative consequences, such as not being able to issue bonds and shares in the next three years or even the risk of delisting. At the same time, the concern about certain types of issues in the inquiry letter may trigger the regulator's subsequent concern about other substantive issues of the company (Brown et al., 2018), which exacerbates the company's risk after being subjected to a regulatory inquiry letter. This will lead to firms strengthening their assessment of their future litigation risk, which in turn will increase the likelihood of D&O insurance purchase.

In summary, this paper proposes the following research hypothesis:

H1. Regulatory inquiry letters increase the likelihood of firms purchasing D&O insurance.

3. Research design

3.1. Sample selection

This paper selects the panel data of all A-share listed companies from 2015 to 2021 as the research sample. This is because previously, the stock exchange did not publicly disclose the annual report inquiry letter, and listed companies adopted voluntary disclosure of information related to the annual report inquiry letter; however, since 2014, in order to improve regulatory transparency and strengthen information communication with investors, the stock exchange has gradually publicized the annual report inquiry letter, which has made it possible to study the economic consequences of the inquiry letter. The data sources of this paper are as follows: (1) the D&O insurance and inquiry letter data of listed companies are from the CSMAR database; (2) the data of the remaining variables are mainly from the China Research Data Service Platform (CNRDS), supplemented by the CSMAR database. In this paper, the raw data are processed as follows: (1) ST, ST*, and financial industry-listed companies are excluded; (2) samples with missing data are excluded. Finally, 24,305 firm-annual observations are obtained. In order to control the possible effects of extreme values, data below 1 % and above 99 % in continuous variables are treated.

3.2. Variable definitions

3.2.1. Explained variable

Referring to Jia et al. (2019), a dummy variable (*D&O insurance*) is used to measure the demand for D&O insurance: if a business has purchased D&O insurance in a given year, D&O is equal to 1. Otherwise, it is 0.

3.2.2. Explanatory variables

We use two approaches to measure regulatory inquiry letters. First, we create the dummy variable *IL_dum*, which measures whether a firm received a regulatory inquiry letter in the previous year (Lu and Qiu, 2023). Second, we use *IL_num* to measure the total number of regulatory inquiries received by the firm in the previous year, calculated as the natural logarithm of the total number of regulatory inquiries received by the firm in the previous year plus one. It equals zero if the firm received no regulatory inquiry letters.

3.2.3. Control variables

Referring to the practice of Jia et al. (2019), (1) company size (*size*), is the natural logarithm of total assets at the end of the year; (2)

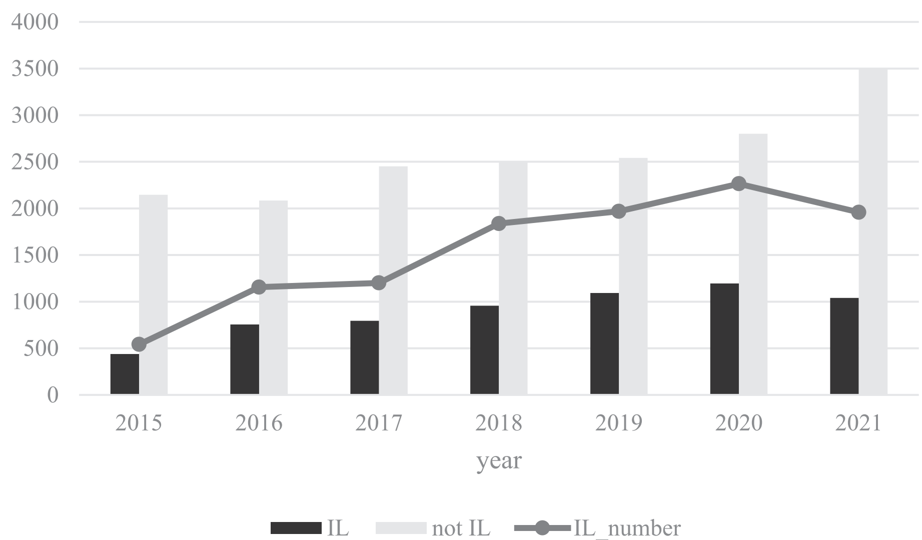

Fig. 1. Year distribution of inquiry letters.

return on assets (*roa*), is the ratio of net profit at the end of the year to total assets at the end of the year; (3) time of establishment (*age*), is the number of years since the establishment of the company, taking the natural logarithm; (4) the asset-liability ratio (*lev*), is the ratio of total liabilities to total assets at the end of the period; (5) the shareholding ratio of the largest shareholder (*top1*), is the ratio of the number of shares held by the largest shareholder at the end of the year to the total number of shares at the end of the year; (6) whether the positions of chairperson and general manager are held by the same person (*dual*), with 1 for yes and 0 for no; (7) the proportion of independent directors (*indir*), equal to the number of independent directors divided by the number of directors; (8) the nature of the property right of the enterprise (*Soe*), whether it is a state-owned enterprise; (9) political connection level (*PCLevel*), which reflects the level of political connection of a company's CEO, is divided into five levels from 0 to 4, and the higher the level, the greater the degree of political connection. In addition, to control the annual fixed effect and the industry fixed effect, the year dummy variable and the industry dummy variable are added.

3.3. Summary statistics

Fig. 1 shows the trend of the change in the distribution of inquiry letters over the sample interval. From the figure, we can see that the number of listed companies receiving inquiry letters shows a year-on-year growth trend during 2015–2021, indicating that the coverage of inquiry letters in China's capital market is gradually expanding. Moreover, the number of inquiry letters also gradually increased, indicating that the regulatory strength of inquiry letters increased.

Table 1 shows the descriptive statistics of the main variables in this paper. The explanatory variable D&O insurance has a mean of 19.1 % and a standard deviation of 0.393, indicating that the percentage of listed companies purchasing D&O insurance in the Chinese capital market is relatively low compared to that in mature D&O insurance markets such as the U.S. and Canada. The mean value of *IL_dum* is 0.258, implying that 25.8 % of the sample of 24,305 observed firms have received regulatory inquiry letters. The mean and standard deviation of *IL_num* are 0.237 and 0.436, respectively, reflecting the differences in the number of regulatory inquiry functions received by the sample firms.

3.4. Empirical model

To reduce potential endogeneity, explanatory variables in the model lag by one year, we set up the following probit model:

$$D\&O\ insurance_{i,t+1} = \beta_0 + \beta_1 \text{Inquiry Letter}_{i,t} + \sum \beta_m control_{i,t,m} + Year + Industry + \varepsilon_{i,t} \tag{1}$$

The explanatory variable $D\&O\ insurance_{i,t+1}$ represents firm i's D&O insurance demand in period $t+1$, i denotes the firm, and the explanatory variable Inquiry $\text{Letter}_{i,t}$ is a measure of one of the ways ($IL\_dum_{i,t}$, $IL\_num_{i,t}$) in which firm i receives an inquiry letter in period t. β_1 is the coefficient of the core explanatory variables. As shown in Eq. (1), all control variables are for period t. In addition, time and industry fixed effects are added.

4. Empirical results

4.1. Baseline regression

Table 2 shows the results of testing the relationship between stock exchange regulatory inquiries and the demand for corporate D&O insurance. Each regression model controls for year and industry fixed effects and is analyzed using stepwise addition of control variables. In columns (1) and (2), the regression models control for firm financial level variables, and the results show that the regression coefficients for regulatory inquiry letters (*IL_dum*) and regulatory inquiry function volume (*IL_num*) are 0.063 and 0.073, respectively, and both are significant at least at the 5 % significance level. In columns (3) and (4), the regression model further incorporates control variables at the corporate governance level, and the results show that the regression coefficients of *IL_dum* and *IL_num* are 0.051 and 0.061, respectively, and remain significant at least at the 5 % significance level. In columns (5) and (6), the

Table 1
Summary statistics.

