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Board Composition, Ownership Structure and Financial Distress: Insights from UK FTSE 350

(Short title: Corporate governance and financial distress)

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Board Composition, Ownership Structure and Financial Distress: Insights from UK FTSE 350

Abstract

Purpose – This study investigates the possible implications of compliance with corporate governance (CG) provisions, including board composition and ownership structures, on the firm's likelihood of falling into financial distress.

Design/methodology/approach – Our study applies a random-effects logistic regression model as a baseline analysis using a sample of 110 FTSE350 manufacturing companies from 2014 to 2019. This technique is supported by conducting a two-stage Heckman regression model to overcome the potential existence of endogeneity problems.

Findings – Our empirical evidence suggests that board composition and ownership structure are heterogeneously associated with financial distress probabilities in that they might have either reduced or increased the financial distress of the sampled firms. Specifically, board independence, board gender diversity, audit committee independence, and institutional ownership negatively influence the likelihood of financial distress. In contrast, and consistent with our expectations, ownership concentration is positively attributed to financial distress, while the board size, audit committee size, and managerial ownership have insignificant impacts on financial distress.

Originality/value – Our study extends the existing body of knowledge by examining the collective effect of board characteristics and ownership structures on firms' financial distress likelihood among a sample of manufacturing firms within the FTSE350 index post the 2008 global financial crisis and following the recent CG reforms in the UK during the study period from 2014 to 2019.

Keywords: Board Composition, Corporate Governance, Financial Distress Likelihood, FTSE 350, Ownership Structure.

Paper type: Research paper

1. Introduction:

The consequences of the 2007–2008 financial crash experienced widespread financial distress probabilities for corporations worldwide, with enormous exceptional influences on entire economies (International Monetary Fund, 2012). One of the most prominent reasons for this financial crisis was primarily related to micro-foundations (Erkens et al., 2012). The inspecting roles of corporate boards and ownership structures were ruthlessly interrogated (Aebi et al., 2012). These critiques suggest that adequate compliance with good corporate governance (CG) practices are essential for businesses' financial performance, including decreasing the likelihood of financial distress (Dowell et al., 2011; Mangena et al., 2020). Thus, we have been motivated in this study to examine how CG arrangements can effectively reduce the likelihood of financial distress.

CG can be described as a mechanism utilized to mitigate agency issues between the shareholders and managers that comprise outside effects of the marketplace, internal decisions, and a system of control (Siahaan, 2014). The board of directors' characteristics are vital in managing CG efficiently, especially in publicly-held corporations where the problems associated with agency arise due to separation of control and ownership (Fauzi and Locke, 2012). The directors help in mitigating such problems not only this, but they also help perform organizational functions smoothly, for instance, giving strategic decisions to the corporation. There are various characteristics of the board and its sub-committees, including the audit committee, which provide various advantages to the organizations in the form of improved performance, lower capital cost, and trouble-free financing. According to Callen et al. (2003), the board's composition involves structure, recruitment, demographics, leadership, and education, together with the criteria and motivation for the working

mechanism of the board members. It can be viewed as an influential factor that has a significant impact on the financial performance of firms. As a powerful internal CG mechanism, ownership structure defines the shares' percentage that various parties hold in the corporation's equity resources/capital (Manna et al., 2016).

Past academic studies have shown that financial distress has gained great scholarly attention in recent years (e.g., Mangena et al., 2020; Cruz et al., 2014; Cavaco et al., 2017; Marinova et al., 2015; Farag and Mallin, 2017). The term financial distress is defined by Mumford (2003) as a situation when the corporation cannot fulfil its financial obligations. Further, Gilbert (1990) also explains that financial instability or distress can be considered a condition under which an organization generates negative earnings/profits for several successive years. Amoa-Gyarteng (2014) discusses the main factors that can affect firms' financial stability and lead to failure, including profitability, asset turnover, and leverage. However, another study considered non-financial factors, i.e., lack of adherence to CG mechanisms, control procedures, guidelines, and stable policies, which are crucial in creating financial distress (Jiming and Weiwei, 2011).

