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Media coverage and demand for directors' and officers' liability insurance—evidence from China

Huining Feng[a], Yanyin Li[a] and Rong Xu[a,b]

[a]School of Finance, Renmin University of China, Beijing, China; [b]School of Finance and China Financial Policy Research Center, Renmin University of China, Beijing, China

ABSTRACT

Previous research has documented the impact of internal governance risks and external litigation risks on the demand for D&O insurance. However, the role played by media coverage in this context remains unclear. This study examines the relationship between media coverage and D&O insurance demand using a sample of Chinese A-share listed companies from 2005 to 2019. Our research findings indicate that an increase in media coverage in the previous year significantly enhances the D&O insurance demand for companies in the current year. To mitigate potential selection bias and omitted variable issues, we employ propensity score matching and instrumental variable regression, and the conclusions remain robust. Mechanism analysis suggests that media coverage primarily affects D&O insurance demand through two channels: alleviating information asymmetry and reputation pressure. Further analysis reveals that in companies with more independent directors, greater institutional ownership, and in highly marketized, legally developed regions, the impact of media coverage on D&O insurance demand is more pronounced. However, the CEO's political affiliation significantly diminishes this effect. This research contributes to a deeper understanding of D&O insurance demand in emerging markets and provides valuable insights for regulatory authorities in recognizing the role of media.

KEYWORDS
Media coverage; D&O insurance; informational role; reputation

JEL CLASSIFICATION
L82; G32; G34

I. Introduction

The media plays a pivotal role in generating and disseminating information to financial markets, serving as a vital source of comparison among multiple sources of information. In the context of media dissemination, various channels are employed, encompassing traditional print media, electronic media, and internet-based media. Electronic media refers to platforms that utilize advanced electronic information technologies for advertising and promotion. Internet-based media boasts a heightened openness, prolonged retention, substantial data volume, and potent sensory engagement. In recent years, with the rapid popularity of the Internet, the significance of electronic media has gradually waned. However, traditional print media continues to hold a pivotal role in people's lives. According to statistics available until the end of 2021, China had a total print circulation of 2.01 billion journal copies and 28.3 billion newspapers. This underscores the enduring impact of traditional printed media on the daily lives of the Chinese populace.

The media's primary economic functions encompass asset pricing and supervisory governance. On the one hand, media influences the prioritization of matters by stakeholders through the collection, processing, and dissemination of information (McCombs and Shaw 1972). Media exerts its impact on market information transmission and investor attention, thereby affecting asset price dynamics (Solomon 2012). In markets characterized by information frictions, media plays a pivotal role in reducing economic agents' information costs, ameliorating market failures, and enhancing capital market pricing efficiency (Fang and Peress 2009; Gao et al. 2020). On the other hand, media serves as a crucial supplement to external oversight forces in emerging capital markets, compensating for deficiencies in legal and governmental supervision. Media oversight assumes a paramount role in governance by enhancing punishment deterrence and affecting managerial reputations (Dyck, Volchkova, and Zingales 2008). This can curtail corporate behaviour and enhance societal welfare (Dai, Parwada, and Zhang 2015; Dyck and Zingales 2002).

CONTACT Yanyin Li liyanyin@ruc.edu.cn School of Finance, Renmin University of China, No.59 Zhongguancun Street, Haidian District, Beijing 100872, China

When formulating corporate strategies, CEOs consider information from external stakeholders, including both hard and soft assessments (Gamache and McNamara 2019). Hard assessments encompass indicators such as stock market reactions and corporate social responsibility scores, while soft assessments involve media reports and analyst recommendations. Firstly, the media provides stakeholders with direct information about the company, attracting the attention of external investors and regulatory bodies. This information serves to mitigate information asymmetry and exposes companies to risks associated with operational conditions and internal transactions (Dai, Parwada, and Zhang 2015). Secondly, media coverage can significantly impact the reputation of the company and its managers, thereby incentivizing directors and executives to proactively mitigate potential reputational damage (Harrison et al. 2018). Enterprises, directors, and executives seek various means to mitigate the impact of media coverage.

Directors & Officers Liability Insurance (referred to as D&O Insurance) provides financial protection to directors and officers of companies in the event of legal proceedings alleging misconduct during their tenure. A survey conducted in 2007 revealed that 87% of directors considered the purchase of D&O insurance as an important factor when considering joining a board of directors (Lin et al. 2013). The primary driving factors behind the demand for D&O insurance encompass incentivizing proactive executive performance, overseeing corporate governance (Holderness 1990), as well as and the self-interested needs of directors and executives (Romano 1998).In recent years, scholars have extensively discussed the governance effects, opportunistic behaviour, pricing factors, and demand factors of D&O insurance (Chalmers, Dann, and Harford 2002; Lin et al. 2013; Yuan, Sun, and Cao 2016). In our analysis, media coverage serves to increase societal attention and enhance the information environment, thereby exposing insiders to stricter supervision and higher litigation risks. Consequently, directors and executives will increase their purchase of D&O insurance in pursuit of economic compensation and liability mitigation. From the perspective of the corporation, due to the risk-mitigating attributes for directors and executives, the acquisition of D&O insurance serves as a means to attract top talents. When external media coverage intensifies, this attractiveness becomes more valuable, thus leading to an increased demand for D&O insurance. Furthermore, media coverage exerts an influence on executive reputations, especially when negative information concerning the company is involved, posing a potential threat to executive reputations. Strong reputations are important in executive recruitment and motivation. If executive reputations are damaged by media reports, companies may encounter challenges in attracting and motivating senior management personnel. Therefore, Offering D&O insurance can be regarded as a benefit to help companies attract and retain exceptional executives.