VARIABLES	N	Mean	Std. Dev.	Min	Median	Max
D&O insurance	24,305	0.191	0.393	0.000	0.000	1.000
IL_dum	24,305	0.258	0.438	0.000	0.000	1.000
IL_num	24,305	0.237	0.436	0.000	0.000	1.792
size	24,305	22.229	1.317	18.961	22.058	26.273
roa	24,305	0.032	0.082	−0.388	0.038	0.219
age	24,305	2.966	0.298	2.079	2.996	3.555
lev	24,305	0.421	0.210	0.058	0.407	0.967
top1	24,305	0.332	0.146	0.084	0.309	0.742
dual	24,305	0.311	0.463	0.000	0.000	1.000
indir	24,305	0.378	0.054	0.333	0.364	0.571
Soe	24,305	0.304	0.460	0.000	0.000	1.000
PCLevel	24,305	0.770	1.412	0.000	0.000	4.000

Table 2
Results of the baseline regression.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	D&O insurance					
IL_dum	0.063**		0.051**		0.079***	
	(2.54)		(2.05)		(3.14)	
IL_num		0.073***		0.061**		0.094***
		(2.91)		(2.39)		(3.64)
size	0.217***	0.218***	0.216***	0.217***	0.202***	0.202***
	(21.44)	(21.51)	(21.10)	(21.15)	(19.21)	(19.29)
roa	−0.362**	−0.332**	−0.287*	−0.262*	−0.227	−0.188
	(−2.48)	(−2.25)	(−1.94)	(−1.76)	(−1.51)	(−1.24)
age	0.225***	0.226***	0.189***	0.190***	0.110***	0.109***
	(5.88)	(5.89)	(4.89)	(4.90)	(2.77)	(2.77)
lev	0.003	−0.004	−0.009	−0.015	−0.059	−0.068
	(0.05)	(−0.06)	(−0.14)	(−0.23)	(−0.86)	(−1.00)
top1			−0.299***	−0.294***	−0.475***	−0.469***
			(−3.97)	(−3.90)	(−6.14)	(−6.06)
dual			−0.138***	−0.138***	−0.083***	−0.082***
			(−5.85)	(−5.85)	(−3.40)	(−3.37)
indir			0.145	0.139	0.190	0.182
			(0.76)	(0.73)	(0.99)	(0.94)
Soe					0.283***	0.286***
					(10.73)	(10.83)
PCLevel					−0.038***	−0.038***
					(−4.77)	(−4.76)
Constant	−7.258***	−7.275***	−7.061***	−7.074***	−6.578***	−6.593***
	(−28.46)	(−28.50)	(−26.42)	(−26.45)	(−24.17)	(−24.22)
Observations	24,301	24,301	24,301	24,301	24,301	24,301
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Pseudo R^2	0.214	0.214	0.216	0.216	0.222	0.222

Note: This table reports the results of the baseline regression; t-statistics are reported in brackets, and ***, **, * denote significance at the 1 %, 5 %, and 10 % levels, respectively (this also applies to the tables below).

regression model continues to include control variables at the level of political affiliation, and the results show that the regression coefficients of *IL_dum* and *IL_num* are 0.079 and 0.094, respectively, and are also significant at the 1 % level. In terms of economic significance, when listed companies receive regulatory inquiry letters, the demand for director's insurance increases by 7.9 %, which can explain 41.36 % of the sample mean (0.079/0.191); when the volume of the regulatory inquiry function increases by 1 unit of standard deviation, the demand for director's insurance increases by 3.69 % on average (0.094*0.393), which can explain 19.3 % of the sample mean (0.036942/0.191). These results indicate that regulatory inquiry letters significantly increase firms' demand for D&O insurance coverage. Specifically, firms are more inclined to purchase D&O insurance in the following year after receiving regulatory inquiry letters and after receiving more regulatory inquiry letters. This validates the paper's research hypothesis H1. In addition, the coefficients of the control variables are consistent with the results of previous studies, further supporting the paper's findings.

4.2. Characterization of regulatory inquiry letters

4.2.1. Differences in questioning pressure

The higher intensity of regulatory inquiry letters implies that firms face significantly higher regulatory and legal risks, executive governance pressures, reputational risks, and compliance costs. Next, this paper explores whether firms appear to differ in their need for D&O insurance depending on the intensity of regulatory inquiries they face. The paper measures the intensity of regulatory inquiries from two perspectives: (1) the number of inquiries received, and in the sample of inquiries received, this paper takes the annual industry median of inquiries as the benchmark. If the number of inquiries is greater than the annual industry median, *High_IL_num* is assigned a value of 1; otherwise, it is assigned a value of 0 (and samples that have not received inquiries are also assigned a value of 0); if the number of inquiries is smaller than the annual industry median, then *Low_IL_num* is assigned a value of 1; otherwise, it is assigned a value of 0 (samples that have not received the inquiry letter are also assigned a value of 0). (2) The full text of the letter of inquiry word count. This paper is based on the inquiry letter word count of the annual industry median as a benchmark. If the number of words in the letter of inquiry is greater than the annual industry median, then *High_IL_word* is assigned a value of 1; otherwise, it is assigned a value of 0 (samples that did not receive the letter of inquiry is assigned a value of 0). If the number of words in the letter of inquiry is smaller than the annual industry median, then *Low_IL_word* is assigned a value of 1; otherwise, it is assigned a value of 0 (samples that have not received the letter of inquiry is also assigned a value of 0). The samples that received an inquiry letter are also assigned a value of 0).

The regression results are presented in Table 3. Columns (1)–(3) show the results of the sequential separate and joint regressions of the difference in the number of regulatory inquiry functions received on the demand for D&O insurance. The results show that the coefficients of both *High_IL_num* and *Low_IL_num* are significantly positive, but the magnitude and significance of the coefficient of *High_IL_num* are greater than those of *Low_IL_num*, suggesting that firms that receive a more significant number of regulatory inquiry letters have a greater demand for D&O insurance than firms that receive fewer regulatory inquiry letters. Columns (4)–(6) show the results of the sequential separate and joint regressions of the difference in the number of words of regulatory inquiry letters received and the demand for D&O insurance. The results show that the coefficients on both *High_IL_word* and *Low_IL_word* are significantly positive, but the magnitude and significance of the coefficient on *High_IL_word* are greater than those on *Low_IL_word*, which suggests that firms that receive a higher number of words in their regulatory inquiry letters have a greater need for D&O insurance than firms that receive a lower number of words in their regulatory inquiry letters.

4.2.2. Differences in company attention disparity toward inquiries

The importance that companies attach to regulatory inquiry letters reflects a high level of awareness of potential legal and financial risks. Detailed responses and lengthy response processes reveal the complexity and seriousness of the issues, increasing the accountability and pressure on executives, and motivate company executives to seek D&O insurance as a means of protection. Next, this paper explores whether firms differ in their need for D&O insurance depending on the importance they attach to regulatory inquiry letters.

To measure the importance of listed companies to regulatory inquiry letters, this paper measures from two perspectives: (1) the time to respond to inquiry letters, this paper takes the annual industry median response time as the benchmark, if the response time to inquiry letters is higher than the annual industry median, *Long_Response* is assigned a value of 1; otherwise, it is assigned a value of 0 (samples that have not received inquiry letters are also assigned a value of 0); If the response time is lower than the annual industry median, then *Short_Response* is assigned a value of 1; otherwise, it is assigned a value of 0 (samples that have not received the inquiry letter are also assigned a value of 0). (2) the degree of detail of the response to the letter of inquiry, this paper according to the letter of inquiry responds to the degree of detail (the number of words in the reply letter/letter of inquiry words) of the annual industry median as a benchmark, if the letter of inquiry to respond to the degree of detail is greater than the annual industry median, then *High_Detail* is assigned a value of 1; otherwise, it is assigned a value of 0 (samples that have not received the letter of inquiry are also assigned a value of 0); if the level of detail in the response to the inquiry letter is less than the annual industry median, then *Low_Detail* is assigned a value of 1; otherwise, it is assigned a value of 0 (the sample that did not receive the inquiry letter is also assigned a value of 0).

