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Confucianism and D&O insurance demand of Chinese listed companies

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ABSTRACT

This study explores the relationship between Confucianism and business ethics and explains the reasons for the low coverage of directors' and officers' (D&O) insurance in emerging markets from the perspective of informal institutions. Using a sample of Chinese listed companies that issued A-shares from 2004 to 2020 and the index of *jinshi* degree holder density as the proxy variable for Confucianism, we empirically tested the impact of Confucianism on corporate D&O insurance demand. Our results demonstrated that ethical values such as integrity, honesty, and wisdom in Confucianism restrain the D&O insurance market. This result is robust to instrumental variables, propensity score matching, the Heckman two-step regression, and other methods. Our mechanism analysis revealed that corporate risk-taking is an important channel through which Confucianism inhibits the D&O insurance demand of listed companies. Further analysis showed that the external regulatory, legal, and natural environments are important factors affecting the negative correlation between them. The influence of Confucianism on D&O insurance demand is more significant if the corporate executive team lacks foreign experience or exhibits high decision-making myopia. Confucianism has a more significant inhibitory effect on D&O insurance in state-owned enterprises, non-foreign holding companies, and firms with small holdings by institutional investors. Litigation risk significantly enhances the inhibitory effect of Confucianism on D&O insurance.

1. Introduction

Culture profoundly influences a country's society, politics, and economy. The upper echelons theory states that the growth environment and cultural soil affect managers' value orientation, behavioral preferences, and subjective cognitive abilities, which are ultimately reflected in their economic decisions (Hambrick and Mason, 1984). Deeply rooted in Chinese culture and tradition, Confucianism remains a relevant and respected moral code that guides individuals and organizations in modern China (Ip, 2009). Fu and Tsui (2003) illustrated that Confucianism permeates Chinese entrepreneurs' values and is reflected in their business decisions.

Du (2015) was the first to measure Confucianism using the distance between a company and a Confucian temple. Notably, their study found that Confucianism enhances the ethical and moral standards of listed companies in China, significantly curbing the interest

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encroachment of controlling shareholders on minority shareholders. In addition, they found that the more profound the influence of Confucianism, the harder it is for women to secure seats on the board of directors (Du, 2016). Chen et al. (2019a) used the same measurement to study the relationship between Confucianism and investment decision-making and found that the deeper the influence of Confucianism on a company, the less likely it is to engage in excessive investment.

Furthermore, state-owned property rights reinforce this negative correlation. From a risk perspective, Confucianism reduces the risk of stock price collapse and bankruptcy in firms (Jebran et al., 2019). Additionally, firms that are more profoundly influenced by Confucianism have been found to have reduced instances of unethical behavior, such as earnings management and fraud (Tang et al., 2021). Confucianism also affects the selection of successors. Chen et al. (2021) observed that family firm founders located in regions deeply influenced by Confucianism are likely to choose a family member or guanxi (i.e., connected through personal relationships or social networks) non-family members as their leadership successors. As is evident, the actions of Chinese firms nurtured and developed within the Confucian milieu bear an unconscious cultural stamp.

As Zou and Adams (2006, 2008) demonstrated, insurance significantly mitigates agency conflicts in enterprise risk management. In recent years, there has been a sharp increase in shareholder litigation against companies and their management, resulting in elevated legal proceedings and compensation costs. This has prompted intense discussions within the capital market regarding high-profile financial fraud cases (e.g., those involving Worldcom Inc., Luckin Coffee Inc., and Kangmei Pharmaceutical Co., Ltd.). Consequently, there has been a growing focus on directors' and officers' (D&O) liability insurance, which is considered a form of senior management protection. D&O liability insurance protects directors, executives, and senior managers from legal expenses and other claims arising from allegations of misconduct or negligence while performing their job duties (Yuan et al., 2016; Jia et al., 2019). This insurance serves as a safeguard for individuals in senior management positions, guarding them against the costs associated with legal proceedings and compensation if any claims are brought against them.

The demand for D&O insurance has emerged as a new form of external governance to mitigate agency conflicts. While this insurance can compensate for governance risks, it also weakens legal mechanisms' constraint and deterrent power, potentially increasing the likelihood of moral hazard and opportunistic behavior among directors, executives, and senior managers. Prior studies have explored the influence of corporate and management characteristics and the legal regime on D&O insurance demand. However, there remains a gap in the literature regarding the relationship between Confucianism (as an informal institution) and the demand for D&O insurance. Examining this relationship from the perspective of soft constraints on moral hazard issues is an important area for further study.

As an ethical code, Confucianism promotes values such as integrity, benevolence, wisdom, honesty, and filial piety, which significantly impact individuals' economic behavior. In China, where honesty, integrity, and wisdom are linked to economic activities, managers are perceived to be less inclined toward unethical practices. Several studies have suggested that the stronger the influence of Confucianism on a firm, the lower the probability that majority shareholders engage in unethical investment practices that harm minority shareholders (Du, 2015; Chen et al., 2019a). This reduction in the likelihood of corporate litigation reduces the necessity for D&O insurance (Peng and Röell, 2008; Pukthuanthong et al., 2017). Confucianism also emphasizes the importance of preparing for potential dangers in times of peace. In a crisis, households with Confucian social values and wealth, as measured by micro-level data, demonstrate a willingness to increase their household savings rates and opt for low-risk assets (Ge et al., 2023). Additionally, firms with a robust Confucian system and lower risk-bearing capacity (Licht et al., 2007; Chen et al., 2019b) display a willingness to purchase D&O insurance and transfer risk to insurance companies.

We focus on China for the following two reasons. First, statistics reveal that approximately 99% of the listed companies in the United States and 90% of those in Canada purchased D&O insurance by the end of October 2021. However, emerging markets such as the People's Republic of China (China) are undersubscribed to D&O insurance with approximately 15% coverage. This study seeks to explain why D&O insurance is under-purchased in emerging markets. In developed markets, where financial markets and legal systems are relatively mature, directors and managers are exposed to high litigation risk, and scholars have observed that risk-averse managers are more willing to purchase D&O insurance to reduce the losses caused by shareholders (Gillan and Panasian, 2015; Park, 2018).

Conversely, emerging markets are generally characterized by imperfect markets and legal systems. Thus, firms and managers face limited litigation risk. Allen et al. (2005) pointed out that in transition economies with immature legal systems and low levels of financial development, informal institutions (e.g., culture) are instrumental in regulating economic operations. Moreover, compared with material and system cultures, cultural values are more stable and have a more profound impact on economic behavior (Guiso et al., 2006). Based on China's economic transition background, this study investigates the role of culture in purchasing D&O insurance from the perspective of informal institutions.

Second, it is crucial to understand the risk management decisions of Chinese enterprises, as China is the world's largest emerging economy, and in 2020, it became the world's largest destination for foreign direct investment. The rapidly expanding capital market and the increasing number of Chinese companies seeking overseas listings present a diverse range of risks for international investors (Zou and Adams, 2008). However, a lack of understanding of the operations of Chinese listed companies (PLCs) can impede effective capital allocation (Lee and Rui, 2000). A recent example is Luckin Coffee's false sales transactions with affiliated parties in 2020, which inflated over $300 million, causing the stock price to drop 80% on the NASDAQ market within hours, resulting in enormous losses for international investors.

In this study, we selected mainland China-based companies that traded on the two Chinese stock exchanges—the Shanghai Stock Exchange and the Shenzhen Stock Exchange—and issued A-shares from 2004 to 2020 as our research sample. We then explored the effect and mechanism of Confucianism on D&O insurance demand from the perspective of informal institutions. Our results showed that Confucianism significantly reduces the demand for D&O insurance—the stronger the influence of Confucianism, the lower the market for D&O insurance. A series of robustness tests were used to verify these results, including the instrumental variable method,

the Heckman two-stage model, the propensity score method (PSM), and controlling for the influence of religious factors and changing explanatory variables and models. An analysis of the economic mechanism showed that the level of corporate risk-taking is an important channel for Confucianism to affect the D&O insurance demand of listed companies. Further analysis showed that the external environment is an important factor affecting the negative correlation. Specifically, the inhibiting effect of Confucianism on D&O insurance demand is more marked in firms with weaker external supervision, more developed formal institutions, and flatter terrain. Internal governance is important as well. First, Confucianism was particularly prominent when the executive team lacked overseas experience or had high decision-making myopia. Next, the restraining effect of Confucianism was more significant in state-owned enterprises, non-foreign holding companies, and firms with small holdings by institutional investors. Finally, litigation risk will increase D&O insurance purchases. In firms with high litigation risk, Confucianism had a stronger inhibitory effect on D&O insurance demand.

This study contributes to the literature on corporate governance, business ethics, and Confucianism in China as follows. Differing from developed economies (e.g., the Western European and United States markets), China's imperfect legal system limits the actual litigation risks faced by listed companies. This study begins from the perspective of the negative governance effect of D&O insurance—that is, the risk transfer function of D&O insurance impairs the binding effect of the legal mechanism and further stimulates management's moral hazard and opportunistic behavior. As an ethical code that advocates personal virtues, the concepts of Confucianism can be articulated in corporate management terms, and can both restrain agents and shareholders from pursuing excessive self-interest and encourage moral restraint in corporate governance (Du, 2015). Unlike previous studies that focused on agency conflict, overinvestment, corporate fraud, earnings management, and corporate social responsibility (Du, 2015; Chen et al., 2019a; Kong et al., 2022), this study explores the impact of Confucianism on D&O purchase decisions based on the Chinese capital markets. Our findings can help scholars, practitioners, and stakeholders understand the institutional reasons behind the difference in D&O insurance coverage between China and Western countries.

Second, this study provides a reference for the mechanism of Confucianism in the modern Chinese corporate environment. Our empirical results showed that firms with strong Confucian systems have a decreased level of risk-bearing capacity and, correspondingly, a decreased need for D&O insurance as a risk-hedging tool. These findings can facilitate scholars, practitioners, and stakeholders' understanding of the internal logic of insufficient purchases in the Chinese D&O insurance market.

Third, this study explored the reasonable conditions of Confucianism from the perspective of the external environment. Our findings suggested that Confucianism strongly opposes the purchase of D&O insurance in firms with low external supervision, and has implications for scholars, practitioners, and stakeholders' understanding of the crucial role of Confucianism in corporate governance. This analysis is important for governmental policymakers in their efforts to strengthen regulatory systems. Moreover, due to China's imperfect formal institutions, consideration of informal institutions could be an important supplement to these efforts (Allen et al., 2005). Thus, the influence of Confucianism is more profound in areas with a more perfect legal environment. Finally, the natural environment is a vital factor that affects the role of Confucianism in D&O insurance demand. Our study found that the restraint of Confucianism on D&O insurance is stronger in areas with flat terrain, with implications for scholars, practitioners, and stakeholders' understanding of Confucianism's conditions at the macro level.