The occurrence of financial distress is considered a global problem that has adversely affected developed and developing economies. Furthermore, its occurrence depends upon CG practices, such as boards' competencies or deficiencies, aggressive management practices, and board oversight (Shah, 2016). For instance, Salloum et al. (2012) indicate that poor CG practices are among the main reasons that create financial distress as they spoil numerous corporations in different sectors and nations worldwide. Several pieces of literature have researched financial distress, CG attributes, and its determinants (e.g., Shahwan, 2015; Dhamija et al., 2014; Lee & Yeh, 2004; Mangena et al., 2020). The mainstream of this research revealed a negative

connection between CG arrangements and a firm's possibility of getting into financial distress. In this regard, Johnson et al. (2000) argue that CG can provide better instructive power for firms during financial crises than the macro-economic variables. However, the increasing globalization can cause growing pressures on boards to have such competencies, enabling them to meet the rapidly increasing competition and stand out in the market (Li et al., 2008). Although a high level of competition can create many new opportunities for existing and potential businesses, it might also increase corporations' chances of financial distress (Udin et al., 2017). Therefore, this study aims to bring extensive insights into the impact of the board of directors' composition and structure of ownership on firms' financial distress likelihood among a selected sample of FTSE350 manufacturing firms. We posit that without well-structured boards, manufacturing firms in the UK can easily fall into agency problems, which prejudice their financial system and increase financial distress prospects. By doing this, the current study helps corporate managers and those charged with CG in the UK establish competent and robust boards from all aspects to enhance firms' financial sustainability and competitiveness in the long run.

At the end of the 1980s, due to poor corporate performance and weak disclosure practices, a series of corporate scandals, such as the Barings Bank's bankruptcy, expanded the need to reform CG provisions in the UK (Al-Bassam et al., 2016). Therefore, a number of laws and regulations have been enacted, and committees have been established, striving to restore investors' trust by improving corporate transparency and accountability of firms listed on the London stock exchange (LSE), such as the Cadbury Committee in 1991 (Ntim et al., 2015), the Smith committee in 2003 (Aebi et al., 2012), and the UK combined CG codes in 2008 (Gerged et al., 2020). Further, in 2012 and 2018, the Combined CG Code in the UK

was revised with a special focus on enhancing the effectiveness of institutional shareholders and also recommended that non-executive directors (NEDs) must represent half of a board to offer innovative strategies for firms, including free oversight and to challenge executive directors constructively (FRC, 2016). Therefore, the current study contributes to the ongoing debate on the financial consequences of CG in the UK by examining the impact of board characteristics and ownership structures on the likelihood of financial distress in the UK after the 2012 CG reforms from 2014 to 2019, among a selected sample of FTSE manufacturing firms.

We selected to focus on manufacturing firms for several reasons. First, we use Altman's Z-Score to measure financial distress, which primarily gauges a publicly traded *manufacturing* firm's likelihood of bankruptcy (Altman, 1968). Specifically, Altman (1968, 589) says, "*the data used in the study are limited to manufacturing corporations*". This means that using Altman's Z-score is more effectively applicable to manufacturing firms, which motivated our study in the sample selection. Second, according to FTSE Russell (2021), about 48% of FTSE 350 are manufacturing companies (see Table 1 for more details), which reflects the importance of conducting a sectorial study focusing on manufacturing companies. Third, for consistency and comparability reasons, we follow a body of prior CG-financial distress studies focused on manufacturing companies (e.g., Gill and Biger, 2013; Chiang and Lin, 2007; Shahwan, 2015). Fourth, although there are a few studies have examined the CG-financial distress nexus in the UK (e.g., Miglani et al., 2015; Mariano et al., 2021; Akbar et al., 2017), as far as we know, there is no single study that provided insights into this link from manufacturing firms in the UK. Hence, we address this empirical gap by focusing on manufacturing firms in the UK.

In an attempt to evaluate the impact of CG characteristics on financial distress likelihood among a selected sample of FTSE 350 manufacturing firms from 2014 to 2019, this study uses a random-effects logistic regression model to investigate the CG-financial distress nexus. This technique has been supported by conducting a two-step Heckman model to control for endogeneity problems. Our empirical evidence suggests mixed results. For example, board independence, audit committee independence, board gender diversity, and institutional ownership can effectively reduce financial distress. However, the board size, audit committee size, and managerial ownership *per se* cannot predict firms' financial distress likelihood. On the other hand, according to our results, ownership concentration is expected to contribute to increasing the possibilities of financial distress among a selected sample of FTSE 350 manufacturing firms.

