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Directors' and officers' liability insurance: a systematic literature review

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Abstract

Purpose – We review and synthesize the existing research on directors' and officers' (D&O) liability insurance. Our objectives are (1) to examine the institutional forces and regulatory requirements that have influenced the development of D&O liability insurance; (2) to identify the factors that influence firms to purchase D&O liability insurance and explore the consequences associated with its usage and (3) to identify gaps in the current literature and provide recommendations for future research on D&O liability insurance.

Design/methodology/approach – We perform a systematic literature review (SLR) using the Preferred Reporting Items for a Systematic Review of Meta-Analysis (PRISMA) guidelines to examine archival studies that investigate the determinants and consequences of D&O liability insurance. Using a Boolean search strategy on the "Web of Science" (WoS) and PRISMA selection criteria, we review 64 published archival research articles and three working papers from 1987 to October 2023.

Findings – Our review reveals that disclosing detailed information regarding D&O liability insurance, such as total insurance premiums and coverage limit, is predominantly voluntary, except in Taiwan. Our findings suggest that the decision to purchase D&O liability insurance is influenced by litigation risk, which is determined by factors such as firm size, complexity and corporate governance variables. We also find that D&O liability insurance has implications for financial reporting, audit outcomes, investment behavior and capital market performance.

Practical implications – In the post-COVID era, where firms face pressure due to financial constraints, our research emphasizes the practical importance of carefully considering and understanding the impact of D&O liability insurance, particularly as it concerns the demand for such insurance.

Originality/value – To the best of our knowledge, this study represents the first systematic review of previous research on D&O liability insurance. Our review highlights some research gaps, particularly in relation to the implications for financial reporting practices, auditing outcomes, firm investment behavior and capital market consequences.

Keywords D&O liability insurance, Litigation risk, Financial reporting, Audit outcome, Systematic literature review

Paper type Literature review

1. Introduction

This paper aims to provide a systematic literature review on the determinants and consequences of directors' [1] and officers' liability insurance (hereafter, D&O liability insurance). D&O liability insurance protects directors, officers, and corporations from liabilities stemming from litigation, mainly brought by shareholders for not diligently

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discharging their official duties (Baker and Griffith, 2006). Griffith (2006) segregates shareholder litigation into three major types. First, derivative lawsuits, which are brought by the shareholders on behalf of the corporation when there is a breach of duties by the directors or officers. The main reason to initiate a derivative lawsuit is to improve corporate governance and prevent officers or directors from violating their fiduciary duties (Ferris *et al.*, 2007). Second, shareholder class action lawsuits, which are brought by shareholders individually or in groups against the directors or the corporation for misconduct causing financial loss to shareholders [2]. Third, securities fraud claims, which are brought by a large group of shareholders against directors or the corporation for their alleged illegal or fraudulent actions, such as insider trading, accounting frauds, and stock manipulation: actions that are detrimental to shareholder interests.

Just as the types of litigation against firms can vary, D&O liability insurance cover also varies. There are three types of insurance coverage available under the umbrella term D&O liability insurance, namely, type A, B and C. Type A (or individual) coverage protects directors from legal expenses incurred during litigation proceedings. Type B (or corporate) coverage protects corporations from litigation costs arising from claims against directors pertaining to the areas not indemnified by the corporation. Type C (or entity) coverage provides for direct reimbursement of costs that the company itself may incur from D&O related suits (Tarr, 2016). Type C cover, however, is rare. D&O liability insurance typically excludes coverage for fraud and illegal profit by directors and officers. Donelson *et al.* (2015) find that the limits of D&O liability insurance play a relatively small role in settlement outcomes. In practice, exclusion of certain clauses (such as claims arising from fraudulent, dishonest acts by directors or officers, pending litigation or insider trading) in D&O liability insurance policies typically do not pose a significant hurdle. This occurs because such exclusions must be officially determined through a final adjudication or because the plaintiff's lawyers can strategically opt not to mention such exclusion in their pleadings (Baker and Griffith, 2010). Generally, insurers tend to approve payouts as long as the defendants (directors and officers) do not confess to fraud or illegal profit. Despite this limitation, D&O insurance is crucial in shielding directors and officers, covering defence costs and settlements for legal matters, such as securities class actions and litigation by regulators such as the Securities and Exchange Commission. The infrequent use of exclusions results in insurers covering substantial defence costs, ensuring effective protection for the personal assets of directors and officers.

From a theoretical perspective, some legal scholars strongly *oppose* the idea of D&O liability insurance, arguing that it negates the fairness and deterrence objectives of a legal system by reducing the motivation of directors and officers to adhere to their corporate responsibilities by reducing or eliminating the cost of compliance (Ambrose *et al.*, 2013). This school of thought identifies three major costs of D&O liability insurance. First, standard moral hazard cost arises when D&O liability insurance boosts the risk appetite for directors and officers and/or diminishes their motivation for diligence, knowing that the third party will bear the economic consequences (Liao and Li, 2017; Lin *et al.*, 2013). Second, adverse selection cost arises when firms with poor governance structures are more likely to purchase D&O liability insurance to protect themselves against litigation (Core, 1997). Third, third-party moral hazard cost arises when the existence of D&O liability insurance will attract litigation from third parties who may be more inclined to sue knowing that insurance cover is available (Parchomovsky and Siegelman, 2022). However, the *proponents* of D&O liability insurance argue that the purchase of such insurance alleviates the agency problem as the insurer plays an external monitoring role, motivating the directors and officers to discharge their responsibilities diligently (Lin *et al.*, 2013). Considering the contrasting theoretical perspectives outlined above, and the research conducted on the determinants and consequences of D&O liability insurance within the realms of accounting, finance and corporate governance, it is important to undertake a comprehensive synthesis of this literature.

This study addresses the research aim by conducting a systematic literature review (SLR) using the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) approach. As recommended by Massaro *et al.* (2016), we design three research questions (RQ) and conduct an SLR. The research questions are:

RQ1. What are the institutional forces, including the regulatory requirements that led to the development of D&O liability insurance?

RQ2. What factors influence a firm's decision to purchase D&O liability insurance?

RQ3. What are the consequences of purchasing D&O liability insurance on the accounting, finance and governance outcomes of a firm?

The first research question describes when and how D&O liability insurance regulations were initiated and changed across various jurisdictions. The second research question explores the factors that motivate a firm to purchase D&O liability insurance. Finally, in the third study question we delve into the effect of purchasing D&O liability insurance on the accounting, finance and governance outcomes of a firm.

There is a growing body of contemporary research published in academic and professional journals on the factors that affect the demand for, and consequences of, D&O liability insurance related to accounting, finance, law and corporate governance. The "Web of Science" (WoS) was used to conduct a comprehensive and systematic search to choose the data sources to ensure in-depth coverage. This search strategy allowed the examination of a broad spectrum of peer-reviewed academic publications. We conducted a Boolean keyword search containing words related to D&O liability insurance: "director and officer liability insurance" OR "director and officer liability*" OR "director and officer liability insurance" OR "director and officer liability*" OR "D&O liability insurance" OR "D&O liability" OR "director and officer insurance" OR "director and officer insurance coverage" OR "directors officers insurance" OR "directors officers liability*" OR "directors' and officers' insurance" OR "directors' and officers' liability" OR "directors' and officers' liability insurance". The PRISMA framework outlines a systematic study selection process consisting of four steps: *identification*, *screening*, *eligibility* and *inclusion*. We perform the Boolean search for the period ending October 2023, which returned a total of 206 records (*identification*). One of our criteria during the identification process is that studies should focus on examining the determinants and/or consequences of D&O liability insurance as the primary research question. Studies that treat D&O liability insurance as a control variable are excluded, but those incorporating D&O liability insurance as a moderating variable are included. We then exclude conference proceedings, book reviews, editorial materials, and non-English manuscripts (46) from the initial search, resulting in 160 articles in the fields of accounting, finance, law, and corporate governance. We carefully reviewed the articles published in law journals and purposefully opted to discard them since they frequently discussed D&O liability insurance-related cases and interpretation, providing in-depth insights into legal aspects and precedents rather than using mainstream empirical archival analysis as the research methodology. However, Core (2000) is an exception who applied an archival research approach and hence we decided to include this study. We also excluded papers that focused on the impact of changes in director liability but did not specifically examine D&O liability insurance as a part of their research question (such as Basu and Liang, 2019).

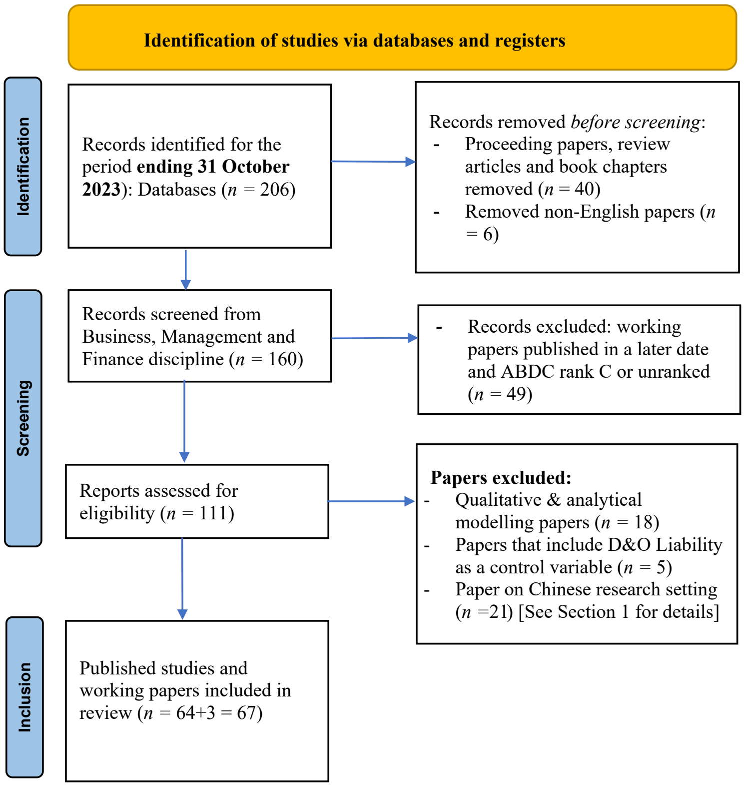
To maintain the quality of the review, we primarily include journals listed on the 2019 Australian Business Deans Council (ABDC) rankings, Field of Research codes 1,501 (Accounting) and 1,502 (Finance) [3]. However, to ensure the review is comprehensive, we also include articles that investigate the determinants and consequences of D&O liability insurance from the perspectives of accounting, finance and corporate governance but which were published in non-accounting and finance journals such as *Economic Modelling* and *Ecological Economics*. We retained the 111 articles published in the 2019 ABDC journal outlets ranked A*, A and B (*screening* and *eligibility* phases of the PRISMA) [4]. To minimize the likelihood that a study investigating D&O liability insurance is omitted from our search procedure, we additionally check through the reference lists of the studies found in the previous stage. Also, we carry out an additional manual screening process to identify papers that are based on analytical modeling and studies that have not explored D&O liability insurance as an experimental variable. As a result of this screening process, we locate and exclude a total of 23 papers that do not meet our criteria of reviewing this topic based on archival research.

During the designated sample period, a total of 21 studies were published in diverse academic journals, focusing on listed firms in China. However, a deliberate decision was made to exclude these studies for specific reasons. Principally, Mainland China operates within a structured, non-free market economic system. Consequently, delineating the precise extent of coverage within D&O insurance contracts and determining whether corporations procure insurance devoid of political influence, potentially from the governing Party, remains ambiguous. More importantly, these academic papers present a critical concern pertaining to potential econometric shortcomings. They might have encountered methodological flaws in their econometric analyses by primarily relying on a singular dummy variable to represent D&O liability insurance. Importantly, all but one or two studies from Mainland China use panel data with repeated firm observations yet do not use firm fixed effects in their regressions. If a paper does not control for firm fixed effects in a panel data approach, then the paper is applying the wrong econometric technique [5]. This methodological limitation could compromise the robustness and validity of their findings.

Finally, a total of 67 studies are *included* in the structured literature review. Our final sample comprises three working papers, selected after a manual review of each working paper. Working papers that were published at a later date were excluded from the review. Figure 1 shows the study selection process in detail following the PRISMA recommendations. An overwhelming majority (77%) of the reviewed papers were published in the last ten years. The summary of the reviewed papers reveals that the three largest jurisdictions covered are Taiwan (25 papers), Canada (21 papers), and the United States (13 papers). Table 1 provides a breakdown of the publication outlets of the reviewed papers, including the ABDC journal rank.

Our review highlights that the demand for D&O liability insurance is determined by firm-specific characteristics, including firm size, complexity, ownership and board structures: firm characteristics that tend to increase litigation risk. Therefore, the pricing of D&O liability insurance conveys information about a firm's risk profile, and shareholders consider this in their investment decisions. However, very little is known about how insurance providers carry out their risk assessment during the contracting process with the firm. As for the consequences of D&O liability insurance, our review provides mixed evidence. While D&O liability insurance alleviates directors and officers from potential financial burdens associated with litigation, enabling them to make strategic and innovative decisions with greater ease, our review suggests that D&O liability insurance can have negative implications as it can compromise the quality of financial reporting and diminish the effectiveness of litigation, thereby exacerbating adverse selection and moral hazard problems. Our review seeks to reinvigorate empirical research studies by examining the determinants and consequences of D&O liability insurance as a key dimension in the overall governance system.

The remainder of the paper proceeds as follows. Section 2 provides the theoretical foundations for research on D&O liability insurance. Section 3 provides an institutional



Note(s): This figure is prepared by the authors

Figure 1.
PRISMA flow diagram for systematic literature reviews

overview of D&O liability insurance in select jurisdictions. Section 4 provides the main review of the literature. Section 5 provides directions for future research and section 6 concludes the paper.