Fourth, this study analyzed the characteristics of corporate internal governance. We found that overseas academic and management experience weakens Confucianism's influence on D&O insurance demand. These results support the standpoint that the collision and fusion of Eastern and Western cultures diminish the power of Confucianism. We found the impact of Confucianism more remarkable in state-owned enterprises, which illustrates the attributes of administration in Confucianism. Finally, we found that Confucianism has a stronger inhibitory effect on D&O insurance demand in firms with high litigation risks and management decision-making myopia. These results further reflect the governance function of Confucian culture. This study's findings provide a theoretical basis and policy reference for listed companies in choosing an appropriate governance mechanism in the context of Chinese culture, and can facilitate scholars and stakeholders' determination of the time, value and governance function of traditional Chinese culture in the transition to a modern developed economy.

The remainder of this paper is organized as follows. Section 2 introduces the institutional background of our study and develops our research hypotheses. Section 3 presents the model design, empirical model, and the main variables. Section 4 presents our study's empirical results. Section 5 presents our analysis, and Section 6 summarizes our conclusions.

2. Theory and hypothesis development

2.1. D&O insurance in China

In 2002, the China Securities Regulatory Commission and the State Economic and Trade Commission issued the Code of Corporate Governance of Listed Companies in China, which stated that listed companies could purchase D&O insurance following approval at general shareholders' meetings. The first D&O insurance policy in China was jointly executed by the Ping An Insurance (Group) Company of China, Ltd., and the international insurance group Chubb Limited (Jia and Tang, 2018). Subsequently, major insurance companies developed their D&O insurance businesses and insured companies, such as China Mobile Communications Group Co., Ltd. (Ticker SHA:600941) and Yunnan Baiyao Group Co., Ltd. (Ticker SHE:000538).

In China, the D&O insurance instrument was developed alongside the investor litigation system. In 2002, the Judicial Committee of the Supreme People's Court issued a circular entitled Provisions of the Supreme People's Court on the Hearing of Civil Compensation Cases Arising from False Statements in the Securities Market. This circular stated that corporate directors and executives could be held jointly liable for shareholder losses resulting from false statements made by corporations concerning securities. In addition, investors

whose rights and interests have been subject to administrative penalties for false statements could file civil compensation suits with courts to protect their investor rights in civil litigation.

In 2005, the revised Company Law clarified the limits of the shareholder representative litigation system, which decreased the cost of investors suing corporate directors, executives, and senior managers. In the same year, the revised Securities Law stated that directors, executives, senior managers, or issuers of other personnel and listed companies should be directly responsible for the firm's misconduct and bear joint liabilities for compensation unless they can prove the absence of a fault (Jia et al., 2019). Since then, the number of securities lawsuits in China has increased, and corporate directors, executives, and senior managers have faced increasing legal risk (Jia and Tang, 2018).

2.2. Confucianism and ethics

Confucianism is an ancient social and ethical philosophy that developed from the teachings of the Chinese philosopher Confucius in the 6th–5th BCE during the Spring and Autumn and Warring States periods in China. Hofstede and Bond (1988) pointed out that this system provides "a set of practical rules for daily life." During the Western Han Dynasty (206 BCE–25 CE), Dong Zhongshu proposed the establishment of Confucianism as the country's philosophical foundation and the abandonment of other ideological systems. However, the combination of Confucianism and political ideology was later considered the relic of a feudal society. The core ethical principles of Confucianism, represented by the five so-called constant virtues of benevolence, honesty, justice, wisdom, and filial piety, would be decisive for Chinese social and cultural life (Du, 2015; Jin et al., 2022). After the Sui (581–618 CE) and Tang (618–907 CE) dynasties, each dynasty's imperial examination (i.e., *jinshi* or the civil service examination system) was based on Confucian classic writings, which further increased the status of Confucianism as a pillar of mainstream Chinese culture. A prosperous Confucian age was formed during the Ming (1368–1644) and Qing (1644–1911/1912) dynasties.

Confucianism was condemned during periods of Chinese history, such as the May Fourth Movement (1917–1921) and the Great Proletarian Cultural Revolution (1966). However, since China began to reform and open its economy in 1978, Confucianism (as well as Taoism and Buddhism) has experienced a revival, and the official discourse of the Chinese Communist Party has not explicitly altered the core tenets of Confucianism (Du, 2015). Scholars have pointed out that these tenets of Confucianism underpin the cultural and psychological characteristics of both mainland and overseas Chinese. Scholars have observed that Confucianism remains highly influential in the construction of modern ethical norms and values in China and Southeast Asian countries and is a frequently but unconsciously held moral philosophy (Du, 2015).

Among the tenets of Confucianism, scholars consider the improvement in individuals' behavior through ethical education the most important (Du, 2015). Ultimately, a humanistic environment is formed when a society's customs reflect its moral values. Confucianism proposes that the development of benevolence, justice, wisdom, honesty, filial piety and other personal virtues is critical to both individual and societal moral cultivation, as these attributes profoundly affect people's thoughts and behaviors. Confucianism is a nonutilitarian philosophy—in contrast with that of materialism and its pursuits—and postulates that the satisfaction of material desires and the pursuit of commercial profits at the expense of personal virtues is immoral (Chan, 2008; Du, 2015). The tenets of Confucianism have thus penetrated the lifestyle and socioeconomic behavior of people in China and Southeast Asia. Lu (1997) posited that modern Chinese business ethics are derived from traditional Chinese culture. Hence, Confucianism, as a pillar of Chinese culture, is crucial for regulating and guiding the behavior of individuals and organizations.

Those who are deeply influenced by Confucianism are considered constrained by morality and may develop a sense of shame while living in the modern, materialistic world. However, Confucianism provides instructions for avoiding shameful situations and actions (Du, 2015). Similarly, corporate governance mechanisms regulate and guide firms, directors, executives, and senior managers' organizational behavior, decreasing costs because they constrain executives from avoiding their fiduciary responsibilities, ensuring that majority shareholders abide by their promises, and restricting the exploitation of minority shareholders' interests (Du, 2015; Chen et al., 2019a). However, corporate governance mechanisms cannot fundamentally alleviate or eliminate opportunistic tendencies. Thus, Confucian ethics can fill this gap and inhibit moral hazard and opportunistic behavior.

With the increased focus on the role of culture in economics and financial literature, scholars have studied the impact of Confucianism on corporate management and business ethics. Chen et al. (2019a) observed that, given the attributes of loyalty, collectivism, and risk aversion inherent in Confucianism, firms with strong Confucian influences may be more efficient in aligning their investment behavior with Confucian values and may reduce overinvestment. Du (2015) found that Confucianism emphasizes personal virtues and effectively diminishes agency costs. Kong et al. (2022) posited that Confucianism's requirement for integrity alleviates information asymmetry and moral hazards. These studies demonstrate that Confucianism can still be an effective informal system for regulating corporate business decisions and improving corporate governance in modern business environments.

2.3. D&O insurance and moral hazard

As a relatively novel instrument in the risk insurance market, D&O insurance has limitations. First, the terms for D&O insurance products in China are often literal translations of foreign insurance products, expressed in an imprecise manner with unclear boundaries of insurance liability. For example, the D&O insurance clauses for Ping An Insurance Company and other insurance companies are considered to have excessively large exclusion scopes, resulting in the difficulty for the insured to obtain compensation, and the reluctance of directors, executives, and senior managers' reluctance to purchase D&O insurance. Second, under current laws, the specific civil liability provisions of directors, executives, and senior managers are unclear. Thus, the legal basis for stakeholders to hold executives accountable is weakened. Finally, the administrative penalty for listed companies is considered the lawsuit threshold.

High thresholds and expensive litigation costs make investors reluctant to file lawsuits.

In 2008, after reviewing the financial statements of GAC Changfeng Motor Co., Ltd. (Ticker SZE:600991), the Chinese Ministry of Finance issued a decision on GAC Changfeng's administrative liabilities and imposed administrative penalties, including the payment of various taxes. In 2011, 17 minority investors filed a civil compensation lawsuit with GAC Changfeng, asking the company to compensate for losses resulting from financial fraud. The court found the firm guilty of making false statements from as early as 2008 and ordered GAC Changfeng to pay the plaintiffs a one-time compensation of 980,000 RMB, including litigation costs. AIG, the insurance company, paid 800,000 RMB to GAC Changfeng. In the case of D&O insurance, policyholders (i.e., directors, executives, and senior managers of firms) are underwritten by insurance companies; that is, insurers take on policyholders' financial risk for a fee. Insurers risk that these policyholders will neglect their fiduciary responsibilities under the shelter of D&O insurance. Hence, D&O insurance transfers the practice risk of decision makers, and also potentially induces moral hazard.

Moral hazard refers to the possibility of loss to an insurance company arising from the actions of insured individuals engaging in risky economic activities when protected from their consequences (e.g., by insurance). D&O insurance protects directors, executives, and senior managers from claims that may arise from their work-related actions for a firm. The compensation may include the settlement amount, legal defense costs, and compensatory damages due to misconduct. The transfer of litigation risk and financial expenses greatly impairs the binding mechanism and deterrent effect of the law, as the professional responsibility of the directors, executives, and senior managers is effectively overlooked, potentially stimulating moral hazard and opportunistic behavior (Chalmers et al., 2002).

Recent empirical studies have suggested that D&O insurance shifts directors, executives, and senior managers' legal costs to insurance companies and thus induces more opportunistic behavior on behalf of their firms. Wang et al. (2020) posited that higher D&O insurance coverage reduces corporate litigation risks and legal liabilities, and firms' financial activities may become more aggressive, generating an increased probability of financial restatement. Lin et al. (2013) found that firms with higher levels of D&O insurance coverage aggrandize corporate risk-taking and the issuance of lower-quality financial reports, leading lenders to charge higher loan spreads to compensate for the risk incurred. Zou et al. (2008b) observed that the extent of minority shareholder conflicts is positively related to D&O insurance demand, and the avoidance of litigation risk is an important reason for purchasing D&O insurance. Jia and Tang (2018) posited that independent directors often neglect to fulfill their responsibilities after purchasing D&O insurance. Other scholars have found that D&O insurance coverage is positively correlated with a firm's equity financing costs, and is negatively related to abnormal stock returns during mergers and acquisitions (Lin et al., 2011; Chen et al., 2016). These findings support the argument that D&O insurance increases the moral hazard of directors and managers by protecting them from the consequences of shareholder lawsuits.

