

Articles
Canstet members really price the book-tax differences correctly? Evidence from
international subsidiaries
Wang et al. 367-389
Does board gender diversity matter for corporate cash holdings? Study on
Chinese companies
Zhang et al. 391-404
Is board gender diversity related to corporate cash holdings? Evidence from China
Zhang et al. 405-418
Do board members care about directors' and officers' liability insurance?
Empirical evidence based on the pricing of corporate bonds
Wang et al. 419-434
Customer satisfaction in the non-financial financial statements: recognition and
impact
Wang et al. 435-448
Board composition heterogeneity: Evidence from the behavior of corporate
cash holdings
Wang et al. 449-464



An International Journal of the Accounting Society of China



ISSN: 2169-7213 (Print) 2169-7221 (Online) Journal homepage: www.tandfonline.com/journals/rcja20

Do bond market participants care about directors' and officers' liability insurance?—Empirical evidence based on the pricing of corporate bonds

Yu Wang, Jiawei Lu & Xun Zhao

To cite this article: Yu Wang, Jiawei Lu & Xun Zhao (2022) Do bond market participants care about directors' and officers' liability insurance?—Empirical evidence based on the pricing of corporate bonds, China Journal of Accounting Studies, 10:3, 367-389, DOI: 10.1080/21697213.2022.2143679

To link to this article: <https://doi.org/10.1080/21697213.2022.2143679>



© 2022 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.



Published online: 12 Nov 2022.



Submit your article to this journal [↗](#)



Article views: 654



View related articles [↗](#)



View Crossmark data [↗](#)

ARTICLE



OPEN ACCESS



Check for updates

Do bond market participants care about directors' and officers' liability insurance?—Empirical evidence based on the pricing of corporate bonds

Yu Wang^a, Jiawei Lu^b and Xun Zhao^b

^aSchool of Accountancy, Shanghai University of Finance and Economics, Shanghai, China; ^bSchool of Accounting, Nanjing Audit University, Nanjing, China

ABSTRACT

Based on the risk hedging perspective, this paper examines the impact of directors' and officers' liability insurance (hereafter referred to as D&O liability insurance) on the pricing of corporate bonds. We find that the purchase of D&O liability insurance can effectively reduce corporate bond insurance pricing. The path test shows that the purchase of D&O liability insurance can reduce the bond insurance pricing by improving the quality of company's internal control. Furthermore, the paper finds that when management power is greater, investor protection is poor or financial risk is high, the impact of the D&O liability insurance is stronger. After purchasing D&O liability insurance, creditors will reduce the use of corporate governance contractual terms, but will set more investments and financing as well as option contractual terms. In addition, companies that purchase D&O liability insurance issue bonds with higher credit ratings and longer bond maturities.

KEYWORDS

D&O liability insurance; pricing of bond; internal control; credit rating; contractual terms

1. Introduction

The bond market is an important part of the capital market, and its healthy development is conducive to improving the efficiency of allocation of market resource and promoting the smooth operation of the capital market. In 2021, China's bond market issue a total of RMB 61.9 trillion of various bonds, an increase of 8% over the previous year. This had a significant impact on the supply-side reform of financing and stimulating the vitality of market players. However, the development of China's bond market late started, and the long-standing belief in rigid payment has seriously distorted the risk pricing mechanism and damaged the efficiency of market resource allocation. The default of the Chaori Bond on interest officially broke the belief in rigid repayment and opened the prelude to the wave of defaults on China's credit bonds. The default of the AAA-rated state-owned enterprise bond Yongmei Bond in 2020 intensified market panic and weakened the investment enthusiasm of investors in the bond market. In this context, discussing the bond investor protection mechanism has far-reaching significance for reducing the risk of

CONTACT Jiawei Lu  Lujiaawei0630@126.com  School of Accounting, Nanjing Audit University, No.86 Yushan West Road, Pukou District. Nanjing. Jiangsu Province 211815, China

Paper accepted by Guliang Tang.

© 2022 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

a bond default, protecting the rights and interests of creditors, and promoting the reasonable pricing of bonds. Among the many investor protection mechanisms, insurance can undoubtedly play the best role in risk hedging, transferring economic compensation risks to third-party insurance companies to protect the interests of investors.

Directors' and officers' liability insurance (hereafter referred to as D&O liability insurance) is an insurance policy that provides coverage for the risky decisions made by insured directors and management in the course of their employment, with the insurer being responsible for reimbursing the directors or managers for their civil liability. Europe's largest insurance group, Allianz, clearly mentioned in the 2016 *Directors and Executives Liability Insurance Insights: Managers' Responsibility Today* report: In Asia, the main cause of executive liability insurance claims is related to securities and bond issuance. Nearly half of the 28 Sci-Tech Innovation Board companies in the early days of the China Sci-Tech Innovation Board purchased D&O liability insurance to protect the interests of executives and investors. The advantage of D&O liability insurance is the introduction of a third-party insurer to provide risk compensation and wealth protection for managers' decision errors, thereby increasing their risk tolerance (Core, 2000). Previous studies have found that purchasing D&O liability insurance can enhance corporate value (Hu & Hu, 2014), improve risk-taking (Hu & Hu, 2017), reduce agency costs (Ling & Bai, 2017), and curb stock price crash risk (Yuan et al., 2016). However, while D&O liability insurance plays a role in risk hedging, it induces opportunistic behaviour of management, which reduces the performance of company mergers and acquisitions (Lin et al., 2011), increases loan spreads (Lin, Officer, et al., 2013) and aggravates earnings management behaviour (Hu & Zhao, 2017), and increases the cost of equity financing (Feng et al., 2017). The completely different corporate governance effects produced by the subscription of D&O liability insurance lay the foundation for this study. Bonds are an important part of corporate financing. How will the company's purchase of D&O liability insurance affect future bond issuance?

The pricing of bond issuance is determined by the possibility that the issuer cannot repay the debt and the degree of protection of the lender in the event of default (Weinstein, 1981). Lowering the pricing of bond issuance can help companies reduce financing costs and promote corporate health development. Bond characteristics such as repurchase terms, repayment sequence, size, and liquidity (Frank & Driessen, 2012; Harris & Piwowar, 2006; Merton, 1974) are important factors that affect bond financing costs. In recent years, some scholars have found that establishing a central bank collateral framework (Huang & Guo, 2021) and multiple credit ratings (Chen et al., 2021) are conducive to reducing bond financing costs. The establishment of environmental protection courts (Gao & Wen, 2021) and the equity pledge of controlling shareholders (Shi et al., 2021) have increased the cost of bond financing. The insurance system can protect the risk behaviour of executives and protect the rights and interests of creditors. However, few scholars pay attention to the impact of the insurance system of companies on the bond market. Theoretically, the company's subscription to D&O liability insurance has two distinct effects on bond issuance. On the one hand, subscribing to D&O liability insurance can play a supervisory effect, improving corporate governance and information quality. In the event of a company's failure to pay, D&O liability insurance can provide adequate indemnity to the suing party, reducing losses in the event of a bond default, and thus reducing the risk premium at the time of the bond issue. On the other hand, subscription

to D&O liability insurance protects management's risky behaviour and then increases risk tolerance. Management will implement more aggressive strategic decisions, while bond investors are averse to aggressive risk strategies. D&O liability insurance can easily induce moral hazard of management (Lin et al., 2013), and creditors will then demand a higher risk premium as compensation. Therefore, how the subscription of D&O liability insurance will affect the pricing of corporate bond issuance is an empirical question with research tension.

This paper selects 2007–2020 corporate bonds as the research object and explores the role of the subscription of D&O liability insurance in the bond market. (1) We find that the company's subscription to D&O liability insurance reduces the cost of bond financing. Our results remain stable after a series of robustness tests, indicating that D&O liability insurance plays an active governance role in China's bond market. (2) Further analysis of its influence mechanism, we find that the subscription of D&O liability insurance can reduce the pricing of corporate bonds by improving the quality of the company's internal control. (3) The impact of the D&O liability insurance on the pricing of corporate bonds is stronger when management has more power, poorer investor protection or higher financial risk. (4) After purchasing D&O liability insurance, creditors reduce the use of corporate governance contractual terms, but will set more investment & financing contractual terms as well as option contractual terms to limit strategic behaviour of corporate risk to protect their rights and interests. (5) In addition, the bonds issued by companies that subscribe to D&O liability insurance have higher credit ratings and longer bond maturities.

Our paper contributes to the literature in several ways. First, it is the first paper to discuss the influencing factors of pricing of corporate bonds from the perspective of risk hedging. Existing literature mainly focuses on the implicit guarantee of local governments (Ao et al., 2017; Bhojraj & Sengupta, 2003; Bonsall et al., 2017; Han & Hu, 2015), and the impact of third-party insurers on the bond issue pricing has not received much attention. Based on the insurance system of D&O liability insurance, this paper discusses its impact on the pricing of bond issuance and enriches the relevant research on the pricing of corporate bonds.