To address the gap in the literature regarding the relationship between media coverage and demand for D&O insurance. This study analyzes a sample of Chinese A-share listed companies. First, in terms of the development of D&O insurance in China, despite the progress in China's financial development, fewer companies choose D&O insurance than in mature markets (Kong et al. 2023). The Governance Guidelines for Listed Companies issued in 2002 allow listed companies to take out this type of insurance. However, due to China's imperfect legal system, there were relatively few litigation cases against listed companies, hindering the development of the insurance (Lai and Tai 2019). Until 2019, when the *Securities Law* was revised and the legal framework began to improve, civil damages lawsuits in China's capital market increased dramatically, providing an opportunity for the development of the D&O insurance market. Our study provides valuable insights for other emerging markets, highlighting its broader significance. Second, from a media perspective, the regulatory influence of local governments in China has weakened the media's monitoring and governance functions. This has led to a significant loss of journalistic independence and objectivity. As a large developing country, China has a low level of press freedom (Borochin and Cu 2018). However, due to insufficient funds for day-to-day operations, Chinese media have been studying practices in developed markets to improve efficiency and performance (Wang and Ye 2015).

Whether Chinese media can complement the legal system in terms of corporate governance is an important research question. In conclusion, it is important to study the impact of the media on the demand for D&O insurance in the Chinese context.

Specifically, we used a Probit model for regression analysis to test the hypothesis. The conclusion shows that media coverage is positively related to the demand for D&O insurance of listed companies, which remains robust after conducting various sensitivity tests such as sample size reduction, variable replacement, controlling for industry fixed effects and industry-province crossover effects, as well as excluding emotional factors. To mitigate endogeneity concerns, we used propensity score matching and instrumental variable regression to retest the main conclusions. Furthermore, this study delves into potential mechanisms through which media coverage impacts D&O insurance demand, including increased information transparency and reputation incentives. We also found that internal supervision and external supervision played a crucial role in reinforcing the positive relationship between media coverage and D&O insurance demand. Specifically, the presence of independent directors, the level of regional legalization, and the proportion of institutional investors significantly amplify the influence of media coverage. Moreover, the effect is weakened in firms where the CEO has stronger political connections.

Our study contributes to the existing literature in the following ways.

Traditionally, research on D&O insurance demand has primarily focused on internal governance risk and external litigation risk (Core 1997). Most existing studies have primarily considered factors such as shareholder class actions (Park 2018) and political connections (Lai and Tai 2019). In addition to these factors, this paper further establishes that media coverage also influences companies' decisions to purchase D&O insurance.

Moreover, in terms of the functions of the media, previous literature has explored the role of the media on earnings management (Chen et al. 2021), executive corruption (Enikolopov, Petrova, and Sonin 2018), insider trading (Aleksanyan et al. 2022), irregularities (Xu et al. 2016), and social responsibility activities (El Ghoul et al. 2019). To the best of our knowledge, this paper is the first to document the influence of media coverage on firms' D&O insurance purchase decisions, thereby shedding light on the crucial role media coverage plays in corporate governance.

Finally, this paper examines the influence of other factors on the media from unique perspectives, including top executives' political connections, board independence, institutional investors, and the legal environment. Our study is based on the distinct Chinese context and provides valuable insights for public companies, media outlets, and policy makers.

The structure of the paper is as follows. Section II reviews the relevant literature and presents the research hypotheses. Section III provides details on the samples, data, variables, and models used in this study, along with descriptive statistics. Section IV presents the main research findings. Section V conducts robustness tests to ensure the reliability of the results. Finally, Section VI concludes the paper.

II. Literature review and hypotheses development

There are two strands of literature related to our study. We discuss them in the sections below.

D&O insurance

D&O insurance, jointly funded and acquired by companies or companies along with their directors and senior executives, serves as a safeguard against personal liability arising from accusations of negligence or misconduct. Existing literature provides abundant evidence on the influence of D&O insurance on corporate management decision-making. However, a comprehensive understanding of the factors influencing corporate D&O insurance remains lacking.