The legal and litigation systems in China limit the actual litigation faced by directors and management, which restricts the positive role of D&O insurance in shareholder litigation. Simultaneously, D&O insurance may reduce the expectations and risks of directors, executives, and senior managers to bear future legal liabilities. This makes the weak litigation supervision effect invisible. Therefore, D&O insurance greatly reduces the disciplinary impact of legal litigation, potentially leading to moral hazards and opportunistic behavior (Boyer and Stern, 2014). Driven by moral hazard, directors, executives, and senior managers may cease to be diligent and prudent in the performance of their duties and may lower the quality of their decision-making and their incentive to seek profits for their shareholders.

Consequently, these actions may impair corporate value to the detriment of a firm's long-term development. Owing to China's imperfect market economy system, corporate governance information transparency is not high. Under these conditions, management's moral hazard may be further aggravated.

2.4. Hypothesis development

Sociologists have posited that a society's culture (i.e., informal institutions) is deeply imprinted on its members' thoughts and behavioral norms and directly affects their economic behaviors (Alesina and Giuliano, 2015). In China, the ancient Confucian ethical and philosophical system underlies modern business practices and acts as an implicit moral constraint that regulates and restricts socioeconomic behavior.

The personal virtues promoted by Confucianism may diminish opportunistic behavior, reducing the demand for D&O insurance. According to agency theory, there is significant information asymmetry between shareholders (principles) and corporate management (agents). Directors, executives, and senior managers with opportunistic motives may use their information advantages to infringe upon shareholders' legitimate rights and interests. Ownership concentration also facilitates the encroachment of majority shareholders on minority shareholders' interests (Jensen and Meckling, 1976). As a social and ethical norm, Confucianism prevents agents or shareholders from pursuing excessive self-interest (Woods and Lamond, 2011; Du, 2015).

Furthermore, Confucianism highlights personal virtues, such as integrity, wisdom, and honesty (Romar, 2002; Zhu, 2015), which are also considered the most relevant characteristics of modern economic activities. Integrity emphasizes that interests must be obtained through reasonable and legal means without harming the legitimate rights and interests of others (Du, 2015). Wisdom is aligned with individuals' thoughts and actions and advocates a balance between short- and long-term interests; that is, short-term benefits should not be gained at the expense of long-term benefits (Lin et al., 2013; Du, 2015). Honesty is an important criterion in business operations as it requires aligning words with actions (Du, 2015). In modern China, the assumption that Confucianism influences managers' decision-making behavior implies that they act at a higher moral level (Woods and Lamond, 2011).

Confucian virtues may improve the corporate environment, enhance the effect of corporate governance, and reduce opportunistic behavior. Based on theoretical experience, scholars have posited that firms located in regions with a strong Confucian atmosphere have

a lower incidence of opportunistic behaviors, such as financial fraud, unethical investment activities at the expense of minority shareholders by major shareholders (i.e., tunneling), and overinvestment (Du, 2015; Chen et al., 2019a). Kong et al. (2022) posited that the imperial examination system promoted a higher level of corporate social responsibility. Scholars have posited that firms with a strong Confucian culture have a lower incidence of the falsification of financial statements, earnings management, tunneling, and other opportunistic behaviors, which decreases the possibility of litigation (Peng and Röell, 2008), and also decreases the demand for D&O insurance by firms (Gillan and Panasian, 2015).

Confucianism, a philosophy with strict adherence to hierarchy, devotion to the blood system and kinship morality, and a tendency toward conservatism, is prevalent in certain regions where it has shaped the formation of well-developed kinship networks. These networks, based on natural blood relationships, result in individuals having greater trust in their relatives and the Confucian clan compared to outsiders (Greif and Tabellini, 2017). The social hierarchy of individuals within this network is determined by Confucian principles and remains unchanged throughout their lives, leading to a greater focus on cooperation based on blood morality rather than contractual arrangements (Greif and Tabellini, 2017). Consequently, the Confucian-influenced kinship network can be viewed as an informal financial market composed of family members who solve each other's financial needs through mutual assistance and resource sharing.

However, this informal financial market also restricts the dissemination of knowledge and cooperation beyond these networks, slowing down the development of China's formal financial market and hindering the demand for contractually guaranteed insurance. Consequently, the more predominant the Confucian atmosphere is, the lower the willingness of listed companies to purchase D&O insurance. Confucianism's conservative and stable nature hinders the acceptance of new concepts and ideas. Throughout Chinese history, this conservative ideology has impeded significant changes and the introduction of new economic models and political systems (Weber and Gerth, 1953). As D&O insurance is a relatively recent introduction in the Chinese market, the influence of Confucianism's conservative and stable ideology has resulted in a low market adoption rate. Hence, this study proposes the following hypothesis:

Hypothesis 1a. Listed companies located in regions that are deeply influenced by Confucianism have less demand for D&O insurance.

The expectation of crisis in Confucianism may also increase the demand for D&O insurance. Confucianism advocates that individuals should be vigilant and prepared for crisis situations, even during stability. Scholars have demonstrated that firms influenced by Confucianism have lower levels of risk-bearing capacity, and individual households are more inclined to increase their household savings rates and choose low-risk assets (Licht et al., 2007; Li and Zahra, 2012; Chen et al., 2019b; Ge et al., 2023). This may also explain the high savings rate of individuals throughout Southeast Asia. (Liang, 2010).

The Chinese capital market is imperfect, and there are various problems with its corporate governance structure. In addition, perfectly rational managers do not exist. Ergo, firms may err in their decision-making, potentially resulting in business and litigation risks (Healy and Palepu, 2001). D&O insurance can shift the liability of compensation for lawsuits faced by firms or managers to insurance companies, thus compensating for governance risk (Jia and Tang, 2018). Yuan et al. (2016) find that D&O insurance can effectively reduce the risk of stock price collapse. Moreover, it can strengthen the protection of directors, executives, and senior managers; hedge their practice risks; and facilitate the retention of exceptional human capital.

The consciousness of potential suffering and other cognitive elements of Confucianism may profoundly affect the risk attitude of managers, which will further influence the management's attention to the long-term survival and development of the firm. Under the impact of preventive motivation, listed companies' D&O insurance demand increases to address potential litigation risks in the future. This study sets forth the following hypothesis:

Hypothesis 1b. In regions with deeper Confucian influences, listed companies have more demand for D&O insurance.

Hypotheses 1a and 1b are competing. Therefore, the effects of Confucianism on demand for D&O insurance require further empirical testing.

3. Method

3.1. Sample selection and data source

This study's sample included companies listed on China's Shanghai Stock Exchange and Shenzhen Stock Exchange from 2004 to 2020. *Jinshi* data were obtained by manual processing from Harvard University's China Biographical Database Project. D&O insurance data were collected manually from annual reports and disclosed meeting minutes by the corporate boards and shareholders. Additional relevant data were obtained from the Chinese Stock Market Accounting and Research database. Considering the influence of partially missing values and outliers, the sample excluded listed financial companies, ST, *ST, PT firms, and firms located in Heilongjiang, Jilin, Liaoning, Inner Mongolia, Qinghai, Xinjiang, and Tibet (i.e., individuals in these regions were not eligible to take the imperial civil service examinations during the Ming and Qing Dynasties). To avoid the interference of outliers in the regression results, all continuous variables were winsorized at 1% and 99%, and 16,811 listed firm-year observations were received.

3.2. Variable definitions

3.2.1. Independent variable

3.2.1.1. Confucianism (Confu_R). The most crucial feature of Confucianism is generally considered to guide individuals' behavior through ethical education, resulting in the formation of a humanistic environment in which they unconsciously experience its effects on a daily basis (Du, 2015). During the Ming and Qing dynasties, the imperial examination system was implemented to facilitate the selection of officials (Fung, 1997), and Confucianism became the carrier of the imperial examination system. The focus of the examination was the classic Confucian texts, known as the Four Books and the Five Classics. Scholars were required to thoroughly read and deeply understand these classics, and then pass the selection examination at different levels to obtain the status of *jinshi* (Ho, 1962). In this study, we used the number of *jinshi* in various regions to measure differences in the effects of Confucianism. Based on Du (2015, 2016), we adopted the distance model and used the distribution density of *jinshi* to measure the intensity of Confucianism's influence.

Specifically, we sorted out relevant information about *jinshi* in the Ming and Qing dynasties according to Harvard University's China Biographical Database Project. The distance was then calculated based on the latitude and longitude of the listed companies' registered locations. If the number of *jinshi* distributed within a certain radius of the registered place is large, Confucianism strongly influences the firm. We followed Chen et al. (2020) and used the density of *jinshi* within a radius of R km ($R = 100, 200, 300$) from the locations in which listed companies were registered to measure the influence of Confucianism. *Confu* equals the natural logarithm of the *jinshi* number plus one.

In the robustness test, we adopted the *jinshi* density within a radius of 50 km, 150 km, and 250 km as proxy variables for Confucianism. To ensure the reliability of the results, the proxy variables of Confucianism were replaced by the number of *jinshi*, the density of Confucian temples, and the Confucian atmosphere of the chief executive officer (CEO)'s birthplace and native place.

3.2.2. Dependent variable

3.2.2.1. D&O insurance demand (DO). Drawing on Jia et al. (2019) and Yuan et al. (2016), we adopt a dummy variable to measure the demand for D&O insurance: *DO* is equal to 1 if a firm purchases D&O insurance in a certain year and 0 otherwise.

3.2.2.2. Control variables. Referring to the studies of Jia et al. (2019) and Park (2018), the following variables affecting the demand for D&O insurance were selected as controls: the debt asset ratio (*Lev*), return on total assets (*Roa*), age (*Age*), corporate size (*Size*), book-to-market ratio (*Btm*), growth ability (*Growth*), board size (*Board*), the proportion of independent directors (*Ind*), the shareholding ratio of managerial ownership (*Manshare*), ownership concentration (*Top1*), nature of property rights (*Soe*), presence of CEO duality (*Duel*), and legal factors (*Law*). The variable definitions are listed in Table 1.