2. Theories of D&O liability insurance

The need for liability insurance stems from the legal responsibility of individuals and corporations who cause personal injury and financial loss to third parties. This type of insurance policy is different from a first-party insurance cover which directly protects the policyholders from such losses (Ambrose *et al.*, 2013). In their study on the legal dimension of D&O liability insurance, Ambrose *et al.* (2013, p. 316) argue as follows:

> The tort liability system operates with two objectives. First, the fairness goal under which it is thought to be equitable for an injurer to bear the cost of injuries caused by his or her actions. This idea leads to the second objective; deterrence of the behavior that may cause injuries. If potential injurers are made financially responsible for the costs of their actions, they should factor those costs into their decisions about the extent of risk involved in their behavior.

The authors further argue that the existence of D&O liability insurance violates, to some extent, both stated objectives. For example, the fairness objective asserts that directors and officers must be liable to pay the costs associated with injuries arising from their actions

Journal	Count	ABDC rank
Journal of Risk and Insurance	9	B
Pacific-Basin Finance Journal	5	A
International Review of Economics & Finance	4	A
Finance Research Letter	3	A
Journal of Accounting and Economics	3	A*
Journal of Financial Intermediation	3	A*
Review of Accounting Studies	3	A*
Asia-Pacific Journal of Accounting & Economics	2	B
Corporate Ownership & Control	2	B
Emerging Markets Finance and Trade	2	B
Journal of Accounting & Public Policy	2	A
Journal of Financial Economics	2	A*
The Geneva Papers on Risk and Insurance - Issues and Practice	2	B
ABACUS	1	A
Accounting Forum	1	B
Accounting Perspective	1	B
Advances in Accounting	1	A
Asian Review of Accounting	1	B
Asia-pacific Journal of Financial Studies	1	B
Business & Society	1	A
European Management Journal	1	B
International Journal of Disclosure and Governance	1	B
International Review of Finance	1	A
Journal of Accounting, Auditing & Finance	1	A
Journal of Business Research	1	A
Journal of Corporate Finance	1	A*
Journal of Economics and Finance	1	B
Journal of Empirical Legal Studies	1	A*
Journal of Financial Perspective	1	Ref. to Footnote 4
Journal of Financial Reporting	1	A
Journal of International Accounting Research	1	A
Journal of Law, Economics and Organization	1	A
The Accounting Review	1	A*
The Journal of Finance	1	A*
The North American Journal of Economics and Finance	1	B
Working Paper	3	
Total	67	

Panel B – Country-wise distribution

Country	Count	Percent (%)
Taiwan	25	37.31
Canada	21	31.34
The USA	13	19.40
Korea	4	5.97
The UK	3	4.48
Germany	1	1.49
Total	67	100

Panel C – Year-wise distribution

Year	Count	Percent (%)
2023	2	2.99
2022	6	8.96

(*continued*)

Table 1.
Panel A: list of journals

Panel C – Year-wise distribution Year	Count	Percent (%)
2021	3	4.48
2020	3	4.48
2019	5	7.46
2018	6	8.96
2017	6	8.96
2016	3	4.48
2015	6	8.96
2014	9	13.43
2013	3	4.48
2012	3	4.48
2011	1	1.49
2010	1	1.49
2009	1	1.49
2008	3	4.48
2002	2	2.99
2000	1	1.49
1997	2	2.99
1987	1	1.49
Total	67	100

Note(s): This table reports the list of journals, country-wise and year-wise distribution of the articles included in this review
Source(s): This table is prepared by the authors

Table 1.

while insurance cover saves them incurring such costs, at least partially. Since liability insurance safeguards officers and directors, they will, therefore, be less likely to stop others from committing harmful actions which result in an intervention aimed at deterrence. Thus, from this theoretical perspective, Ambrose *et al.* (2013) oppose purchasing D&O liability insurance. However, other researchers in economics, finance and law provide further theoretical interpretations and explanations both in favor of (Wang and Chen, 2016; Yuan *et al.*, 2016) or against (West, 2001) the purchase of D&O liability insurance. This section provides an overview of the theoretical foundations used by earlier researchers to explain the purchase of D&O liability insurance and its consequences.

2.1 Agency theory

Prior research examining the theoretical foundations of D&O liability insurance is dominated by agency theory. Shareholder litigation stems from the divergence between the interests of shareholders and managers, i.e. due to an agency problem (Baker and Griffith, 2007; Bhagat *et al.*, 1987, 1994; Francis *et al.*, 1994). In this context, one group of researchers argues that the purchase of D&O liability insurance alleviates the agency problem because the insurer performs an external monitoring function (Wang and Chen, 2016; Yuan *et al.*, 2016). However, an opposing group of researchers argues that D&O liability insurance reduces the threat of litigation against directors and officers, thereby increasing managers' opportunistic behavior (Liao and Li, 2017; Lin *et al.*, 2013) and risk appetite (Chen *et al.*, 2017; Li and Liao, 2014). Hence, D&O liability insurance exacerbates the agency problem. This behavior has been termed *standard moral hazard* of D&O liability insurance (West, 2001).

The association between agency problems and D&O liability insurance is further explained through signaling theory and the information hypothesis. Boubakri and Bouslimi (2016) argue that the purchase of D&O liability insurance signals high future litigation risk. In other words, firms with poor governance and consequently a higher probability of litigation risk, i.e. high agency problems, will purchase more D&O liability insurance (Core, 1997). This explanation makes sense from the litigation theory standpoint, i.e. higher chances of litigation against the firm increases the desire to protect the officers and directors from litigation. Hence, the adverse selection results in most firms in this category purchasing more D&O liability insurance or paying a higher premium for it (Parchomovsky and Siegelman, 2022). Baker and Griffith (2007) find that, apart from considering the precedent of shareholder litigation history and financial health checks of the insured firm, D&O liability insurance underwriters prioritize corporate governance in risk assessment. Insurers demonstrate sophistication [6] in pricing by applying algorithms to evaluate not only the formal governance structure but also delving into 'deep' governance indicators, such as corporate culture.

Within the principal-agency framework, D&O liability insurance can be viewed as a component of the managerial remuneration package. Another strand of the literature investigates the interplay between D&O liability insurance, the outcome of litigation, and other remuneration components which jointly affect shareholder overall investment strategy. Parry and Parry (1991) and Gutierrez (2003) both consider D&O liability insurance to model the optimal compensation package with respect to loss distribution and the insurance premium.

Gutierrez (2003) investigates the multifaceted dynamics of D&O insurance, juxtaposing contrasting perspectives. While O'Sullivan (2002) posit that insurers function as monitors, spurring diligence in boards and executives, Gutiérrez contends that D&O insurance may instigate moral hazard by shielding directors from litigation, potentially undermining their commitment to stakeholder interests. The study also examines private enforcement mechanisms ensuring compliance with corporate governance codes, encompassing shareholder activism, stock market penalties, and director-oriented litigation. Gutierrez (2003) presents a principal-agent model to consider (1) how changes in the level of damage awards, legal fees, the probability of legal errors, and the availability of liability insurance alter both the directors' incentives to fulfill their fiduciary duties and the shareholders' incentives to litigate, and (2) how this in turn alters the optimal fiduciary contract that maximizes firm value. Gutierrez (2003) summarizes the propositions by noting that when litigation is costly, the damage award has to be high enough to give the shareholders the incentive to litigate. But if protective measures (e.g. D&O liability insurance) are not allowed, the same damage award will result in too much or too little litigation depending on the characteristics of the firm and the director (e.g. the director's wealth). When the director's wealth is low, the incentives for the shareholders to commence litigation can be maintained only through the adoption of an insurance policy which guarantees shareholders will receive the full amount of the damage award. In contrast, when the director's wealth is high, a high damage award may induce the shareholders to litigate too often even if the probability that the director is culpable is very low. In this case, the use of a cap on damages can solve the litigation problem. Gutierrez (2003) concludes that the existing legal rules are designed to optimally fill the gaps in the contracts between shareholders and directors (p. 531).

However, a contrasting theoretical argument is the information hypothesis which states that the insurer has the incentives and resources to examine the associated risks of the insured firm (Baker and Griffith, 2007; Boyer and Stern, 2012), therefore, the liability insurance premium provides additional information regarding the risks of the entity (Boubakri and Bouslimi, 2016). Thus, the purchase of D&O liability insurance by itself is not an indication of higher litigation risk, rather it provides decision-relevant information regarding the firm's corporate governance and its litigation risk profile. Griffith (2006) further explains this phenomenon and contends that insurers play a gatekeeping role by screening the governance quality and other risks associated with clients. Hence, information on D&O liability insurance, such as the amount of premium, overall limits, type of insurance policy, and the detail of the insurer will convey meaningful information to the market, but the lack of mandatory disclosure requirements discourages firms from providing such valuable information.

2.2 Third-party moral hazard theory

Parchomovsky and Siegelman (2022) argue that having D&O liability insurance increases the risk of being sued by third parties merely because the company becomes an easier target for lawsuits. Parchomovsky and Siegelman (2022) suggest that there are four reasons why third parties may be more likely to commence litigation against a company with D&O liability insurance. First, the insurance company has more money than the company itself, making the former a more attractive target. Second, insurance companies are not living creatures, therefore, the person initiating a lawsuit (plaintiff) against an insurance company feels less personal connection compared to directly suing an individual who will be paying from his personal pocket. This psychological distance and impersonal nature of the insurance company in the litigation process can attract more litigation: a phenomenon termed as depersonalization. Third, it may be more difficult for the insurance company to detect false claims resulting in unnecessary payouts and increased vulnerability to litigation. Finally, the monitoring party (e.g. the shareholders) responsible for overseeing the company's actions may become less vigilant because they believe the insurance company will do the monitoring for them (Parchomovsky and Siegelman, 2022, pp. 105).

Using representative examples from insurance policies other than D&O liability insurance, Parchomovsky and Siegelman (2022) demonstrate the existence of third-party moral hazard. For example, insurance which covers ransom demands made by kidnappers has been found to encourage more abductions (Weill, 2014). Similarly, insurance against cyber ransom has been linked to a rise in cyber-attacks (Dudley, 2019). In the healthcare industry, the presence of insurance has enabled overbilling and fraud. D&O liability insurance, too, has been associated with a higher likelihood of litigation against corporate defendants (Donelson *et al.*, 2018). Empirical studies provide evidence consistent with third-party moral hazard. For instance, Baker and Griffith (2009) interviewed several industry participants responsible for settling securities cases with one interviewee responding, "I think it is easier to get money out of an insurance carrier than it is out of an insured. Why? Because it is a third party's money" (p. 797). Donelson *et al.* (2018) find that the connection between insurance premiums and litigation is more significant for companies incorporated in New York (where disclosure of insurance premium information is mandatory), compared to those incorporated elsewhere. Donelson *et al.* (2018) suggest that the content of insurance disclosures has an impact on the likelihood of legal action. They conclude that if D&O insurance premiums were known in all states, it would have resulted in a 12–19% increase in securities class-action lawsuits during their sample period.

2.3 Other theories

Kaplan and Harrison (1993) use *resource dependence theory* to argue that directors are a critical resource for firms, and procuring liability insurance for this important resource will improve its utilization or governance effectiveness in two ways. First, it instils in directors confidence and assurance, thereby attracting more capable and skilled directors (Core, 1997). Second, insurers play a monitoring role that oversees the actions of directors, resulting in more responsible behavior, thus maximizing the utility of this important resource (Boyer and Stern, 2014; Core, 2000; O'Sullivan, 1997).

Kalelkar and Nwaeze (2015) explain D&O liability insurance through *optimal contracting theory* which suggests that a reduction in the risks imposed on management will enhance their performance. In other words, managers facing excessive risk will prefer "safe" projects over risky projects, irrespective of the fact that the risky projects could be more profitable. Kalelkar and Nwaeze (2015) find that abnormal D&O liability insurance coverage results in abnormal disclosures, more aggressive investments, and higher profitability.

Hu and Fang (2022) suggest that information transferred through the social network of executives affects organizational as well as individual decision outcomes, including D&O liability insurance-related decisions. Their findings suggest that firms connected through the social networks of executives have a higher tendency to purchase liability insurance because of the information exchanged through informal networks. Looking at liability insurance from the perspective of political connections, Jia *et al.* (2019) suggest that corporate political connections reduce the likelihood of connected firms purchasing D&O liability insurance. This is because governmental connections provide guaranteed protection to directors and officers as they possess formal and informal authority, which in turn reduces the reliance of connected firms on an external protection mechanism, i.e.i.e. D&O liability insurance coverage.

Using *behavioral decision theory*, Lai and Tai (2019) argue that overconfident CEOs have more trust in their decision making and problem-solving skills and will therefore have less demand for D&O lability insurance. Conversely, they further argue that the opportunistic behavior of overconfident CEOs will result in high demand for liability insurance because they will invest in significantly higher-risk projects. Core (1997, 2000) uses a related argument and asserts that entrenched managers will have more demand for liability insurance.

2.4 Section summary

The need for liability insurance arises from the legal responsibility of directors, officers, and corporations owed to third parties. The proponents argue D&O liability insurance mitigates the agency problem by encouraging directors and officers to undertake value-increasing activities. The opponents, however, are of the view that D&O liability insurance reduces the threat of litigation, which in turn leads to opportunistic managerial behavior and high-risk appetite, thereby exacerbating the agency problem. The association between the agency problem and D&O liability insurance is also explained through signaling theory and the information hypothesis. For example, the purchase of D&O liability insurance signals increased future litigation risk or provides decision-relevant information regarding a firm's governance and litigation risk profile. The third-party moral hazard theory suggests that D&O liability insurance increases the risk of lawsuits by third parties. Factors such as the insurance company's deeper pockets, reduced emotional attachment to suing the insurer, increased vulnerability to false claims, and decreased vigilance by monitoring parties results in third-party moral hazard. Other theories, including resource dependence theory, optimal contracting theory, social networking theory, and behavioral decision theory have also been used to explain the intention of firms to purchase D&O liability insurance.