Core (1997) asserts that personal and corporate insurance represent the dual sources of effective demand for D&O insurance. Firstly, managers are generally risk-averse. Companies with serious conflicts of interest between controlling shareholders and minority shareholders may encounter difficulties in hiring and retaining competent executives, and managers may refuse to engage in interest misappropriation activities with controlling shareholders (Zou et al. 2008). To overcome this challenge and signal their commitment to attracting and retaining top-notch management, companies opt to purchase D&O insurance. Secondly, a company's demand for D&O insurance is influenced by both internal governance risks and external litigation risks. On the one hand, the cost of obtaining D&O insurance can reflect the company's internal governance risk (Baker and Griffith 2007). High corporate risks such as management self-interest (Chalmers, Dann, and Harford 2002) and CEO overconfidence (Xia et al. 2023) may lead to an increase in the demand for D&O insurance. Conversely, the proliferation of ethical values within Confucian culture can enhance corporate governance practices, reduce opportunistic behaviour, and consequently diminish the need for D&O insurance (Kong et al. 2023). On the other hand, companies confronted with high litigation risks may experience heightened demand for D&O insurance as a protective measure for their controlling shareholders' wealth (Park 2018). Nevertheless, the presence of political connections in enterprises can mitigate litigation risks and subsequently decrease the demand for D&O insurance (Lai and Tai 2019).

The value of media coverage

Mass media play a pivotal role in capital markets by disseminating existing information and generating new information (Chen et al. 2021). On one hand, acting as an intermediary for information transmission, the media reduces the cost of information collection, enables investors to gain a comprehensive understanding of a company's operational landscape, and mitigates information asymmetry (Graf-Vlachy et al. 2020). Existing literature indicates that media coverage can enhance the pricing efficiency of capital markets (Peress 2014), increase stock price volatility (Griffin, Hirschey, and Kelly 2011), decrease the likelihood of undervalued initial public offerings (An et al. 2020), and contribute to timely stock price adjustments and increased retail trading activity (Bonsall, Green, and Muller 2020).

On the other hand, the media serves as a crucial supplement to external monitoring mechanisms in emerging capital markets. As a professional collector, processor, and disseminator of information, it compensates for the deficiencies in legal and governmental oversight. Dyck and Zingales (2002) were the first to underscore the media's role in corporate governance and proposed three potential ways in which it can impact corporate governance practices. Firstly, media reports attract the attention of regulatory authorities and influence stakeholders' behaviour through deterrence. Secondly, the media affects the relationship between management and shareholders, consequently influencing executive compensation and career progression. Lastly, media reports create public opinion and societal pressure, thereby influencing managers' public image. Scholars have found that media reports effectively enhance board governance (Joe, Louis, and Robinson 2009), reduce debt costs (Gao et al. 2020), curb earnings management (Chen et al. 2021), deter insider trading (Aleksanyan et al. 2022), mitigate violations (Xu et al. 2016), foster engagement in social responsibility activities (El Ghoul et al. 2019), and restrain managerial corruption (Enikolopov, Petrova, and Sonin 2018).

Hypothesis development

Media reporting is an important means of reducing information asymmetries in corporate behaviour (Gao et al. 2020). Specifically, media reports function as an intermediary between stakeholders and listed companies, capturing the attention of regulators and investors, thereby playing a crucial role in mitigating market friction and information asymmetry (Peress 2014). Heightened media coverage correlates with decreased stock price synchronicity, reducing information asymmetry and promoting transparent internal decision-making within companies (Menshawy et al. 2023).

When the quantity of media coverage increases, it diminishes information asymmetry for the company, facilitating investors to assess the company's operations. With increased media coverage, if errors or improper conduct occur in the management process, investors can more easily detect these issues and initiate lawsuits (Aleksanyan et al. 2022). Simultaneously, regulatory agencies find it easier to supervise companies when the amount of media coverage increases, resulting in increased litigation risk and penalties for the company (Dai, Parwada, and Zhang 2015). Consequently, companies may be more proactive in purchasing D&O insurance to ensure sufficient legal protection when needed, mitigating the financial risk for their executives.

Furthermore, as a company receives more media coverage, high-level executives face increased reputational pressure for several reasons. Firstly, when a company becomes the subject of widespread media attention, the actions and statements of its executives are more likely to be in the public spotlight (Dyck and Zingales 2002). This means that executive decisions and managerial performance become subject to greater scrutiny and evaluation by stakeholders, creating increased reputational pressure. This affects their future compensation, employment opportunities, corporate financing ability, and career trajectories. Additionally, executive reputations are closely tied to the company's reputation. Executive reputations can be influenced by company-level media coverage, especially when it involves negative information, misconduct, compliance issues, or corporate crises (Love, Lim, and Bednar 2017). Therefore, the increase in media coverage poses a potential threat to executive reputations.

A strong reputation is crucial for recruiting and incentivizing high-level executives. If executive reputations are tarnished by media coverage, companies may face challenges in attracting and motivating top management. Offering D&O insurance can serve as a benefit to help companies attract and retain exceptional executives (Core 1997). Consequently, an increase in media coverage for a company prompts management to request an increase in the purchase of D&O insurance.

In summary, media coverage primarily increases the demand for D&O insurance through two channels: reducing information asymmetry and enhancing reputational pressure.

Based on the above analysis, we propose the following hypothesis:

Hypothesis1: Media coverage is positively correlated to the company's demand for D&O insurance.