3.3. Empirical model specification

To reduce potential endogeneity, the explanatory variables in the model lagged by one year, and the model was set as follows:

Table 1
The definition of variables.

Variable	Explanation
DO	The dummy variable is 1 if the firm purchases D&O insurance in a given year, 0 otherwise
Confu_R	Natural logarithm of the number of Jinshi plus 1 within R km of the listed company (R = 100, 200, 300)
Comfu_MR	Natural logarithm of the number of Jinshi plus 1 within MR km of the listed company (MR = 50, 150, 250)
Confu_Raw_R	The number of Jinshi within R km of the listed company
Confucian_temple_R	Natural logarithm of the number of Confucian temples plus 1 within R km of the listed company
Birth_R	Natural logarithm of the number of Jinshi plus 1 within R km of the CEO's birthplace
Native_R	Natural logarithm of the number of Jinshi plus 1 within R km of the CEO's native place
Distance	The minimum distance between the listed company's registered place and the printing centers
Religion	Natural logarithm of the number of religious temples plus 1 within a certain radius of the listed company
Lev	The asset-liability ratio is the ratio of total liabilities to total assets
Roa	Return on total assets, net profit/total assets
Age	The years of listing
Size	Natural logarithm of the total assets of the firm
Btm	Book to market ratio, the ratio of book value to market value
Growth	Growth ability, operating income growth rate
Board	The number of directors
Ind	The proportion of independent directors: the number of independent directors/the number of directors of a company
ManHold	Management shareholding ratio
Top1	*Ownership concentration, that is, the Proportion of the largest shareholder*
Soe	Company nature. Dummy variable is 1 if the firm is a state-owned enterprise, 0 otherwise
Duel	presence of CEO duality. Dummy is 1 if the board chair and CEO are the same people and 0 otherwise
Law	Provincial legal environment index provided by Fan et al. (2011)

$$DO_{i,t+1} = \beta_0 + \beta_1 Confu_{i,t} + \sum \beta_q control_{q,i,t} + Year + Industry + Region + \varepsilon_{i,t} \quad (1)$$

where $DO_{i,\ t+1}$ represents D&O insurance demand, i is firm i, and the explanatory variables are a series of proxy variables for Confucianism. β_1 is the coefficient of the core explanatory variables. All the control variables lagged by one stage, as shown in Table 1. In addition, the time, industry, and region fixed effects are added.

4. Results

4.1. Descriptive statistics

The descriptive statistical results for all the variables are shown in Table 2. The mean value of the explained variable, D&O insurance demand, was 0.087, which indicates that purchasing D&O insurance is not very common in listed companies. The mean values of *jinshi* density were 5.638, 6.581, and 7.106, respectively, indicating that the distribution density of *jinshi* increases with the expansion of the selection radius. The distribution of the other control variables was within the normal range, and the results were in accordance with the findings of Jia et al. (2019).

4.2. Correlation analysis

Table 3 shows the Pearson correlation coefficient matrix and Spearman rank correlation coefficient matrix. It shows consistency among the three indicators. The three critical explanatory variables, which are the density of *jinshi* within 100 km, 200 km, and 300 km, were positively correlated at a significance level of 1%. The correlation coefficients between the proxy variables of Confucianism and D&O insurance demand were negative and significant at the confidence level of 1%. It is a preliminary indication that listed companies influenced by Confucianism will reduce purchasing D&O insurance. The correlation coefficients of other explanatory variables were all less than 0.6; therefore, there was no multicollinearity.

4.3. Baseline regression results

Table 4 reports the regression results between Confucianism and D&O insurance needs. To keep our units the same, all variables in this study were standardized before regression. Columns (1)–(3) show the regression results without adding control variables. Columns (4)–(6) represent the results with all control variables. All regressions are added-year fixed effect (*Year*), industry fixed effect (*Industry*), and region fixed effect (*Region*). The results showed that the symbols of the core explanatory variables remain unchanged with all variables. Taking Columns (4)–(6) as an example, the coefficients of *Confu_R* were − 0.020, −0.022, and − 0.032, and the T values were − 5.983, −6.501, and − 9.083, respectively, all prominent at the 1% significance level. This shows a negative correlation between Confucianism and D&O insurance demand; thus, firms that are deeply influenced by Confucianism are more reluctant to buy D&O insurance. Therefore, Hypothesis 1a was confirmed.

Regarding control variables, Table 4 shows that the coefficients of firm size and D&O insurance requirements were 0.054, 0.054, and 0.053, respectively. Age, board size, the proportion of independent directors, the nature of property rights, and legal factors increase the need for D&O insurance. In accordance with the results of previous studies, large firms are more reluctant to purchase D&O insurance (Zou et al., 2008; Jia and Tang, 2018). In addition, we found that return on total assets (ROA), book-to-market ratio,

Table 2
Descriptive statistics.

Variable	mean	sd	min	p25	p50	p75	max
DO	0.087	0.281	0	0	0	0	1
Confu_100	5.638	1.141	0	5.252	5.717	6.646	7.234
Confu_200	6.581	1.073	0	5.892	6.402	7.639	7.971
Confu_300	7.106	0.965	0	6.562	7.203	8.013	8.210
Lev	0.461	0.204	0.057	0.303	0.462	0.612	0.937
Roa	0.041	0.062	−0.221	0.015	0.038	0.069	0.225
Age	16.593	5.720	4.170	12.420	16.330	20.500	30.920
Growth	0.208	0.490	−0.558	−0.007	0.123	0.290	3.347
Size	22.237	1.325	19.548	21.315	22.078	22.965	26.221
Btm	0.320	0.154	0.028	0.207	0.299	0.412	0.771
Ind	0.372	0.053	0.300	0.333	0.333	0.429	0.571
Manshare	0.070	0.139	0	0	0	0.051	0.633
Top1	35.069	14.863	9.130	23.290	33.030	45.430	73.670
Board	8.764	1.760	5	8	9	9	15
Soe	0.417	0.493	0	0	0	1	1
Law	11.026	5.345	1.480	6.510	11.220	15.180	24.330
Duel	0.234	0.423	0	0	0	0	1

This table displays descriptive statistics for the variables. The number of firm-year samples is 16,811 over the period from 2004 to 2020. The mean, standard deviation (SD), minimum (min), 1st quartile (p25), median (p50), 3rd quartile (p75), and maximum (max) of each variable are reported. The definition of each variable is shown in Table 1.

Table 3
The correlation coefficient.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
	DO	*Confu_100*	*Confu_200*	*Confu_300*	*Lev*	*Roa*	*Age*	*Growth*	*Size*	*Btm*	*Ind*	*Manshare*	*Top1*	*Board*	*Soe*	*Law*	*Duel*
(1)		**−0.083**	**−0.086**	**−0.110**	**0.117**	**−0.036**	**0.133**	**−0.032**	**0.204**	0.008	**0.036**	**−0.110**	**0.045**	**0.081**	**0.170**	**0.047**	**−0.077**
(2)	**−0.055**		**0.815**	**0.719**	**−0.024**	**0.034**	0.013	−0.011	**−0.048**	**0.022**	−0.004	0.007	**0.030**	**−0.076**	**−0.134**	**0.349**	**0.049**
(3)	**−0.059**	**0.878**		**0.947**	0.007	0.009	0.004	**−0.023**	**−0.026**	0.017	**−0.031**	**−0.053**	**0.039**	**−0.034**	**−0.077**	**0.276**	**0.022**
(4)	**−0.076**	**0.774**	**0.950**		0.006	0.014	−0.014	−0.020	−0.011	**0.027**	**−0.034**	**−0.044**	**0.037**	**−0.021**	**−0.074**	**0.256**	0.017
(5)	**0.115**	−0.009	0.004	0.014		**−0.384**	**0.099**	0.015	**0.399**	**−0.475**	**−0.031**	**−0.296**	**0.063**	**0.145**	**0.274**	**−0.130**	**−0.135**
(6)	**−0.032**	−0.003	0.012	0.017	**−0.344**		**−0.087**	**0.328**	0.020	**0.070**	**−0.022**	**0.137**	**0.111**	0.004	**−0.117**	**0.040**	**0.048**
(7)	**0.132**	0.015	0.013	−0.003	**0.103**	**−0.077**		**−0.112**	**0.216**	**−0.040**	**0.040**	**−0.117**	**−0.115**	**−0.047**	**0.078**	**0.184**	**−0.035**
(8)	−0.015	0.005	−0.006	−0.011	**0.040**	**0.211**	**−0.034**		**0.055**	**−0.080**	0.002	**0.109**	0.009	−0.009	**−0.077**	**−0.023**	**0.041**
(9)	**0.245**	**−0.030**	−0.020	−0.003	**0.395**	**0.051**	**0.194**	**0.023**		**0.059**	**0.027**	**−0.159**	**0.178**	**0.199**	**0.263**	**0.097**	**−0.132**
(10)	0.004	0.018	0.015	**0.024**	**−0.504**	**0.054**	**−0.043**	**−0.068**	**0.050**		−0.018	**0.108**	**0.041**	**0.028**	**−0.031**	**0.081**	0.003
(11)	**0.027**	−0.003	−0.019	**−0.024**	**−0.026**	−0.014	**0.031**	0.010	**0.052**	**−0.024**		**0.056**	**0.028**	**−0.494**	**−0.067**	**0.074**	**0.106**
(12)	**−0.103**	**0.054**	0.012	−0.001	**−0.298**	**0.098**	**−0.150**	**0.027**	**−0.214**	**0.151**	**0.066**		**−0.214**	**−0.181**	**−0.493**	**0.256**	**0.242**
(13)	**0.041**	**0.030**	**0.033**	**0.036**	**0.062**	**0.123**	**−0.118**	**0.027**	**0.218**	**0.049**	**0.043**	**−0.105**		0.000	**0.217**	−0.009	**−0.043**
(14)	**0.089**	**−0.094**	**−0.065**	**−0.042**	**0.151**	0.019	**−0.048**	**−0.030**	**0.232**	**0.028**	**−0.437**	**−0.179**	0.018		**0.278**	**−0.157**	**−0.193**
(15)	**0.170**	**−0.129**	**−0.090**	**−0.061**	**0.272**	**−0.071**	**0.079**	**−0.062**	**0.285**	**−0.033**	**−0.059**	**−0.404**	**0.219**	**0.287**		**−0.216**	**−0.276**
(16)	**0.044**	**0.384**	**0.359**	**0.294**	**−0.128**	0.004	**0.192**	**−0.032**	**0.094**	**0.087**	**0.061**	**0.191**	−0.017	**−0.146**	**−0.217**		**0.164**
(17)	**−0.077**	**0.065**	**0.041**	**0.023**	**−0.134**	**0.035**	**−0.034**	**0.023**	**−0.131**	0.003	**0.108**	**0.217**	**−0.048**	**−0.179**	**−0.276**	**0.162**	

This table reports the correlation coefficient between the regression variables. The lower triangle is the Pearson correlation coefficient matrix, and the upper one shows the Spearman rank correlation coefficient matrix. Bold values are significant at the 1% level.