3. D&O liability insurance: an institutional overview

D&O liability insurance is related to the litigation risks faced by directors and officers which is embedded in the legal and political environment of different jurisdictions. With respect to empirical research studies, the institutional background of the dataset is a critical consideration in justifying the sample selection and articulating the results and implications. Research studies under our review were from the US, United Kingdom (UK), Canada, Korea, Taiwan, China, and Germany, where the D&O liability insurance data is available because of the security market disclosure requirements across those countries. Many of these research studies have provided detailed descriptions of the institutional background and development of D&O liability insurance in the countries where data was collected. We now provide a synthesis of the collected knowledge of the institutionalization and implications of D&O liability insurance and the related disclosure requirements discussed by the research studies under our review [7].

3.1 D&O liability insurance: Anglo-Saxon environment

It is believed that the first D&O liability insurance was sold in England in 1930 (Chen *et al.*, 2015). Historically, UK firms were prohibited from indemnifying directors against liability for negligence, default and breach of fiduciary duty (O'Sullivan, 1997) because D&O liability insurance provides a cushion for directors and officers who caused financial damage to shareholders. Despite the common criticisms that D&O liability insurance weakens the monitoring role of shareholder litigation, the 1989 amendment to the UK 1985 Companies Act (section 310) allowed firms to purchase D&O liability insurance. The 1989 legislation also required companies to reveal the existence of a D&O liability insurance policy in their annual reports. Supporting arguments suggest that D&O liability insurance discourages overly conservative management and encourages talented individuals to serve as directors (O'Sullivan, 2002). There are essentially three types of D&O liability insurance available to directors in the UK: individual cover intended primarily for individual non-executive directors who hold multiple directorships; professional liability cover offered to lawyers, accountants and other professionals who sit on the boards of client companies as part of their professional services; and corporate cover, offering insurance to the directors and officers of a specific company and financed by the company.

Although it is not clear when the very first D&O liability insurance was purchased in the US, Donelson *et al.* (2018) provide a detailed discussion on the development of D&O liability insurance in the US. A set of legislation passed by New York Legislature (1969) clarified that firms may purchase D&O liability insurance to recover the cost of indemnification, which at the time had become a common practice. However, the legislation prohibits insurance policies from covering fraud. New York also required D&O liability insurance-related information to be disclosed to shareholders, including the insurance premiums. Nowadays, almost all US public companies purchase D&O liability insurance to protect directors, officers, and the firm itself against the cost of shareholder litigation (Baker and Griffith, 2010).

We summarize three key learnings from the development of D&O liability insurance in the US. First, D&O liability insurance is a response to class actions brought by shareholders against the firm. Directors and officers face two types of claimants: shareholders who sue in their own right, or on behalf of the corporation; and third-party claimants such as employees, creditors, customers or government agencies. Directors and officers are liable for breaches of their fiduciary duties (Romano, 1991). D&O liabilities are established through lawsuits. With shareholder class actions and indemnification of corporate officers becoming common in 1960s, D&O liability insurance also became widespread. The provisions of the US Sarbanes-Oxley Act 2002 (SOX) criminalized and added penalties to deter future corporate misconduct, which increased personal accountability for corporate directors and officers and, as a result, D&O premiums (Linck *et al.*, 2009). Second, there are different types of D&O liability insurance contracts (see section 2), so various parties can be involved in the contracting process. Third, D&O liability insurance providers are often consortiums or syndicates of local and international insurance firms, thus, D&O liability insurance is not insulated from global economic turmoil. Firms typically purchase coverage from multiple insurers with the excess policies covering claims after the primary policy coverages are fully used. The above three points may be relevant to all countries, but the following characteristics may be specific to the highly litigious US environment. Disclosure of D&O liability insurance information may affect litigation outcomes and so this has been intensely debated for over half a century (Donelson *et al.*, 2018). Even though the SOX has significantly increased the liability of corporate directors and officers, it did not require a commensurate increase in the disclosure requirements of D&O liability insurance.

The development of D&O liability insurance in Canada shares similar features to that in the US. The disclosure of D&O liability insurance is mandated for security issuers (Boubakri and Bouslimi, 2016), however, the litigation environment in Canada is considered weaker than the US (Clarkson and Simunic, 1994; Emerson and Clarke, 2003; Heys and Berenblut, 2012). Bill 198 was introduced in Canada in 2003 and became effective at the end of 2005, significantly changing the responsibilities of corporate managers [8]. It also introduced the concept of class action security derivative lawsuits against directors and officers for a breach of fiduciary duties (Emerson and Clarke, 2003). According to Chen *et al.* (2016), subsequent to the passage of Bill 198, shareholders in Canada can sue firms and their directors and officers for misrepresentations in both primary and secondary liability suits, resulting in an increase in the number of class actions brought against directors and officers in Canada.

3.2 D&O liability insurance: other jurisdictions

The purchase of D&O liability insurance is common among German companies. One reason might be that German companies are not allowed to limit director liability for breach of duties in corporate charters (Black *et al.*, 2005). German companies are governed by a two-tier board system dating back to the Company Law of 1870 that consists of the management board and the supervisory board. In the aftermath of the 2008 financial crisis, the Act on the Appropriateness of Management Board's Remuneration was passed by the German Parliament in 2009 (Lin *et al.*, 2019). The 2009 legislation mandates a personal deductible for members of the management board. This means that a significant part of the financial loss due to litigation is to be borne by the directors and officers before the insurer's coverage is initiated. This deductible is at least 10% of the relevant loss with an annual cap of not less than 1.5 times the executive's annual fixed pre-tax remuneration.

Similar to those in the US and the UK, development of D&O liability insurance in Korea is triggered by the increase in shareholder class action and regulatory interference. The specific terms of D&O liability insurance in Korea are similar to those in the US, and many contracts are underwritten by US insurers (Hwang and Kim, 2018). As per Hwang and Kim (2018), many Korean firms decided to have D&O liability insurance coverage after the Asian financial crisis in the late 1990s when the number of corporate failures and subsequent legal actions increased. The Korean government decided to allow shareholder class actions for public firms having assets over 2 trillion Korean Won from 2005 and extended this to all publicly listed firms from 2007 (Park, 2018). In 2011, the Korean government enacted the Director Liability Reduction Coverage Laws (Choi and Jung, 2021). Although not mandatory, many Korean companies have adopted the laws into their articles of incorporation. The law states that firms can absolve a director of liability with respect to any amount exceeding six times his or her salary for the year prior to the date of the act of misconduct by all directors of the board.

Liao and Li (2017) suggest that the D&O liability insurance market developed slowly in Taiwan, and that coverage was not available until 1996. However, a series of accounting scandals occurred in Taiwan from 2003 to 2005; consequently, the Taiwanese government introduced strict regulations similar to the SOX. In 2002, the Securities Investors and Futures Traders Protection (SIFTP) Act was passed, which relaxed restrictions in civil procedures that benefited the class which brought actions against listed firms. Since the enactment of the SIFTP, an increasing number of lawsuits have been filed against directors or managers (Chang and Chen, 2018). The mandatory disclosure of D&O liability insurance in Taiwan began in 2008 (Wang and Chen, 2016).

3.3 Section summary

In this section, we synthesized the regulatory environment surrounding the development of D&O liability insurance across various jurisdictions. The D&O liability insurance originated as a response to shareholder class actions. The increased responsibilities of directors and officers under both case law and legislation resulted in acceptance of D&O liability insurance. Meanwhile, the disclosure of D&O liability insurance by listed firms is only required by a number of countries and jurisdictions.

4. Determinants and consequences of D&O liability insurance: review of the literature

Opponents of D&O liability insurance information disclosure requirements argue that such disclosure is expected to significantly increase non-meritorious litigation against the company (Donelson *et al.*, 2018; New York Legislature, 1969). However, proponents believe that it will encourage meritorious litigation against unethical and poorly managed firms (Levin, 2019; Shavell, 1986). Furthermore, the disclosure of this information will result in greater financial transparency and mitigate information asymmetry (Luo and Krivogorsky, 2017). Regardless of the theoretical discussion of the pros and cons of D&O liability insurance and its disclosures, the purchase of D&O liability insurance appears to be an accepted norm as around 95% of Fortune 500 companies hold such policies (Chiang and Chang, 2022). Empirical researchers use three proxies of D&O liability insurance, namely: a dummy variable for the presence/absence of D&O liability insurance; the amount of the insurance premium; and abnormal insurance premiums (Chalmers *et al.*, 2002; Core, 1997, 2000; Gillan and Panasian, 2015) [9]. Section 4.1 below reviews the literature on the determinants of D&O liability insurance, followed by D&O liability insurance in the not-for-profit (NFP) sector in section 4.2 and the consequences of D&O liability insurance in section 4.3. Table 2 provides a concise summary of the research questions, sample(s) used, and the key findings from the reviewed papers pertaining to the determinants and consequences of D&O liability insurance.

4.1 Determinants of D&O liability insurance

The existing literature suggests that D&O liability insurance functions as a monitoring mechanism. There are avenues of research exploring whether D&O liability insurance functions to compliment or substitute other monitoring mechanisms. Studies exploring the demand for this particular risk management tool have identified several factors that influence the decision to purchase D&O liability insurance. Among these factors, litigation risk emerges as the most prominent consideration since certain governance characteristics increase litigation risk and consequently drives the demand for D&O liability insurance coverage.

Core (1997) suggests that large firms with costly external ownership and monitoring are more likely to purchase D&O liability insurance. Furthermore, executive ownership and D&O liability insurance can be viewed as substitute monitoring devices. According to Core (1997), Canadian firms with greater litigation risk and greater probability of financial distress, and those operating in the energy sector, are more likely to purchase D&O liability insurance. O'Sullivan (2002) finds that UK firms purchasing D&O liability insurance are larger, have US subsidiaries, have low managerial ownership, and have a higher number of non-executive directors. Cao and Narayanamoorthy (2014) document that US firms with financial restatements or lower earnings quality pay higher D&O liability insurance premiums. Lai and Tai (2019) find that the demand for D&O liability insurance is higher for family firms with overconfident CEOs, especially when the CEOs are family members. Chang and Hsiao (2012) investigate a range of corporate governance determinants of the D&O liability insurance purchase decision in Taiwan and find that the purchase of D&O liability insurance is positively associated with board of directors (BOD) independence, BOD

Table 2.
Summary of papers – determinants and consequences of D&O liability insurance

Author (year)	Research issues	Sample	Key results	% of observations with D&O insurance purchase	Insurance premium or coverage (both or neither	Number of citations received[a]
Su (2023)	D&O liability insurance and expected stock return	Taiwan: 2008–2020. $N = 19{,}256$ firm-year observations	Firms with higher D&O insurance liabilities are expected to be more undervalued in abnormal profit. Firms with high D&O insurance significantly outperform those with low D&O liability insurance by 7%–13% annually	66.54	Both (insurance amount and the amount of coverage)	0
Lu *et al.* (2023)	CSR and D&O liability insurance	Canada: $N = 1{,}157$ firm-year observations	Firms with better CSR performance are more likely to purchase D&O insurance and have a lower premium-to-coverage ratio	74	Premium to coverage ratio	0
Chiang and Chang (2022)	D&O liability insurance and the association between ownership structure and overinvestment	Taiwan: 2008–2014. $N = 9{,}187$ firm-year observations	Firms with higher D&O liability insurance increase the profitability of overinvestment. Also, they find that the influence of board shareholding on firm overinvestment is affected by the changes in the purchase of D&O liability insurance	43.42	Insurance dummy (None)	4

(continued)

Author (year)	Research issues	Sample	Key results	% of observations with D&O insurance purchase	Insurance premium or coverage (both or neither	Number of citations received[a]
Lin *et al.* (2022)	Does D&O liability insurance affect managerial ability?	Taiwan: 2011–2017. $N = 5{,}506$ firm-year observations	D&O liability insurance increases managerial ability, and the association is more pronounced in the firms where the CEO is in an early stage of tenure, the firm belongs to a family-controlled group and has higher environmental uncertainty	100	Insurance amount (insurance amount/market value)	1
Huang (2022)	Examines the effect of D&O liability insurance on firm default risk	Taiwan: 2010–2017. $N = 11{,}419$ firm-year observations	Firms with D&O liability insurance coverage have a higher default risk. Economic significance indicates that a 1% rise in the D&O liability insurance coverage ($-value) index increases the expected default frequency by 0.09% and increases credit risk by 0.29%	62.02	Both (insurance amount and the amount of coverage	2

(*continued*)

Table 2.

Table 2.

Author (year)	Research issues	Sample	Key results	% of observations with D&O insurance purchase	Insurance premium or coverage (both or neither	Number of citations received[a]
Liao *et al.* (2022)	Impact of D&O liability insurance coverage on SEO pricing	Taiwan: 2007–2018. $N = 634$ firm-year observations	SEO firms with D&O liability insurance policies or higher insurance coverage are associated with significantly fewer negative announcement effects than those with lower or no D&O liability insurance coverage. The authors also find a significantly positive association between D&O insurance and SEO announcement returns which is more pronounced for firms with higher director ownership and firms operating in less competitive industries	62.62	Both (insurance amount and the amount of coverage	1
Wang *et al.* (2022)	D&O liability insurance and board meeting attendance	Taiwan: 2008–2015. $N = 98{,}524$ director-level observations	Firms purchasing D&O liability insurance have a higher level of board meeting attendance. On average, the board meeting attendance rate of D&O liability-insured firms is 2.9% higher than the of uninsured firms	8.38	Insurance dummy (None)	0

(*continued*)

Author (year)	Research issues	Sample	Key results	% of observations with D&O insurance purchase	Insurance premium or coverage (both or neither	Number of citations received[a]
Choi and Jung (2021)	D&O liability insurance and stock price crash risk	Korea: 2011–2017. $N = 8{,}891$ firm-year observations	Compared to directors of non-covered firms, those of D&O liability insurance-covered firms are more prone to experience higher price crash risk. This is more pronounced for firms with a high proportion of foreign investors, covered by many financial analysts, and is less regulated by the listed exchange	48.62	The paper uses Directors Liability Reduction (DLR) rather than D&O liability insurance and thus use a dummy	4
Donelson *et al.* (2021)	D&O liability insurance coverage and agency costs	US: 2001–2013. $N = 5{,}470$ firm-year observations	D&O insurance premium provides limited incremental information on agency conflict. Accounting-related agency costs have no consistent association with D&O liability insurance	100	Both (insurance amount and the amount of coverage	2
Donelson *et al.* (2022)	D&O liability insurance and aggressive tax planning	US: 1996–2016. $N = 40{,}456$ firm-year observations	D&O liability insurance coverage is higher for aggressive tax planning firms. Also, firms with higher tax uncertainty led to more D&O liability insurance coverage	100	Both	4

(*continued*)

Table 2.