The regression results are presented in Table 4 Columns (1)–(3) show the results of the sequential separate and joint regressions of the difference in response time to regulatory inquiries on the demand for D&O insurance. The results show that the coefficients of *Long_Response* and *Short_Response* are both significantly positive, but the magnitude and significance of the coefficients of *Long_Response* are greater than those of *Short_Response*, indicating that firms that respond to regulatory inquiries over a longer period of time demand more D&O insurance. Columns (4)–(6) show the results of the sequential separate and joint regressions of the difference in the level of detail of firms' responses to inquiry letters and the demand for D&O insurance. The results show that the coefficients of both *High_Detail* and *Low_Detail* are significantly positive, but the magnitude and significance of the coefficient of *High_Detail* are greater than those of *Low_Detail*, suggesting that firms with higher levels of detail in responding to regulatory inquiry letters have a greater demand for D&O insurance than firms with lower levels of detail in responding to regulatory inquiry letters.

4.2.3. Differences in the types of inquiry letters

According to the severity of the listed company's problems, inquiry letters can be divided into different types. Typically, a letter of concern is where the exchange suggests risks and asks for further clarification, a financial report inquiry letter focuses on issues such as accounting treatment and business operations, and a non-financial report inquiry letter specifically inquires into transactions or

Table 3
Intensity of inquiry letters and D&O insurance.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Number of inquiries			Word count of inquiry letters		
	D&O insurance					
High_IL_num	0.114***		0.097**			
	(2.90)		(2.50)			
Low_IL_num		0.074**	0.072**			
		(2.57)	(2.50)			
High_IL_word				0.098***		0.087***
				(2.91)		(2.62)
Low_IL_word					0.077**	0.073**
					(2.42)	(2.31)
Constant	−6.850***	−6.915***	−6.696***	−6.806***	−6.949***	−6.695***
	(−22.43)	(−24.03)	(−24.41)	(−23.01)	(−23.48)	(−24.40)
Observations	20,168	22,162	24,301	21,131	21,199	24,301
Controls	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Pseudo R^2	0.226	0.229	0.222	0.224	0.230	0.222

Table 4
Company's attention to inquiry letters and D&O insurance.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Response time			Detail of response		
	D&O insurance					
Long_Response	0.095**		0.088**			
	(2.11)		(1.98)			
Short_Response		0.082***	0.078***			
		(2.84)	(2.72)			
High_Detail				0.105***		0.103***
				(3.24)		(3.20)
Low_Detail					0.076**	0.068**
					(2.28)	(2.06)
Constant	−6.704***	−6.855***	−6.587***	−6.809***	−6.748***	−6.591***
	(−23.11)	(−25.19)	(−25.10)	(−24.28)	(−23.82)	(−25.10)
Observations	20,435	22,782	24,301	21,428	21,363	24,301
Controls	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Pseudo R^2	0.228	0.230	0.223	0.230	0.228	0.223

matters such as mergers and acquisitions, restructuring, internal controls, operational risks and tax practices of listed companies. Generally, non-financial reporting enquiry letters and concern letters reveal broader and deeper operational risks and management issues, which often have a significant impact on the company's long-term development, and are more complex and diverse, requiring the company to have higher risk management capabilities and internal governance levels, which may lead to a difference in the need for D&O insurance when facing non-financial inquiry and concern letters compared to the need when facing financial inquiry letters.

For this purpose, this paper examines the specific differences in the demand for D&O insurance based on different types of regulatory inquiry letters. It does so by assessing whether companies received letters of concern (*IL_concern*), financial report inquiry letters (*IL_report*), or non-financial report inquiry letters (*IL_nonreport*), as well as measuring the quantity of concern letters (*IL_concern_num*), financial report inquiry letters (*IL_report_num*), and non-financial report inquiry letters (*IL_nonreport_num*). The regression results are presented in Table 5. Columns (1)–(4) show the results of sequential separate and joint regressions of the differences in the different types of regulatory inquiry letters received by firms on the demand for D&O insurance. The results show that the coefficients of *IL_nonreport* and *IL_concern* are both significantly positive, but the coefficient of *IL_report* is positive but insignificant. Additionally, the magnitude of the coefficients of *IL_nonreport* and *IL_concern* are both larger than that of *IL_report*. Columns (5)–(8) show the results of the sequential separate and joint regressions of the difference in the number of different types of regulatory inquiry letters received by firms on the need for D&O insurance. The results show that the coefficients of *IL_nonreport_num* and *IL_concern_num* are significantly positive, but the coefficient of *IL_report_num* is positive but not significant. In addition, the magnitude of the coefficients of both *IL_nonreport_num* and *IL_concern_num* are also larger than that of *IL_report_num*, suggesting that non-financial inquiry and concern letters involving more risks will trigger the concern of company directors and executives about their own legal and litigation risks, and thus

Table 5
Type of inquiry letter and D&O insurance.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	D&O insurance							
IL_report	0.048			0.020				
	(1.44)			(0.57)				
IL_concern		0.091***		0.082**				
		(2.73)		(2.36)				
IL_nonreport			0.120***	0.116***				
			(2.75)	(2.65)				
IL_report_num					0.059			0.004
					(1.36)			(0.08)
IL_concern_num						0.107***		0.103***
						(3.13)		(2.79)
IL_nonreport_num							0.172***	0.167***
							(3.09)	(2.99)
Constant	−6.555***	−6.568***	−6.558***	−6.593***	−6.555***	−6.576***	−6.561***	−6.599***
	(−24.97)	(−25.01)	(−24.99)	(−25.09)	(−24.96)	(−25.04)	(−25.01)	(−25.11)
Observations	24,301	24,301	24,301	24,301	24,301	24,301	24,301	24,301
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Pseudo R^2	0.223	0.223	0.223	0.223	0.223	0.223	0.223	0.224

they are more inclined to purchase risk management tools, such as directors' and executives' liability insurance, to provide the necessary legal protection. This also leads to a more positive effect of non-financial reporting inquiry letters in raising awareness of corporate risk management and promoting improvements in internal governance.

5. Further testing

5.1. Mechanism tests

5.1.1. Regulatory inquiry letters and the company's external litigation risk

Regulatory inquiry letters mainly focus on the deficiencies of listed companies in information disclosure and can effectively capture the hidden risk information within the company, thus having a good risk warning effect. Theoretically, if the regulatory inquiry letter can have an effective risk alert and early warning effect, i.e., early warning of the litigation risk of listed companies, the relevant risk information can be effectively utilized by the management of the company in risk management, thus improving the level of risk governance of the company. Increased litigation risk leads to higher potential litigation costs for directors and executives, who are more motivated to seek risk management tools to ensure risk-benefit equilibrium in corporate decision-making. D&O insurance, as a corporate risk management tool, can effectively reduce the legal risk of directors and officers in the normal performance of their duties. To cope with potential litigation risks, firms have more incentives to purchase D&O insurance. Therefore, this paper examines whether regulatory inquiries can have an effective risk warning effect on the litigation risk of listed companies. Specifically, this paper measures the future litigation risk from three aspects, namely, the probability of litigation risk of listed companies in period t + 1 ($ligt\_dum_{t+1}$), the number of lawsuits filed ($ligt\_num_{t+1}$), and the amount of lawsuits filed ($ligt\_money_{t+1}$). The analysis method is regression by the Probit model and OLS model respectively.

The regression results are shown in Table 6, where columns (1)–(6) show the regression results of the regulatory inquiry letter and litigation risk. The regression coefficients of *IL* and *IL_num* are both significantly positive, indicating that regulatory inquiry letters are significantly and positively related to future company litigation risk. The above results show that when a listed company receives an inquiry letter, its litigation risk in the following year is significantly higher, which indicates that the inquiry letter is indeed an early warning signal of the litigation risk of the company, confirming that the regulatory inquiry letter can provide effective risk early warning information for the company's directors and executives, and thus verifying the mechanism of the influence of the regulatory inquiry letter in influencing the company's directors and executives' demand for D&O insurance through early warning of litigation risk.