Second, it deepens and expands the research on the governance effect of D&O liability insurance. Existing studies mainly focus on the impact of D&O liability insurance on enterprise value (K. F. Li & Liao, 2014; Hu & Hu, 2014), corporate governance (Hu & Zhao, 2017; Ling & Bai, 2017), cost of capital (Feng et al., 2017; Lin et al., 2013), risk-taking (Hu & Hu, 2017), and stock price crash risk (Yuan et al., 2016). Following previous research, this paper analyzes the relationship & mechanism between D&O liability insurance and bond issuance & pricing, and further supplements the research on the governance effect of D&O liability insurance.

Thirdly, we analyse the mechanism and effect of D&O insurance in reducing the pricing of bond issuance. This paper finds that D&O insurance reduces bond issuance pricing by improving the quality of corporate internal control. There is a stronger governance effect in firms with greater management power, lower levels of investor protection, and greater risk of bankruptcy. Providing empirical clues as to how D&O liability insurance plays the role in corporate governance.

2. Institutional background, theoretical analysis, and research assumptions

2.1. Institutional background

D&O liability insurance is liability insurance purchased by the company, with the purpose of getting the bottom line for the management's risk activities, and has a high coverage rate abroad. According to Towers-Watson's 2014 survey, 97% of American companies hold D&O liability insurance, and the coverage rate in Canada is 86%. Even in Hong Kong, the coverage rate reaches 60% to 70%. The introduction of D&O liability insurance in China was relatively late. On 7 January 2002, the guidelines for corporate governance of listed companies promulgated by the China Securities Regulatory Commission stipulated that listed companies can purchase D&O liability insurance. On 24 January 2002, China's Ping An Insurance Co., Ltd. and Chubb Insurance Group of the United States jointly launched the first D&O liability insurance in China. At the press conference of Ping An Insurance's D&O liability insurance, Vanke Enterprise Co., Ltd., and Ping An Insurance signed the first insurance policy. Wang Shi, the founder of Vanke (000002), became the first insured of the D&O liability insurance. The cumulative compensation limit of the policy is RMB 5 million. Subsequently, in the *Several Opinions on the Reform and Development of the Insurance Industry* issued by the State Council on 15 June 2006, and the *Several Opinions on Accelerating the Development of the Modern Insurance Service Industry* issued by the State Council on 10 August 2014, both mentioned vigorously developing D&O liability insurance.

GAC Changfeng (600,991) created a precedent for China's D&O liability insurance compensation. In mid-November 2011, GAC Changfeng Moto Co., Ltd. reached an agreement with 15 plaintiffs including the defendant, Li Mou, to pay a total of RMB 980,000 for the loss of investment difference, stamp duty loss, interest loss, and litigation costs. AIG China paid RMB 800,000 to GAC Changfeng Company, and it was the first step in the settlement of claims in China's D&O liability insurance cases. On 22 July 2019, the Sci-Tech Innovation Board Market opened, and listed companies in the biomedical, high-tech, and new energy industries have significantly increased their demand for insurance, which has promoted the rapid development of D&O liability insurance. In March 2020, the implementation of the new Securities Law increased the penalties for securities violations by directors, supervisors, and senior managers of listed companies, greatly increased the number of claims and compensation amounts that listed companies may face, and increased the risk exposure of directors and executives. The Luckin Coffee Accounting Fraud in April 2020 further brought the D&O liability insurance into the public eye. The D&O liability insurance purchased by Luckin Coffee Inc was as high as 25 million US dollars. At present, the company has applied for a claim to the insurance company, but there is still some uncertainty about the settlement of claims. On 12 November 2021, in the first-instance judgement of Kangmei Pharmaceutical's False Statement Civil Litigation Case, a total of 52,037 investors finally received RMB 2.459 billion in compensation, and this pushed D&O liability insurance into the public view. As of the end of October 2021, 650 D&O liability insurance companies are insured, with an insurance coverage rate of about 15%.

Then, is D&O liability insurance leading to more bond claims because of its negative governance effect, or is it having a better bottom-up effect and taking responsibility proactively to reduce default losses? However, exactly what role it plays is unclear and requires further empirical testing.

2.2. Theoretical analysis and research assumptions

The existing literature believes that the pricing of corporate bonds is closely related to default risk. The lower the risk of default, the stronger the ability of the company to repay the principal and interest on maturity, and the lower the risk premium demanded by creditors as risk compensation (Altman & Rijken, 2004; Elton et al., 2001). Default risk is mainly related to the level of corporate governance and the ability to cope with risks. The lower the company's financial leverage (Goh & Ederington, 1993), the larger the scale (Chen & Guo, 2008) and the stronger the bond liquidity (Campbell & Taksler, 2003), the less risk a company faces during its operation, and the more likely it is to repay the principal and interest on time, thereby reducing the cost of bond financing. The higher the quality of the company's internal control (Ao et al., 2017), the higher the shareholding ratio of institutional investors (Bhojraj & Sengupta, 2003), and the lower the degree of information asymmetry (Bonsall et al., 2017; H. Zhou et al., 2012), the weaker the management's motivation and ability to grab personal benefits, and the lower the probability of the company's failure to operate, which reduces the probability of future bond defaults from the root cause. The implicit guarantee of the local government plays an important role in the pricing of bond issuance (Han & Hu, 2015; L. Wang & Chen, 2015). Implicit guarantee institutions such as the government can cover the company's default and protect the interests of investors. Therefore, when bonds have implicit guarantees, their issuance are priced relatively low. To sum up, it can be seen that the quality of information, the level of corporate governance and the implicit guarantee are important factors that reduce the pricing of bond issuance. This paper attempts to examine the impact of the subscription of D&O liability insurance on the pricing of bond issuance from two levels of external supervision hypothesis and opportunistic hypothesis.

2.2.1. External oversight hypothesis

D&O liability insurance underwriting companies can exert the effect of external supervision, restrain the self-interested behaviour of the management, improve the level of corporate governance, reduce the risk of future default, and then reduce the pricing of bond issuance. The hypothesis of external supervision effect holds that in order to reduce risks and make full compensation, insurance companies will conduct effective risk assessments on the insured enterprises before taking the insurance, and decide whether to accept the business and design corresponding insurance clauses according to the assessment results. To supervise business decision-making and other aspects to ensure the compliance of enterprises, and play the role of external supervision (O'Sullivan, 2002). When evaluating the risk exposure of insured companies, insurance companies will pay full attention to the past behaviour of directors and executives that may lead to future litigation risks, and tailor insurance policies for each company, thereby improving the effectiveness of supervision. A series of literature show that D&O liability insurance plays an active role in external supervision, which can effectively reduce the company's future stock price crash risk (Yuan et al., 2016), financial restatement (Yuan et al., 2018), and corporate non-compliance probability (C. Li & Xu, 2020), and improve the company's internal control system (Liu et al., 2021). Since the macroeconomic environment and the micro-enterprise environment to which the company belongs have their own risk characteristics in the process of governance, insurance companies can't provide insurance

agreements to insured companies in a standardised format during the underwriting process. Examination of historical evidence of company operations is often the basis for insurance companies to assess their risk of claims, on which insurance companies can formulate relevant premium and insurance policy policies for different company risk characteristics (Hu & Hu, 2017). This paper expects underwriting companies to charge higher premiums, lower liability premiums, and stricter insurance terms to listed companies with higher default risks to reduce default risk losses. In addition, By actively participating in corporate governance, insurance companies can discipline companies for false disclosures or other violations, which in turn improves the quality of corporate governance and reduces default risk, allowing bond market participants to claim lower risk premium compensation. Based on this, we propose the following hypothesis:

H1a: Based on the external supervision hypothesis, subscribing to D&O liability insurance can reduce the pricing of bond issuance.

2.2.2. *The opportunistic hypothesis*

The risk underwriting role played by D&O liability insurance reduces the deterrent effect of the law, induces opportunistic management behaviour and raises the risk of corporate default, which increases the pricing of bond issues. Subscribing for D&O liability insurance can provide the bottom line for the management's risky behaviour, improve the risk tolerance of the company's management (Parsons, 2003), and motivate the management to implement corporate innovation, differentiation strategies, and other risk strategic decisions (Hu & Wang, 2019; Hu et al., 2019). However, risk strategy decisions such as corporate innovation require a lot of financial support on the one hand, and financing methods such as equity pledges, short-term loans, and long-term investment aggravate the potential risks of creditors (Lai et al., 2019; Shi et al., 2021). With high uncertainty, once these major decisions fail, the company will face financial difficulties and the bonds will not be able to repay the principal and interest. Creditors are risk-averse investors, and the high-risk business strategy is contrary to the original intention of creditors to invest, and thus demand higher risk premium compensation. In addition, the risk-taking effect of D&O liability insurance is likely to induce opportunistic behaviours in management, and management is more likely to conduct mergers and acquisitions based on its private benefits (Hao & Hu, 2014), which reduces the performance of corporate mergers and acquisitions (Lin et al., 2011), aggravates the the degree of earnings management (Hu & Zhao, 2017), the occurrence of these behaviours to a certain extent means the failure of the internal control system. The conflict between management and investor agents would intensify after purchasing D&O liability insurance, and the company faces higher operational risks. Therefore, D&O liability insurance increases the likelihood that the company gets into financial distress, i.e. unable to pay its principal and interest, resulting in a higher risk of default and higher issuance rates demanded by creditors. Overall, this paper proposes the following hypothesis:

H1b: Based on the opportunistic hypothesis, the subscription of D&O liability insurance will increase the pricing of bond issuance.