Author (year)	Research issues	Sample	Key results	% of observations with D&O insurance purchase	Insurance premium or coverage (both or neither	Number of citations received[a]
Huang *et al.* (2021b)	Do firm size and book-to-market affect D&O liability insurance coverage?	Taiwan: 2008–2018. $N = 15{,}313$ firm-year observations	A negative relationship exists between litigation risk and D&O liability insurance purchases among small and low book-to-market firms	64.00	Coverage	7
Kao *et al.* (2020)	Is D&O liability insurance a complement or substitute for IPO pricing risk avoidance?	Taiwan: 2008–2015. $N = 325$ IPO firms	D&O liability insurance exerts a substitute effect on risk avoidance. Directors and officers who have D&O liability coverage tend to avoid making aggressive or risky pricing decisions, leading to a complementary effect on risk avoidance. In contrast, when directors and officers are not covered by D&O liability insurance, they may be more likely to make aggressive or risky pricing decisions due to the absence of insurance protection	44.60	Coverage	6
Aguir and Aguir (2020)	D&O liability insurance protection and firm value	US:1992–2006. $N = 12{,}410$ firm-year observations	Firms with greater D&O liability insurance protection have significantly lower firm value, and the association is more pronounced in the period before the SOX-2002	57.32	Dummy	2

(continued)

Table 2.

Author (year)	Research issues	Sample	Key results	% of observations with D&O insurance purchase	Insurance premium or coverage (both or neither	Number of citations received[a]
Lin *et al.* (2020)	D&O liability insurance and the number of key audit matters (KAMs)	Taiwan: 2016. $N = 1{,}501$ firms	D&O liability insurance led to an increase in the number of KAMs reports, suggesting that the higher the amount of D&O liability insurance coverage, the greater the operating risk and the larger number of KAMs reports	71.00	Coverage	8
Lai and Tai (2019)	CEO overconfidence and D&O liability insurance in family vs non-family firms	Taiwan: 2008–2014. $N = 7{,}525$ firm-year observations	Overconfident CEOs had a positive association with D&O liability insurance purchases. Family firms have lower tendency to purchase D&O liability insurance than non-family firms. Economic significance suggests that family firms are 13.7–16.2% less likely to buy D&O liability insurance than non-family firms. Family firms with overconfident CEOs are 1.77–4.52% more likely to buy D&O liability insurance than non-overconfident CEOs	56.62	Both (amount and coverage)	13

(*continued*)

Table 2.

Table 2.

Author (year)	Research issues	Sample	Key results	% of observations with D&O insurance purchase	Insurance premium or coverage (both or neither	Number of citations received[a]
Donelson and Yust (2019)	The ability of D&O liability insurance to monitor class action litigation and response through pricing	US: 1998–2013. N = 1,330 firm-year observations	D&O liability insurers and lenders respond differently to class action litigation based on their expected outcomes. D&O liability insurers and lenders closely monitor class action lawsuits during the early stages of litigation and adjust their pricing to reflect the actual litigation costs	100	Both	9
Chan *et al.* (2019)	D&O liability insurance and firm investment-cash flow sensitivity	Taiwan: 2008–2014. N = 8,172 firm-year observations	D&O liability-insured firms are more likely to have excessive investments than uninsured firms, given the same level of cash flow	58.00	Dummy	8
Kang *et al.* (2019)	Determinants of auditor firm's purchase decision of D&O liability insurance	Korea: 2005–2013. N = 776 Auditor firm-year observations	Audit firms purchase D&O liability insurance to protect themselves from lawsuits. Also, a negative association between the ratio of audit partners and the separation of non-audit services from audit services. In contrast, there is a positive association between professional liability insurance premiums and auditors' revenue growth and operating losses	23.71	Both	7

(*continued*)

Author (year)	Research issues	Sample	Key results	% of observations with D&O insurance purchase	Insurance premium or coverage (both or neither	Number of citations received[a]
Lin *et al.* (2019)	The incentive effects of a mandatory personal deductible in liability insurance contracts for D&O liability insurance	Germany: 2006–2012. $N = 885$ firm-year observations	Stock market reacts positively around the first announcement of the plan to impose a personal deductible. Also, the treated firms decrease risk-taking in operational activities and financial reporting and improve the quality of takeover decisions. Firms which purchase D&O liability insurance before the implementation of the law experience a higher CAR of about 2.6% than the others around the announcement of the law	75.39	Dummy	14

(continued)

Table 2.

Table 2.

Author (year)	Research issues	Sample	Key results	% of observations with D&O insurance purchase	Insurance premium or coverage (both or neither	Number of citations received[a]
Lee and Chiang (2018)	D&O liability insurance and SG&A cost stickiness	Taiwan 2008–2015. N = 9,191firm-year observations	The degree of SG&A cost stickiness increases with the level of D&O insurance coverage, implying that D&O insurance can motivate firms' resource commitment decisions. Moreover, D&O insurance moderates the effects of pessimistic managers on reduced cost stickiness decision (i.e. anti-cost stickiness decision). The moderating effect is due to optimal risk-taking, as evidenced by the direct benefit to an improvement in competitiveness and long-term value creation which associated with D&O insurance.	56.24	Coverage	

(*continued*)

Author (year)	Research issues	Sample	Key results	% of observations with D&O insurance purchase	Insurance premium or coverage (both or neither	Number of citations received[a]
Hwang and Kim (2018)	D&O liability insurance and firm value	Korea: 2002–2008. $N = 2,571$ firm-year observations	D&O liability insurance increases firm value compared to non-insured firms and the increase in firm value is more significant for firms with greater growth opportunities. The probability of purchasing D&O liability insurance increases by 19.4% when the mean asset size of the firm increases by 172%	32.34	Both	2

(*continued*)

Table 2.

Table 2.

Author (year)	Research issues	Sample	Key results	% of observations with D&O insurance purchase	Insurance premium or coverage (both or neither	Number of citations received[a]
Park (2018)	The causal relation between litigation risk and D&O liability insurance demand	Korea: 2000–2008. $N = 4{,}706$ firm-year observations	Firms increase the D&O liability insurance coverage in response to increased litigation risk. Also, firms in high litigation-risk industries and those with high agency conflicts between shareholders and management increase their insurance coverage relatively more. Firms that are subject to the class action law from 2005 have an increase of KRW 10.86 billion in D&O liability insurance coverage between the pre-law and post-law periods compared to the firms that are not affected by the law	100	both	8
Chen and Keung (2018)	Excess D&O liability insurance coverage and effectiveness of firm internal controls	Taiwan: 2008–2012. $N = 1{,}036$ firm-year observations	Firms with excess D&O liability coverage exhibit a greater likelihood of internal control weaknesses. Economic significance indicates that excess D&O liability insurance coverage increases the probability of reporting internal control weaknesses by approximately 6%	100	Coverage	3

(*continued*)

Table 2.

Author (year)	Research issues	Sample	Key results	% of observations with D&O insurance purchase	Insurance premium or coverage (both or neither	Number of citations received[a]
Donelson *et al.* (2018)	D&O liability disclosure and non-meritorious securities lawsuits	US: 1998–2010. $N = 5{,}265$ firm-year observations	Disclosure of D&O liability insurance premiums increases lawsuits in New York based firms more than non-New York based firms. Furthermore, the results for New York based firms are driven by non-meritorious (rejected) cases. Economic significance suggests that New York based firms faced four additional litigious actions compared to the non-New York firms	9.24	Both	14
Chang and Chen (2018)	Does D&O liability affect the choice of earning management techniques?	Taiwan: 2008–2013. $N = 6{,}135$ firm-year observations	D&O liability insurance results in higher accrual-based earnings management. However, the overall earnings management of insured firms are marginally less than uninsured firms	55.00	Coverage	10

(*continued*)

Table 2.

Author (year)	Research issues	Sample	Key results	% of observations with D&O insurance purchase	Insurance premium or coverage (both or neither	Number of citations received[a]
Liou *et al.* (2017)	D&O liability insurance on disclosure quality and occurrence of corporate fraud	Taiwan: 2008–2012. N = 5,636 firm-year observations	D&O liability insurance improves the disclosure quality, and the higher the premium amount is, the better the disclosure quality. However, the occurrence of corporate fraud is not associated with D&O liability insurance coverage	53.69	Coverage	7
Chen *et al.* (2017)	Impact of D&O liability insurance on the association between CEO compensation and R&D investment	Taiwan: 2008–2013. N = 4,466 firm-year observations	D&O liability insurance moderates the association between CEO compensation and R&D investment, suggesting D&O liability insurance encourages the CEO to allocate more resources to R&D investment	53.18	Coverage	22
Weng *et al.* (2017)	D&O liability insurance and financial restatements	Taiwan: 2007–2012. N = 6,268 firm-year observations	Firms with D&O liability insurance are likely to have a higher chance of earnings restatements, and the restatements are particularly in relation to income overstatement, indicating that D&O liability insurance leads to aggressive earnings choices	100	Coverage	14

(*continued*)

Author (year)	Research issues	Sample	Key results	% of observations with D&O insurance purchase	Insurance premium or coverage (both or neither	Number of citations received[a]
Li and Liao (2017)	D&O liability insurance and audit fees	Taiwan: 2010–2013. $N = 4,285$ firm-year observations	D&O liability insurance results in higher audit fees. Furthermore, they evidence that the association is stronger when the insurer is a foreign company	66.00	Coverage	3
Liao and Li (2017)	D&O liability insurance and risk-taking attitude in banks	Taiwan: 2008–2011. $N = 77$ bank-year observations	Higher D&O liability insurance increases bank risk-taking attitude. However, this association is less pronounced for banks with the insurer which is either an industry specialist or has a high credit rating	74.80	Coverage	3
Zeng (2017)	D&O liability insurance and firms' aggressive tax reporting	Canada: 2003 to 2012. $N = 620$ firm-year observations	D&O liability insurance has a negative association with GAAP effective tax rates and a positive association with total and residual book-tax differences	90.48	Both	7
Boubakri and Bouslimi (2016)	D&O liability insurance and analyst forecast	Canada: 1997 to 2010. $N = 146$ firm-year observations	Analysts are more optimistic regarding the future earnings growth of uninsured firms than insured firms. Furthermore, insured firms have lower analysts forecasts accuracy	62.95	Both	10

(*continued*)

Table 2.

Table 2.

Author (year)	Research issues	Sample	Key results	% of observations with D&O insurance purchase	Insurance premium or coverage (both or neither	Number of citations received[a]
Wang and Chen (2016)	D&O liability insurance and firm performance	Taiwan: 2008 to 2012. $N = 5{,}619$ firm-year observations	Directors pay-performance sensitivity is significantly lower in D&O insured firms compared to non-insured firms. This lower sensitivity suggests a high agency cost and lower shareholder wealth in insured firms	55.00	Coverage	15
Chen *et al.* (2016)	Impact of D&O liability insurance on financial reporting quality and cost of equity (COE)	Canada: 1996–2008. $N = 2025$ firm-year observations	D&O liability insurance has a positive association with COE. Also, a higher D&O liability insurance leads to poor financial reporting quality, low stock liquidity, lower analysts forecast accuracy and high forecast dispersion. Furthermore, D&O liability insurance has a positive association with firms' stock betas but no association with future cash flows or firm value	70.90	Coverage	71
Kalelkar and Nwaeze (2015)	Impact of D&O liability insurance on financial reporting, investment and performance	US: 2004–2008. $N = 196$ firm-year observations	Abnormal D&O liability insurance is positively associated with aggressive reporting, aggressive investment activity, and abnormal profit performance	100	Coverage	5

(*continued*)

Author (year)	Research issues	Sample	Key results	% of observations with D&O insurance purchase	Insurance premium or coverage (both or neither	Number of citations received[a]
Gillan and Panasian (2015)	D&O liability insurance coverage and the likelihood of shareholder lawsuits	Canada: 1995, 2000, 2005. $N = 629$ firm-year observations	Firms with D&O liability insurance coverage are more likely to be sued, and the likelihood of litigation increases with increased coverage. The presence of D&O insurance is associated with an 11.8% point higher probability of lawsuits for firms	100	Both	40
Chung *et al.* (2015)	The association between D&O liability coverage limits and audit fees	Canada: 2002–2008. $N = 938$ firm-year observations	Auditors charge higher audit fees to firms which have excess coverage of D&O liability insurance. Also, excess coverage of D&O liability insurance is positively associated with the likelihood of future shareholder litigation	77.82	Coverage	21
Egger *et al.* (2015)	The rationale of D&O liability in a volatile stock market	Canada: 1996–2008. $N = 436$ firm-year observations	Both the insurance coverage and the premium are higher in the presence of new shareholders and volatile markets	100	Both	7

(*continued*)

Table 2.

Table 2.

Author (year)	Research issues	Sample	Key results	% of observations with D&O insurance purchase	Insurance premium or coverage (both or neither	Number of citations received[a]
Khan and Wald (2015)	Impact of D&O liability on earnings management and audit fees	US: 1993–2008. N = 11,706 firm-year observations	A firm with D&O liability insurance has higher accruals management and audit fees. In the pre-SOX period, auditors charged 17% higher audit fees from firms with D&O liability-protected directors. In the post-SOX period, the gap between the audit fees of firms with D&O liability protected and non-protected directors reduced from 17% to 2%	56.76	Dummy	6
Boyer and Tennyson (2015)	The determinants of D&O liability insurance and the consequence on earnings management	Canada: 1996–2005. N = 1,524 firm-year observations	Firms that purchase D&O liability insurance are large, and higher D&O liability insurance coverage leads to more aggressive earnings management	74.00	Both	35

(continued)

Author (year)	Research issues	Sample	Key results	% of observations with D&O insurance purchase	Insurance premium or coverage (both or neither	Number of citations received[a]
Nwaeze and Kalelkar (2014)	The determinants of D&O liability disclosure	US: 2004–2008. N = 1,201 firm-year observations	Firms in competitive industries, firms with a high threat of lawsuits, big firms, and firms with weak internal governance are less likely to disclose D&O liability insurance. Economic significance indicates that the odds of disclosing only the premium declines by 81% with an increase in the proportion of outside directors	17.40	Both	1
Gillan and Panasian (2014)	The determinants of D&O liability insurance	Canada: 2005. N = 210 firm-year observations	Audit fees and D&O premiums for cross-listed firms vary with firms' disclosures, indicating that both litigation risk and increased disclosure complexity drive the cross-listing premium in audit fees. Economic significance indicates that D&O liability insurance premiums are approximately 112% higher for Canadian firms that cross-list on the US exchanges than those that do not	100	Both	8

(*continued*)

Table 2.