5.1.2. Regulatory inquiry letters and internal corporate governance risk

The regulatory effect of regulatory inquiry letters may change the risk-return equilibrium in directors' and executives' decision-making. Specifically, according to principal-agent theory, the separation of corporate ownership and operation leads to agency problems, and management may be motivated to maximize their own interests to the detriment of shareholders. In a situation where the requirements of the external regulatory regime are more lenient, corporate executives may be more likely to exhibit opportunistic behavior because they may believe that their actions will not be easily detected or punished. This lax regulatory environment may lead some executives to adopt dishonest or non-transparent behaviors for personal gain or risk avoidance without regard to the overall interests of the company. In such cases, the benefits that a company's executives receive by maintaining their existing employment relationship with the company can outweigh the costs they incur. However, when the regulatory environment tightens, especially when a company receives regulatory inquiry letters, flaws and problems in the day-to-day operations and management of the company's executives will be promptly discovered, and further explanations will be demanded. In this process, stock exchanges and stakeholders will continue to pay attention to the behavior of company executives, and the increased supervision will make the opportunistic behavior of company executives easier to detect. With the increase in regulatory pressure, the perceived level of risk of company executives subsequently rises, thus breaking the previous cost-benefit equilibrium, and the propensity of company executives

Table 6
Inquiry letters and litigation risk.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Probit		OLS		OLS	
	$ligt\_dum_{t+1}$		$ligt\_num_{t+1}$		$ligt\_money_{t+1}$	
IL_dum	0.313***		0.244***		0.859***	
	(15.36)		(16.43)		(3.82)	
IL_num		0.388***		0.351***		1.592***
		(18.68)		(20.83)		(5.95)
Constant	0.059	0.020	0.881***	0.816***	−16.966***	−17.388***
	(0.28)	(0.09)	(6.38)	(5.97)	(−5.56)	(−5.70)
Observations	24,305	24,305	24,277	24,277	24,277	24,277
Adjusted R^2/Pseudo R^2	0.074	0.078	0.177	0.188	0.0167	0.0177
Controls	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES

to leave the company will also rise significantly. To avoid internal governance risks resulting from the departure of company executives, companies may increase the demand for D&O insurance purchases. This reflects the company's efforts to safeguard the interests of its executives, demonstrates the importance it places on the value of its executives, and helps to enhance the company's reputation among the executive community, as well as its competitiveness in attracting and retaining the best talent.

In light of this, we further explore the impact of regulatory inquiry letters on executive departures. The chairperson and general manager of a firm play a key role in the operation of the firm, and their role is significantly greater than that of other executives, so we define executive separation as a change in the position of the chairperson or general manager. Specifically, this paper measures the extent of executive departures in a firm by the number of chairperson or general manager departures ($ResignNum_{t+1}$) and whether there are any chairperson or general manager departures ($ResignDum_{t+1}$) in period t + 1 of the firm. At the same time, we measure the extent of executive departures in a firm by the number of chairperson or general manager active departures in period t + 1 of the firm ($Vol\_ResignNum_{t+1}$) and whether there are any chairperson or general manager active departures ($Vol\_ResignDum_{t+1}$) to measure the extent of company executives' active departures. The regression results (See Table 7) show that the regression coefficients of *IL_dum* and *IL_num* are significantly positive in columns (1)–(4), indicating that regulatory inquiry letters are significantly and positively associated with firm executive departures. Similarly, in columns (5)–(8), the regression coefficients of both *IL_dum* and *IL_num* are significantly positive, indicating that regulatory inquiry letters are significantly and positively associated with company executives leaving on their own initiative. These results indicate that when a listed company receives an inquiry letter, the number and tendency of executive departures and executive-initiated departures of the company in the following year are significantly greater, revealing that the inquiry letter may lead to an increase in the internal governance risk of the company.

5.1.3. Regulatory inquiry letters and company reputational risk

Regulatory inquiry letters can exert a certain negative penalty effect, sending out negative signals about a company's disclosure and corporate governance and damaging the company's reputation (Brown et al., 2018). Specifically, from the perspective of market regulation such as media and intermediaries, the regulatory inquiry letter from the exchange to listed companies can trigger or strengthen the governance role of market participants such as the media, securities analysts and institutional investors due to the obvious positive externality of the regulator's regulation, i.e., the spillover effect (Bozanic et al., 2017). Theoretically, regulatory inquiry letters are closely related to corporate reputational risk. When regulators send inquiry letters to listed companies, they usually trigger external attention and scrutiny of the company. This concern often spreads through media reports and online public opinion, affecting the company's image and reputation. The media may report on the company's mismanagement, non-compliance or other negative events, and these reports may raise concerns among the company's stakeholders about the company's risks, leading to reputational risk.

To measure a firm's reputation risk, with reference to the inquiry of Feng et al. (2023), this paper measures it from two perspectives respectively, firstly, by quantifying the index of negative media reports through the China Listed Companies Financial News Database (CFND) of the China Research Digital Service Platform (CNRDS). Specifically, this paper uses the logarithm of the number of negative media reports on a company in period t + 1 to measure the number of negative media reports on a company ($news\_neg_{t+1}$) and the ratio of the number of negative media reports on a company to the total number of positive and negative reports in period t + 1 to measure the propensity of negative media reports (neg_ratio_{t+1}). Second, by improving the web crawler, we capture the posts of listed companies in the Oriental Wealth Net's stock bar forum, which is the most visited stock net forum in China, and then utilize the machine learning method to classify the post sentiment into three categories of neutral, positive, and negative in order to quantify the index of negative public opinion on the internet. In this paper, the logarithm of the company's negative posts in the stock bar forum in period t + 1 is used to measure the number of negative online opinions ($post\_neg_{t+1}$), and the ratio of the number of negative posts of the company in the stock bar forum in period t + 1 to the number of all the posts in that year is used to measure the propensity of the company's negative online opinions ($neg\_ratio\_post_{t+1}$).

The results of the study are presented in Table 8. Columns (1)–(4) show the regression results of regulatory inquiry letters and negative company media coverage, and the regression coefficients of *IL_dum* and *IL_num* are significantly positive, indicating that

Table 7
Inquiry letters and corporate governance risk.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Resignation				Voluntary Resignation			
	$ResignNum_{t+1}$		$ResignDum_{t+1}$		$Vol\_ResignNum_{t+1}$		$Vol\_ResignDum_{t+1}$	
IL_dum	0.135***		0.237***		0.053***		0.293***	
	(11.75)		(11.23)		(9.88)		(10.24)	
IL_num		0.174***		0.287***		0.072***		0.341***
		(13.55)		(13.31)		(11.07)		(12.02)
Constant	0.003	−0.022	−1.569***	−1.606***	0.178***	0.167***	−1.110***	−1.158***
	(0.02)	(−0.19)	(−7.08)	(−7.25)	(3.59)	(3.36)	(−3.45)	(−3.58)
Observations	24,292	24,292	24,301	24,301	24,292	24,292	24,301	24,292
Adjusted R^2/Pseudo R^2	0.073	0.076	0.062	0.063	0.037	0.041	0.064	0.068
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES

regulatory inquiry letters are significantly and positively related to negative company media coverage. Similarly, columns (5)–(8) show the regression results of the regulatory inquiry letter and negative company online public opinion, and the regression coefficients of *IL_dum* and *IL_num* are both significantly positive, indicating that the regulatory inquiry letter is significantly positively related to negative company online public opinion. These results indicate that when a listed company receives an inquiry letter, the company's negative media coverage and negative online public opinion for that year will be significantly greater, revealing that the inquiry letter may lead to an increase in the company's reputational risk.