3. Research design

3.1. Sample selection and data sources

This paper takes the corporate bonds issued by A-share listed companies in Shanghai and Shenzhen from 2007 to 2020 as the initial sample. We use 2007 as the starting point of our sample period since the issuance of the first corporate bonds approved by China in 2007. Following existing research (Shi et al., 2017; B. Wang & Shi, 2014), we filter the data: (1) This paper excludes ST and *ST companies due to their particularity; (2) Accounting of listed companies in the financial industry Compared with other industries, the treatment is quite different, and this article will exclude them; (3) We exclude delisted companies. After screening, we finally obtain 1522 observations. We winsorise all continuous variables at the 1st and 99th percentiles of their respective distributions to eliminate the influence of extreme values. Details of corporate bonds are from the *Corporate Bond Prospectus* or *Corporate Bond Issuance Announcement*. The data of D&O liability insurance is obtained manually from the disclosure of shareholders' meetings, board of directors, and annual reports of each listed company. The rest of the data are from the WIND and CSMAR databases.

3.2. Variable definitions

3.2.1. Pricing of corporate bonds

This paper uses the bond credit spread (*Creditspread*) to measure the pricing of bond issuance, that is, the interest rate at the time of bond issuance minus the yield to maturity of treasury bonds with the same maturity structure (Pan et al., 2019). As the bond with the highest credit in the bond market, treasury bonds are the benchmark for the pricing of various other bonds and are closely related to the operation of the macroeconomy (Diebold & Li, 2006; Niu et al., 2016). In this paper, the bond credit spread is the issuance rate of corporate bonds minus the yield to maturity of treasury bonds with the same maturity structure, thereby reducing the impact of the macroeconomic environment on bond pricing.

3.2.2. Directors and executives liability insurance

This paper draws on the practice of Hu et al. (2019) and Hu and Hu (2017), and sets a dummy variable (*Ins*) to measure whether to purchase D&O liability insurance. Specifically, our variable of interest *Ins*, describing whether the company purchases D&O liability insurance, is a dummy variable. The variable is equal to 1 when the Board of Directors proposes the purchase of D&O liability insurance and the proposal is voted through in the shareholders' proxy meeting, or when there is information about the purchase of this insurance in the announcement of the shareholders' proxy meeting, otherwise it is 0.

3.2.3. Other variables

Drawing on the methods of H. Zhou et al. (2012), Shi et al. (2017), and Lin et al. (2019), this paper controls the characteristics of corporate bonds: bond size (*Bondsize*), bond maturity (*Maturity*), bond rate type (*Ratetype*), bond guarantee (*Guarantee*); referring to Hu et al. (2019), it controls company characteristics: company size (*Size*), asset-liability ratio (*Lev*), return on total assets (*ROA*), loss (*Loss*), listing date (*Age*) and the nature of property rights

Table 1. Variable definition.

Variables	Variable symbols	Definitions
Dependent variable	<i>Creditspread</i>	Bond credit spread, see 3.2.1 for details.
Independent variable	<i>Ins</i>	The variable is equal to 1 if the firm purchase the D&O liability insurance, and otherwise is 0.
Control variables	<i>Bondsize</i>	BOND CHARACTERISTICS <i>Bondsize</i> is defined as the logarithm of the size of the bonds issued.
	<i>Maturity</i>	<i>Maturity</i> is Bond issuance period.
	<i>Ratetype</i>	<i>Ratetype</i> is type of bond issue rate that equals 1 if the rate is floating and progressive and 0 if the rate is fixed.
	<i>Guarantee</i>	<i>Guarantee</i> is whether the issue of bonds is secured that equals 1 if there is a third-party guarantee, and 0 otherwise.
	<i>Size</i>	COMPANY CHARACTERISTICS <i>Size</i> is defined as the natural logarithm of total book assets at the end of the period.
	<i>ROA</i>	<i>ROA</i> is return on total assets, defined as Net profit/Total assets.
	<i>Lev</i>	<i>Lev</i> is assets and liabilities, defined as total responsibility/total assets.
	<i>Loss</i>	<i>Loss</i> is whether there was a loss in the previous year that equals 1 if there was a loss, and 0 otherwise.
	<i>Age</i>	<i>Age</i> is defined as the natural logarithm of the difference between the bond issue date and listing date.
	<i>SOE</i>	The variable equals 1 if it is a state-owned enterprise, and 0 otherwise.
	<i>Indu</i>	<i>Indu</i> is an industry dummy variable. The SEC industry code for manufacturing is retained to the last digit of the letter, while others are retained only the first digit.
	<i>Year</i>	<i>Year</i> is a dummy variable. The sample interval is 2007–2020.

(SOE). In addition, we also control the fixed influence of industry and year, see, [Table 1](#) for variable definitions for details.

3.3. Models

In this paper, the OLS model is used to verify the H1. The specific model is as follows:

$$Creditspread_{i,t} = a_0 + a_1 Ins_{i,t-1} + a_2 Controls_{i,t-1} + Indu + Year + \varepsilon \quad (1)$$

If H1a holds, the coefficient of *Ins* should be significantly negative, while the coefficient of *Ins* should be significantly positive if H1b holds.

4. Empirical results

4.1. Descriptive results

[Table 2](#) presents the descriptive statistics for the main variables in the paper. The mean and standard deviation of bond issue pricing (*Creditspread*) are 2.172 and 1.224 respectively, indicating that bond issue pricing is higher than that of risk-free government bonds of the same maturity, and there are significant differences in bond issue pricing among companies. The mean value of the subscriptions to D&O liability insurance (*Ins*) is 0.197, indicating that 19.7% of companies in the sample have purchased D&O liability insurance, indicating that the development of D&O liability insurance in China's capital market is slightly lagging behind. The mean value of *Maturity* is 4.674, indicating that the average maturity of corporate bonds is 4.674 years; the mean value of *Ratetype* is 0.583, indicating that nearly 58% of bonds have floating or progressive interest rates; and the mean value of *Guarantee* is 0.284, indicating that 28.4% of bonds are guaranteed by a third party. The

Table 2. Descriptive statistics.

Variables	N	Mean	Std. Dev.	Min	Median	Max	Range
<i>Creditspread</i>	1522	2.172	1.224	0.299	1.861	5.420	5.120
<i>Ins</i>	1522	0.197	0.398	0.000	0.000	1.000	1.000
<i>Bondsize</i>	1522	20.670	0.811	18.420	20.720	22.520	4.094
<i>Maturity</i>	1522	4.674	1.786	0.247	5.000	15.000	14.75
<i>Ratetype</i>	1522	0.583	0.493	0.000	1.000	1.000	1.000
<i>Guarantee</i>	1522	0.284	0.451	0.000	0.000	1.000	1.000
<i>Size</i>	1522	24.260	1.712	21.020	24.110	28.180	7.164
<i>ROA</i>	1522	0.037	0.029	−0.007	0.029	0.147	0.154
<i>Lev</i>	1522	0.595	0.166	0.178	0.614	0.879	0.701
<i>Loss</i>	1522	0.015	0.122	0.000	0.000	1.000	1.000
<i>Age</i>	1522	2.530	0.627	0.693	2.708	3.367	2.674
<i>SOE</i>	1522	0.657	0.475	0.000	1.000	1.000	1.000

remaining control variables are more consistent with existing research and will not be elaborated upon.

4.2. The regression results of D&O liability insurance and pricing of corporate bonds

Table 3 presents the regression results for D&O liability insurance and bond issue pricing. Column (1) presents the results of the regression between *Ins* and *Creditspread* with a coefficient of -0.530 and significant at the 1% statistical level, indicating that the purchase of D&O liability insurance is negatively related to the spread of bond issues. Column (2) further controls bond insurance characteristics and the findings are largely unchanged. Column (3) controls firm characteristics on the basis of column (2), with a coefficient of -0.174 and significant at the 1% statistical level for *Ins*. The above findings support H1a, indicating that the purchase of D&O liability insurance can play a role in external supervision, improve corporate governance, reduce the risk of corporate default and thus reduce the pricing of bond issues. As for the control variables, *Bondsize* and *Maturity* are negatively related to *Creditspread*, which may be explained by the fact that companies with low default risk are able to issue larger and longer maturity bonds, and the credit spreads of bonds issued by such companies are also relatively low; firm size (*Size*), return on total assets (*ROA*) and nature of ownership (*SOE*) are negatively related to *Creditspread*, indicating that the larger the company and the better its business performance, the stronger its ability to resist risk and the lower the risk of bond default. When the bond issuer is a state-owned enterprise, there is an implicit government guarantee and the bond default loss is lower, thus the lower the bond issue pricing. Corporate financial leverage (*Lev*) is positively correlated with bond issue pricing, indicating that the higher the financial leverage of a company, the higher the operational risk and the higher the risk premium compensation demanded by bond investors.