Corporate executives are susceptible to the influence of self-attribution bias (Liu, Zhang, and Jiraporn 2016; Roll 1986). They are more likely to attribute the company's success to themselves rather than to broader factors. Media coverage brings recognition to corporate executives, which may further exacerbate their self-attribution bias and overconfidence levels. Consequently, corporate executives tend to overestimate their risk management abilities, leading to the adoption of riskier business strategies. D&O insurance provides a tool for managing liability risks for both the company and individual executives. The greater the media coverage, the more likely corporate executives are to become overly confident, which could potentially reduce the demand for D&O insurance.

Based on the above analysis, we propose the following hypothesis:

Hypothesis 2: Media coverage is negatively correlated to the company's demand for D&O insurance.

III. Methods

Sample selection and data source

The sample for this study includes companies listed on the Shanghai Stock Exchange and the Shenzhen Stock Exchange in China from 2005 to 2019. Given the impact of some missing values and outliers, we excluded the finance and insurance sectors and the sample of missing values. To avoid confounding outliers in the regression results, all continuous variables were winsorized at 1% and 99%, and a total of 35,600 annual observations of listed companies were obtained.

The data on D&O insurance, basic characteristics of listed companies, and moderating variables were obtained from the CSMAR database. CEO association data was obtained through manual reading of personal resumes. The media coverage data is derived from the CFND(China Financial News Database) of CNRDS(China Research Data Service Platform). This study utilizes the CFND's metrics related to financial news articles, encompassing data from over 600 significant newspaper sources.

Variable definitions

The dependent variable, *Insured*, was measured as a binary variable. As the decision to take out D&O insurance in the next year reflects the demand for D&O insurance in the current year, we lagged the dependent variables by one period. Specifically, *Insured* $=1$ indicates that the company has taken out D&O insurance in the next year, reflecting a demand for D&O insurance in the current year. On the other hand, *Insured* $=0$ indicates no demand for D&O insurance in the current year.

The independent variable, *Media*, was used to measure the level of media coverage a company receives. This metric was obtained from the CNRDS database and represents the total number of news articles involving the company throughout the year. In our regression analysis, we added one to the actual value of the variable and then applied the natural logarithm.

Consistent with prior literature (Park 2018; Zou et al. 2008), we controlled for several variables at the company level. *Size* represents the total assets of the company, and we used the natural logarithmic value of this variable in our regression. *ROA* is used to assess the profitability of a business and is calculated as net profit after tax divided by total assets. *Growth* measures the growth rate of the company's operating income. *Leverage* is a company's asset liability ratio, which serves as a measure of financial risk, defined as total liabilities divided by total assets. *Age* is defined as the natural logarithm of the period after the establishment of the enterprise plus one. *Top1* reflects the equity concentration of the company, measured by the natural logarithmic value of the largest shareholder's shareholding. In terms of board characteristics, we controlled for *Director* and *INDE*, measured by the natural logarithmic value of the number of directors and the number of independent directors divided by the total number of directors, respectively. Additionally, considering the differences between state-owned enterprises and private enterprises in the Chinese market, we used *SOE* to indicate the nature of the companies, where a value of 1 represents state-owned and 0 represents private.

Summary statistics

Table 1 presents the descriptive statistics for the main variables. As shown in Table 1, the mean value of the dependent variable *Insured* was 0.0688, indicating that only 6.88% of the companies purchased D&O insurance during the sample period. D&O insurance is still not widely prevalent in the Chinese market. The independent variable *Media* ranges from 0 to 9.274, with a mean of 3.171, indicating an average of 76 articles per company during the year (exp3.171). The standard deviation of *Media* is 9.274, indicating considerable variation in the number of reports across companies.

In terms of control variables, the minimum and maximum values of *Size* are 19.90 and 24.40, respectively, indicating differences among companies. The mean values of *ROA* and *Growth* are 0.0136 and 1.469, respectively, suggesting that most companies were able to maintain profitability and growth. The average Leverage is 0.446, indicating a reasonable asset-liability ratio for China's A-share listed companies. The average shareholding ratio (*Top1*) of the largest shareholder is 35% (exp3.458), which is at a reasonable level. The average director size (*Director*) of the sample companies is 10 (exp2.278), and the proportion of

Table 1. Summary statistics.

Type	Variable	N	mean	sd	min	max
Dependent Variable	Insured	35600	0.069	0.253	0	1
Independent Variable	Media	35600	3.171	1.360	0	9.274
Control Variables	Size	35600	21.807	1.220	19.899	24.401
	ROA	35600	0.014	0.024	−0.033	0.147
	Growth	35600	0.458	1.469	−0.823	11.408
	Leverage	35600	0.446	0.219	0.062	0.933
	Age	35600	2.801	0.360	0	4.174
	Top1	35600	3.458	0.467	2.171	4.318
	Director	35600	2.278	0.250	1.386	3.296
	INDE	35600	0.376	0.070	0.083	0.800
	SOE	35600	0.467	0.499	0	1

independent directors (*INDE*) is 0.376. The average *SOE* is 0.467, indicating that state-owned companies account for a significant portion of the Chinese market, approximately 46.7%. Overall, the values of the control variables do not deviate significantly from existing literature.