5.2. Heterogeneity test

5.2.1. Executive governance capability

The corporate governance and individual characteristics of management are important factors influencing firms' demand for D&O insurance (Core, 2000; Xia et al., 2023), e.g., overconfident CEOs (Lai and Tai, 2019), and directors with overseas experience (Xia et al., 2023) are more likely to purchase D&O insurance. Next, this paper verifies how the quality of top management affects the promotion effect of regulatory inquiry letters on the demand for D&O insurance. On the one hand, higher-quality management can exert good corporate governance effects, promptly discover and correct relevant violations, and reduce opportunistic motives within the company. In this way, even if the company receives a letter of regulatory inquiry, a high-quality management team can quickly respond and solve the problem, reduce the concerns of regulators and stakeholders about the company's litigation risk, and reduce the company's need for D&O insurance. On the other hand, higher-quality management can play an active role in information disclosure and maintain information transparency in operating activities. Transparent and accurate information disclosure can increase the trust of external investors and regulatory agencies and reduce suspicion and legal disputes caused by information asymmetry. At the same time, concerns raised by regulatory inquiry letters will be better handled in a transparent information environment. Potential litigation risks can be reduced, thereby reducing the need for D&O insurance.

In this study, we refer to Zhao et al. (2021) and employ Principal Component Analysis (PCA) to extract common components from a series of variables closely associated with corporate management, subsequently calculating a composite score for management quality. In selecting indicators, we have thoroughly considered multiple dimensions of management, including team size (i.e., the number of individuals in the management team), age structure (the average age of the management team), experience accumulation (the average tenure of the management team), gender diversity (the proportion of female executives), professional qualifications (the number of senior managers holding advanced titles), international exposure (the number of senior managers with international study experience), and educational background (the number of senior managers with advanced academic qualifications). Additionally, we include the number of senior executives with financial industry experience and the number of directorships or executive positions held in other companies.

In the regression model, this paper introduces the supervisory inquiry function variable and its interaction term with top management quality. The regression results are shown in Table 9. Columns (1) and (2) show the regression results of the regulatory inquiry letter and the cross-term of top management quality (*IL_dum*×*TMQ_Score*, *IL_num*×*TMQ_Score*). The results show that both *IL_dum*×*TMQ_Score* and *IL_num*×*TMQ_Score* are significantly negative at the 1 % level, indicating that executive governance capabilities inhibit the impact of regulatory inquiry letters on a company's demand for D&O insurance to a certain extent. Columns (3) and (4) further add company-level control variables, and *IL_dum*×*TMQ_Score* and *IL_num*×*TMQ_Score* are both significantly negative at the 1 % level. These results indicate that good management quality can effectively reduce the litigation risk caused by regulatory inquiry letters, thereby reducing a company's need for D&O insurance.

5.2.2. Political connections

There exists a significant relationship between political connection and the demand for D&O insurance, particularly within the institutional context of the Chinese government's reform from a centrally planned system. Political connection serves as an alternative risk protection mechanism for firms, alleviating the litigation risks encountered by management and thereby reducing the overall

Table 8
Inquiry letters and reputational risk.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	News Media				Stock Forum			
	news_neg $_{t+1}$		*neg_ratio* $_{t+1}$		*post_neg* $_{t+1}$		*neg_ratio_post* $_{t+1}$	
IL_dum	0.347***		0.072***		0.285***		0.002***	
	(24.89)		(30.67)		(24.23)		(4.82)	
IL_num		0.418***		0.087***		0.338***		0.003***
		(31.04)		(37.18)		(28.65)		(7.77)
Constant	−2.438***	−2.454***	0.704***	0.700***	2.142***	2.130***	0.256***	0.256***
	(−14.98)	(−15.18)	(33.75)	(34.11)	(17.13)	(17.11)	(53.75)	(53.78)
Observations	24,305	24,305	24,101	24,101	24,305	24,305	24,305	24,305
Adjusted R^2	0.283	0.291	0.122	0.143	0.211	0.220	0.373	0.374
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES

Table 9
Inquiry letters and corporate governance.

VARIABLES	(1)	(2)	(3)	(4)
	D&O insurance			
IL_dum × *TMQ_Score*	−0.110***		−0.087***	
	(−3.86)		(−3.02)	
IL_num × *TMQ_Score*		−0.111***		−0.086***
		(−3.87)		(−2.97)
IL_dum	0.110***		0.122***	
	(4.23)		(4.41)	
IL_num		0.111***		0.131***
		(4.44)		(4.79)
TMQ_Score	0.255***	0.254***	0.138***	0.137***
	(19.06)	(19.33)	(9.23)	(9.30)
Constant	−1.930***	−1.924***	−5.915***	−5.926***
	(−17.00)	(−16.96)	(−21.15)	(−21.19)
Observations	24,425	24,425	24,301	24,301
Controls	NO	NO	YES	YES
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Pseudo R^2	0.199	0.199	0.226	0.226

demand for D&O insurance (Jia et al., 2019). Political connections can enhance a firm's public image and credibility, and external stakeholders may perceive firms with good relations with the government as more trustworthy and stable, so that even if they receive a regulatory inquiry letter, the external risk assessment of the firm will be relatively low, and the firm will in turn reduce the demand for D&O insurance. In addition, political connections may influence the attitude of judicial and administrative bodies toward a company, reducing the probability of the company being involved in legal proceedings and disputes. Therefore, facing the same regulatory inquiries, firms with strong political connections face lower litigation risk, which in turn may reduce the demand for D&O insurance.

We use three variables (*PCLevel*, *PC*, and *Soe*) to measure firms' political connections. *PCLevel* and *PC* reflect the extent and presence of a firm's CEO's political connections. Specifically, drawing on the research methodology of (Fan et al., 2007), we use the political connection level *PCLevel* as a key indicator to assess the degree of political connections within firms, determining whether a firm's CEO is politically connected based on prior or current roles as a party representative, National People's Congress (NPC) deputy, or Chinese

Table 10
Inquiry letters and political connection.

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	D&O insurance					
PCLevel × *IL_dum*	−0.041**					
	(−2.27)					
PCLevel × *IL_num*		−0.037**				
		(−2.00)				
PC × *IL_dum*			−0.114*			
			(−1.96)			
PC × *IL_num*				−0.103*		
				(−1.70)		
Soe × *IL_dum*					−0.095*	
					(−1.76)	
Soe × *IL_num*						−0.097*
						(−1.66)
IL_dum	0.106***		0.104***		0.107***	
	(3.82)		(3.69)		(3.67)	
IL_num		0.118***		0.115***		0.116***
		(4.18)		(4.05)		(4.03)
PCLevel	−0.027***	−0.029***	−0.011	−0.011	−0.038***	−0.038***
	(−2.97)	(−3.20)	(−0.45)	(−0.45)	(−4.79)	(−4.78)
PC			−0.063	−0.067		
			(−0.77)	(−0.83)		
Soe	0.283***	0.286***	0.285***	0.288***	0.307***	0.307***
	(10.74)	(10.84)	(10.77)	(10.87)	(10.43)	(10.58)
Constant	−6.590***	−6.603***	−6.564***	−6.576***	−6.560***	−6.573***
	(−24.18)	(−24.23)	(−24.01)	(−24.06)	(−24.08)	(−24.12)
Observations	24,301	24,301	24,301	24,301	24,301	24,301
Controls	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Pseudo R^2	0.222	0.223	0.222	0.223	0.222	0.222