5. Influencing channel inspection: internal control quality

In the previous section, we explored the impact of subscription to D&O liability insurance on bond issue pricing from the external monitoring hypothesis and the opportunistic hypothesis, and empirically tested that subscription to D&O liability

Table 3. D&O liability insurance and pricing of corporate bonds.

Variables	<i>Creditspread</i>		
	(1)	(2)	(3)
<i>Ins</i>	−0.530*** (−8.27)	−0.304*** (−4.84)	−0.174*** (−3.10)
<i>Bondsize</i>		−0.372*** (−9.86)	−0.211*** (−5.30)
<i>Maturity</i>		−0.137*** (−8.36)	−0.088*** (−6.30)
<i>Ratetype</i>		0.357*** (5.68)	0.093 (1.54)
<i>Guarantee</i>		0.085 (1.20)	0.039 (0.61)
<i>Size</i>			−0.150*** (−5.54)
<i>ROA</i>			−6.220*** (−6.09)
<i>Lev</i>			1.296*** (5.71)
<i>Loss</i>			0.182 (0.93)
<i>Age</i>			0.057 (1.31)
<i>SOE</i>			−1.041*** (−15.81)
<i>_cons</i>	2.476*** (7.34)	11.07*** (12.98)	11.28*** (14.73)
<i>Indu</i>	YES	YES	YES
<i>Year</i>	YES	YES	YES
<i>N</i>	1522	1522	1522
<i>Adj. R2</i>	0.253	0.356	0.509

The numbers in parentheses are T values. ***, ** and * represent significance at the level of 1%, 5%, and 10% respectively. All standard errors have been adjusted for robustness.

insurance helps to reduce bond issue pricing. In this section, we further explore the channels underlying the impact of D&O liability insurance on bond issue pricing. Internal control refers to the methods of self-adjustment, discipline, planning, evaluation and control that a company adopts within the enterprise to achieve its business objectives and to ensure the truthfulness and reliability of accounting information. The positive effect of internal control quality on bond issuance has been unanimously recognised by scholars, for example, high-quality internal control can effectively improve bond credit ratings and reduce bond financing costs (Ao et al., 2017; Zhu, 2021), while subscription to D&O liability insurance can improve the quality of a company's internal control, inhibit management's opportunistic behaviour and reduce the probability of financial restatement (Yuan et al., 2018). We expects that subscribing to D&O liability insurance can improve the quality of a company's internal control and thus influence the pricing of bond issues, that insurers can set stricter insurance terms for companies with higher default risk to reduce default risk losses, and that insurers can actively participate in corporate governance to restrain companies from false disclosures or other illegal behaviours, improve the quality of internal control and reduce default risk. This section therefore further tests whether the quality of internal controls is a possible pathway for subscription to D&O liability insurance to influence the pricing of bond issues.

Referring to the mediation effect test methods of Wen et al. (2004) and Yuan et al. (2018), this paper uses models (1)–(3) to test whether the subscription of D&O liability insurance affects bond issuance and pricing through the quality of internal control.

$$Internalcontrol_{i,t} = \alpha_0 + \alpha_1 Ins_{i,t-1} + \alpha_2 Controls_{i,t-1} + Indu + Year + \varepsilon \quad (2)$$

$$Creditspread_{i,t} = \alpha_0 + \alpha_1 Ins_{i,t-1} + \alpha_2 Internalcontrol_{i,t} + \alpha_3 Controls_{i,t-1} + Indu + Year + \varepsilon \quad (3)$$

Table 4 lists the results of the mediation effect test. Panel A shows the regression results of the first step of the intermediary effect test, subscribing to D&O liability insurance (*Ins*) can reduce the bond issuance price (*Creditspread*); Panel B shows the regression results of the second step of the intermediary effect test, the regression coefficient between *Ins* and *Internalcontrol* is 0.038 and is significantly positive at the 1% level, which indicates that the subscription of D&O liability insurance can improve the quality of the company's internal control; Panel C shows the results of the third step test of the intermediary effect, the regression results of *Ins* and *Internalcontrol* or *Creditspread* were all significantly negative, and the regression coefficient of *Ins* changed from -0.174 to -0.165 . Referring to the Sobel intermediary factor test method of Baron & Kenny (1986), The Sobel Z test was -2.386 and was significant at the 5% statistical level, indicating that the quality of internal control played a partial mediating effect. The above results show that the subscription of D&O liability insurance can improve the quality of the company's internal control, inhibit the opportunistic behaviour of management, reduce the risk of bond default and affect the pricing of bond issuance.

6. Additional tests

6.1. D&O liability insurance and pricing of corporate bonds: a cross-sectional analysis

6.1.1. D&O liability insurance and pricing of corporate bonds: the impact of management power

The previous analysis demonstrates that D&O liability insurance underwriters are able to exert an external oversight effect that restrains management's self-interest, improves corporate governance, reduces the risk of future defaults, and in turn reduces the pricing of bond issues. When management has more power, executives are more likely to extract private benefits through on-the-job spending (T. Zhang & Sha, 2014), exacerbating corruption (M. Zhou et al., 2016) and making corporate agency problems more serious. At this time, D&O liability insurance can play a stronger role of external supervision and governance, restrain management's opportunistic behaviour, inhibit management's on-the-job consumption and other private profit-grabbing behaviours, improve corporate governance and reduce bond default risk. Therefore, we expect that when the management has more power, the subscription to D&O liability insurance can play a stronger role in external monitoring and governance, and the negative relationship with bond issue pricing is more significant.

Table 4. Mediating effect: quality of internal control.

Panel A (without test for mediators)	
	<i>Creditspread</i>
<i>Ins</i>	−0.174*** (−3.10)
<i>Controls</i>	Yes
<i>Indu</i>	Yes
<i>Year</i>	Yes
<i>N</i>	1522
<i>Adj. R2</i>	0.509
Panel B (with test for mediators)	
	<i>Internalcontrol</i>
<i>Ins</i>	0.038*** (2.96)
<i>Controls</i>	Yes
<i>Indu</i>	Yes
<i>Year</i>	Yes
<i>N</i>	1522
<i>Adj. R2</i>	0.447
Panel C (with test for mediators)	
	<i>Creditspread</i>
<i>Ins</i>	−0.165*** (−2.93)
<i>Internalcontrol</i>	−0.251** (−2.33)
<i>Controls</i>	Yes
<i>Indu</i>	Yes
<i>Year</i>	Yes
<i>N</i>	1522
<i>Adj. R2</i>	0.511
<i>Sobel Z</i>	−2.386**
<i>P> Z </i>	0.016

Notes: The numbers in brackets are T values. ***, **, and * represent significance at 1%, 5%, and 10% levels, respectively. All standard errors have been adjusted for robustness. All control variables are the same as the model (1). To be consistent, to save space, we do not report control variables and intercept terms.

6.1.2. D&O liability insurance and pricing of corporate bonds: implications for investor protection

The external oversight hypothesis focuses on the principal-agent theory, in which a company uses funds for risky investments to the detriment of creditors in a situation of information asymmetry, and when the company subscribes to D&O liability insurance, the company passes the risk to a third-party insurer, which is required to pay for litigation claims against the insured manager for actions detrimental to shareholders' interests. As indirect bearers of the consequences of a manager's actions, insurers have a greater incentive than other supervisors to exercise their supervisory powers. This paper expects that when bond market participants face weak investor protection mechanisms, the purchase of D&O liability insurance by companies can be more effective in providing external oversight, discouraging management from taking personal advantage and reducing the pricing of bond issues. Therefore, the paper expects that the negative relationship between the subscription to D&O liability insurance and bond issue pricing is more significant when the investor protection mechanism is weak.

6.1.3. *D&O liability insurance and pricing of corporate bonds: the impact of financial risk*

The pricing of bond issues is mainly concerned with the company's ability to repay capital and interest on maturity, and subscription to D&O liability insurance can, on the one hand, play an external supervisory role, improve corporate governance and reduce the company's financial risk; on the other hand, D&O liability insurance can play the role of a third party default underwriter. Creditors are compensated and losses from bond defaults are reduced. We expect that when a company's financial risk is high, D&O liability insurance will play a stronger role in external oversight and governance, reducing the company's financial risk, and when a company has difficulty raising funds quickly to pay capital and interest in the event of a default, D&O liability insurance will play a third-party guarantee role, reducing bond default losses. Therefore, we expect that the negative relationship between subscription to D&O liability insurance and bond issue pricing is more significant when the financial risk is high.

6.1.4. *A cross-sectional analysis*

In order to test the above hypothesis, this paper draws on the research method of Wang et al. (2015), and uses whether the two positions of the management are combined to measure the power. If the chairman and the general manager are the same person, it is considered that the management has more power, otherwise less power. Referring to the method of H. Zhang and Wang (2018), the investor protection index of Beijing Technology and Business University was used to measure the degree of investor protection from the dimensions of accounting information quality, internal control, external audit and financial operation. If above the median, the investor protection level is considered to be high, otherwise, the investor protection level is considered to be low; the financial risk adopts the bankruptcy risk Z index in the WIND database. The larger the index, the lower the bankruptcy risk. If the Z index is higher than the annual median, the financial risk is considered low, otherwise the financial risk is high.