Author (year)	Research issues	Sample	Key results	% of observations with D&O insurance purchase	Insurance premium or coverage (both or neither	Number of citations received[a]
Chung and Wynn (2014)	D&O liability insurance and audit pricing	Canada: 2002–2007. N = 218 firm-year observations	Auditors charge higher audit fees to firms that have higher coverage of D&O liability insurance	100	Both	15
Chi and Weng (2014)	Effect of D&O liability insurance coverage on the choice of a Big4 auditor	Taiwan: 2008–2010. N = 671 firm-year observations	Firms with excess D&O liability insurance coverage are less likely to appoint Big4 auditors. Economic significance indicates a unit change in excess D&O liability insurance coverage decreases the likelihood of hiring a Big4 auditor by 17.38%	100	Coverage	25
Cao and Narayanamoorthy (2014)	D&O liability insurance and financial reporting quality	US: 2001–2004. N = 152 firm-year observations	Firms with lower earnings quality or prior accounting restatements pay higher D&O liability insurance premiums	100	Both	50
Li and Liao (2014)	D&O liability insurance coverage and investment efficiency	Taiwan. 2008–2010. N = 3,356 firm-year observations	D&O liability insurance coverage is positively associated with over-investment, and the association is more pronounced in firms with lower levels of director ownership or institutional holdings and weakened when firms purchase from domestic rather than foreign insurers	53.50	Coverage	53

(continued)

Table 2.

Author (year)	Research issues	Sample	Key results	% of observations with D&O insurance purchase	Insurance premium or coverage (both or neither	Number of citations received[a]
Boyer and Stern (2014)	D&O liability insurance and IPO performance	Canada: 1995–2010. N = 209 firm-year observations	Insurers charge a higher premium per dollar of coverage to protect the directors and officers of firms that will subsequently have poor first-year post-IPO stock performance. The ability of D&O liability insurance to predict stock market returns wanes after the first year because market participants gradually assimilated information that was exclusively accessible to insurers during the IPO process	70.81	Both	38
Aguir *et al.* (2014)	D&O liability insurance and compensation of directors	US: 1992–2006. N = 5,342 firm-year observations	Director compensation is higher for firms that provide less D&O liability protection and takeover of firms with protected directors are less likely to succeed. Economic significance indicates that directors of firms with D&O liability insurance receive approximately 12–15% lower compensation on average than their counterparts in firms without protection	53.97	Dummy	14

(*continued*)

Table 2.

Table 2.

Author (year)	Research issues	Sample	Key results	% of observations with D&O insurance purchase	Insurance premium or coverage (both or neither	Number of citations received[a]
Boyer (2014)	Does D&O liability insurance protect shareholders' wealth?	Canada: 1993–1998. N = 1,407 firm-year observations	Director cash compensation, the market value of equity, debt ratio and the presence of financial institution block holders determine the decision of firms to purchase D&O liability insurance protection	71.69	Coverage	96
Chi *et al.* (2013)	D&O liability insurance and corporate diversification	Taiwan: 2008–2011 N = 2,023 firm-year observations	Excessive D&O liability insurance is positively associate with corporate diversification and destroys shareholders' value in diversified firms	100	Coverage	11
Chung *et al.* (2013)	D&O liability insurance and accruals quality	Canada: 1998–2008. N = 909 firm-year observations	Firms with higher D&O liability insurance coverage exhibit lower quality accruals. Also, D&O liability insurance moderates the role of accrual quality on investment efficiency	100	Coverage	20
Lin *et al.* (2013)	D&O liability insurance and the spreads charged on bank loans	Canada: 1996–2008. N = 615 firm-year observations	Higher levels of D&O liability insurance coverage are associated with higher loan spreads. A one-standard-deviation increase in the D&O liability insurance coverage ratio increases loan spread by about an average of 19 basis points	72.00	Both	99

(*continued*)

Author (year)	Research issues	Sample	Key results	% of observations with D&O insurance purchase	Insurance premium or coverage (both or neither	Number of citations received[a]
Boyer and Stern (2012)	D&O liability insurance on different ownership forms	Canada: 1995–2005. N = 200 firms	Income trusts pay more for D&O liability insurance coverage than common equity companies	69.00	Both	21
Chang and Hsiao (2012)	Corporate governance determinants of the purchase of D&O liability insurance	Taiwan: 2008–2009. N = 1,389 firm year observations	The purchase of D&O liability insurance is positively associated with BOD independence, BOD remuneration level, higher management turnover. It is negatively associated with auditors tenure, ownership concentration and cashflow rights. However, there is no association between D&O liability and quality of disclosure and board chair duality	50	Dummy	1
Gupta and Prakash (2012)	Determinants of D&O liability insurance purchase	Canada, 1998–2002. N = 255 firm-year observations	Manager's purchasing of D&O liability insurance exposes their private information, as there is a connection between having insider control that exceeds insider shareholding and having lower limits of D&O liability insurance coverage	100	Both	13

(*continued*)

Table 2.

Table 2.

Author (year)	Research issues	Sample	Key results	% of observations with D&O insurance purchase	Insurance premium or coverage (both or neither	Number of citations received[a]
Lin *et al.* (2011)	D&O liability insurance and the outcomes of M&A decisions	US: 2002–2008. $N = 709$ completed M&As	Acquirers whose executives have a higher level of D&O liability insurance coverage experience significantly lower announcement-period abnormal stock returns. A one-standard-deviation increase in the D&O liability insurance coverage ratio is associated with 16.4–18.3% higher acquisition premiums (holding acquirer and deal characteristics constant)	83.74	Coverage	142
Chen and Li (2010)	Determinants of D&O liability insurance and impact on firm performance	Taiwan: 2003–2005. $N = 100$ firm-year observations	Demand for D&O liability insurance is positively related to the firm's litigation risk. Also, D&O liability insurance has no impact on firm performance	35.00	Both	16
O'Sullivan (2009)	D&OL insurance and audit pricing	UK: 1992. $N = 753$ firm-year observations	D&O liability insurance is associated with higher audit fees. The association is more pronounced in smaller firms, firms audited by Big4 auditors, and firms with lower representations of independent directors	74.10	Dummy	97

(continued)

Author (year)	Research issues	Sample	Key results	% of observations with D&O insurance purchase	Insurance premium or coverage (both or neither	Number of citations received[a]
Boubakri and Ghalleb (2008)	Whether mandatory disclosure of D&O Liability insurance curbs managerial opportunism?	Canada: 1997–2003. N = 127	(1) there is a significant negative relation between the amount of D&O insurance purchased and subsequent firm performance; (2) it is not supported that lower D&O insurance premiums are associated with good corporate governance quality	81.2	D&O Coverage and Premium	2
Chung and Wynn (2008)	D&O liability insurance and earnings conservatism	Canada: 1998–2004. N = 1,015 firm-year observations	Firms with higher D&O liability insurance coverage tend to recognize bad news in a less timely manner compared to firms with lower D&O liability insurance coverage	77.14	Both	110
Wynn (2008)	Excess D&O liability insurance coverage and quality of a firm's voluntary disclosure	Canada: 2000–2001. N = 425 firm-quarters observations	Firms with higher D&O liability insurance coverage are less likely to report bad news forecasts	76.00	Both	50

(*continued*)

Table 2.

Table 2.

Author (year)	Research issues	Sample	Key results	% of observations with D&O insurance purchase	Insurance premium or coverage (both or neither	Number of citations received[a]
O'Sullivan (2002)	The determinants of D&O liability insurance	UK: 1992. $N = 386$ firm-year observations	Firms purchasing D&O liability insurance are larger, have a higher exposure to litigation in the US (subsidiaries registered in the US), have higher share price risk, have lower managerial ownership, and have higher non-executive director representation on boards	81.86	Dummy	34
Chalmers *et al.* (2002)	D&O liability insurance premium purchased before IPO and post IPO share performance	US: 1992–1996. $N = 72$ IPO firms	A significant negative association between the purchase of D&O liability insurance premium purchased in conjunction with the initial public offering and three years post IPO performance	100	Both	295

(*continued*)

Author (year)	Research issues	Sample	Key results	% of observations with D&O insurance purchase	Insurance premium or coverage (both or neither	Number of citations received[a]
Core (2000)	Corporate governance quality and D&O liability insurance coverage	Canada: 1994–1994. N = 246 firm-year observations	D&O liability premiums are higher for firms with weaker governance. Poor governance is indicated by insiders having higher voting rights, lower insider ownership, the appointment of more outside directors by the CEO, and inside officers having employment contracts. Furthermore, CEOs of firms with higher D&O premiums have higher compensation	100	Both	114
Core (1997)	Do higher D&O liability insurance premiums indicate higher litigation risk?	Canada: 1993–1994. N = 222 firm-year observations	Firms having higher litigation risk are more likely to purchase D&O liability insurance and have higher limits	62.61	Coverage	147

(*continued*)

Table 2.

Table 2.

Author (year)	Research issues	Sample	Key results	% of observations with D&O insurance purchase	Insurance premium or coverage (both or neither	Number of citations received[a]
O'Sullivan (1997)	The monitoring role of D&O liability insurance	UK: 1991–1992. N = 366 firm-year observations	D&O liability insurance and outside directors are more visible in larger firms because boards in larger firms are difficult to monitor. The joint effect of D&O liability insurance and outside directors has a negative association with executive equity ownership suggesting that D&O liability insurance is a substitute monitoring mechanism	74.59	Dummy	92
Bhagat *et al.* (1987)	The impact of D&O liability insurance on shareholders' wealth	US: 1978–1982. N = 112 firm-year observations	D&O liability insurance has a positive association with abnormal monthly stock returns which is around 6.23% higher than for uninsured firms	100	Dummy	208

Note(s): The papers are listed in chronological orders
[a] Number of citations were collected from the SCOUPUS database in October 2023
Source(s): This table is prepared by the authors

compensation, and management turnover. Meanwhile, liability insurance purchase decisions are negatively associated with the frequency of auditor change, ownership concentration, and the number of non-executive directors on the board. However, the authors find no association between D&O liability insurance purchase decisions and the disclosure transparency and CEO-BOD Chair duality. Gillan and Panasian (2014) find that D&O premiums are generally higher for all US-Canada cross-listed firms than firms only listed in Canada. The premiums increase and then decrease with increased disclosure complexity. Donelson *et al.* (2022) reveal that insurance coverage is higher for aggressive tax planning firms, and firms with higher tax uncertainty. Chen and Li (2010) find the demand for D&O liability insurance is positively related to the firm's litigation risk and the motivation of its board of directors, consisting of director compensation and total director ownership, but is negatively related to outside director ownership in Taiwan.

Alternatively, Boyer and Stern (2012) find common equity firms pay lower D&O liability insurance premiums than income trusts: an alternative and riskier form of ownership than common equity. The authors argue that D&O liability insurance is priced by an independent monitoring party, i.e. the insurer, based on its own direct financial stake. Therefore, the D&O liability insurance premium conveys significant information about a firm's governance risks. Gupta and Prakash (2012), also show that D&O liability insurance premiums reflect the manager's private information about firm governance risk. Since D&O liability insurance conveys information about the insurer's own governance risk assessment, the disclosure of D&O information may signal a level of governance risk. Nwaeze and Kalelkar (2014) show that large firms, firms operating in competitive industries, and firms with high litigation risk and weak internal control are less likely to disclose their D&O liability insurances. Using a sample of IPO firms that went public, Chalmers *et al.* (2002) find that IPO size determines the extent of D&O liability insurance coverage.

Boyer and Tennyson (2015) is an important piece of research as it, for the first time, separates and tests the frequency and severity of D&O insurance losses in an integrated model. The study focuses on the determinants of D&O insurance demand, emphasizing the intricate factors influencing corporate insurance purchase decisions. These factors include the firm's financial position, potential loss severity [10], board risk tolerance, insurance service benefits and opportunism. The research highlights the importance of considering litigation risk, utilizing legal and institutional characteristics of D&O liability. The empirical model incorporates variables such as the firm's market value, the proportion of shareholders with a claim, and the expected downward return on stock in the event of managerial wrongdoing. The study addresses potential relationships between these variables and D&O insurance demand, emphasizing the complexity of the decision-making process.

Following the notion that D&O liability insurance is a part of the managerial incentive package (Gutierrez, 2003; Parry and Parry, 1991), Egger *et al.* (2015) present a model with volatile stock markets where shareholders design remuneration packages to incentivize executives to pursue short-term increases in share prices instead of long-term returns. The model presented by Egger *et al.* (2015) confirms that due to disparities in belief between insiders and outsiders in the capital market, purchasing D&O liability insurance incentivizes behavior that contributes to short-term price bubbles. In a more recent study, Lu *et al.* (2023) find that firms with better CSR performance are more likely to purchase D&O insurance and have a lower premium-to-coverage ratio suggesting that CSR performance likely mitigates the liability risks of directors and officers. Kang *et al.* (2019) present compelling evidence suggesting that audit firms procure D&O liability insurance as a safeguard against litigation risks. Additionally, their study reveals a noteworthy inverse relationship between the ratio of audit partners and the segregation of non-audit services from audit services. Conversely, Kang *et al.* (2019) observe a positive association between premiums for professional liability insurance and both the growth in auditors' revenue and instances of operating losses.