People's Political Consultative Conference (CPPCC) committee member, and categorizing political connection into five tiers corresponding to China's administrative divisions. *PC* is a dummy variable that indicates whether the firm is politically connected, defined by whether the CEO has previously or currently served as a Party, NPC or CPPCC member, taking a value of 1 if politically connected and 0 otherwise. *Soe* reflects the nature of the firm, i.e., whether it is a state-owned enterprise (SOE), which takes the value of 1 if the firm is a SOE and 0 if the firm is a non-SOE. In the regression model, this paper introduces the regulatory inquiry letter variable and its interaction term with firm political connections. The regression results are presented in Table 10. Columns (1)–(4) show the regression results for the degree and presence of cross-multiplier terms ($PCLevel \times IL\_dum$, $PCLevel \times IL\_num$, $PC \times IL\_dum$ and $PC \times IL\_num$) for regulatory inquiry letters and political connections with the firm's CEO. The results show that $PCLevel \times IL\_dum$, $PCLevel \times IL\_num$, and $PC \times IL\_dum$ are significantly negative, and $PC \times IL\_num$ is negative but not significant, indicating that the degree and presence of executives' political connections inhibits the impact of regulatory inquiry letters on firms' demand for D&O insurance to a certain extent. Columns (5) and (6) show the regression results of the cross-multiplier terms ($Soe \times IL\_dum$, $Soe \times IL\_num$) of regulatory inquiry letters and firm nature. The results show that $Soe \times IL\_dum$ and $Soe \times IL\_num$ are both significantly negative at the 10 % level, which suggests that the nature of the firm as a state-owned enterprise dampens the effect of regulatory inquiry letters on the demand for firm D&O insurance to some extent.

6. Robustness checks

6.1. Difference-in-differences estimation

To further validate the causal relationship between regulatory inquiry letters and the demand for corporate D&O insurance, this paper adopts a double difference model (DID model) to mitigate the endogeneity problem caused by mutual causality, and model (2) is used in this paper:

$$D\&O\ insurance_{i,t+1} = \beta_0 + \beta_1 Treat_{i,t} \times Post_{i,t} + Year + Firm + \varepsilon_{i,t} \tag{2}$$

where *Treat* represents the sample of firms in the experimental group that have received an inquiry letter, and takes the value of 1 if they have ever received an inquiry letter, and 0 if they have never received one; *Post* is defined as 1 if the current year is greater than the year in which the firm first received an inquiry letter, and 0 if it is not. The results of the regression through the OLS model are shown in Column (1) of Table 11, and the coefficients of the regression of $Treat \times Post$ are significantly positive at the 1 % level of significance. To strengthen the robustness of the regression results, the paper continues to validate the results using model (3).

$$D\&O\ insurance_{i,t+1} = \beta_0 + \beta_1 Treat_{i,t} \times Post_{i,t} + \beta_2 Treat_{i,t} + \sum \beta_m\ control_{i,t,m} + Year + Industry + \varepsilon_{i,t} \tag{3}$$

where treat and post are defined in the same way as in model (2) and are regressed by probit and OLS models, respectively, and the regression results are shown in columns (2) and (3) of Table 11. From the results in columns (2) and (3), it can be seen that the regression coefficients of $Treat \times Post$ are all significantly positive at least at the 10 % significance level, indicating that listed companies will significantly increase their demand for D&O insurance after receiving regulatory inquiry letters, thus further validating research hypothesis H1.

6.2. Propensity score matching estimation

This study continues to address the endogeneity issue using the PSM methodology, where firms that received inquiry letters during the sample period are classified as the treatment group, firms that never received inquiry letters during the sample period are classified

Table 11
Difference-in-Differences estimation.

VARIABLES	(1)	(2)	(3)
	OLS	probit	OLS
	D&O insurance		
$Treat \times Post$	0.018***	0.125***	0.009*
	(2.98)	(3.28)	(1.76)
Treat		−0.153***	−0.010*
		(−3.96)	(−1.79)
Constant	0.039***	−6.396***	−1.022***
	(8.48)	(−23.39)	(−17.13)
Observations	27,889	24,301	24,305
Adjusted R^2/Pseudo R^2	0.149	0.222	0.216
Controls	NO	YES	YES
Industry FE	NO	YES	YES
Firm FE	YES	NO	NO
Year FE	YES	YES	YES

as the control group, and Logit regression models are developed to calculate the propensity values of these two groups of firms. In propensity score matching (PSM), in the selection of covariates, we draw on the study of (Johnston and Petacchi, 2017) to include firm characteristic variables that may affect the probability of listed firms being subject to regulatory inquiries. The main variables include firm size (*size*), leverage (*lev*), firm age (*age*), proportion of shares held by the first largest shareholder (*top1*), proportion of independent directors (*indir*), state-owned enterprises (*Soe*), whether the firm is a loss in operations (*loss*), and the number of analysts followed (*analyst*). This study uses the calculated propensity values to match these two groups of firms with 1:1, 1:2, and 1:3 put-back sampling closest distance and re-runs the regression analysis of model (1) using the successfully matched samples, the results of which are presented in Table 12. We first conducted correlation and parallel hypothesis tests, the results of which are presented in the Appendix. The results of the PSM test reported in columns (1)–(6) in Table 12 are in line with those in Table 2, which further confirm the robustness of the results of the present study.

6.3. Instrumental variables estimation

To exclude the influence of endogeneity problems on the results, the instrumental variable method is used to test the main regression results for endogeneity. In this paper, the relative regulatory distance (*Distance*) of listed companies is selected as an instrumental variable. First, the absolute distance of listed companies from provincial regulators is calculated, and then the median of the absolute regulatory distance of listed companies in the same industry in the same province and in the same year is defined as the relative regulatory distance (*Distance*) of the enterprise. To some extent, this variable may capture the likelihood of listed companies receiving regulatory inquiry letters. Firms that are close to regulators may have more interaction and communication with local regulators, and these regulators may pass the problems and concerns they find to the exchange, prompting the exchange to issue inquiry letters to these firms. As a result, the further a listed company is from a regulator, the less likely it is to receive a regulatory inquiry letter. Table 13 Columns (1) through (4) show the regression results via the IVprobit model. In the first stage regression (columns (1) and (3)), there is a significant negative relationship between the instrumental variable and whether a firm receives an inquiry letter from the regulator, while in the second stage regression (columns (2) and (4)), there is a significant positive relationship between the instrumental variable and whether a firm purchases D&O insurance. The chi2_exog and Wald chi2 tests both indicate that the instrumental variables are valid. Columns (5) through (8) of Table 13 show the regression results from the IV-2SLS model, which are consistent with the IVprobit regression results, and the Sargan statistical tests indicate that the instrumental variables are valid.

6.4. Replacement of explanatory variables

This paper conducts alternative tests for the explanatory variables. In this paper, the ratio of the insured amount of D&O insurance to the company's operating income and the ratio of the premium of D&O insurance to the company's operating income are used to measure the extent of the company's purchase of D&O insurance to test the impact of the regulatory inquiry letter on the extent of the company's purchase of director's liability insurance. As can be seen from columns (1) and (4) of Table 14, the regression results are significantly positive and consistent with the benchmark regression, indicating robust findings.

6.5. Other robustness tests

To further verify the robustness of the main regression results, the paper also conducts a series of robustness tests, as shown in columns (1)–(4) of Table 14. Columns (1)–(2) show that when the regression model is replaced with an OLS model, regulatory inquiry letters still positively impact firms' demand for D&O insurance at the 1 % confidence level. In addition, this paper also conducts a fixed effects regression of industry and time interaction on top of the primary regression. Table 15 shows the results in columns (3)–(4). At the 1 % confidence level, regulatory inquiry letters still significantly positively affect firms' demand for D&O insurance. The above robustness tests further confirm the robustness of the results of this study.