Empirical model

Since the dependent variable *Insured* is a binary variable, we used the Probit model for regression. The model is specified as follows:

$$Insured_{it+1} = \alpha + \beta_1 Media_{it} + \beta_2 Controls_{it} + year + Province + \varepsilon_{it} \quad (1)$$

α represents the constant term, *Insured* serves as the dependent variable, *Media* is the independent variable, *Controls* are the control variables, and *year* and *Province* are the fixed effects for year and province, respectively.

IV. Results

Baseline results

Table 2 presents the estimation results of model (1), carefully controlling for various factors. In the first column of the regression, only *Insured* is included, without controlling for province and year effects. In the second column, we introduced province and year fixed effects as additional controls. The third column includes additional control variables, while the fourth column uses the absolute value (number of articles covered by the media) of media coverage instead of the logarithmic value. Notably, the coefficients on *Media* in all four columns show statistically significant positive effects at the 1% confidence level, providing robust evidence that media coverage has a significant impact on the demand for D&O insurance. More specifically, our results indicate that a 1% increase in media coverage leads to a 0.0237% increase in the demand for D&O insurance. Furthermore, a one standard deviation increase in media coverage corresponds to a 0.0398 (0.0001×290.8115) increase in demand, which explains 57.78% of the mean. These results show that our results are not only statistically significant but also economically meaningful, in line with Hypothesis 1.

Endogeneity

As rational entities, the media tends to select news stories that are most likely to attract the attention

Table 2. Probit regression analysis of D&O insurance demand.

VARIABLES	(1) Insured	(2) Insured	(3) Insured	(4) Insured
Media	0.1130***	0.1209***	0.0237***	0.0001***
	(16.131)	(16.401)	(2.845)	(4.985)
Size			0.2751***	0.2763***
			(22.962)	(24.056)
ROA			−3.1019***	−3.0280***
			(−4.428)	(−4.356)
Growth			−0.0112	−0.0112
			(−1.385)	(−1.382)
Leverage			0.2300***	0.2235***
			(3.545)	(3.447)
Age			0.2828***	0.2813***
			(6.789)	(6.744)
Top1			−0.0567**	−0.0550**
			(−2.224)	(−2.158)
Director			0.2860***	0.2825***
			(6.116)	(6.039)
INDE			−0.0212	−0.0297
			(−0.128)	(−0.179)
SOE			0.3153***	0.3131***
			(11.659)	(11.586)
Constant	−1.8606***	−2.0423***	−9.2517***	−9.2015***
	(−71.570)	(−26.094)	(−31.327)	(−31.571)
Observations	35,600	35,600	35,600	35,600
Province	No	Yes	Yes	Yes
Year	No	Yes	Yes	Yes

T- statistics are reported in the parentheses. ***, **, * indicate significance at 1%, 5% and 10%, respectively. The remaining tables are the same.

of market participants, with negative news often being more appealing to the general public. As a result, companies that receive more media coverage may face higher risks and poorer operating conditions, which could increase their likelihood of purchasing D&O insurance. In addition, companies can indirectly influence media coverage by controlling the timing and frequency of bond and equity announcements, the selection of investment banks and auditors, and the frequency of earnings reports (Gao et al. 2020). These firm-level characteristics may affect the demand for D&O insurance. Finally, it should be noted that there may be endogenous problems with the regression analysis.

Endogeneity: propensity score matching (PSM) method

To mitigate the problem of endogeneity caused by selection bias, we grouped the sample according to the median of media coverage and used propensity score matching to reduce potential bias. In the first stage, we used a caliper-nearest-neighbour Probit model, controlling for all relevant firm-level variables, provinces and years, to regress on binary media variables.

In the unreported results, there are significant differences in the characteristics of the two sample groups. After propensity score matching, the samples no longer show significant differences. The matched regression results are presented in Table 3, showing that the coefficient of the independent variable Media is significantly positive at the 10% confidence level ($p = 0.097$), suggesting that the endogeneity problem is not a significant concern in our analysis.

Endogeneity: instrumental variable approach

To address potential endogeneity concerns, we employed instrumental variable regressions in addition to propensity score matching. Drawing on the relevant literature (Gao et al. 2020), we identified two instrumental variables: the number of radio stations in the province where the firm is located and the proportion of employees in the radio and television industry. We justified our choice of instrumental variables for several reasons: (1) These instrumental variables are plausibly related to the independent variable of interest, as a higher number of radio stations and employees is likely to lead to increased media coverage of the firm. (2) The instrumental variables are unlikely to be correlated with the demand for D&O insurance, which mitigates endogeneity concerns. (3) There is no theoretical evidence of a relationship between the instrumental variables and potential unobserved variables.

The regression results are shown in Table 4. The regression coefficients for the independent variable *IV_Media* are significantly positive at 1% and 5% confidence levels, respectively, indicating that endogeneity does not substantially affect our main conclusions.

Table 3. PSM estimation.