This paper re-estimates the model (1) according to management power, investor protection and financial risk grouping, and the test results are shown in Table 5. Columns (1) and (2) show that when the management has great power, the regression coefficient of *Ins* is -0.888 and is significant at the 1% level. When the management has little power, the regression coefficient of *Ins* is -0.141 and is significant at the 5% level; we carried out the coefficient difference test between groups, the coefficient difference is -0.747 and significant at the 1% level, above results show that when the management has great power, the external supervision effect of D&O liability insurance is stronger. It has a more significant effect on reducing the default risk of bonds, and thus has a stronger impact on the pricing of bond issuance. Columns (3) – (6) also support our hypothesis.

6.2. *The influence of D&O liability insurance on bond contractual terms*

Bond contractual terms are an important part of corporate bonds, which can effectively reduce the risk of bond default and protect the rights and interests of bond investors. Default risk is a key influence on the setting of bond contractual terms (Billett et al., 2006), and the higher the level of corporate governance, the lower the bond contractual terms (Qi

et al., 2011). T. Wang and Shi (2021) find, based on Chinese corporate bonds, that institutional investors mitigate agency conflicts between bond issuers and bond investors by improving corporate governance and the information environment, thereby reducing the use of restrictive bond contractual terms. We expect the purchase of D&O liability insurance to have two distinct impacts on the setting of bond contractual terms. On the one hand, D&O liability insurance plays an external monitoring and governance role, improving corporate governance and reducing the use of corporate governance contractual terms; on the other hand, D&O liability insurance creates a risk-pocketing effect on management's financial risk, inducing management to act opportunistically and implement risky decisions such as innovation and differentiation strategies. If these major decisions fail, the company will be in financial difficulty and will not be able to repay its capital and interest. Therefore, creditors may set more restrictive terms on investment and financing for companies subscribing to the D&O liability insurance, such as suspending major foreign investments and restricting the pledge of assets to protect their rights and interests.

Drawing on the research of Shi et al. (2017), in this paper, the contractual terms of corporate bonds are divided into investment & financing contractual terms (moratorium on major foreign investments, restrictions on acquisitions or mergers, restrictions on the sale of assets, restrictions on pledging assets and restrictions on connected transactions), corporate governance contractual terms (restrictions on dividends to shareholders, restrictions on executive remuneration and non-transferability of key responsible persons) and option contractual terms (adjustable interest rates, early repayment, redemption, resale, technical default and the establishment of a debt service fund). The results are shown in Table 6. Column (1) shows the results of the regression between D&O liability insurance and investment & financing contractual terms, with the regression coefficient of 0.864 and significant at the 1% level, indicating that creditors will demand more contractual terms to protect their rights and interests in order to prevent executives from making major investment decisions. The regression coefficient is 0.985 and significant at the 1% statistical level, indicating that creditors expect companies that purchase D&O liability insurance to make risky strategic decisions and therefore set more option-based contractual terms such as interest rate adjustment and risk default compensation to protect themselves.

6.3. The influence of D&O liability insurance on bond credit rating and bond maturity

This section further examines the impact of subscription to D&O liability insurance on the credit rating of the debt and the maturity of the bond. A bond credit rating is a rating that indicates the creditworthiness of a debtor by assessing the reliability of a particular bond issued by an independent legal entity in terms of its ability to meet its debt service obligations. D&O liability insurance has two main functions: external monitoring and governance and risk underwriting. Xiao and Liao (2007) found that the more serious the short-selling of a company by its majority shareholders, the weaker the protection of creditors and the shorter the maturity of the bond. In addition, by continuously monitoring the management's business decision-making activities, D&O liability insurance can prevent major mistakes in decision-making and improve the soundness of the company's operations. Moreover, due to the uncertainty in the course of business, even if a company faces the risk of not being able to repay its bonds, the

Table 5. D&O liability insurance and pricing of corporate bonds: a cross-sectional analysis.

Variables	Management power		Investor protection		Financial risk	
	Large	Small	Poor	Good	High	Low
	Creditspread (1)	Creditspread (2)	Creditspread (3)	Creditspread (4)	Creditspread (5)	Creditspread (6)
<i>Ins</i>	-0.888*** (-3.19)	-0.141** (-2.36)	-0.332*** (-2.62)	-0.092 (-1.53)	-0.188*** (-2.70)	-0.027 (-0.25)
<i>Controls</i>	YES	YES	YES	YES	YES	YES
<i>Year</i>	YES	YES	YES	YES	YES	YES
<i>Indu</i>	YES	YES	YES	YES	YES	YES
<i>N</i>	240	1282	754	768	758	764
<i>Adj.R2</i>	0.476	0.516	0.420	0.597	0.552	0.491
Coefficient of difference test between groups			(1) - (2): -0.747*** (p = 0.000)			
			(3) - (4): -0.240** (p = 0.015)			
			(5) - (6): -0.161** (p = 0.040)			

Notes: The numbers in brackets are T values. ***, **, and * represent significance at 1%, 5%, and 10% levels, respectively. All standard errors have been adjusted for robustness.

Table 6. D&O liability insurance and bond contractual terms.

Variables	Investment & financing contractual terms (1)	Corporate governance contractual terms (2)	Option contractual terms (3)
<i>Ins</i>	0.864*** (5.56)	-0.384* (-1.84)	0.985*** (6.58)
<i>Controls</i>	YES	YES	YES
<i>Year</i>	YES	YES	YES
<i>Indu</i>	YES	YES	YES
<i>N</i>	1522	1522	1522
<i>Pseudo. R2</i>	0.056	0.172	0.087

Notes: The numbers in brackets are Z values. ***, **, and * represent significance at 1%, 5%, and 10% levels, respectively. All standard errors have been adjusted for robustness.

risk underwriting function of the D&O liability insurance can provide some compensation in lieu of management, reducing the likelihood of the bonds not being repaid. Therefore, we expect bonds issued by companies subscribing to the D&O liability insurance to have a higher credit rating.

Referring to the processing methods of Chen and Li (2013), Lin, Officer et al. (2013), this paper assigns the bond credit rating AA- to 1, AA to 2, AA+ to 3, and AAA to 4, thus define the multivariate variable of *Credit_rating*(=1, 2, 3, 4) and uses the Ologit model to test. Bond maturity measured by *Maturity*. The regression results are shown in Table 7. The column (1) is the influence of D&O liability insurance on the bond credit rating. The coefficient of *Ins* is 0.778 and is significant at the level of 1%. The column (2) is the influence of D&O liability insurance on bond maturity. The coefficient of *Ins* is 0.238 and is significant at the level of 5%. The above results show that D&O liability insurance can play its role in supervision and governance, and effectively improve bond credit rating and bond maturity.

7. Robustness checks

This paper describes the effect of subscription to D&O liability insurance on bond issuance and its underlying mechanisms from the perspective of external monitoring. However, we argue that there may be a very different path to explain the phenomenon. For example, companies with better governance tend to choose D&O liability insurance, while such companies issue bonds with inherently higher credit ratings and lower credit spreads. Based on this, we conducted an endogeneity test to control for the effect of endogeneity on the conclusions of this paper.

7.1. Instrumental variable regression

Referring to Yuan et al. (2018), we select the overseas-experience of executives (*Foreign-experience*) as an instrumental variable for subscribing to D&O liability insurance. The take-up rate of D&O liability insurance among firms in mature capital markets exceeds 90%, and executives with overseas backgrounds have in-depth knowledge of the market mechanism of D&O liability insurance and are more willing to purchase D&O liability insurance as a risk hedging mechanism. At the same time, there is no literature showing that the overseas background of executives has a direct impact on the pricing of

Table 7. The influence of D&O liability insurance on bond credit rating and bond maturity.

Variables	Credit_rating (1)	Maturity (2)
<i>Ins</i>	0.778*** (3.14)	0.238** (2.01)
<i>Controls</i>	YES	YES
<i>Year</i>	YES	YES
<i>Indu</i>	YES	YES
<i>N</i>	1522	1522
<i>Adj_R2/Pseudo R2</i>	0.487	0.373

Notes: The numbers in brackets are T values ***, **, and * represent significance at 1%, 5%, and 10% levels, respectively. All standard errors are adjusted for robustness.

corporate bond issues, thus *Foreign-experience* satisfies the relevance and exogeneity requirements. The regression results are shown in Table 8, with column (1) reporting the correlation between the instrumental variable and the explanatory variable. The coefficient of *Foreign* is 0.632 and is statistically significant at the 1% level, suggesting that executives with an overseas background are more likely to subscribe to D&O liability insurance. Column (2) reports the regression results for the instrumental variables, with the regression coefficient on *Ins* and *Creditspread* being significantly negative at the 5% level, which remains consistent with the previous results.