Table 12
Propensity Score Matching estimation.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	1:1 match		1:2 match		1:3 match	
	D&O insurance					
IL_dum	0.094***		0.091***		0.098***	
	(2.68)		(3.09)		(3.57)	
IL_num		0.100***		0.096***		0.111***
		(2.85)		(3.25)		(3.97)
Constant	−5.842***	−5.854***	−5.612***	−5.624***	−5.855***	−5.873***
	(−12.70)	(−12.73)	(−15.04)	(−15.07)	(−17.16)	(−17.21)
Observations	8981	8981	12,944	12,944	15,435	15,435
Controls	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Pseudo R^2	0.217	0.217	0.215	0.215	0.212	0.212

Table 13
Instrumental Variables estimation.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	IV-probit Regression				IV-2sls Regression			
VARIABLES	IL_dum	D&O insurance	IL_num	D&O insurance	IL_dum	D&O insurance	IL_num	D&O insurance
Distance	−0.011***		−0.015**		−0.011***		−0.009**	
	(−2.90)		(−2.44)		(−2.90)		(−2.44)	
IL_dum		6.789**				1.409**		
		(2.52)				(2.51)		
IL_num				8.308**				1.722**
				(2.20)				(2.20)
Constant	0.561***	−10.579***	0.580***	−11.068***	0.562***	−1.763***	0.581***	−1.971***
	(8.27)	(−6.75)	(8.78)	(−5.18)	(8.28)	(−5.69)	(8.79)	(−4.44)
Observations	24,301	24,301	24,301	24,301	24,305	24,305	24,305	24,305
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
chi2_exog		23.33		23.39				
Wald chi2		1210.36		931.93				
Sargan statistic						0.000		0.000
Adjusted R^2	0.114		0.155					

Table 14
Replacement of explanatory variables.

VARIABLES	(1)	(2)	(3)	(4)
	Limit/income	Limit/income	Premium/income	Premium/income
IL	0.009***		0.000**	
	(2.59)		(2.36)	
IL_num		0.010***		0.000**
		(2.60)		(2.29)
Constant	0.497***	0.494***	0.000***	0.000***
	(10.95)	(10.82)	(5.76)	(5.58)
Controls	YES	YES	YES	YES
Ind FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	1035	1035	1035	1035
R-squared	0.348	0.349	0.151	0.153

7. Conclusion

Based on data from regulatory inquiry letters issued by China's Shanghai Stock Exchange (SSE) and Shenzhen Stock Exchange (SZSE) during 2015–2021, we examine the impact of non-punitive regulation on firms' demand for D&O insurance. We find that inquiry letters significantly increase firms' demand for D&O insurance. To disentangle the endogeneity problem, we re-examine the main findings using DID regressions, propensity score matching, and instrumental variable regressions, and the results remain robust. In the channel analysis, we find that inquiry letters can exert an effective risk warning effect by alerting firms in advance of litigation, governance, and reputational risks, thus changing the risk-return equilibrium of directors' and executives' risk management decisions and increasing the demand for risk management tools, which leads to an increase in the demand for D&O insurance. It is further found that corporate governance mechanisms and political affiliation significantly reduce the demand-enhancing effect of regulatory inquiries on D&O insurance and that regulatory inquiries' pressure and firms' attention significantly increase the demand for D&O insurance. Moreover, the impact of different types of inquiries on the demand for D&O insurance varies, with non-financial reporting inquiries having a more significant effect on the demand for D&O insurance.

Our study enriches the literature on the economic consequences of non-punitive regulation and the determinants of corporate D&O insurance demand. Our findings contribute to the understanding of the impact of regulatory inquiry letters on firms' internal decision-making and provide policymakers in emerging market countries with essential ideas for optimizing the regulatory letter of inquiry system. Policymakers should further optimize the design of regulatory inquiry letters to ensure that they can more effectively perform the risk warning function and reveal potential risk points of listed firms promptly. At the same time, the inquiry letter should also become a tool for information optimization, prompting listed companies to provide more accurate and comprehensive information disclosure and reduce information asymmetry. In addition, policymakers need to balance the strictness of regulatory inquiries with the flexibility of corporate governance improvement in the implementation of regulation, not only to warn and correct possible violations promptly through inquiry letters but also to give listed companies enough time and space to improve their internal governance mechanisms and adjust their risk management strategies.

For the management of the company, it should attach great importance to the risk issues revealed in the inquiry letter, and regard it

Table 15
Other robustness tests.

VARIABLES	(1)	(2)	(3)	(4)
	OLS model		Interaction fixed effect	
	D&O insurance	D&O insurance	D&O insurance	D&O insurance
IL	0.016***		0.086***	
	(2.94)		(3.48)	
IL_num		0.018***		0.097***
		(3.28)		(3.98)
Constant	−1.045***	−1.047***	−6.437***	−6.453***
	(−18.13)	(−18.16)	(−15.69)	(−15.73)
Controls	YES	YES	YES	YES
Ind FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Ind-Year FE	NO	NO	YES	YES
Observations	24,305	24,305	24,159	24,159
R-squared	0.219	0.219	0.226	0.226

as an opportunity to improve the level of corporate governance and risk management capability. By strengthening the internal risk management mechanism, the management should be able to identify and deal with potential risks in a timely manner to ensure the sound operation of the company. At the same time, in order to minimize the litigation risk caused by information asymmetry, the management should also strengthen information disclosure and investor communication to ensure that investors are able to understand the company's operation status and risk status in a timely manner.

CRediT authorship contribution statement

Qiankun Gu: Writing – review & editing, Supervision, Resources, Project administration, Formal analysis, Conceptualization. **Conggang Li:** Writing – review & editing, Supervision, Funding acquisition, Formal analysis, Conceptualization. **Yanyin Li:** Writing – original draft, Software, Methodology, Investigation, Data curation, Conceptualization. **Rong Xu:** Writing – review & editing, Supervision, Resources, Conceptualization. **Yize Xu:** Writing – original draft, Software, Methodology, Investigation, Formal analysis, Data curation.

Appendix A. Appendix

A.1. Definition of variables and data sources

Variables	Description	Data sources
Dependent variable		
D&O insurance	The dummy variable for whether or not to purchase D&O insurance, with 1 for yes and 0 for no	CNRDS
Independent variable		
IL_dum	The dummy variable for whether or not an inquiry was received, with 1 for yes and 0 for no	CNRDS
IL_num	Log(number of inquiry letters received)	CNRDS
Control variables		
size	Log(total assets)	CSMAR
lev	Debt/total assets	CSMAR
roa	Net profit/total assets	CSMAR
age	Current Year - Year of Incorporation	CSMAR
Soe	1 for state-owned enterprises, 0 otherwise	CSMAR
top1	The ratio of the number of shares held by the largest shareholder	CSMAR
dual	Whether the positions of chairperson and general manager are held by the same person, with 1 for yes and 0 for no	CSMAR
PCLevel	Levels of political connection	CSMAR
Other variables		
High_IL_num	Whether the number of words in the letter of inquiry is greater than the annual industry median	CNRDS
Low_IL_num	Whether the number of words in the letter of inquiry is smaller than the annual industry median	CNRDS
High_IL_word	Whether the number of words in the letter of inquiry is greater than the annual industry median	CNRDS
Low_IL_word	Whether the number of words in the letter of inquiry is smaller than the annual industry median	CNRDS
Long_Response	Whether the response time to inquiry letters is higher than the annual industry median	CNRDS
Short_Response	Whether the response time to inquiry letters is less than the annual industry median	CNRDS

(*continued on next page*)

(*continued*)

Variables	Description	Data sources
High_Detail	Whether the inquiry letter to respond to the degree of detail is greater than the annual industry median	CNRDS
Low_Detail	Whether the inquiry letter to respond to the degree of detail is lower than the annual industry median	CNRDS
IL_concern	Whether companies received concern letters	CNRDS
IL_report	Whether companies received financial report inquiry letters	CNRDS
IL_nonreport	Whether companies received non-financial report inquiry letters	CNRDS
IL_concern_num	The number of concern letters	CNRDS
IL_report_num	The quantity of financial report inquiry letters	CNRDS
IL_nonreport_num	The quantity of non-financial report inquiry letters	CNRDS
ligt_dum	Whether the firm has any litigation cases during the year	CNRDS
ligt_num	The number of lawsuits filed	CSMAR
ligt_money	The number of lawsuits filed	CSMAR
ResignNum	The extent of executive departures in a firm by the number of chairperson or general manager departures	CSMAR
ResignDum	Whether there are any chairperson or general manager departures	CSMAR
Vol_ResignNum	The extent of executive departures in a firm by the number of chairperson or general manager active departures	CSMAR
Vol_ResignDum	Whether there are any chairperson or general manager active departures	CSMAR
post_neg	The number of negative online opinions	CNRDS
neg_ratio_post	The propensity of the company's negative online opinions	CNRDS
news_neg	The number of negative media reports on a company	CNRDS
neg_ratio	The propensity of negative media reports	CNRDS
TMQ_Score	Top management quality score	CSMAR
PC	Whether the company is politically connected	CSMAR
Distance	Regulatory distance	CSMAR