VARIABLES	(1) Insured
Media	0.0178*
	(1.662)
Constant	−8.9765***
	(−22.211)
Observations	22194
Controls	Yes
Province	Yes
Year	Yes

Robustness check

Subsample test

It is worth noting that only a small percentage of companies in our sample have taken out D&O insurance, with an average of 6.8%. To address the limitation of the limited number of companies with D&O insurance in our sample, we focused specifically on companies that had taken out D&O insurance in order to observe changes in corporate decision-making over time. After this sample reduction, a total of 5363 entries remained. The regression results after sample reduction are shown in column (1) of Table 5. Importantly, the coefficient on the *Media* has a statistically significant positive effect at the 10% confidence level, further reinforcing the robustness of our main conclusions.

Consider the effect of company size

We also found that company size has an impact on both media coverage and demand for D&O insurance. In particular, larger companies tend to attract more media attention. In addition, larger companies tend to have more directors and officers,

Table 4. IV estimation.

VARIABLES	(1) Insured	(2) Insured
IV_Media	0.8023***	0.6753**
	(76.953)	(2.399)
Constant	5.0411	−0.5845
	(1.326)	(−0.086)
Observations	28,226	26,221
Controls	Yes	Yes
Province	Yes	Yes
Year	Yes	Yes

Table 5. Subsample test, the effect of company size and transform sample period.

VARIABLES	(1) Insured	(2) Insured	(3) Insured
Media	0.0250*		0.0223**
	(1.799)		(2.568)
Media_Asset		0.0201***	
		(5.499)	
Constant	−8.3673***	−9.6969***	−8.9663***
	(−16.388)	(−33.214)	(−28.167)
Observations	5,363	35,600	29,890
Controls	Yes	Yes	Yes
Province	Yes	Yes	Yes
Year	Yes	Yes	Yes

leading to a higher demand for D&O insurance. To control for the potential confounding effect of company size, we used the ratio of the number of news reports to the company's total assets as a proxy for the independent variable. The regression results are presented in column (2) of Table 5, which shows that the coefficient of *Media_Asset* has a statistically significant positive effect at the 1% confidence level, further validating the robustness of our conclusions.

Transform sample period

In addition, we considered the potential impact of the 2008 financial crisis on the financial market and excluded samples from before 2008. We focused only on samples from 2009 to 2019, with a sample size of 29,890. As shown in column (3) of Table 5, the coefficient for *Media* remains significantly positive at the 5% confidence level. These additional analyses further strengthen the reliability of our findings and provide additional support for our conclusions.

Industry-fixed effects

To account for differences in risk levels and operating conditions across industries (Gao et al. 2020), we further controlled for industry fixed effects and the cross product of industry and province effects in our regression analysis, as shown in Table 6. Notably, the coefficients of Media in both regressions are significantly positive at the 1% confidence level, indicating that even after excluding the influence of industry factors, media coverage remains positively correlated with corporate demand for D&O insurance.

Excluding emotional factors

The media reports on the company are composed of positive reports, negative reports and neutral reports, which have different emotional tendencies (Harrison et al. 2018). The differential effects of media sentiment on the quantity of coverage are associated with firms' operational and risk-related outcomes. To mitigate the influence of emotional factors, we replaced the independent variable with neutral media attention in our regression analysis. Specifically, we added one to the number of neutral reports and took the natural logarithm value. The results in Table 7, which display the total number of neutral reports (*Neu1*) and the number of original neutral reports (*Neu2*) per year as the independent variables in two columns, reveal that the coefficients of the independent variables in both regressions are significantly positive. These findings further underscore the robustness of our conclusions, as they highlight the consistent and significant impact of media coverage on the demand for D&O insurance by companies, even after controlling for emotional factors associated with media reports.

Considering rare events bias

The dependent variable *Insured* is a dummy variable in our regression analysis. Out of the total sample size, only 6.88% (2,450 observations) have purchased D&O insurance (*Insured* = 1), while the

Table 6. Industry fixed effect.

VARIABLES	(1) Insured	(2) Insured
Media	0.0606***	0.0434***
	(6.079)	(3.187)
Constant	−7.7941***	−10.1289***
	(−22.138)	(−17.352)
Observations	34,285	18,452
Controls	Yes	Yes
Industry	Yes	Yes
Province	Yes	Yes
Industry*Province	No	Yes
Year	Yes	Yes

Table 7. Excluding emotional factors.

VARIABLES	(1) Insured	(2) Insured
Neu1	0.0345***	
	(3.968)	
Neu2		0.0433***
		(4.526)
Constant	−9.1492***	−9.1073***
	(−30.827)	(−30.678)
Observations	34,309	34,237
Controls	Yes	Yes
Province	Yes	Yes
Year	Yes	Yes

majority have not. Given the rarity of the event, we utilized the cloglog model to accurately classify the control and treatment groups and mitigate the risk of rare event bias. Our regression analysis results are presented in Table 8, indicating a significantly positive coefficient for the independent variable Media, at the 10% level. This suggests that even after accounting for the rare event bias, our findings remain statistically significant.

Extending the sample period

To address concerns regarding the potential impact of sample obsolescence on the persuasiveness of our conclusions, we extended the sample period to 2005–2021 and re-conducted the regression analysis. The results presented in the Table 9 indicate that the coefficients of the explanatory variables remain significantly positive. This suggests that even after expanding the sample period, the core conclusions of our study remain valid.