Table 4
The influence of confucianism on D&O insurance demand.

Dep. var.	*Prob(DO = 1)*					
Indep.var	*Confu_100*	*Confu_200*	*Confu_300*	*Confu_100*	*Confu_200*	*Confu_300*
Confu_R	**−0.027*** **	**−0.026*** **	**−0.033*** **	**−0.020*** **	**−0.022*** **	**−0.032*** **
	(−8.270)	**(−7.768)**	**(−9.662)**	**(−5.983)**	**(−6.501)**	**(−9.083)**
Lev				−0.000	−0.001	−0.000
				(−0.130)	(−0.139)	(−0.041)
Roa				−0.009***	−0.008***	−0.008***
				(−3.483)	(−3.416)	(−3.337)
Age				0.024***	0.024***	0.024***
				(9.142)	(9.167)	(9.029)
Growth				0.000	0.000	0.000
				(0.128)	(0.082)	(0.030)
Size				0.052***	0.052***	0.052***
				(16.562)	(16.570)	(16.599)
Btm				−0.007**	−0.008**	−0.007**
				(−2.255)	(−2.302)	(−2.176)
Ind				0.009***	0.009***	0.009***
				(3.790)	(3.811)	(3.825)
Manshare				−0.001	−0.001	−0.001
				(−0.184)	(−0.311)	(−0.335)
Top1				−0.005**	−0.005**	−0.005**
				(−2.181)	(−2.214)	(−2.185)
Board				0.008***	0.008***	0.008***
				(3.176)	(3.175)	(3.113)
Soe				0.040***	0.041***	0.043***
				(7.514)	(7.788)	(8.035)
Law				−0.006	−0.003	0.001
				(−1.367)	(−0.778)	(0.173)
Duel				−0.017***	−0.017***	−0.017***
				(−3.237)	(−3.265)	(−3.307)
Constant	−0.117	−0.112	−0.128	−0.022	−0.016	−0.028
	(−0.740)	(−0.703)	(−0.809)	(−0.142)	(−0.105)	(−0.182)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes.	Yes	Yes.	Yes
Region FE	Yes	Yes	Yes	Yes	Yes.	Yes
Observations	16,811	16,811	16,811	16,811	16,811	16,811
R-squared	0.072	0.072	0.073	0.122	0.122	0.124

This table reports fixed-effect panel regression estimates for the relation between *Confu* and D&O insurance demand. We report t-statistics in parentheses, while *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively

ownership concentration, and CEO duality negatively influence D&O insurance demand.

4.4. Endogeneity

As the measurement of Confucianism is based on historical data, the reverse causal relationship between D&O insurance and Confucianism can be excluded. However, endogeneity problems may be caused by other factors. Therefore, this study used propensity score matching (PSM), the Heckman two-step regression, and instrumental variable methods to deal with possible endogeneity problems.

4.4.1. Endogeneity: propensity score matching (PSM) method

Due to the diversity in firms' characteristics, we could not rule out differences in purchasing behaviors caused by their inherent demand for the sample, that is, high Confucian impact and low Confucian impact. To cope with the endogeneity problem caused by selection bias, PSM was used to re-estimate the samples following Yuan et al. (2016). The samples were divided into groups according to the year-industry median of Confucianism. Suppose that the number of *jinshi* within a radius of 200 km of the listed company's registered location is greater than the median. In this case, the firm was considered the experimental group. The remaining samples were then matched with firms in the experimental group using a 1:1 ratio of nearest neighbors as a control group. The covariables were company size, age, operating income growth rate, presence of CEO duality, the shareholding ratio of managerial ownership, debt–asset ratio, and ROA. Panel A of Table 5 presents the regression results, and the coefficients remain distinctly negative.

4.4.2. Endogeneity: instrumental variable approach

To further control for endogeneity problems caused by omitted variables, we used the shortest distance between listed companies and 19 official printing centers as instrumental variables (Chen et al., 2020). Two-stage regression was performed. In the Ming and Qing dynasties, scholars had to be deeply familiar with and understand various classic Confucian texts (Ho, 1962). Although only 19 printing presses were distributed across the country's 278 counties, they produced 80% of the printing and publishing works in the

Table 5
Endogeneity: various tests.

Panel A PSM Method			
Indep.Var	*Confu_100*	*Confu_200*	*Confu_300*
	(1)	(2)	(3)
Confu_R	**−0.021*** **	**−0.022*** **	**−0.031*** **
	(−4.824)	**(−4.907)**	**(−6.538)**
Control variables	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes.	Yes
Region FE	Yes	Yes.	Yes
Observations	9287	9287	9287
R-squared	0.124	0.124	0.125

Panel B Instrumental Variable Approach						
Dep.Var	*Confu_100*	*DO*	*Confu_200*	*DO*	*Confu_300*	*DO*
	First	Second	First	Second	First	Second
	(1)	(2)	(3)	(4)	(5)	(6)
Confu_100		**−0.036*** **				
		(−4.945)				
Confu_200				**−0.027*** **		
				(−4.949)		
Confu_300						**−0.025*** **
						(−4.955)
Distance	−0.463***		−0.620***		−0.653***	
	(−66.664)		(−107.143)		(−124.092)	
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes.	Yes	Yes	Yes.	Yes
Region FE	Yes	Yes.	Yes	Yes	Yes.	Yes
Observations	16,811	16,811	16,811	16,811	16,811	16,811
R-squared	0.443	0.120	0.594	0.122	0.640	0.124
Cragg-Donald Wald F	4444.07		11,479.68		15,398.87	
	($p = 0.000$)		(p = 0.000)		(p = 0.000)	
Anderson_Rubin Wald		24.36		24.36		24.36
		(p = 0.000)		(p = 0.000)		(p = 0.000)

Panel C Heckman two-step Regression						
Dep.Var	*Confu_100_ dummy*	*DO*	*Confu_200_ dummy*	*DO*	*Confu_300_ Dummy*	*DO*
	First	Second	First	Second	First	Second
	(1)	(2)	(3)	(4)	(5)	(6)
Confu_100		**−0.050*** **				
		(−5.390)				
Confu_200				**−0.040*** **		
				(−3.812)		
Confu_300						**−0.033** **
						(−2.352)
Imr		0.302***		0.164***		0.125***
		(5.509)		(5.624)		(4.268)
Control_Heckman	Yes	No	Yes	No	Yes	No
Control variables	No	Yes	No	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes.	Yes	Yes	Yes.	Yes
Region FE	Yes	Yes.	Yes	Yes	Yes.	Yes
Observations	16,811	16,811	16,811	16,811	16,811	16,811

This table reports the regression results after controlling endogeneity. We report t-statistics in parentheses, while *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

country. High transportation costs meant that the farther the county was from these printing presses, the higher was the expense of obtaining Confucian classic texts and related books. Coupled with the uneven distribution of official printing centers, the farther the county was from these printing presses, the scarcer the Confucian books were. Therefore, it was more difficult for scholars to achieve

Table 6
Alternative measure of proxy variables for confucianism.

Indep.Var	*Confu= Temple_100*	*Confu = Temple_200*	*Confu= Temple_300*	*Confu= Birth_100*	*Confu = Birth_200*	*Confu= Birth_300*	*Confu= Native_100*	*Confu = Native_200*	*Confu= Native_300*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Confu	**−0.017*** **	**−0.021*** **	**−0.019*** **	**−0.019*** **	**−0.018*** **	**−0.014*** **	**−0.016*** **	**−0.014*** **	**−0.011*** **
	(−7.433)	**(−9.292)**	**(−8.425)**	**(−5.128)**	**(−4.649)**	**(−3.646)**	**(−4.176)**	**(−3.751)**	**(−2.810)**
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	16,811	16,811	16,811	6958	6958	6958	6958	6958	6958
R-squared	0.123	0.124	0.123	0.167	0.167	0.166	0.166	0.166	0.165

Columns (1)–(3) respectively use *Temple_R* (R = 100, 200, 300) as the proxy variables of Confucianism. Column (4)–(6) in this table reports the regression results after using *Birth_R* (*R* = 100, 200, 300) as the proxy variable of Confucianism. Column (7)–(9) in this table reports the regression results after using *Native_R* (*R* = 100, 200, 300) as the proxy variable. The detailed definitions of the above variables are shown in Table 1. We report t-statistics in parentheses, while *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

high-performance results in the imperial examination, resulting in fewer *jinshi*. This satisfied the strong correlation between the endogenous and instrumental variables. With the development of modern printing technology, these official printing centers no longer exist (Reed, 2011), and there is no direct relationship between this distance and D&O insurance demand, which also ensures the externality of the instrumental variables. Therefore, the shortest distance of the 19 printing centers (*Distance*) as an instrumental variable qualified the two conditions of endogenous and exogenous.

Panel B in Table 5 presents the regression results for the instrumental variables. Columns (1), (3), and (5) present the first-stage regression results, which show that *Distance* and *Confu_R* are significantly negatively correlated at the 1% level, indicating a correlation between the instrumental and explanatory variables. The *F*-statistics of the first-stage regression were 3333.67, 7945.29, and 7309.17, and all were greater than 10. This finding suggests that *Distance* is not a weak instrumental variable. The regression results in Columns (2), (4), and (6) in the second stage are still negative, which supports the previous conclusions. In addition, a more rigorous Anderson–Rubin Wald test was reported in this study. The results are marked at the 1% level. This further illustrates the strong correlation between the instrumental and endogenous explanatory variables. These results confirm the robustness of the conclusions of this study after controlling for endogeneity.