References

Baker, T., Griffith, S.J., 2007. Predicting corporate governance risk: evidence from the Directors' & Officers' liability insurance market. U. Chi. L. Rev. 74, 487.
Bozanic, Z., Dietrich, J.R., Johnson, B.A., 2017. SEC comment letters and firm disclosure. J. Account. Public Policy 36 (5), 337–357.
Brown, S.V., Tian, X., Tucker, J.W., 2018. The spillover effect of SEC comment letters on qualitative corporate disclosure: evidence from the risk factor disclosure. Contemp. Account. Res. 35 (2), 622–656.
Cao, Z., Narayanamoorthy, G.S., 2014. Accounting and litigation risk: evidence from directors' and officers' insurance pricing. Rev. Acc. Stud. 19, 1–42.
Cao, F., Zhang, X., Liu, J., 2023. Comment letter regulation and stock price synchronicity: evidence from China. Asia-Pacific J. Account. Econ. 30 (3), 569–593.
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. Account. Rev. 88 (6), 1875–1908.
Chalmers, J.M.R., Dann, L.Y., Harford, J., 2002. Managerial opportunism? Evidence from directors' and officers' insurance purchases. J. Financ. 57 (2), 609–636.
Core, J.E., 1997. On the corporate demand for directors' and officers' insurance. J. Risk Insur. 63, 63–87.
Core, J.E., 2000. The directors' and officers' insurance premium: An outside assessment of the quality of corporate governance. J. Law Econ. Organ Org. 16 (2), 449–477.
Cunningham, L.M., Johnson, B.A., Johnson, E.S., et al., 2020. The switch-up: an examination of changes in earnings management after receiving SEC comment letters. Contemp. Account. Res. 37 (2), 917–944.
Ding, X., Appolloni, A., Shahzad, M., 2022. Environmental administrative penalty, corporate environmental disclosures and the cost of debt. J. Clean. Prod. 332, 129919.
Drienko, J., Sault, S.J., 2013. The intraday impact of company responses to exchange queries. J. Bank. Financ. 37 (12), 4810–4819.
Egger, P., Radulescu, D., Rees, R., 2015. Heterogeneous beliefs and the demand for D&O insurance by listed companies. J. Risk Insur. 82 (4), 823–852.
Fan, J.P., Wong, T.J., Zhang, T., 2007. Politically connected CEOs, corporate governance, and Post-IPO performance of China's newly partially privatized firms. J. Financ. Econ. 84 (2), 330–357.
Feng, H., Li, Y., Xu, R., 2023. Media coverage and demand for directors' and officers' liability insurance—evidence from China. Appl. Econ. 1–15.
Gietzmann, M.B., Isidro, H., 2013. Institutional investors' reaction to SEC concerns about IFRS and US GAAP reporting. J. Bus. Financ. Acc. 40 (7–8), 796–841.
Gillan, S.L., Panasian, C.A., 2015. On lawsuits, corporate governance, and directors' and officers' liability insurance. J. Risk Insur. 82 (4), 793–822.
Gong, N., 2007. Effectiveness and market reaction to the stock exchange's inquiry in Australia. J. Bus. Finan. Account. 34 (7–8), 1141–1168.
He, Q., Fang, C., 2019. Regulatory sanctions and stock pricing efficiency: evidence from the Chinese stock market. Pac.-Basin Fina. J. 58, 101241.
Hong, Y., Yao, Y., 2024. Can comment letters impact excess perks? Evidence from China. Int. Rev. Financ. Anal. 91, 102943.
Hou, J., Shi, X., Tao, R., 2023. Exchange comment letters and corporate social responsibility: Evidence from China. Emerg. Mark. Financ. Tr. 59 (4), 1140–1160.
Jia, N., Mao, X., Yuan, R., 2019. Political connections and directors' and officers' liability insurance–evidence from China. J. Corp. Finan. 58, 353–372.
Jin, Y., Cheng, C., Zeng, H., 2020. Is evil rewarded with evil? The market penalty effect of corporate environmentally irresponsible events. Bus. Strateg. Environ. 29 (3), 846–871.
Johnson, B.A., Lisic, L.L., Moon, J.S., et al., 2023. SEC comment letters on form S-4 and M&a accounting quality. Rev. Acc. Stud. 28 (2), 862–909.
Johnston, R., Petacchi, R., 2017. Regulatory oversight of financial reporting: securities and exchange commission comment letters. Contemp. Account. Res. 34 (2), 1128–1155.
Keynes, J.M., 1973. The general theory of employment. Q. J. Econ. 51 (2), 209–223.
Kong, X., Xu, S., Liu, M.Y., et al., 2023. Confucianism and D&O insurance demand of Chinese listed companies. Pac.-Basin Fina. J. 79, 101996.
Lai, Y.-H., Tai, V.W., 2019. Managerial overconfidence and directors' and officers' liability insurance. Pac.-Basin Fina. J. 57, 101051.
Lu, J., Qiu, Y., 2023. Does non-punitive regulation diminish stock price crash risk? J. Bank. Financ. 148, 106731.
Park, M., 2018. What drives corporate insurance demand? Evidence from directors' and officers' liability insurance in Korea. J. Corp. Finan. 51, 235–257.
Pistor, K., Xu, C., 2005. Governing stock Markets in Transition Economies: lessons from China. Am. Law Econ. Rev. 7, 184–210.
Stigler, S.M., 1971. Optimal experimental design for polynomial regression. J. Am. Stat. 66 (334), 311–318.
Wang, Q., 2016. Determinants of segment disclosure deficiencies and the effect of the SEC comment letter process. J. Account Public. Pol. 2 (35), 109–133.
Wang, M.C., 2016. The relationship between environmental information disclosure and firm valuation: the role of corporate governance. Qual. Quant. 50, 1135–1151.
Wu, Y., Zhang, B., 2023. Inquiry Letters and Tax Aggressiveness. China World Econ. 31 (4), 37–65.
Xia, C., Yang, J., Yang, Z., Chan, K.C., 2023. Do directors with foreign experience increase the corporate demand for directors' and officers' liability insurance? Evidence from China. Econ. Model. 119, 106146.

Xu, L., Huang, Z.J., Wen, F., 2022. Comment letters and stock price synchronicity: evidence from China. Rev. Quant. Finan. Acc. 59, 1387–1421.
Yao, Y., Hong, Y., 2023. Can comment letters impact excess cash holdings? Evidence from China. Int. Rev. Econ. Financ. 83, 900–922.
Yu, Y., Lee, Y.-T., 2023. Can Inquiry Letters Make R&D Information Pricing More Effective? Evidence from China. Emerg. Mark. Finance Trade.
Yu, X., Tsang, A., Wu, Y., Leng, Z., 2024. Stock exchange oversight and investor quotes: evidence from initial public offering comment letters in China. Br. Account. Rev. 56, 101361.
Yuan, R., Sun, J., Cao, F., 2016. Directors' and officers' liability insurance and stock price crash risk. J. Corp. Financ. 37, 173–192.
Zhao, Q., Li, Z., Yu, Y., 2021. Does top management quality promote innovation? Firm-level evidence from China. China Econ. Rev. 65, 101562.
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. J. Bank. Financ. 32, 2636–2645.