To summarize, existing literature on the determinants of D&O liability insurance tends to theorize the insurance as a monitoring device or being priced as a component of the total remuneration package within the agency framework. Firm characteristics, such as firm size, cross-listing, operational and financial complexity, ownership structure and board structures, are likely to increase firm litigation risks and motivate the purchase of D&O liability insurance. D&O liability insurance communicates information about the firms' risk, therefore it is priced and considered by the shareholders in strategic decision-making. CSR performance may effectively reduce D&O liability risk and thus reduce the cost of insurance. However, very little is known about whether and how insurance providers in fact carry out their risk assessment during the contracting process or actively monitor their clients after purchase.

4.2 D&O insurance in the NFP sector

NFP organizations operate across many sectors such as schools, day care centers, museums, hospitals, shelter homes, religious bodies and labor unions. The services of such entities are extremely important because they make a difference to the lives of individuals and communities across many jurisdictions (Collin, 1987; MacChiarola, 1988). Unlike for-profit entities, the directors of these entities work on a volunteer basis and are time constrained due to their other commitments, leading to the question of whether their tort liabilities are fulfilled (Barrett, 1996; Collin, 1987). Barrett (1996) categorizes three different views of legislators on this issue. First, some argue that these directors should be treated as trustees and hence should adhere to strict liability standards because, unlike for-profit entities, these directors are exposed to less stringent monitoring from shareholders and regulators. The second viewpoint contradicts the first, namely that lenient liability standards result because strict standards would discourage experts from joining these boards due to fear of high personal liability. The third viewpoint suggests that the for-profit and NFP directors should be subject to the same standards of liability.

MacChiarola (1988) reports a rising level of litigation against for-profit entities during the 1980s which created a crisis-like situation even for the NFP sector due to fear of a similar rise in litigation against such entities. This fear resulted in a substantial increase in D&O liability insurance costs of as much as 300% for some charitable entities. This rising cost has been attributed to insurance companies treating for-profit and NFP entities equally (Collin, 1987). Both Collin (1987) and MacChiarola (1988) stress the need for change in the existing laws and argue that different set of regulatory frameworks should govern the liability of the NFP sector to enhance the efficiency of the sector. Similarly, Barrett (1996) argues that even though NFP entities are not exposed to the same level of litigation risk as for-profit entities, the amount of D&O liability insurance premium paid by the NFP entities is similar to that of the for-profit entities. Barrett (1996), therefore, suggests that at the least a different liability regime should govern smaller NFP entities to relieve them of higher premiums. Wolfe (2020) explains that both Federal law and certain state laws limit the liabilities of charitable organizations and their officers and directors by setting a liability cap for such entities and their directors and officers in case of any litigation. These limits are expected to reduce the costs of premiums for the charitable entities.

Grunewald (2008), commenting on the impact of the SOX Act on the NFP sector, argues that in the post-SOX era the scrutiny and governance requirements of corporations have drastically increased. This changing landscape is expected to increase the liability of directors and officers of NFP entities and so, to retain the right mix of expertise, D&O liability insurance will be an essential requirement for these organizations. Sampson (2008) suggests that, with rising scrutiny in the sector, charitable entities must be extremely vigilant when assessing the details of liability insurance contracts to ensure they gain maximum coverage at an optimum insurance premium. McGregor-Lowndes (1992) concludes similar findings for Australian charitable entities, i.e. purchase of D&O liability insurance will reduce the risk of exposure of not only the entities but also personal assets of directors and officers to growing threats of litigation.

Innes *et al.* (2009) explain that under subsection 227.1 (1) of the Canadian Income Tax Act, if the directors of an entity (both for-profit, and NFP) failed to remit the deductible employee taxes, then they become liable jointly along with the entity to a liability amounting to the tax payable and any interest or penalties payable. They further assert that the Federal Court of Appeal, when deciding directors' liability of NFP entities, reject that the standard of due care required of such directors is lower than for directors of for-profit entities. Acknowledging that this equal treatment of directors' liability across the for-profit and NFP sector will discourage experts to join the boards of directors of charities, Innes *et al.* (2009) further assert that Ontario Regulation 4/01 under section 5.1 of the Charities Accounting Act permits charities to purchase insurance for their directors and officers without seeking permission from the court. However, Burke-Robertson (2009) is of the view that even purchasing D&O liability insurance will not protect them from certain liabilities such as failure to remit taxes or GST, therefore, the best liability minimization strategy for directors and officers in the NFP sector is to become highly diligent and careful while performing their duties. McGregor-Lowndes (1992) suggests that the most sustainable strategy at the time of increasing litigation risk and rising insurance costs for the NFO sector is to have an appropriate risk identification and mitigation strategy in place. This will reduce any unwanted litigation risk without paying hefty insurance premiums.

4.3 Consequences of D&O liability insurance

In this section, we analyze the strand of empirical studies that investigates the implications of D&O liability insurance for a firm's operational and financial performance. In financial markets, D&O liability insurance information is priced according to the firm's litigation risk, thus it affects the firm's financing and investing decisions. We also review the literature on the implications of D&O liability insurance on a firm's financial reporting quality, including audit outcomes and corporate governance environment.

4.3.1 D&O liability insurance and finance outcomes.

(A) D&O liability insurance and investment decision

The relationship between D&O liability insurance and firm investment behavior is complex. D&O liability insurance may have a detrimental impact on investment efficiency. The agency hypothesis suggests D&O liability insurance reduces the personal financial risk that directors and officers face, which can lead to a moral hazard problem in which managers become less diligent in their decision-making and are more likely to make investments that are not in the best interests of the firm's shareholders (Jensen, 1986). Li and Liao (2014) argue that executives with higher D&O liability insurance coverage exhibit more inefficient investments, but in the absence of such insurance coverage, executives may avoid investing in high-risk but positive net present value (NPV) projects due to the possibility of future litigation. The risk hypothesis implies that D&O liability insurance can increase investment efficiency by lowering the risk that the firm and its managers endure. D&O liability insurance can encourage managers to make long-term investment decisions that may have greater initial costs but better long-term benefits. Bhagat *et al.* (1987) report that the adoption of D&O liability insurance enhances shareholder wealth.

Empirical research finds overwhelming support for the agency hypothesis. Li and Liao (2014) hypothesize that CEOs with more legal liability insurance cover would make more efficient investment decisions but find evidence to the contrary. However, this is less pronounced for firms with high percentages of director stock or institutional ownership; and for firms that purchase insurance from domestic insurers versus those that purchase from foreign insurers. Chen *et al.* (2015) find that D&O liability insurance increases overinvestment, primarily driven by a rise in free cash flows and such overinvestments reduce firm value. Lee and Chiang (2018) reveal that the degree of selling, general and administrative (SG&A) cost stickiness increases with D&O liability insurance coverage, suggesting that risk-taking incentives encourage managers to retain committed resources when sales decrease. Chan *et al.* (2019) find that D&O liability insurance increases investment cash-flow (ICF) sensitivity. Their findings suggest that because of the inherent problem of moral hazard, companies insured against D&O liability are more likely to engage in excessive investment than uninsured firms with the same level of cash flow [11]. Chiang and Chang (2022) find that firms in Taiwan with D&O liability insurance and higher insurance coverage are more prone to overinvest. Wang and Sun (2023) provide the only study that finds support for the "risk hypothesis" by documenting that the purchase of D&O liability insurance curbs corporate overinvestment. However, the effects become weaker when board members have a high shareholding. Tang *et al.* (2023) find that firms purchasing D&O liability insurance exhibit increased risk-taking behavior characterized by maturity mismatch, where short-term debt is used to finance long-term investment projects, resulting in a gap between investment expenditure and long-term financing. They also evidence that the association is particularly pronounced in firms with weaker internal and external monitoring.

While the research summarized thus far has largely revealed a positive relationship between D&O liability insurance and overinvestment, it is feasible that D&O liability insurance might promote underinvestment in some circumstances. One such setting may involve early-career CEOs who face significant personal career concerns (Silberzahn and Arregle, 2019). These CEOs may be more risk-averse and so are more cautious when exploring potential profitable investments and so may underinvest.

Chen *et al.* (2017) reveal that D&O liability insurance strengthens the link between R&D investments and managerial incentives, motivating CEOs to allocate resources to R&D activities and making CEO incentive contracts more effective for long-term corporate investments. Since innovation requires incentive mechanisms that encourage tolerance for failure (Davila *et al.*, 2009; Speckbacher and Wabnegg, 2020), this evidence suggests that D&O liability insurance acts as one such incentive mechanism. R&D expenditure, however, being an input measure, is not an ideal proxy for innovation as this generally captures a firm's risk-taking propensities (Huang *et al.*, 2021a). Patent-based measures better capture innovation activities, as patents capture innovation outputs (Hall *et al.*, 2005).

Research has also examined D&O liability insurance and merger and acquisition (M&A) decisions. During an M&A transaction, there is often an increased risk of lawsuits being filed against the directors and officers of the firms involved, because they are making crucial choices that might affect the value of the firm and its shareholders. D&O liability insurance can mitigate some of this risk by providing financial protection in the event that the firm's directors and officers face legal action. Additionally, in M&A deals the parties involved generally carry out comprehensive due diligence to examine the risks and obligations connected with the acquisition. This due diligence procedure may include an evaluation of the D&O liability insurance policies in place to ensure that they offer enough coverage for the firms' directors and officers. Lin *et al.* (2011) find that acquirers whose management is protected by D&O liability insurance, or have greater policy limits, experience significantly negative abnormal returns during the announcement period than acquirers who do not have such insurance. This suggests that the negative returns stem from insured managers making poorer M&A deals. In a subsequent study, Lin *et al.* (2019) examine stock price response to a new German law that required a deductible for D&O liability insurance and document a positive announcement return. Lin *et al.* (2019) note that firms reduce the level of risk they assume in their day-to-day business and financial reporting while improving the accuracy of their long-term takeover decisions in response to the passing of the new law.

(B) D&O liability insurance, firm performance and capital market consequences

A few researchers have examined the impact of D&O liability insurance coverage on the future stock price crash risk, but the findings are mixed. A competing argument prevails as D&O liability insurance may increase the likelihood of bad news hoarding behavior: the catalyst of price crash. Such insurance coverage may encourage aggressive risk-taking behavior because of reduced concern over litigation risk, but too much risk could cause prices to crash. Choi and Jung (2021) find support for this proposition. The positive association is more pronounced when the firm has a large share of foreign investors [12], is covered by many financial analysts and is less affected by stock exchange regulations. However, D&O liability insurance may reduce the likelihood of bad news hoarding behavior, as it can signal to investors that the firm is taking steps to improve its corporate governance practices and reduce the risk of managerial misconduct. Further research might investigate how the institutional variation across countries might influence the relationship between D&O liability insurance and price crash. Also, the extant literature proposes "bad news hoarding" (agency argument) as the primary catalyst for price crash risk. Yet, another key driver of stock price crash is heterogeneity in investor beliefs (Hong and Stein, 2003). Future research should incorporate both these theories in the D&O liability insurance setting to examine the suitability of the theory(ies) in explaining the relationship between D&O liability insurance and price crash.

Kalelkar and Nwaeze (2015) find an association between abnormal D&O liability coverage and a higher-than-usual frequency of forward-looking statements in the management discussion and analysis section. Additionally, they demonstrate a link between abnormal capital spending and the present and future D&O liability coverage. Finally, the results indicate that abnormal coverage has a favorable influence on both the present and future profitability of a firm.

D&O liability insurance may benefit firms which intend to raise capital from the primary (IPO firms) and the secondary market (SEO firms) by increasing investor confidence and improving the first impressions of potential investors by indicating to them that the firm and its management are making efforts to avoid risk and act in an ethical and responsible way. Furthermore, certain institutional investors and underwriters may insist on D&O liability insurance as a pre-condition of investing in or underwriting IPOs/SEOs (Studley, 2021). However, the purchase of D&O liability insurance may also signal increased litigation risk and agency costs to market participants, thereby increasing investor uncertainty about firm value, and negative announcement returns. Chalmers *et al.* (2002) argued that the purchase of D&O liability insurance is an indicator of managerial opportunism and the quality of corporate governance, and they document a negative association between the purchase of D&O liability insurance and the three-year post-IPO stock price performance. Boubakri and Ghalleb (2008) examine whether informed managers modify their behaviors prior to SEOs in Canada where firms must disclose D&O liability insurance information. Their results reveal a significant negative relationship between the amount of purchased D&O insurance and subsequent firm performance but find no evidence D&O insurance premiums substitute good corporate governance quality. Thus, the mandatory disclosure of D&O insurance information does not seem to curb management opportunism. Boyer and Stern (2014) investigate the impact of D&O liability insurance on the first-year excess return and total return post-IPO years. They find that insurers charge a higher premium per dollar of coverage to protect the directors and officers of firms that will have negative first-year stock performance following their IPOs. A higher coverage price is also associated with greater post-IPO volatility and a lower Sharpe ratio. Kao *et al.* (2020) find that firms going public in Taiwan set a conservative IPO price despite taking D&O liability insurance (i.e. IPO is underpriced). However, retail subscription has a moderating effect as IPO firms take conservative (aggressive) pricing decisions under D&O insurance when observing weak (strong) feedback from the public as manifested in retail subscriptions. In the context of SEO, Liao *et al.* (2022) find that SEO firms carrying D&O insurance policies or higher insurance coverage experience fewer negative announcement effects. This evidence is consistent with D&O liability insurance serving as a monitoring mechanism, which helps to alleviate such negative effects.