4.4.3. Endogeneity: Heckman two-step regression

To solve the endogeneity problem caused by sample selection bias, we used the Heckman two-step regression model following Chen et al. (2021) and Jia and Tang (2018). In the first stage, we chose firms' financial and corporate governance characteristics as the explanatory variables. Whether firms were distributed in areas with strong Confucianism was taken as the explained variable, and a probit model was constructed. The inverse Mills ratio (IMR) was calculated using regression. In the second stage, IMR was added to the baseline regression to estimate the coefficients of Confucianism. In China, the chairperson is the firm's legal representative and is directly appointed by the shareholders' general meeting; therefore, chairpersons have more power in corporate governance (Jiang and Kim, 2015; Kato and Long, 2006). In the first stage, the characteristic variables of the management team and chairperson were added as covariables in addition to the control variables mentioned above. This included the separation of the two samples, that is, high Confucian impact and low Confucian impact (*Deviation*), management salary, chairperson's educational background (*Education_Ch*), overseas background (*Oversea_Ch*), and financial background (Finance_Ch). These variables were closely related to Confucianism. Nevertheless, there is no direct link to D&O insurance needs. The regression results are shown in Panel C of Table 5. Accordingly, all are significantly negative, verifying the robustness of the conclusion.

4.5. Robustness checks

4.5.1. Alternative measure of proxy variables for confucianism

To ensure the robustness of the results, *jinshi* density within a radius of 50 km, 150 km, and 250 km of the firm's registered place was also adopted as the proxy variable for Confucianism, following Du (2015) and Kong et al. (2022). After adding time, industry, and region fixed effects, the coefficient was still significantly negative. Next, the proxy variable of Confucianism was replaced by the number of *jinshi* within a radius of 100, 200, and 300 km from the listed company's registered place. The coefficients of the main explanatory variables are still negative and significant at the 1% level. This table is no longer included because of the length of the article.

The promulgation of Confucian virtues was facilitated by the establishment of Confucian temples throughout China (Ho, 1962; Chen et al., 2019a). The greater the number of Confucian temples built, the more related Confucian rituals conducted and the deeper Confucianism's influence on society (Ho, 1962; Kung and Ma, 2014). Therefore, we posited that the greater the number of Confucian temples near a firm, the more profound the influence of Confucianism on the firm. In Columns (1)–(3) in Table 6, the proxy variables of Confucianism are replaced by the density of Confucian temples within a radius of 100 km, 200 km, and 300 km of firms, and the regression results show that the coefficient is still significantly negative. These results support the aforementioned conclusions.

Chen et al. (2018) and Jin et al. (2022) used the number of Confucian colleges as a proxy for measuring the presence of Confucianism in a given area. This methodology was adopted to assess the influence of Confucianism on individual behavior, with a particular focus on the impact of Confucian education. As expounded by Confucius and his successors, the spread of Confucianism was primarily achieved through lectures and education in Confucian colleges such as temples and academies. During the Ming and Qing Dynasties, Confucian education became more secularized and accessible to the general population, further popularizing and disseminating the principles of Confucianism. Given this historical context, it is appropriate to use the number of Confucian colleges as a proxy for Confucianism. The regression analysis results, which utilized the density of Confucian colleges in prefecture-level cities to measure Confucianism, confirmed the significant negative impact of Confucianism on the purchase of D&O insurance. However, owing to space limitations, the results of this analysis are not presented herein.

4.5.2. Influence of CEO's birthplace and native place

Childhood experiences are susceptible to the external environment, and childhood is a critical period for psychological development, including the development of values (Elder Jr, 1974). Early educational experiences and the growth environment in childhood have an important influence on behavioral decision-making in adulthood. After adolescence, personality traits stabilize as psychological characteristics mature. Therefore, we posit that executives' childhood experiences are closely related to their corporate decisions. For example, CEOs who experienced severe disasters in childhood tend to be more conservative, which can significantly impact corporate social performance (Bernile et al., 2017; O'Sullivan et al., 2021). Thus, a CEO's early childhood experience is considered an essential element in the behavioral decision-making process. Referring to Chen et al. (2019a, 2020), this study used *jinshi* density

within a radius of 100 km, 200 km, and 300 km of CEOs' birthplace as a proxy variable for Confucianism to explore the relationship between Confucianism and D&O insurance demand.

The uniquely Chinese concept of native place is an expression of a kind of ancestral home, and the native place of a citizen has historically been considered the residence of their grandfather at the time of the citizen's birth (i.e., a citizen's registered permanent residence), which has generally been consistent with the citizens' place of birth. Since ancient times, Chinese people have considered themselves to long for their native place. One's native place also has an important impact on one's growth environment. In this study, we adopted the Confucian cultural atmosphere of the CEO's hometown as a proxy variable for Confucianism. The density of *jinshi* within a radius of 100 km, 200 km, and 300 km of the CEO's native place location was selected and then standardized. The regression results are shown in Columns (4)–(9) in Table 6, and the coefficient is still significantly negative. This again verifies the negative relationship between Confucianism and D&O insurance. Hypothesis 1b is rejected.

4.5.3. Controlling for religion

Religion and Confucianism are considered informal institutional factors (Ge, 2021). They also affect the need for D&O insurance. Drawing on Du (Du, 2015), the density of religious temples within the radius of 100 km, 200 km, and 300 km of the firm's registration place was used as control variables to further eliminate the interference of religious tradition on our findings. The results show that the relationship between Confucianism and D&O insurance demand is still valid under religious control.

4.5.4. Alternative model

To validate the robustness of the above results, the probit and logit models were further tested with reference to Jia et al. (2019). The coefficients of the main independent variables are significantly negative. Thus, Confucianism has a prominent inhibitory effect on D&O insurance, again verifying Hypothesis 1a.

4.5.5. Subsample test

To further test the impact of Confucianism on changes in the D&O insurance purchase decisions of listed companies, the sample that had never purchased D&O insurance was deleted during the sample period. The coefficient is still negative and significant at the 1% confidence level. This finding indicates that Confucianism inhibits the purchase of corporate D&O insurance, and Hypothesis 1a was confirmed. Considering the length of the article, these tables are no longer shown.

4.6. Economic channel

We explore the mechanism by which Confucianism decreases listed companies' D&O insurance demand. Risk-taking has both positive and negative effects. Moderate risk-taking may enhance corporate value (John et al., 2008). Conversely, excessive risk-taking may have devastating economic consequences for the firm. Under the impact of Confucianism, senior executives are more likely to fulfill their fiduciary responsibilities, reduce opportunistic behaviors (e.g., risk-taking), and lower their levels of risk-bearing capacity (Chen et al., 2019a).

The stronger the influence of Confucianism, the more conservative a firm's attitude toward risk. First, uncertainty avoidance is an essential concept in Confucianism, which advocates prudence in speech and conservatism in behavior. Therefore, if a firm is more influenced by Confucianism, it is less likely to encourage risk-taking behaviors such as overinvestment (Chen, 2017). Second, compared to the concept of individualism, Confucianism emphasizes collectivism, and advocates that individuals must obey the collective and even sacrifice individual pursuits when necessary (Jin et al., 2022). Thus, collectivism tends to avoid risk (Licht et al., 2007). Conversely, individualism emphasizes the realization of individual value and highlights individual ability, which may aggravate individuals' risk-taking behaviors and their choice of high-risk projects (Chen, 2017). Therefore, collectivism and uncertainty avoidance, advocated by Confucianism, restrain risk-taking behaviors and reduce corporate risk-taking (Chen et al., 2017). As a

Table 7
Economic channel.

Indep.Var	*Confu_100*	*Confu_200*	*Confu_300*	
Dep. Var	*Risk_taking*	*Risk_taking*	*Risk_taking*	*DO*
	(1)	(2)	(3)	(4)
Confu_R	**−0.019***	**−0.032*****	**−0.045*****	
	(−1.660)	**(−2.719)**	**(−3.680)**	
Risk_taking				**0.015*****
				(6.608)
Control variables	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes.	Yes	Yes
Region FE	Yes	Yes.	Yes	Yes
Observations	16,803	16,803	16,803	16,803
R-squared	0.193	0.194	0.194	0.122

This table shows the mediating effect results. Risk-taking is measured by the fluctuation level of the firm's earnings in the three-year period. T-statistics are given in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 8
Further analysis.

Panel A Regulatory Environment

	(1)	(2)	(3)	(4)	(5)	(6)
Indep.Var	*Confu_100*	*Confu_200*	*Confu_300*	*Confu_100*	*Confu_200*	*Confu_300*
	High Analyst Attention	Low Analyst Attention	High Analyst Attention	Low Analyst Attention	High Analyst Attention	Low Analyst Attention
Confu_R	**0.001**	**−0.040*****	**−0.005**	**−0.040*****	**−0.015*****	**−0.049*****
	(0.119)	**(−8.423)**	**(−0.963)**	**(−8.041)**	**(−3.123)**	**(−9.478)**
Observations	9399	7412	9399	7412	9399	7412
R-squared	0.163	0.100	0.163	0.100	0.164	0.103
Difference test	−0.037***		−0.026***		−0.020***	
Indep.Var	*Confu_100*	*Confu_200*	*Confu_300*	*Confu_100*	*Confu_200*	*Confu_300*
	High Audit Quality	Low Audit Quality	High Audit Quality	Low Audit Quality	High Audit Quality	Low Audit Quality
Confu_R	**0.001**	**−0.040*****	**−0.005**	**−0.040*****	**−0.015*****	**−0.049*****
	(0.119)	**(−8.423)**	**(−0.963)**	**(−8.041)**	**(−3.123)**	**(−9.478)**
Observations	9399	7412	9399	7412	9399	7412
R-squared	0.163	0.100	0.163	0.100	0.164	0.103
Difference test	−0.037***		−0.026***		−0.020***	

Panel B External Environment

Indep.Var	*Confu_100*	*Confu_200*	*Confu_300*	*Confu_100*	*Confu_200*	*Confu_300*
	Strict Legal Environment	Relaxed Legal Environment	Strict Legal Environment	Relaxed Legal Environment	Strict Legal Environment	Relaxed Legal Environment
Confu_R	**−0.029*****	**−0.010****	**−0.041*****	**−0.009****	**−0.064*****	**−0.013*****
	(−5.531)	**(−2.348)**	**(−7.219)**	**(−2.209)**	**(−10.650)**	**(−2.957)**
Observations	9783	7028	9783	7028	9783	7028
R-squared	0.169	0.095	0.171	0.095	0.176	0.095
Difference test	−0.034***		−0.043***		−0.053***	
	(1)	(2)	(3)	(4)	(5)	(6)
Indep.Var	*Confu_100*	*Confu_200*	*Confu_300*	*Confu_100*	*Confu_200*	*Confu_300*
	Flat Terrain	Uneven Terrain	Flat Terrain	Uneven Terrain	Flat Terrain	Uneven Terrain
Confu_R	**−0.007**	**−0.026*****	**−0.002**	**−0.033*****	**−0.012****	**−0.044*****
	(−1.437)	**(−4.804)**	**(−0.347)**	**(−6.131)**	**(−2.079)**	**(−7.992)**
Observations	8867	7165	8867	7165	8867	7165
R-squared	0.158	0.148	0.158	0.150	0.158	0.153
Difference test	−0.021***		−0.018***		−0.017**	