7.2. Propensity score matching

Compared to foreign capital markets with a rate of over 97%, the purchase rate of D&O liability insurance for Chinese listed companies is lower, so it is likely that companies subscribing to D&O liability insurance have been screened out during the purchase process, leaving behind companies with inherently better corporate governance. Based on such a possibility, we used the propensity score matching method to control for the impact of differences in firm characteristics on the findings of this paper. Results remain robust after controlling for potential endogeneity issues. The conclusions will not be shown due to space limitations.

7.3. Heckman two-step method

Since the purchase of D&O liability insurance is non-random, then there may be a sample self-selection problem in the regression process, we use the Heckman two-step method to control for the impact of potential sample self-selection problems on the empirical results. Results remain robust after controlling for potential endogeneity issues. The conclusions will not be shown due to space limitations.

8. Conclusions

The corporate governance effect of D&O liability insurance is a hot topic in the field of corporate finance, and its practical role in corporate governance has been controversial due to the external monitoring effect and opportunistic effect, which has hindered the

Table 8. Instrumental variable regression.

	Ins	Creditspread
Variables	(1)	(2)
<i>Foreign-experience</i>	0.632*** (5.78)	
<i>Ins</i>		-1.169** (-2.41)
<i>Controls</i>	YES	YES
<i>Year</i>	YES	YES
<i>Indu</i>	YES	YES
<i>N</i>	1522	1522
<i>Adj.R2</i>	0.191	0.326

Notes: The numbers in brackets are T values. ***, **, and * represent significance at 1%, 5%, and 10% levels, respectively. All standard errors have been adjusted for robustness.

promotion and development of D&O liability insurance in China. This paper examines the role of D&O liability insurance in corporate governance from the perspective of bond market participants. The study finds that the purchase of D&O liability insurance can effectively reduce the pricing of bond issues, and the findings remain robust after controlling for potential endogeneity issues, including through the instrumental variables approach. Path tests suggest that the purchase of D&O liability insurance improves the quality of a company's internal controls as an important path for influencing bond issue pricing. Further research finds that the impact of D&O liability insurance on bond issue pricing is stronger when management has more power, poorer investor protection or higher financial risk; D&O liability insurance can play a corporate governance role, with creditors setting fewer governance-type contractual terms, but increasing investment and option-type contractual terms to constrain management's risky investment behaviour and protect their own interests; furthermore, companies that purchase D&O liability insurance issue bonds with higher credit ratings and longer maturities.

This paper examines the impact of D&O liability insurance on the pricing of bond issues, taking the issuance of corporate bonds in China as an entry point. Theoretically, this paper analyses the corporate governance role of D&O liability insurance from the perspective of bond issue pricing. D&O liability insurance can exert external oversight and governance effects, improve the quality of a company's internal controls, inhibit management's self-interest and reduce the risk of bond defaults, thereby reducing bond issue pricing. Thus, this paper enriches the literature on the corporate governance effects of D&O liability insurance and broadening the study of factors influencing bond issue pricing. In practical terms, the research in this paper provides empirical evidence to promote effective pricing of bonds in the Chinese bond market. China's insistence on pursuing an independent innovation path with Chinese characteristics and implementing an innovation-driven development strategy cannot be achieved without the strong support of the capital market. Therefore, the stable development of the bond market is of paramount importance, which is related to stimulating the vitality of market players and promoting high-quality corporate development. The Fifth Plenary Session of the 19th CPC Central Committee proposed to improve the financing structure, vigorously develop the bond market and multi-level capital market, co-ordinate the planning of financial infrastructure and build a financial infrastructure management system that can adapt to

the two-way opening of finance. Effective pricing of bonds plays a driving and leading role in promoting the smooth development of the bond market. In short, only when the bond pricing mechanism is continuously improved can the bond market vitality be continuously stimulated, thus promoting high-quality corporate development.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This study is funded by The National Natural Science Foundation of China [Project No. 72172062], and The Key Project of Philosophy and Social Science Research in Colleges and Universities in Jiangsu Province [No.2022SJZD013].

References

- Altman, E.I., & Rijken, H.A. (2004). How rating agencies achieve rating stability. *Journal of Banking & Finance*, 28(11), 2679–2714. <https://doi.org/10.1016/j.jbankfin.2004.06.006>
- Ao, X., Lin, W., & Li, X. (2017). Internal control quality and bond credit rating. *Audit Research*, 2, 57–64. (In Chinese). [内部控制质量与债券信用评级 - 中国知网(cnki.net)] (https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2017&filename=SJYZ201702010&uniplatform=NZKPT&v=lamX2O2bqE9s10ppX1f9fERntzt7ol4a_4YuZ53XWDCPqK2h-BMhrEqHFTEuDUsg)
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173. <https://psycnet.apa.org/buy/1987-13085-001>
- Bhojraj, S., & Sengupta, P. (2003). Effect of corporate governance on bond ratings and yields: The role of institutional investors and outside directors. *The Journal of Business*, 76(3), 455–475. <https://doi.org/10.1086/344114>
- Billett, M., King, D., & Mauer, D. (2006). The effect of growth opportunities on the joint choice of leverage, maturity and covenants. *Journal of Finance*. <https://doi.org/10.1111/j.1540-6261.2007.01221.x>
- Bonsall, S.B., IV, Koharki, K., & Neamtiu, M. (2017). When do differences in credit rating methodologies matter? Evidence from high information uncertainty borrowers. *The Accounting Review*, 92(4), 53–79. <https://doi.org/10.2308/accr-51641>
- Campbell, J.Y., & Taksler, G.B. (2003). Equity volatility and corporate bond yields. *The Journal of Finance*, 58(6), 2321–2350. <https://doi.org/10.1046/j.1540-6261.2003.00607.x>
- Chen, C., & Guo, Z. (2008). My country's corporate bond financing, financial risk and bond rating. *Contemporary Finance*, 2, 39–48. (In Chinese). [我国企业债券融资、财务风险和债券评级 - 中国知网 (cnki.net)] (https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFD2008&filename=DDCJ200802012&uniplatform=NZKPT&v=QwWwO3mZFJXeO59lq4MwGTuQloWimoXkC4EPfu1WMJAEStSqdkS0okjHs_0_7gxP)
- Chen, C., & Li, R. (2013). Can auditing improve the credit rating of corporate bonds. *Auditing Research*, 3, 59–66. (In Chinese). [审计能否提高公司债券的信用评级 - 中国知网 (cnki.net)] (https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFD2013&filename=SJYZ201303012&uniplatform=NZKPT&v=3nYaUF7i8xtFV00_4Sqgcf3a68sauCaJWCO2yl8T7rg1nZaEnslJQtrWUD1nLhGi)
- Chen, G., Lian, L., & Zhu, S. (2021). Multiple credit ratings and bond financing costs: Empirical evidence from China's bond market. *Financial Research*, 2, 94–113. (In Chinese). [多重信用评级与债券融资成本——来自中国债券市场的经验证据 - 中国知网 (cnki.net)] (<https://kns.cnki.net/>)

- kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2021&filename=JRYJ202102006&uniplatform=NZKPT&v=Dy2OTraPRyhj5MVGbsLitmZ6oKlaJ7PRNUCRjCADxSWPCfSd8sJDvXgG4h_XhpT)
- Core, J.E. (2000). The directors' and officers' insurance premium: An outside assessment of the quality of corporate governance. *Journal of Law, Economics, and Organization*, 16(2), 449–477. <https://doi.org/10.1093/jleo/16.2.449>
- Diebold, F.X., & Li, C. (2006). Forecasting the term structure of government bond yields. *Journal of Econometrics*, 130(2), 337–364. <https://doi.org/10.1016/j.jeconom.2005.03.005>
- Elton, E.J., Gruber, M.J., Agrawal, D., & Mann, C. (2001). Explaining the rate spread on corporate bonds. *The Journal of Finance*, 56(1), 247–277. <https://doi.org/10.1111/0022-1082.00324>
- Feng, L., Kong, X., & Cao, H. (2017). Directors' and officers' liability insurance and cost of equity capital: Empirical research evidence from information quality channels. *Accounting Research*, 11, 65–71. (In Chinese). [董事高管责任保险与权益资本成本——来自信息质量渠道的实证研究证据 - 中国知网 (cnki.net)] (https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2018&filename=KJYJ201711012&uniplatform=NZKPT&v=g76wGyVMSVphJXYzFzl9H7Xm886sk4lvD1zkhoucS5laEdhZfQk_uEeATvPECfli)
- Frank, D.J., & Driessen, J. (2012). Liquidity risk Premia in corporate bond markets. *Quarterly Journal of Finance*, 2(2), 1–34. <https://doi.org/10.1142/S2010139212500061>
- Gao, H., & Wen, H. (2021). The impact of ecological rule of law on the cost of bond financing: Based on a quasi-natural experiment established by my country's environmental protection court. *Financial Research*, 12, 133–151. (In Chinese). [生态法治对债券融资成本的影响——基于我国环保法庭设立的准自然实验 - 中国知网 (cnki.net)] (<https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2022&filename=JRYJ202112008&uniplatform=NZKPT&v=Dy2OTraPRz0N-cEvrouLCXejdl3VkpUilpv1xEZ9Uq1GTW1kj7ZLcfRylVgfoR>)
- Goh, J.C., & Ederington, L.H. (1993). Is a bond rating downgrade bad news, good news, or no news for stockholders? *The Journal of Finance*, 48(5), 2001–2008. <https://doi.org/10.1111/j.1540-6261.1993.tb05139.x>
- Han, P., & Hu, Y. (2015). Can government implicit guarantees reduce the financing cost of bonds? —An empirical study on bonds of state-owned enterprises and local financing platforms. *Financial Research*, 3, 116–130. (In Chinese). [政府隐性担保一定能降低债券的融资成本吗?——关于国有企业和地方融资平台债券的实证研究 - 中国知网 (cnki.net)] (<https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2015&filename=JRYJ201503008&uniplatform=NZKPT&v=F6Bc3AONy6aSAym6Axm1oNbUUCzEMOj8QIY4ZZBbYkjSNYwTZ36gcz6CYAbJs->)
- Hao, Z., & Hu, G. (2014). A Study of directors' and officers' liability insurance, private income, and corporate M&A behavior. *Insurance Research*, 12, 78–89. (In Chinese). [董事高管责任保险、私有收益与公司并购行为的研究 - 中国知网 (cnki.net)] (https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2015&filename=BXJYJ201412010&uniplatform=NZKPT&v=rKR3ftpJWpqsmBTHuZ2-KT3KNUqnkkKJlNUnm4aWZDBdvqo7maeMs_uqugya)
- Harris, L.E., & Piwowar, M.S. (2006). Secondary trading costs in the municipal bond market. *The Journal of Finance*, 61(3), 1361–1397. <https://doi.org/10.1111/j.1540-6261.2006.00875.x>
- Huang, Z., & Guo, Y. (2021). Central bank collateral framework, bond credit spread and corporate financing cost. *Economic Research*, 1, 105–121. (In Chinese). [央行担保品框架、债券信用利差与企业融资成本 - 中国知网 (cnki.net)] (https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2021&filename=JJYJ202101008&uniplatform=NZKPT&v=9xsOIl1Msik070gMo-esbHlfcHeKLZkuQ-Ml52gTa2HldEKLPCb83H_5PgWkAEJX)
- Hu, G., & Hu, J. (2014). Directors' and officers' liability insurance and corporate performance: An empirical analysis based on China's a-share listed companies. *Economic Review*, 5, 136–147. (In Chinese). <https://doi.org/10.19361/j.er.2014.05.012>
- Hu, G., & Hu, J. (2017). Directors' and officers' liability insurance and enterprise risk taking: Theoretical path and empirical evidence. *Accounting Research*, 5, 40–46. (In Chinese). [董事高管责任保险与企业风险承担:理论路径与经验证据 - 中国知网 (cnki.net)] (<https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2017&filename=>

- K J Y J 2 0 1 7 0 5 0 0 6 & u n i p l a t f o r m = N Z K P T & v = g76wGyVMSVoE5LSLSBCd48FxmM4BWSvPOOV5jSYNttypbAgf-JNHakx_lx_nC3jh)
- Hu, G., & Wang, Y. (2019). Directors' and officers' liability insurance and corporate differentiation strategy. *Business Economics and Management*, 11, 55–69. (In Chinese). [董事高管责任保险与企业差异化战略 - 中国知网 (cnki.net)] (<https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2019&filename=SYJG201911007&uniplatform=NZKPT&v=09zTbykK2Hov1zwK0je2d3KUwlvd6-X1Ld9kL8UM7nGp2HmJQixd8fJlfzMB05VW>)
- Hu, G., & Zhao, Y. (2017, December 2). Corporate governance level, directors' and officers' liability insurance and earnings management. *Financial Theory and Practice*, 2 74–80. (In Chinese). <https://doi.org/10.16339/j.cnki.hdxbcjb>
- Hu, G., Zhao, Y., & Hu, J. (2019). D&O insurance, risk tolerance and enterprise independent innovation. *Management World*, 8, 121–135. (In Chinese). [D&O保险、风险容忍与企业自主创新 - 中国知网 (cnki.net)] (<https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2019&filename=GLSJ201908012&uniplatform=NZKPT&v=tl3YudqOkulbv1FX5KPqL-4yIVcjiORUD-vs1ZSAguAN4bzg6fDhTYAAL8cHFUb3>)
- Lai, L., Tang, Y., Xia, X., & Ma, Y. (2019). Does directors' and officers' liability insurance reduce corporate risk? —Based on the perspective of short-term loan, long-term investment, and credit acquisition. *Management World*, 10, 160–171. (In Chinese). [董事高管责任保险降低了企业风险吗?——基于短贷长投和信贷获取的视角 - 中国知网 (cnki.net)] (<https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2019&filename=GLSJ201910015&uniplatform=NZKPT&v=tl3YudqOkuL26mjXQsju9vk7qm1TLuQ0zIVgqhAQnLjFnS-WqF9ENnVGRYfkQTN>)
- Li, K.F., & Liao, Y.P. (2014). Directors' and officers' liability insurance and investment efficiency: Evidence from Taiwan. *Pacific-Basin Finance Journal*, 29, 18–34. <https://doi.org/10.1016/j.pacfin.2014.03.001>
- Ling, S., & Bai, R. (2017). The Corporate governance role of directors' and officers' liability insurance —Based on the perspective of double agency costs. *Finance and Trade Economics*, 12, 95–110. (In Chinese). [董事高管责任保险的公司治理作用——基于双重代理成本的视角 - 中国知网 (cnki.net)] (https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2018&filename=CMJJ201712008&uniplatform=NZKPT&v=5AsxPj55uuDhs6UHyfpil7EHs_yv3Y2FE8pMGnIZHnVJ_RsrgeVMxZD2_ZGVL3XC)
- Lin, W., Liu, Y., & Zhao, Z. (2019). Underwriters' ratings and bond credit spreads: Empirical evidence from regulations on the classification of securities companies. *China Industrial Economy*, 1, 174–192. (In Chinese). [承销商评级与债券信用利差——来自《证券公司分类监管规定》的经验证据 - 中国知网 (cnki.net)] (https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2019&filename=GGYY201901013&uniplatform=NZKPT&v=KZLB3_urHJDg2EAFzFnEkt-X8rZuN096oKFpdNfZpfjs0RmeNfTEMOD9cm3Q1XvQ6)
- Lin, W., Li, G., Wang, H., & Liu, L. (2013). Analyst forecasts and corporate bond credit spreads——Based on Chinese corporate bond data from 2008 to 2012. *Accounting Research*, 8, 69–75+97. (In Chinese). [分析师预测与企业债券信用利差——基于2008-2012年中国企业债券数据 - 中国知网 (cnki.net)] (https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFD2013&filename=KJYJ201308010&uniplatform=NZKPT&v=DLTQkGOxEfewdaSIFAor_bQnFzprfgGzRCuPqyQFBBYl7_x0pgFTJl5n-fm9RnVH)
- Lin, C., Officer, M.S., Wang, R., & Zou, H. (2013). Directors' and officers' liability insurance and loan spreads. *Journal of Financial Economics*, 110(1), 37–60. <https://doi.org/10.1016/j.jfineco.2013.04.005>
- Lin, C., Officer, M.S., & Zou, H. (2011). Directors' and officers' liability insurance and acquisition outcomes. *Journal of Financial Economics*, 102(3), 507–525. <https://doi.org/10.1016/j.jfineco.2011.08.004>
- Liu, B., Fu, J., & Hu, G. (2021). Directors' and officers' liability insurance, property rights and construction of internal control. *Research Management*, 7, 171–178. (In Chinese). [董事高管责任保险、产权与内部控制构建 - 中国知网 (cnki.net)] (<https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2021&filename=KYGL202107019&uniplatform=NZKPT&v=AOcUFPWciSrQJAQ-HhI0TDFG09vEKq8YQxErPihVdggc9NhXK6uq75MIZHsBlNJ>)