A stream of research contends that firms with D&O liability insurance are better managed (Bradley and Chen, 2011; Core, 2000). Limiting such insurance may be damaging to shareholder value since it undermines an effective monitoring system and directors who enjoy limited accountability are immune from legal sanctions. Hwang and Kim (2018) find that Korean firms, in particular high-growth firms, with D&O liability insurance have greater firm value. Su (2023) reports that stocks with higher D&O liability insurance significantly outperform stocks with lower D&O insurance by an annual return of 7%–13%. In contrast, Chi *et al.* (2013) evidence a positive association between excessive D&O liability insurance and corporate diversification, most notably in unrelated diversifications. The authors further document shareholder value destruction stemming from such unrelated diversification. D&O liability insurance coverage can affect the firm capital structure, and loan spreads along with bond credit spreads [13]. Huang (2022) argues that firms purchasing D&O liability insurance may experience moral hazard problems, as they may be less inclined to take risk without such coverage. Huang (2022) finds that firms purchasing D&O liability insurance are associated with default risks and credit rating agencies also perceive such coverage as a credit risk, resulting in lower credit ratings for these firms. Chen *et al.* (2016) find that firms purchasing D&O liability insurance have a higher cost of equity and the positive relationship is mediated by poor information quality and high risk-taking behavior. When a firm buys D&O liability insurance, it might possibly lower the risk of legal claims against its directors and officers: a favorable outcome for lenders and bond investors. Lin *et al.* (2013) find that higher levels of D&O liability insurance coverage results in higher loan spreads, indicating increasing credit risk. This might be the result of moral hazard or information asymmetry. They also find that having a high level of D&O liability insurance coverage is associated with more risk-taking and a higher possibility of financial restatement. D&O liability insurance, however, increases the value of substantial capital expenditures for firms with effective internal and external monitoring agents.

4.3.2 D&O liability insurance and financial reporting quality. D&O liability insurance reduces the expected legal liability and financial loss, thus undermining the effectiveness of shareholder litigation in constraining opportunistic managerial behavior including, but not limited to, aggressive financial reporting. Chung and Wynn (2008) find that D&O liability insurance reduces reporting conservatism, an indicator of poor earnings quality, for a sample of listed Canadian firms. Wynn (2008) documents a negative association between D&O liability insurance and the likelihood and timeliness of bad news forecasts by firms cross listed on both the US and Canadian stock exchanges. However, when firms do release bad news forecasts, the D&O liability insurance is positively associated with the *precision* of such forecasts. In a later paper, Chung *et al.* (2013) show that Canadian firms with higher D&O liability insurance produce lower quality accruals, which further undermines the investment efficiency measured by investment cash flow sensitivity. Also, Boyer and Tennyson (2015) evidence that discretionary accruals increase when firms purchase D&O liability insurance, indicating the presence of a moral hazard effect associated with insurance coverage. Weng *et al.* (2017) find that the level of D&O liability insurance is positively and significantly associated with the likelihood of financial report restatement, especially core earnings restatements and income overstatements for a sample of Taiwanese companies. By investigating large Canadian listed companies from 2003 to 2012, Zeng (2017) concludes that D&O liability insurance is associated with aggressive tax-reporting (i.e. lower reported tax expenses), measured as the effective tax rate under GAAP and the book-to-tax gap. However, there is no evidence that D&O liability insurance reduces the actual tax paid. Donelson *et al.* (2021) find that D&O liability insurance predicts to a certain extent the level of abnormal accruals and irregular restatements. Overall, these results provide supportive evidence that D&O liability insurance undermines the quality of financial reporting.

Research studies reveal a pattern of firms substituting accruals-based earnings management (AEM) with real activities earnings management (REM) in the post-SOX era, because REM is harder to detect and less likely to result in litigation (Cohen *et al.*, 2008). Following this notion, Khan and Wald (2015) reveal a significant positive association between the level of directors' protection and AEM, while the association between directors' protection and REM has been insignificant since the passage of the SOX. Chang and Chen (2018) provide an explanation that AEM remains more pronounced than REM in Taiwanese firms so long as D&O liability insurance provides adequate financial coverage, because REM is far more costly in the long run. Their empirical evidence confirms this prediction thus further validating that D&O liability insurance alters the tolerance of litigation risks of directors and officers as well as their trade-off between AEM and REM.

The implications of D&O liability insurance on financial reporting quality may not always be negative. Some argue that D&O liability insurance creates a unique governance mechanism as insurance providers are less willing to accept clients facing high litigation risk (Holderness, 1990; O'Sullivan, 1997). Liou *et al.* (2017) find that firms in Taiwan raise the quality of financial information disclosure along with the purchase and level of coverage of insurance. Wang and Wu (2023) propose that the act of purchasing D&O insurance serves as a deterrent against corporate misconduct. This is attributed to the increased costs and challenges associated with engaging in such misconduct when there is active and effective external supervision. The authors find that D&O insurance effectively restrains corporate misconduct, with a more pronounced impact observed in SOEs compared to non-SOEs.

Our review in 4.2.1(A) finds that D&O liability insurance positively affects investments, e.g. innovation. Bushman and Smith's (2001) theoretical framework posits that good quality financial information should improve investment outcomes by reducing information asymmetry and moral hazard. However, our review above provides overwhelming evidence that D&O liability insurance adversely affects financial reporting quality. D&O liability insurance as a governance mechanism, therefore, contradicts Bushman and Smith's framework. We encourage further research to investigate the dynamic interplay among D&O liability insurance, financial reporting quality and investment efficiency. Readers should be reminded that the purchase of D&O liability insurance serves as a signal that firms are involved in decisions, whether operational and/or financial, which are subject to high litigation risk. D&O liability insurance, however, does not provide coverage for the legal liability caused by the fraudulent conduct of directors and officers. Thus, firms may be willing to disclose more credible information (Healy and Palepu, 2001) and more negative financial information (Skinner, 1994) than they would do otherwise, to avoid costly litigation.

4.3.3 D&O liability insurance and audit outcomes. Although financial reporting quality and audit quality share many common measures in archival research studies, the interactions between the D&O liability insurance and audit outcomes are underpinned by different economic propositions. D&O liability insurance may affect audit outcomes (e.g. audit fees and audit opinions) in two opposing ways. First, the insurance premium may vary in the same direction as audit fees because both reflect the consistency in the litigation risk of client financial reporting and governance characteristics as assessed by auditors and insurers. A positive association between D&O liability insurance and audit fees is documented in the

UK (O'Sullivan, 2009), Canada (Chung and Wynn, 2014; Chung *et al.*, 2015) and Taiwan (Li and Liao, 2017). Li and Liao (2017) also show that auditors charge additional audit fees for clients whose insurance underwriter is from overseas because foreign insurers are less likely to have the informational advantage of local insurers. O'Sullivan (2009) further finds that the positive association is more pronounced in smaller firms which are audited by Big4 auditors and have a smaller representation of independent directors. Finally, Khan and Wald (2015) show that audit fees in firms with D&O liability insurance are 17% higher than in uninsured firms before the SOX. In contrast, this fee gap was reduced to a range of 2%–10% in the post-SOX sample period, suggesting the SOX has significantly altered the dynamics of shareholder litigation and shifted some of the litigation risk from auditors to officers in the US. The number of key audit matters also reflects auditors' risk perceptions and efforts. Lin *et al.* (2020) reveal the number of key audit matters is higher for a company that purchases D&O liability insurance in Taiwan.

Second, D&O liability insurance may have a substitutive effect on audit fees. The insurance theory of auditing posits that shareholders hire auditors to recoup financial loss caused by failure in financial reporting (Wallace, 1980). D&O liability insurance provides an alternative source of funds to satisfy legal claims against failed firms; thus, D&O liability insurance may undermine audit monitoring. Chi and Weng (2014) show that firms in Taiwan with excess D&O liability insurance coverage are less likely to appoint Big4 auditors. However, Big4 auditors are more likely to issue modified opinions regarding earnings management for clients with excess D&O liability insurance coverage (Chi and Weng, 2014).

Given the above, more concerns are raised about the impact of D&O liability insurance on the integrity of financial reporting and auditing. Very few research studies link the existence of D&O liability insurance with going concern audit opinions. Also, it is not clear whether auditors charge higher audit fees because of poor reporting quality stemming from D&O liability insurance and, hence, exposing auditors to audit litigation risk.

4.3.4 The interaction between D&O liability insurance and corporate governance. The research interest of D&O liability insurance and corporate governance lies in the relationship between D&O liability insurance and other corporate governance mechanisms, i.e. D&O liability insurance could complement or substitute other governance mechanisms. D&O liability insurance can be an effective governance tool because it protects risk-averse directors and officers against litigation risk (Core, 1997, 2000). Thus, D&O liability insurance is expected to interact with (1) the attributes of directors and officers and (2) the risk assessments made by various corporate governance stakeholders, including insurance providers.

First, D&O liability insurance directly affects directors and officers discharging their corporate governance roles. D&O liability insurance coverage is often framed as undermining the governance mechanism by reducing the expected severity of litigation. In Taiwan, D&O liability insurance significantly weakens pay-performance sensitivity (Wang and Chen, 2016); and firms with excess D&O coverage exhibit a greater likelihood of internal control weaknesses (Chen and Keung, 2018). It is worth noting that a strand of literature investigates the corporate governance impact of D&O liability insurance at the individual director and officer level. Jia and Tang (2018) find that there is a significant negative association between D&O liability insurance and a number of diligence measures utilized by corporate directors. For example, D&O liability-insured directors are significantly busier than their non-insured counterparts. Wang *et al.* (2022) report that board meeting attendance is higher for D&O liability insured-firms than their non-insured counterparts, although this association is attenuated in firms with a higher level of director compensation. Conversely, D&O liability insurance may play a complimentary role by reducing the financial burdens of directors and officers who are pivoting strategic decisions for higher performance. Chen *et al.* (2017) reveal a positive association between CEO remuneration and tenure and

R&D activities in the firm, whereas the presence of D&O liability insurance intensifies this association when CEOs have more cash-based than equity-based compensation. Lin *et al.* (2022) also support the notion that D&O liability insurance in Taiwan increases managerial ability when CEOs are newly appointed, in family firms and in firms with higher environmental uncertainty.

Second, D&O liability insurance may incentivize or discourage certain behavior as it alters the risk assessment of stakeholders. Generally, firms with D&O liability insurance coverage are more likely to face shareholder litigation (Gillan and Panasian, 2015). D&O liability insurance studies posit that insurance providers may play a monitoring role as an external governance mechanism. In the capital market, the information embedded in the D&O liability insurance disclosure is priced, especially in the IPO process, when insurers assess the entities' potential cost of litigation against their governance structure (Boyer and Stern, 2012). Donelson and Yust (2019) support the idea that both D&O insurers and lenders effectively monitor securities litigation and respond accordingly through pricing before case outcomes are known. According to Donelson *et al.* (2018), firms which are required to disclose more D&O liability insurance premium information attract more non-meritorious litigation [14] than those firms which are not subject to the compulsory D&O liability insurance disclosure requirements. This raises an interesting yet critical question about the outcome of regulatory intervention toward compulsory disclosure of the existence, structure and premium of D&O liability insurance.

4.3.5 Other ways to protect directors and officers: corporate indemnification policies and limited liability provisions. Indemnification is a legal concept where a firm agrees to compensate or reimburse its directors and officers for certain expenses and losses which may be incurred because of their roles and responsibilities. Indemnification may cover legal fees, settlements and judgments, similar to D&O liability insurance. The key difference between D&O liability insurance and indemnification is the source of funds where D&O liabilities insurance relies on an external insurance policy, but indemnification involves the firm directly using its own resources to compensate or reimburse its director and officers.

Until 1941, indemnification of D&O in the US was a contractual matter, and they were not entitled to indemnification if it was not specifically stated in any corporate by-laws or articles (Wynn, 2008). In some early cases, indemnification was provided to directors and officers who successfully defended derivative lawsuits. In certain states, the indemnification was conditioned upon the evidence that the action of directors and officers was of direct benefit to the corporation. In the landmark case of New York Dock Co vs McCollum, directors were denied indemnification regardless of the fact that the derivative suit was successfully defended, and the court concluded that it was in the interest of the corporation to avoid the appointment of receivers. In response to enormous criticism of McCollum for denying indemnification to its directors, the first US indemnification statute was enacted in New York in 1941 (Coffee, 1989). By the late 1960s, 44 states and the District of Columbia had explicit provisions pertaining to either providing mandatory indemnification or indemnification to directors and officers conditional upon successful defence (McKeown, 1968).

Cheffins and Black (2005) investigate D&O liability and indemnification across six jurisdictions including the US. Their discussion indicates that statutory D&O indemnification (either mandatory or conditional) exists across Canada, the UK and US. Even though German Law lacks a specific indemnification provision, stock corporations still provide indemnification so long as directors are not in breach of duties owed to the company. Similarly, indemnification provisions are not part of French and Japanese laws, however, D&O indemnification across these jurisdictions exists in different forms although litigation against directors is not very common. Furthermore, in 2001, the Japanese government allowed companies to put a maximum cap on director personal liability.

Within the US, state laws permit limited liability provisions (LLP) to be implemented. These provisions manifest in three primary forms intended to aid firms in constraining director liabilities: statewide provisions that uniformly limit director liability, provisions that enable firms to incorporate liability limitations into their charters, and laws imposing caps on director liability (Romano, 2006). Kaplan and Harrison (1993) highlight that these provisions gained prominence after the 1985 Smith vs Van Gorkom case. The passage of the SOX may have increased personal liability (Linck *et al.*, 2009), rendering D&O liability insurance a less effective tool to protect directors and officers against corporate wrongdoings. Aguir *et al.* (2014) find that, subsequent to being taken over, firms carrying D&O protections are more likely to fail, thereby supporting the "substitute" view of D&O liability insurance. Aguir and Aguir (2020) evidence that the value of firms with protected directors is on average lower than the value of firms without protected directors and that this effect was particularly pronounced before the introduction of the SOX.

4.3.6 Section summary. Extant literature on the consequences of D&O liability insurance highlights that the implications of D&O on the operational and financial performance of firms have both positive and negative consequences. D&O liability insurance fulfills the expectation of directors and officers to ease their financial burden for potential litigation when they are pivoting strategic and innovative decisions. However, D&O liability insurance acts as a cushion to reduce the severity of litigation which may stimulate adverse selection and moral hazard. Such paradoxical impacts are also recognized in studies discussing the financial reporting quality and corporate governance of firms when D&O liability insurance is framed as a factor affecting agency relationship and agency costs. D&O liability insurance is a governance mechanism; however, implicitly it may introduce challenges to the accountability of directors and officers in financial reporting and governance practice. It is concerning that empirical evidence largely supports that D&O insurance compromises the quality of financial reporting and auditing and has the potential to alter the outcome of litigation. Capital market research studies evidence that D&O liability insurance information is priced according to firm litigation risk. Thus, D&O liability insurance information affects firm value and firm financing and investing decisions.