Why media coverage increases demand for D&O insurance

Furthermore, our analysis delved into the channels through which media coverage impacted the demand for D&O insurance. Specifically, we investigated how media coverage can mitigate information asymmetry and enhance reputational deterrence, consequently driving the demand for D&O insurance by companies.

Relieve information asymmetry

According to the existing literature, media-provided information alleviates market frictions and information asymmetry (Dai, Parwada, and Zhang 2015; Graf-Vlachy et al. 2020). We utilized stock price synchronization (*SPS*) as a proxy variable for company information transparency. *SPS* is calculated as the correlation between the change in a single company's stock price and the average change in the overall market, measured by the R^2 obtained from the return of individual stock returns and market returns. A higher R^2 indicates that systemic factors in the market have a stronger ability to explain the return of individual stocks, resulting in a higher correlation between the movement of individual stock prices and the average market, and indicating lower information transparency. Our results, presented in Table 10, substantiate that increased media coverage is associated with a statistically significant reduction in stock price synchronicity, implying a decrease in information asymmetry for firms. Moreover, the introduction of an interaction term between *Media* and *SPS* reveals that the impact of media coverage on D&O insurance demand is more pronounced in firms with higher transparency, as evidenced by the significantly negative coefficient of *Media*×*SPS* at the 5% confidence level. The above results show that by alleviating information asymmetry, media coverage increases the demand for D&O insurance.

Independent director reputation

Reputation is a valuable resource that can confer a competitive advantage to companies. Negative

Table 8. Cloglog regression analysis of D&O insurance demand.

VARIABLES	(1) insured
Media	0.0284*
	(1.888)
Constant	−17.5038***
	(−30.210)
Observations	35,600
Controls	Yes
Province	Yes
Year	Yes

Table 9. Extending the sample period.

VARIABLES	(1) Insured
Media	0.0264***
	(3.587)
Constant	−8.3022***
	(−32.875)
Observations	39,686
Controls	Yes
Province	Yes
Year	Yes

Table 10. Media coverage, information asymmetry and D&O insurance demand.

VARIABLES	(1) SPS	(2) Insured
Media	−0.1401***	0.0117
	(−21.751)	(1.211)
SPS		0.0444*
		(1.776)
Media × SPS		−0.0155**
		(−2.502)
Constant	−6.9113***	−9.1854***
	(−33.814)	(−30.149)
Observations	35,354	35,354
Controls	Yes	Yes
Province	Yes	Yes
Year	Yes	Yes

media coverage can pose a threat to director's reputation, compelling them to proactively engage in behaviour that mitigates the external and internal consequences of reputation damage (Harrison et al. 2018). To measure the impact of reputation on independent directors, we construct a variable *Rank*, which is derived by summing the ranking values of independent directors' reputation based on the market value of the company where they serve concurrently. A higher *Rank* value indicates that independent directors receive more social attention and are subject to greater supervision constraints. As shown in Table 11, we introduced the cross product of *Media* and *Rank*, and find that its coefficient is significantly positive at the 1% confidence level. This implies that media coverage has a stronger impact on independent directors who value reputation more. Media coverage increases the demand for D&O insurance by companies as a response to reputational threats.

Table 11. Media coverage, independent Director reputation and D&O insurance demand.

VARIABLES	(1) Insured
Media	0.0137
	(0.699)
Rank	−0.0551***
	(−3.170)
Media × Rank	0.0108***
	(2.961)
Constant	−8.4835***
	(−23.757)
Observations	30,077
Controls	Yes
Province	Yes
Year	Yes

V. Additional analyses

In this chapter, we further analysed whether there were differences in the impact of media coverage on the demand for D&O insurance in different sub-samples. Specifically, we looked at the internal and external regulatory environment and the political connections of the CEO.

Internal supervision

The introduction of independent directors is expected to mitigate agency problems and reduce internal governance risks, which in turn may reduce the demand for D&O insurance, as noted in previous literature (Core 1997). However, high levels of external ownership may increase supervision costs, and D&O insurance can serve as a complementary mechanism for external supervision. Moreover, external independent directors are likely to value their reputation and avoid risks, and D&O insurance can provide a risk transfer function that helps retain external directors in the face of increased litigation risks (Park 2018). Therefore, as the proportion of independent directors increases, it is expected that the demand for D&O insurance will also rise. To empirically verify the impact of independent directors on the demand for D&O insurance, we conducted analyses at the intersection of *Media* and *INDE*, where *INDE* represents the proportion of independent directors. The results, as shown in the first column of Table 12, reveal a significantly positive coefficient for the interaction term *INDE×Media* at

Table 12. Media coverage, internal supervision and D&O insurance demand.

VARIABLES	(1) Insured	(2) Insured
Media	−0.0692*	−0.0154
	(−1.760)	(−0.688)
INDE	−0.9225**	
	(−2.254)	
Institutional		0.0080***
		(6.012)
Media × INDE	0.2479**	
	(2.419)	
Media × Institutional		0.0006*
		(1.720)
Constant	−8.9069***	−7.6742***
	(−27.164)	(−24.330)
Observations	35,600	35,548
Controls	Yes	Yes
Province	Yes	Yes
Year	Yes	Yes

a 5% confidence level. This finding suggests that the increase in the proportion of independent directors strengthens the positive impact of media coverage on the demand for D&O insurance.