Panel C Nature of investor

Indep.Var	*Confu_100*	*Confu_200*	*Confu_300*	*Confu_100*	*Confu_200*	*Confu_300*
	SOE	Non-SOE	SOE	Non-SOE	SOE	Non-SOE
Confu_R	**−0.041*****	**−0.002**	**−0.051*****	**−0.002**	**−0.067*****	**−0.009****
	(−6.503)	**(−0.578)**	**(−7.852)**	**(−0.526)**	**(−9.962)**	**(−2.329)**
Observations	7010	9801	7010	9801	7010	9801
Adj.R^2	0.162	0.057	0.164	0.057	0.169	0.058
Difference test	0.026***		0.027***		0.030***	
Indep.	*Confu_100*	*Confu_200*	*Confu_300*	*Confu_100*	*Confu_200*	*Confu_300*
	Non-foreign holding	Foreign holding	Non-foreign holding	Foreign holding	Non-foreign holding	Foreign holding
Confu	**−0.022*****	**0.021**	**−0.023*****	**−0.001**	**−0.034*****	**0.011**
	(−6.313)	**(1.343)**	**(−6.537)**	**(−0.079)**	**(−9.299)**	**(0.671)**
Observations	15,905	906	15,905	906	15,905	906
Adj.R^2	0.126	0.214	0.126	0.212	0.128	0.213
Difference Test	−0.034***		−0.025**		−0.050***	
	Confu_100	*Confu_200*	*Confu_300*	*Confu_100*	*Confu_200*	*Confu_300*
	Low-institution	High-institution	Low-institution	High-institution	Low-institution	High-institution
Confu	**−0.033*****	**−0.007**	**−0.030*****	**−0.015*****	**−0.037*****	**−0.027*****
	(−8.352)	**(−1.297)**	**(−7.125)**	**(−2.703)**	**(−8.656)**	**(−4.751)**
Observations	8568	8243	8568	8243	8568	8243
Adj.R^2	0.086	0.171	0.084	0.172	0.087	0.173

(*continued on next page*)

Table 8 (*continued*)

Panel C Nature of investor						
Indep.Var	*Confu_100*	*Confu_200*	*Confu_300*	*Confu_100*	*Confu_200*	*Confu_300*
	SOE	Non-SOE	SOE	Non-SOE	SOE	Non-SOE
Difference Test	−0.027***		−0.013**		−0.008	

Panel D Executives' characteristics						
Indep.Var	*Confu_100*	*Confu_200*	*Confu_300*	*Confu_100*	*Confu_200*	*Confu_300*
	Overseas Experience	Non-Overseas Experience	Overseas Experience	Non-Overseas Experience	Overseas Experience	Non-Overseas Experience
Confu_R	**0.015**	**−0.022*** **	**0.006**	**−0.023*** **	**−0.003**	**−0.033*** **
	(0.895)	**(−5.195)**	**(0.341)**	**(−5.320)**	**(−0.148)**	**(−7.323)**
Observations	9399	7412	9399	7412	9399	7412
R-squared	0.163	0.100	0.163	0.100	0.164	0.103
Difference test	−0.039***		−0.026**		−0.025**	
Indep.Var	*Confu_100* High Degree of Myopia	*Confu_200* Low Degree of Myopia	*Confu_300* High Degree of Myopia	*Confu_100* Low Degree of Myopia	*Confu_200* High Degree of Myopia	*Confu_300* Low Degree of Myopia
Confu_R	**−0.031*** **	**−0.008**	**−0.035*** **	**−0.008***	**−0.045*** **	**−0.018*** **
	(−6.545)	**(−1.616)**	**(−7.064)**	**(−1.689)**	**(−8.868)**	**(−3.560)**
Observations	8401	8410	8401	8410	8401	8410
R-squared	0.130	0.133	0.131	0.133	0.134	0.134
Difference test	0.018**		0.015***		0.012**	

T-statistics are given in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. All table control for all control variables, and Year, Industry, and Region fixed effects.

necessary means of risk management, the insurance coverage of a firm should be adjusted according to actual risk exposure (i.e., the actual level of risk-bearing capacity) (Park, 2018). Corporate activities, such as financial reporting, business, corporate governance, and litigation, affect a firm's D&O insurance demand. Lin et al. (2011) and Lin et al. (2013) observed that higher D&O insurance coverage is associated with higher corporate risk. This is because D&O insurance needs are usually related to lawsuits by minority shareholders or other stakeholders against the firm and its managers. Shareholder litigation is caused by poor stock performance and high stock price volatility. Simultaneously, the increase in corporate operations and financial risk is a fundamental reason for stock return fluctuations (Boyer and Stern, 2014).

Based on the above analysis, the risk-taking level (*Risk_taking*) is used as a proxy variable for the conservative behavior of listed companies. Referring to John et al. (2008), firms' risk-taking was measured by the fluctuation level of their earnings in the three years (i.e., the standard deviation of the return on assets in the three-year forward-looking period). A two-step regression model was used.

The regression results are presented in Table 7. Columns (1)–(3) show whether Confucianism significantly affects a firm's risk-taking level. The results were considered statistically significant. As affected by Confucianism, a firm's risk-taking level was reduced. Column (4) shows the regression results for risk-taking and demand for D&O insurance. Moreover, it indicates a positive correlation between a firm's risk-taking level and its D&O insurance requirements; that is, a lower risk-taking level reduces the firm's need for D&O insurance. Thus, the level of risk-taking acts as a powerful mechanism between Confucianism and D&O insurance demand.

5. Discussion

Our study's findings show that under Confucian moral constraints, firms' opportunistic behaviors are reduced and, subsequently, D&O insurance demand decreases. Factors related to the moral constraints of Confucianism and corporate government also affect D&O insurance demand. Meng et al. (2013) posited that a superior external supervision environment could improve corporate governance and reduce unethical behavior, weakening the guiding role of Confucianism. Chen et al. (2020) found that in the Ming and Qing dynasties, locations with less undulating terrains produced more *jinshi*, which also influenced the spread of Confucianism in later generations. In addition to the external environment, internal corporate governance enhances (or weakens) the inhibitory action of Confucianism on D&O insurance demand. When internal governance is not in place, management may either ignore negative news or conceal it from stakeholders, aggravating the opportunistic behavior of directors, executives, and senior managers. Thus, the governance effect of Confucianism may be more prominent (Kong et al., 2022). Specific factors have a more decisive influence on opportunistic behavior within the firm; thus, the moral constraint of Confucianism becomes insignificant. Alternatively, these factors benefit Confucianism, and thus the impact of Confucianism will consequently be strengthened.

5.1. External environment

5.1.1. Regulatory environment

Superior external supervision improves corporate governance and information disclosure (Meng et al., 2013). Analysts generally possess more professional knowledge and abilities than ordinary investors. Healy and Palepu (2001) argued that analysts could be instrumental in supervising managerial behavior. In terms of audit quality, audits of the Big Four (i.e., PwC, Deloitte, EY, and KPMG) international audit firms are considered more professional and stricter than those of other firms, resulting in higher audit quality, which makes it difficult for clients to suppress negative information (Cao et al., 2019). Therefore, if Big Four accountants audit a firm, it is subject to stricter external supervision. Superior supervision can weaken the senior management team's governance effect and self-discipline behavior (Huang and Ho, 2023). Therefore, the governance effect of Confucianism may be more vital when external supervision is relaxed.

We divided our sample into high and low analysis attention groups according to median analyst attention in the same year and industry. Analyst attention is defined as the natural logarithm of the number of securities analysts who follow the same listed company plus one. Similarly, we split the full sample into two subsamples based on whether the firm is audited by a Big Four auditor. The results in Panel A of Table 8 show that Confucianism has a more substantial restraining effect on demand for D&O insurance in firms with less external supervision. All regression results passed the test of the coefficient difference between the groups. When external supervision is not in place, Confucianism can be used as an alternative governance mechanism to compensate for its deficiencies.

5.1.2. Legal environment

Unlike the high litigation risk environment created by Western legal systems, the Chinese legal system is not perfect, and listed companies face discrepant litigation risks. Significantly, there have been few litigation cases in which the court's decision favors stakeholders. Even if it is available to deceive stakeholders, the compensation amount for managerial fraud is limited compared to the cost. The immature legal environment in China weakens the disciplinary effect of investor litigation on management, and the impact of formal institutions needs to be further verified.

Williamson (2000) argued that there is a substitution or complementarity between Confucianism and the formal legal system. The complex interactions between them guide the most practical Chinese corporate activities. The origins of values, justice, and fairness of modern Chinese law originated from Confucianism, and thus, Confucianism and law are consistent to some extent.

Referring to Chen et al. (2021), we divide the sample into two groups according to the median of the same industry in a given year. The results in Panel B of Table 8 show that Confucianism has a more substantial restraining effect on demand for D&O insurance among firms in a stricter legal environment. Moreover, the empirical results passed the difference test between the groups. A mutually promoting relationship exists between Confucianism and the formal system.

5.1.3. Natural environment

The greater the topographic relief of a region, the more difficult the population transfer. This leads to a lower population density and less economic development. As a natural environmental condition, relief amplitude also plays a vital role in the relationship between Confucianism and the demand for D&O insurance. Confucianism is less conductive owing to the problem of undulating terrain. Consequently, the impact of Confucianism on listed companies may be weaker in these regions. During the Ming and Qing dynasties, the Yangtze River Delta region was flat, prosperous, and produced more *jin*shi (Chen et al., 2020). Following Barone and Narciso (2015), the definition of relief amplitude in a particular location is as follows:

$$ups\_downs = \frac{[max(H) - min(H)] \times [1 - P(A)/A]}{500} \tag{2}$$

where $max(H)$ and $min(H)$ are the highest and lowest elevations in each measuring unit, respectively. A is the area of the measuring unit; and $P(A)$ is the flat area within the measuring unit. The criterion for judging flat land is that the difference between the highest and lowest elevations within 25 km^2 should be less than or equal to 30 m.