5. Future research directions

Our current review is mainly focused on the firm-level determinants and consequences of D&O liability insurance in the field of finance, accounting and corporate governance, i.e. the demand side perspective. Our review demonstrates increasing sophistication, depth and rigor, and consistency in its intellectual structure with respect to theoretical frameworks and research questions regarding D&O liability insurance. D&O insurance research in our review highlights the dominance of agency theory, and the concentration of research in the limited number of capital markets, but only where the D&O disclosure information is available. Literature on the determinants of D&O liability insurance suggests that in empirical research D&O liability insurance is seen as a component of corporate monitoring, the demand of which is driven by a firm's governance characteristics and overall remuneration strategy. Research studies on the consequences are abundant in the field of accounting, finance and governance. It is concerning that empirical evidence of the impact of D&O liability insurance on financial reporting, auditing and corporate governance mainly portrays the dark side of having such insurance. It is questionable whether D&O liability insurance in fact plays any monitoring role. Regulators, practitioners and scholars may critically reflect on the assumptions and regulatory regimes of D&O liability insurance with respect to improving the integrity and wellbeing of capital markets and related professional services.

Future research may consider more legal focused studies considering the contracting processes, and the cause and effect of D&O liability insurance pay outs. The supplier perspective on the determinants and consequences of D&O liability insurance also remains unknown. We view the research studies on D&O liability insurance as a subject of multi-disciplinary research spanning law, economics, finance, accounting, management, and corporate governance. Exploratory and critical analyses of the *actual purchase decision* at the individual director and officer level is lacking in the current body of literature. In the discussion to follow, we provide some directions for future research opportunities.

(1) D&O liability insurance as a variable does not have a clear and consistent construct. The variable has been used to measure a piece of priced information in the capital market for litigation risk (a component of the remuneration package), independent monitoring from the insurer (a response to litigation risk), and potential recoupment when a firm is facing litigation in conjunction with the auditor's liability. These constructs, although predominantly underpinned by the agency relationship, are attributable from various perspectives to different stakeholders of governance. So far, D&O liability insurance largely remains a black box; very little is known via exploratory or critical studies with respect to the constructionism of meanings embedded in the supplying and purchasing decision. Narrative literature reviews on law papers, in-depth and/or critical qualitative research studies, quantitative studies drawing on survey and experimental design and textual analytics on court decisions and/or insurance contracts may contribute to clarifying the nature of the buyer and supplier behaviors and perceptions. Such approaches may also be helpful in understanding the pricing of D&O liability insurance premiums, the implications of insurance pay-outs, as well as the perceptions of those who ultimately have to pay the costs of the insurance.

(2) We observed that the present D&O liability insurance coverage measure, predominantly based on a binary indicator, may not adequately capture the nuanced causal relationship between D&O liability insurance and different outcomes. We advise using stronger indicators to address this constraint, including the proportion of D&O liability coverage to total assets or profits, industry benchmarks, and the amount of excess D&O liability coverage that firms acquire. Very little research addresses D&O liability insurance at the director and executive level, particularly considering individual directors and executives serve in multiple firms. Research studies on the interplay between D&O liability insurance and board subcommittees are also lacking. Existing literature on directors' busyness and board committees has highlighted the linkage between director and officer-level attributes and corporate governance (Falato *et al.*, 2014; Jiraporn *et al.*, 2009). Data restriction precludes researchers from investigating overall insurance coverage of individual directors and officers and governance outcome. Future regulatory interventions may consider expanding the disclosure regime by revealing insurance information at the individual officer level.

(3) Empirical research shows that COVID-19 has had significant adverse effects on firm liquidity (Gofran *et al.*, 2022), investment efficiency (Liu *et al.*, 2022), innovation (Jin *et al.*, 2022), firm leverage (Vo *et al.*, 2022) and performance (Shen *et al.*, 2020). We anticipate the COVID-19 pandemic will have various implications for D&O liability insurance demand and costs. Specifically, the economic uncertainty induced by the pandemic may raise litigation risk against directors, executives and firms which are believed to have mishandled their operations during the crisis. Banham (2020, p. 6) reports that the CEO of AON financial service group, Christine Williams raised concerns that, "… *there is definitely a heightened awareness that litigation tied to the substantial fall-off in the stock market could rear its head, with shareholders looking to insurers to recover their financial losses.*" Furthermore, the financial distress experienced by many firms because of the pandemic may result in an increase in bankruptcies and insolvencies, which may

impact the availability and cost of D&O liability insurance. Future studies should examine how much litigation against directors and officers has increased (if any) during the pandemic or post-COVID period and how this has influenced the willingness of insurance firms to provide D&O policies.

(4) The empirical research on the role of D&O liability insurance in management accounting is currently insufficient. We propose an avenue for future research to explore the relationship between D&O liability insurance in the management accounting domain. Specifically, researchers could investigate how D&O liability insurance affects managerial slack. Managerial slack can be defined as "excess expenditure, compensation and perquisites consumed by management at their own discretion that deviated firms from the goal of profit maximization." We expect D&O liability insurance to increase managerial slack because purchasing D&O liability insurance can alleviate monitoring pressure on managers and allow them greater flexibility, thereby resulting in managerial slack. Additionally, future research could examine how D&O liability insurance affects the level of operational slack in organizations and its impact on firm efficiency. Operational slack serves as a crucial "shock-absorbing buffer" that safeguards firms against disruption and guards as a risk reduction strategy. However, firms may encounter financial distress if operational resources are redirected towards paying D&O insurance premiums. For example, due to the COVID-19 pandemic, firms are experiencing employee redundancies and other related expenses. Hence, it is essential to understand whether D&O liability insurance also affects the cost behavior of firms: both cost stickiness and operating leverage.

(5) Our literature review identifies methodological shortcomings in studies investigating D&O liability insurance. These limitations primarily involve issues of endogeneity and correlated omitted variables. It is important to note that these challenges are not exclusive to D&O liability insurance research but are critical to ensuring the generation of robust statistical evidence. Several studies included in this review have attempted to mitigate selection bias driven by firm-specific financial variables through a focus on tests examining the determinants of D&O liability insurance. However, it is crucial to recognize that the decision to purchase D&O liability insurance may be influenced by additional factors such as industry-specific risks, ownership structure (e.g. family firms), or the source of debt financing (e.g. bank *versus* public debt). Consequently, it is necessary to consider these supplementary factors to obtain a comprehensive understanding of the determinants of D&O liability insurance. Endogeneity within D&O liability insurance research can manifest in three primary ways. First, self-selection bias emerges when firms with higher or perceived higher risk opt to purchase D&O liability insurance, thereby establishing a bidirectional relationship between the insurance and the outcomes under investigation. Second, reverse causality occurs when successful firms are more inclined to purchase insurance due to increased legal risks, resulting in the reversal of the relationship between D&O liability insurance and outcomes. Finally, unobserved heterogeneity introduces confounding factors that impact both the decision to purchase insurance and the outcomes, potentially leading to inaccurate attributions.

Overall, our review of D&O liability insurance research highlights the need for clarity in its construct and measurement. Additionally, we identified a call for stronger indicators to capture the nuanced relationship between D&O liability insurance and outcome, including at the director level of analysis. We anticipate that the COVID pandemic will likely impact the D&O liability insurance demand and costs, requiring further investigation into litigation risks and financial distress of firms to extend this stream of research.

6. Conclusion

We conducted a systematic literature review on the determinants and consequences of D&O liability insurance in accounting, finance and corporate governance domains. We explored the regulatory landscape surrounding D&O liability insurance and examined how requirements vary across countries such as the US, UK, Canada, Germany, South Korea and Taiwan. While the proponents suggest that D&O liability insurance is crucial for firms as a protection against lawsuits, to attract and retain top talents, to mitigate financial risks and to enhance corporate governance quality, opponents argue that D&O liability insurance could exacerbate agency conflict as such assurance could encourage firm management to embrace excessive risks and lead to adverse outcomes for the firm.

Our review indicates that the agency theory-based signaling and information risk hypotheses are the main themes of the extant research on D&O liability insurance. According to our research, D&O liability insurance impacts several areas that affect a firm's operating behavior, including investment efficiency, stock market performance and firm value, financial reporting quality, audit outcomes and corporate governance structures. While most studies have analyzed the impact of D&O liability insurance on firm outcomes, few have investigated the determinants of D&O liability insurance purchases, which represents a promising avenue for future research. Our review additionally reveals that endogeneity and measurement problems remain significant obstacles in the empirical research on D&O liability insurance. Findings from research in this field could not be generalized if these issues are not properly dealt with.

The current study contributes to the existing body of knowledge of D&O liability insurance by consolidating the finance, accounting and corporate governance literature. Our review calls for regulators and practitioners to consider regulations requiring the disclosure of more comprehensive information about D&O liability insurance to enable more effective investment decisions and more in-depth research studies regarding its determinants and consequences. The current review does not cover law papers, which, to our knowledge, are in abundance in dealing with the cases and legal issues involving D&O liability insurance. A narrative review of law papers and interdisciplinary research studies may be of value to regulators, practitioners and scholars. However, the exclusion of management and economics journals, where research on D&O liability insurance might be available, could pose a potential limitation. Exploring research published in such journals could provide additional dimensions to our review, considering the multi-faceted nature of D&O liability issues across managerial perspectives. We also call for empirical research studies informed by novel research designs to further our understanding of the nature and behavioral implications of D&O liability insurance.

Notes

1. Section 2 of the United States (US) Company Act of 2013 explicitly defines the term "director" as an individual appointed to the board of directors. The term "officer" within this legislative context encapsulates various roles, including director, manager, or secretary. In the corporate governance structure, shareholders exercise their authority to appoint directors, entrusting them with the oversight of managerial strategic roles pertinent to the corporation. Conversely, officers, designated by directors, bear the responsibility for the day-to-day operational activities of the company. This hierarchical distinction aligns with the delineation of key officer roles, constituting the Chief Executive Officer (CEO), Chief Operating Officer (COO), and Chief Financial Officer (CFO) as integral positions within the organizational framework.

2. In the US, Securities Class Action Lawsuits are largely filed under Section 10(b) of the Securities Exchange Act of 1934 and its subsequent Rule 10(b)5 (Rose, 2008). Rule 10(b)5 made it easier for plaintiffs to sue corporate defendants if they purchased the shares from an efficient market. Unlike common law fraud cases, where plaintiffs must prove that they read and relied upon the allegedly

misleading disclosures for investment decision-making, the requirement for securities litigation is less strict (Habib *et al.*, 2014). Although class actions can be useful to discipline opportunistic managers and controlling shareholders, they can also lead to non-meritorious lawsuits (Habib *et al.*, 2014; Rose, 2008).

3. ABDC ranks journals into four categories: A*, A, B, and C. This literature review includes studies published in journals ranked A and above to ensure a certain quality threshold. We included papers published in journals ranked B only if we felt this inclusion was absolutely necessary. The full list of ABDC rankings can be retrieved from https://abdc.edu.au/research/abdc-journal-list/(accessed at the end of January 2022). We also consulted the Academic Journal Guide (AJG) rankings. We considered journals ranked three and above following the AJG ranking for inclusion in our review. The complete list of AJG Journal ranking can be retrieved from https://charteredabs.org/academic-journal-guide-2021/.
4. We have decided to include Boyer (2014) in our review despite being published in *The Journal of Financial Perspective*, a non-ranked outlet, due to its high citations in top accounting and finance journals.
5. We thank an anonymous reviewer for this insight.
6. Baker and Griffith (2007) reveal that insurers use sophisticated mechanisms to guard the confidentiality of their algorithms. They report that D&O insurance coverage was tied to the number of directors on the board in the early days, but it later evolved to consider factors like governance risk, market capitalization, stock price volatility, accounting performance, and the age/maturity of the insured firm.
7. Naaraayanan and Nielsen (2021) briefly describe the development of D&O liability insurance in India and relate such insurance to the directors' and officers' personal liability. However, no empirical testing is provided related to D&O liability insurance.
8. Bill 198, also regarded as "C-SOX", requires management and accounting firms taking legal responsibility for their claims by individually certifying corporate financial statements. As a result, Bill 198 imposes civil liability for inaccurate or incomplete corporate disclosure; this is so that investors can seek compensation for damages suffered if the issuer or responsible individuals make written or oral public disclosures that contain an untrue statement of a material fact or fail to make timely disclosures (Boyer and Tennyson, 2015).
9. Abnormal Coverage is defined as the residuals of the regression of the natural logarithm of maximum coverage less any deductible on its hypothesized determinants (Core, 1997, 2000), or the residual of the regression of the natural logarithm of the premium as a function of firm fundamentals and governance structures (Core, 2000).
10. The authors argue that the potential severity of loss to the firm will be a function of the proportion of shareholders who purchased on wrong information and held on to the stock, the current market value of equity of the company, and some measure of downward return when mismanagement is revealed (p. 763).
11. It should, however, be noted that ICF sensitivity has also been used as a proxy for financial constraints in the academic literature (see Habib *et al.*, 2021, Section 2.1 for a review).
12. Although foreign investors are expected to exercise a monitoring role and constrain price crash, Vo (2018) argues that foreign investors are vulnerable to agency problems because of the separation of ownership and control, allowing directors to benefit themselves. Vo (2018) further argues that in the Asian market, foreign investors' exit from a firm sends a negative signal and might result in a significant decrease in stock prices.
13. Loan spreads are the difference between the interest rate paid on a loan and the risk-free interest rate. Bond credit spreads are the difference in yields between corporate bonds and government bonds of the same maturity.
14. Under non-meritorious claim litigation, the establishment of basic facts of directors' breach of duty of care is not required.

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