Also, institutional investors can play a positive role in regulatory oversight and improving the quality of information disclosure by listed companies. On one hand, as an important component of external supervision, institutional investors can potentially substitute for D&O insurance. On the other hand, improved information transparency may also result in increased litigation and penalties, thereby further driving up the demand for D&O insurance by companies. In the second column of Table 12, we have added the interaction item between institutional investor shareholding ratio (*Institutional*) and *Media*, and its coefficient is significantly positive. This shows that institutional investors can strengthen the impact of media reports on the demand for D&O insurance.

External supervision

In our study, we investigated the impact of regional legal environment on external supervision. Judicial efficiency is a crucial factor in determining civil litigation and investor protection. Regions with higher levels of legal systems tend to see increased use of legal rights protection by residents and reduced government favouritism. The construction of a robust legal system can increase the litigation risk for listed companies, leading to higher demand for D&O insurance. We constructed the multiplication of the regional legal environment variable (*Legal*) and the media report variable (*Media*). The legal environment data comes from the sub-indicator of 'Market Intermediary Organization Development and Legal Environment' in the Pan-Hong Kong Index. As shown in Table 13, the coefficient for intersection is significantly positive. This suggests that a favourable legal environment can strengthen the positive relationship between media coverage and the purchase of D&O insurance.

Table 13. Media coverage, external supervision and D&O insurance demand.

VARIABLES	(1) Insured
Media	−0.0714***
	(−2.662)
Legal	−0.0448***
	(−2.659)
Legal × Media	0.0097***
	(3.731)
Constant	−8.8602***
	(−26.733)
Observations	35,426
Controls	Yes
Province	Yes
Year	Yes

Political connections

In the Chinese market, the phenomenon of political association among listed companies is widespread. Politically associated firms often enjoy lower litigation risks due to what is commonly referred to as 'intangible protection'. They face a lower probability of prosecution and a higher probability of victory in litigation (Jia, Mao, and Yuan 2019). In this study, we sought to examine whether there is an inverse relationship between political associations and the demand for D&O insurance. We measured political associations using two principal components, denoted *PC1* and *PC2*, which capture the presence and level of political connections of the firm's CEO. Specifically, *PC1* is a binary variable that takes the value 1 if the CEO has a political connection and 0 otherwise. *PC2* measures the level of the CEO's political connection, categorized into five levels from 0 to 4. The results are presented in Table 14 and show a significantly negative coefficient for the interaction term at the 1% confidence level. This suggests that the political association of the CEO weakens the effect of media coverage on the demand for D&O insurance.

Table 14. Media coverage, political connections and D&O insurance demand.

VARIABLES	(1) Insured	(2) Insured
Media	0.0334***	0.0333***
	(3.106)	(3.171)
PC2		0.0339*
		(1.780)
PC1	0.1316**	
	(2.111)	
PC1 × Media	−0.0431***	
	(−2.698)	
PC2 × Media		−0.0131***
		(−2.795)
Constant	−9.0600***	−9.0904***
	(−29.141)	(−29.193)
Observations	31,251	31,251
Controls	Yes	Yes
Province	Yes	Yes
Year	Yes	Yes

VI. Conclusion

Complementing information intermediaries and extralegal monitoring systems, the news media play a crucial role as a legal channel in mitigating information asymmetry among firms and monitoring corporate governance. Focusing on China's A-share listed companies as a sample, this study examines the impact of media coverage on the demand for D&O insurance and analyses the possible mechanisms involved. The results show that media coverage significantly increases the demand for D&O insurance among listed companies by reducing information asymmetry and enhancing reputation deterrence. These conclusions are robust to controlling for various variables, sample periods, industry effects and reported sentiment. Propensity score matching and instrumental variable regression analyses further confirm the causality of the findings. Moreover, our study highlights that media coverage has a more significant positive impact on the demand for D&O insurance in companies with stronger internal and external monitoring. In addition, political connections can be seen as an 'invisible protection', as media coverage has a weaker effect on the demand for D&O insurance in companies where the CEO has strong political connections.

Our research holds significant policy implications for China and other emerging economies. Firstly, it is widely acknowledged that the Chinese media is subject to extensive government control. However, our research findings demonstrate that media coverage can play a crucial supervisory role by reducing information asymmetry and increasing pressure on corporate executives to maintain their reputations, thereby promoting improvements in corporate governance. Therefore, government and regulatory authorities should further encourage and enhance the role of media as participants in capital markets. Specifically, media reporting should prioritize objectivity and accuracy. The government should incentivize in-depth investigative reporting to enhance the information environment of capital markets. Secondly, although our research focuses on the purchase of D&O insurance, the main conclusions are equally applicable to other corporate risk management decisions. Close collaboration between regulatory agencies, media outlets, and corporate managers is essential for effective corporate governance and capital market supervision. Through joint efforts, a more transparent, equitable, and healthy capital market environment can be established. This is conducive to attracting domestic and foreign investors and promoting sustainable economic growth.

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