Therefore, if *ups_downs* are higher than the median of the same industry in the same year, the sample is divided into a high-relief amplitude group. Otherwise, it was divided into the low-relief amplitude group. The results were also tested by the differences between the groups, as shown in Panel B of Table 8. This demonstrated that Confucianism substantially restrains D&O insurance demand in firms with low topographic relief. These results strongly support the notion that topographic relief restrains the influence of Confucianism on D&O insurance demand.

5.2. Internal governance

5.2.1. Nature of investor

Contrary to the ownership structure of private enterprises, the Chinese government owns or controls state-owned enterprises. In this case, corporate behavior is not entirely determined by the firm's will and interests. Since the Han Dynasty, the combination of Confucianism and the political ideology of rulers has been a moral tool for regulating people's and organizations' behaviors and maintaining social order. Thus, the influence of Confucianism is more evident in state-owned enterprises. As government organizations appoint the managers of state-owned enterprises, the managerial personnel levels correspond to those of government officials. These managers are inclined to be risk-averse in protecting their reputations and planning their careers (Stein, 1989; Hirshleifer and Thakor, 1992). Compared to private firms, state-owned enterprises are more profoundly impressed by Confucianism and are thus more

unwilling to buy D&O insurance.

The major shareholders of foreign stocks are often influenced by the principles of marketization and Western ideology, which advocate for market competition. This may lead to cultural conflicts between China and the West in foreign-funded enterprises (Chen et al., 2019). Previous research has highlighted that when there is cultural conflict within an organization, one culture may suppress the influence of another (Siegel, 2011). Therefore, the role of Confucianism in corporate decision-making may be diminished. Furthermore, as a product imported from the West, D&O insurance has a high coverage rate of up to 90% in Western countries. Foreign shareholders tend to have a relatively high level of acceptance and recognition of this insurance, meaning that the inhibitive effect of Confucianism on the demand for D&O insurance may not be as pronounced in foreign-funded enterprises.

According to Chopra et al. (1992), institutional investors possess several advantages, including a larger scale, specialized expertise, and an enhanced ability to gather and analyze information, resulting in more rational investment behavior. To maximize their interests, these investors tend to hold a higher number of shares, become active stakeholders, and engage in corporate governance. As argued by Yuan et al. (2016), D&O insurance can efficiently transfer compensation liabilities faced by a company, thereby reducing the risk of stock price collapse. Consequently, companies with a high proportion of institutional investor holdings are likely to be more willing to purchase D&O insurance to protect their rights and interests, thereby weakening the inhibiting effect of Confucianism. Furthermore, institutional investors are associated with formal institutions, which can counteract the influence of informal institutions, such as cultural norms, to some extent. Therefore, in companies where institutional investors have a low stake, the influence of Confucianism as a deterrent to D&O insurance is stronger.

Based on the previously discussed analysis, our sample was divided into two groups based on the nature of property rights: state-owned or non-state-owned, foreign or non-foreign. Panel C of Table 8 presents these findings. The results show that Confucianism strongly restrained the demand for D&O insurance in state-owned enterprises. It is also revealed that, in firms that are not foreign-controlled, the inhibitory effect of Confucianism on demand for D&O insurance is stronger. Furthermore, the sample was grouped according to the annual median of institutional investor holdings in each industry. The regression analysis results indicate that the presence of institutional investors weakens the impact of Confucianism on demand for D&O insurance. These regression results were confirmed to have passed the intergroup coefficient difference test.

5.2.2. *Executives' characteristics*

The corporate senior management team has leadership responsibilities for a firm's operations, decision-making, and management. Drawing on Huang and Ho (2023) and relevant provisions of the Chinese government's Company Law, in this study, we defined senior executives as general manager, deputy manager, chief financial officer (CEO), secretary of the board, and other executive members according to a company's articles of association. The characteristics of the senior management team—including the team members' level of experience—are critical for firms' decision-making and implementation. We posited that characteristics such as overseas academic or managerial experience and myopic management behavior strongly influence the purchase of D&O insurance.

The overseas experience —specifically, studying for a degree overseas or managerial experience—of the senior management team may facilitate the compliance of a corporation with strict governance standards, as experience abroad tends to increase executives' self-discipline (Cao et al., 2019). As a result, the opportunistic behavior of listed companies may decrease. Moreover, exposure to different cultural backgrounds may lead to diversity in people's ideologies, thinking, and behavior (Chen et al., 2019a). Hence, we posit that the effect of Confucianism becomes less significant when the senior management team includes executives with overseas academic and managerial experience.

Management behavior is characterized as myopic if the management team sacrifices long-term corporate interests to maximize short-term financial performance and stock prices. Conversely, Confucianism emphasizes the balance between long- and short-term interests and that immediate benefits should not be pursued at the expense of future benefits (Lin et al., 2013). Therefore, the

Table 9
Litigation risk.

Indep.Var	*Confu_100*	*Confu_200*	*Confu_300*
	(1)	(2)	(3)
Confu_R	**−0.017*****	**−0.019*****	**−0.029*****
	(−4.843)	**(−5.390)**	**(−7.879)**
Confu_R_Lawsuit	**−0.012*****	**−0.010*****	**−0.010*****
	(−3.538)	**(−3.134)**	**(−2.788)**
Lawsuit	**0.042*****	**0.038*****	**0.037*****
	(4.603)	**(4.222)**	**(3.837)**
Control variables	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes.	Yes
Region FE	Yes	Yes.	Yes
Observations	16,811	16,811	16,811
R-squared	0.123	0.123	0.125

This table reports the moderating effect results. Litigation risk, as the moderating variable, is defined as whether a listed company is sued in a given year. T-statistics are given in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

governance effect of Confucianism is more pronounced in firms with myopic management.

Following Huang and Ho (2023), if the senior management team includes one or more managers with overseas academic or managerial experience, the value of overseas experience is 1; 0 otherwise. Referring to the discussion of the short-term horizon of Brochet et al. (2015), we used text analysis to define the short-term vision index of management. Our study's sample companies were grouped according to the annual median value of the management myopia index. The regression results are shown in Panel D of Table 8. Consequently, in Chinese companies with no foreign experience or highly short-sighted management, Confucianism has a more substantial restraining effect on the demand for D&O insurance.

5.2.3. Litigation risk

Based on a quasi-natural experiment to explore the reform of class action lawsuits, Park (2018) argued that a firm would increase D&O insurance to cope with ascending litigation risk. Additionally, corporate litigation destroys a firm's reputation and has a series of adverse effects on production and operation. Therefore, Confucianism's governance effect plays a more important role in firms with higher litigation risk.

Referring to Jia et al. (2019), the dummy variable measured litigation risk. The *Lawsuit* was 1 if the firm had been sued in the same year, and 0 otherwise. Next, we introduced the interaction between Confucianism and litigation risk (*Confu_R_Lawsuit*): The coefficient of *Confu_R_Lawsuit* represented the joint effect of litigation risk and Confucianism on listed companies' D&O insurance. Table 9 shows the regression results. First, the coefficient of Lawsuit is significantly positive at the 1% level. This supports the findings of previous studies that demonstrated litigation risk increases the market for listed companies' D&O insurance (Park, 2018). Second, the interaction term was distinctly negative with the same symbol as *Confu_R*'s coefficient; that is, in companies with higher litigation risk, Confucianism has a more substantial inhibiting effect on the D&O insurance demand of listed companies.

6. Conclusion

This study explored the relationship between Confucianism and business ethics in China and explained the reasons for the low coverage of D&O insurance in emerging markets from the perspective of informal institutions. The findings are as follows. First, Confucianism has a conspicuous restraining effect on D&O insurance demand; a stronger Confucian atmosphere leads to fewer purchases of D&O insurance by Chinese listed companies. Second, the mechanism analysis demonstrates that Confucianism mainly affects D&O insurance demand by reducing corporate risk-taking. Third, the external environment analysis showed that this relationship is more prominent in firms with lower analyst attention and audit quality and regions with a developed legal environment and a minor degree of topographic relief. Finally, our internal governance analysis revealed that Confucianism significantly impacts the need for D&O insurance in firms with shortsighted management teams, lack of overseas experience, fewer institutional investors, and in state-owned or non-foreign enterprises. Litigation risk significantly enhances the inhibitory effect of Confucianism on D&O insurance.

6.1. Managerial implications

The main implications of this study for scholars, corporate management, and stakeholders are as follows. First, as China is an emerging market, its formal institutions are still imperfect; therefore, informal institutions, such as culture, may supplement resource allocation efforts. Next, corporate managers should realize the significant influence of Confucianism on their values and behavioral decisions and adopt appropriate strategies to maximize their strengths and avoid their weaknesses. Then, lawmakers and regulators in China should consider the complementary role of Confucianism in establishing formal systems. Finally, they should use traditional cultural factors to guide market activities and build a flexible management model informed by formal and informal institutions. This will facilitate the speed and effectiveness of policy and program implementation.

6.2. Limitations

This study has some limitations. Although we examined the factors influencing D&O insurance purchases, future scholars and stakeholders can further develop the following three aspects. First, compared with dummy variables, changes in D&O insurance and cost amounts may contain more information. Future scholars and stakeholders should explore this, as D&O insurance coverage is an important factor. Second, the influence of Confucianism is strong not only in China but also in Korea, Thailand, and Singapore. Hence, future scholars and stakeholders should probe the influence of Confucianism on D&O insurance demand under different institutional backgrounds. Finally, as D&O insurance is instrumental in corporate governance, future scholars and stakeholders should further investigate the reasons for upward (or downward) changes in insurance amounts and costs, the problem of excess D&O insurance coverage, and the governance effect on corporations.

7. Notes

Referring to Jin et al. (2022), the regional dummy variables are divided into five main areas according to the degree of economic development and geographical distribution in China. The most developed are the municipalities of Beijing, Shanghai, Tianjin, and Guangdong. The second most developed are Jiangsu, Zhejiang, Shandong, Fujian, and Hainan provinces. The third most developed are Hunan, Hubei, Jiangxi, Anhui, Sichuan, and Chongqing. Liaoning, Jilin, Heilongjiang, Shanxi, and Inner Mongolia rank fourth among developed regions. The remaining regions are the fifth most developed.

Ethical approval

This article does not contain any studies with human participants or animals performed by any of the authors.

Informed consent

Informed consent was obtained from all individual participants included in the study.

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Declaration of Competing Interest

All authors declare that he has no conflict of interest.

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