- Li, C., & Xu, R. (2020). Insurance governance and corporate violation: A study on the governance effect of directors' and officers' liability insurance. *Financial Research*, 6, 188–206. (In Chinese). [保险治理与公司违规——董事高管责任保险的治理效应研究 - 中国知网 (cnki.net)] (https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2020&filename=JRYJ202006011&uniplatform=NZKPT&v=ibqwsTcW_G35b4wuWmuagKtAJReMhX0ibXKbzq8lENgjEmx5u0ZN0C_gor50HdRe)
- Merton, R.C. (1974). On the pricing of corporate debt: The risk structure of interest rates. *The Journal of Finance*, 29(2), 449–470. <https://doi.org/10.2307/2978814>
- Niu, L., Hong, Z., & Chen, G. (2016). Local government debt concerns and risk transmission——Based on the analysis of treasury bond yield and urban investment bond spread. *Economic Research*, 11, 83–95. (In Chinese). [地方政府债务隐忧及其风险传导——基于国债收益率与城投债利差的分析 - 中国知网 (cnki.net)] (https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2017&filename=JJYJ201611008&uniplatform=NZKPT&v=m1y3GYTrLsl5mlykphBx_24GhLVy9EPrtIDo9YmxGCDYbpu1Kpz9QT4ZhpF0GeY)
- O'Sullivan, N. (2002). The demand for directors' and officers' insurance by large UK companies. *European Management Journal*, 20(5), 574–583. [https://doi.org/10.1016/S0263-2373\(02\)00096-8](https://doi.org/10.1016/S0263-2373(02)00096-8)
- Pan, J., Yu, Y., Wang, L., & Jing, X. (2019). Monetary policy, issuer differences and local government bond pricing. *Accounting Research*, 12, 72–77. (In Chinese). [货币政策、发行主体差异与地方政府债券定价 - 中国知网 (cnki.net)] (https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2020&filename=KJYJ201912011&uniplatform=NZKPT&v=sFD8SYfSaVD5uu31WoixsWjNIZ0shiv-KezMeJpHQfefSRvMU14OP5R7aF4DL_tQ)
- Parsons, C. (2003). Moral hazard in liability insurance. *The Geneva Papers on Risk and Insurance-Issues and Practice*, 28(3), 448–471. <https://doi.org/10.1111/1468-0440.00236>
- Qi, Y., Roth, L., & Wald, J. (2011). How legal environments affect the use of bond covenants. *Journal of International Business Studies*, 42, 235–262. <https://doi.org/10.1057/jibs.2010.52>
- Shi, Y., Song, M., Li, F., & Zhen, H. (2021). Controlling shareholder's equity pledge and corporate creditor's interest protection: Evidence from China's bond market. *Economic Research*, 8, 109–126. (In Chinese). [控股股东股权质押与企业债权人利益保护——来自中国债券市场的证据 - 中国知网 (cnki.net)] (https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2021&filename=JJYJ202108008&uniplatform=NZKPT&v=9xsOiL1MsimdND0GjWper_f2c22ebuy3gyPayDgYYEekdyfocn_KFxDIOKDuQDy)
- Shi, Y., Tian, Y., & Ma, X. (2017). Covenant terms, debt financing and corporate growth: An empirical study based on Chinese corporate bonds. *Accounting Research*, 9, 41–47. (In Chinese). [契约条款、债务融资与企业成长——基于中国公司债的经验研究 - 中国知网 (cnki.net)] (https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2018&filename=KJYJ201709006&uniplatform=NZKPT&v=g76wGyVMsVognSivIE_MIOa0MJW6oUnYKA8cAhTBTAnpvYMIUw5hn6MA9UYWwbX)
- Wang, H., Cao, F., & Ye, K. (2015). Supervision or hollowing out: Shareholding ratio of major shareholders and stock price crash risk. *Management World*, 2, 45–57. (In Chinese). [监督还是掏空:大股东持股比例与股价崩盘风险 - 中国知网 (cnki.net)] (<https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2015&filename=GLSJ201502008&uniplatform=NZKPT&v=iAqhAQL6GqpOzpgCfmXLnoa6XGwnw0Rnb5WxqYYIXwVtddhtqNb4SzlpHBW8qcZG>)
- Wang, L., & Chen, S. (2015). Government implicit guarantee, debt default and interest rate decision. *Financial Research*, 9, 66–81. (In Chinese). [政府隐性担保、债务违约与利率决定 - 中国知网 (cnki.net)] (<https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2015&filename=JRYJ201509005&uniplatform=NZKPT&v=F6Bc3AONY6YPdk6xm3yxPHbWDXD6JtRPVdwcvc7wbVAyfKvF4P-in5OmQ6cxv44KN>)
- Wang, B., & Shi, D. (2014). Research on the role of accounting information on bond pricing under market characteristics. *Accounting Research*, 4, 19–26. (In Chinese). [市场特征下会计信息对债券定价的作用研究 - 中国知网 (cnki.net)] (https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFD2014&filename=KJYJ201404003&uniplatform=NZKPT&v=ggFBt43kADL5toUWx4-JPWRWZh_nFa3w_Ns1iBBjasvTK150t87MYOwq8-fUTQk8)
- Wang, T., & Shi, Y. (2021). Does institutional investor shareholding affect the design of restrictive clauses in corporate bonds. *Accounting Research*, 8, 124–136. (In Chinese). [机构投资者持股影响

- 公司债券限制性条款设计吗 - 中国知网 (cnki.net)] (https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2021&filename=KJYJ202108009&uniplatform=NZKPT&v=QN9HGNXZmCECPViyg_5tA83O2bBcym38oH-pGjwG4-ug65vlm7WCe4qdOYgo9N)
- Weinstein, M. (1981). The systematic risk of corporate bonds. *Journal of Financial and Quantitative Analysis*, 16(3), 257–278. <https://doi.org/10.2307/2330238>
- Wen, Z., Zhang, L., Hou, J., & Liu, H. (2004). Mediation effect test procedure and its application. *Acta Psychologica Sinica*, (05), 614–620. <https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFD2004&filename=XLXB200405016&uniplatform=NZKPT&v=GGk9XNmNo1dw4TRlgFlxTE-Ac17FfvUVLdH80yB-WdTSFZlxX73fz4-zBxo3BNIO>
- Xiao, Z., & Liao, L. (2007). Major shareholders, creditor protection and corporate debt maturity structure selection: Empirical evidence from Chinese listed companies. *Management World*, 10, 99–113. (In Chinese). [大股东、债权人保护和公司债务期限结构选择——来自中国上市公司的经验证据 - 中国知网 (cnki.net)] (https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFD2007&filename=GLSJ200710013&uniplatform=NZKPT&v=mul7plwFahPCvL_FFXAdq_QQ6franOyKRHvwKCQ4rPJi35ByANb1eWs1V8p9vwZI)
- Yuan, R., Sun, J., & Cao, F. (2016). Directors' and officers' liability insurance and stock price crash risk. *Journal of Corporate Finance*, 37, 173–192. <https://doi.org/10.1016/j.jcorpfin.2015.12.015>
- Yuan, R., Wen, W., & Xie, Z. (2018). Directors' and officers' liability insurance and financial statement restatement. *Accounting Research*, 5, 21–27. (In Chinese). [董事高管责任保险和财务报表重述 - 中国知网 (cnki.net)] (<https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2018&filename=KJYJ201805003&uniplatform=NZKPT&v=rVcowVgAGHdEg4m-EWB0308rwd-oHZUwn0Mtabv9V4bvxd9wDxdyh25EgqkXRjIP>)
- Zhang, T., & Sha, M. (2014). A Study on management capability, power and on-the-job consumption. *Nankai Management Review*, 5, 63–72. (In Chinese). [管理层能力、权力与在职消费研究 - 中国知网 (cnki.net)] (<https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFD2014&filename=LKGP201405008&uniplatform=NZKPT&v=FxDnNoXnl45K8d3xwwLQg1HYRzXoNyK6Bb09ci0GZpl9Lx29Csa7-Mgr0fC1RULr>)
- Zhang, H., & Wang, J. (2018). Can company-level investor protection reduce the risk of stock price crash? *Accounting Research*, 10, 80–87. (In Chinese). [公司层面的投资者保护能降低股价崩盘风险吗? - 中国知网 (cnki.net)] (<https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2019&filename=KJYJ201810011&uniplatform=NZKPT&v=rVcowVgAGHfHVHxpcEAesKkiCxL9q3uaVtLxyxEWjHsRyRBbK38ekmCK32VzT9SV>)
- Zhou, M., Lin, B., & Lin, D. (2016). Management power, internal control and corruption governance. *Accounting Research*, 3, 56–63. (In Chinese). [管理层权力、内部控制与腐败治理 - 中国知网 (cnki.net)] (<https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2016&filename=KJYJ201603008&uniplatform=NZKPT&v=0GBV5CGwgkQLqDr3tt2lvFwMrGmGT23pAQ73gxt1yHbkMpChzegDfNX8MK5pN>)
- Zhou, H., Lin, W., Li, G., & Wang, H. (2012). Information asymmetry and corporate bond credit risk evaluation——Based on Chinese corporate bond data from 2008 to 2011. *Accounting Research*, 12, 36–42. (In Chinese). [信息不对称与企业债券信用风险估价——基于2008-2011年中国企业债券数据 - 中国知网 (cnki.net)] (<https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFD2012&filename=KJYJ201212006&uniplatform=NZKPT&v=rj4pMvnCAI44HMP9DajND7-Q0su9-BjW4R0apirsFeoWSk92geg3X063zL-UCQsB>)
- Zhu, C. (2021). The mediating effect of internal control effectiveness in the impact of board governance on bond credit rating. *Audit Research*, 3, 118–128. (In Chinese). [内部控制有效性在董事会治理对债券信用评级影响中的中介效应研究 - 中国知网 (cnki.net)] (https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2021&filename=SJYZ202103014&uniplatform=NZKPT&v=59FhI5YthzUyUuVURU8aRaGcvCU33ilzu_b4K-B_KAj0ACXyO2BiWpRhy74LJZDbE)