By doing so, our study extends the existing body of knowledge by examining the collective effect of board composition and ownership structure on firms' financial distress likelihood post the 2008 financial crisis and the recent CG reforms in the UK. This implies that policymakers and standards setters should develop a more effective enforcement mechanism for CG provisions to reduce agency costs in an effort to minimize the probability of firms' falling into financial distress conditions. Also, our study provides a unique sectorial investigation of the CG-financial distress nexus among manufacturing companies listed under the FSTE 350 index.

The remainder of the paper is structured as follows. Section 2 reviews the previous CG-to-financial distress studies; section 3 defines the research design; section 4 presents the empirical findings and robustness checks; section 5 concludes the main results, limitations and future recommendations.

2. Literature review

2.1. Theoretical Framework:

According to Van Puyvelde et al. (2012), it is supposed in the theoretical concept of "Agency" that a conflict related to a goal can be seen between the agent and the principal, as both of them desire to make the best use of their convenience. Such a theory's fundamentals are grounded upon social psychology that pays attention to the executives' behaviour. Therefore, we build upon this hypothetical viewpoint to conceptualize the CG-financial distress nexus.

Jensen and Meckling (1976) defined agency theory as a relationship based on a contract between principal-agent, which requires agents to perform action or service for the principal and includes some authority related to decision-making provided to the agent. Yusoff and Alhaji (2012) explain the agency theory's two factors that are ascribed by CG's extensive literature. The first aspect describes that the number of participants within the corporations is reduced to two, i.e., stockholders and managers, and both interests are presumed to be consistent and transparent (Yusoff and Alhaji, 2012). Daily et al. (2003) give details about the other factor, which states that human beings are self-centred and hesitant towards sacrificing their interests for other individuals' interests. Further, McColgan (2001) explains that the problem of agency arises because of the variation in the conflict and interest between the control and ownership due to the authority of decision-making that the principal delegates to the agent.

It is suggested by Boston (1991) that this concept could be utilized for the analysis of the comparative proficiency of the alternate arrangements of the institution, as the focus of such theory remains on the nature of contractual relations. Davis et al.

(1997; 20) stated, *"rooted in economics, agency theory suggests that managers will choose opportunistic self-interested behaviour rather than behaviour aimed at maximizing the principal's interest."* In the CG context, the essential view is that in some circumstances, executives (agents) may not act to expand investor (principles) returns in opposition to their responsibility, except if appropriate structures of CG (to manage costs) are set up to ensure the premiums of investors (L'Huillier, 2014). As per Hutchinson (2002), agency theory implies that the board within the corporation is a powerful interior administration system. However, the board's ability to screen is imperilled if interior individuals (executives or agents) overwhelm the board. CG's critics recommend that board monitoring be increasingly powerful if boards comprise independent outside executives and from expanded directors' shareholdings, minimizing the agency conflict between managers and shareholders and increasing firms' financial stability (Mangena et al., 2020).

Consistently, Mallin (2004) also states that corporate compliance with CG arrangements, in which the boards are considered a vital device, can minimize the agency cost raised because of the relation of the principal with the agent. Adegbite et al. (2012) narrate that it is suggested by the framework of agency that CG is all about monitoring and creating the mechanisms that shareholders place to manage the insiders within the corporation to capitalize on the wealth of the stockholders by reducing the agency loss and minimizing the potential of financial distress. The theoretical framework "Agency" indicates that the corporation cannot be measured as an individual but as a fiction that is legal as well, where clashing targets of people are brought into balance inside a system of legally binding connections (Yusoff and Alhaji, 2012). Such relations on a contractual basis are developed with customers, creditors, employees, and suppliers. Deegan (2004) explains the contracts' intention, which is

that all the involved parties (that perform actions for their own sake) are motivated to maximize the organizational value by making a reduction in the costs of agency and adopting methods of accounting, which most effectively reflect the performance of all those individuals involved in the contractual relation.

It is claimed by Maijor (2000) that the agency concept presumed that the detachment of possession and the executives' capacities lead to the clashes of agent-principal as the directors may seek their personal benefit to the detriment of the principals (Mustapha and Ahmad, 2011). However, criticism has been placed by Johnson and Droege (2004) against agency theory as they explain that the social relation's existence is being ignored in this theory, and it is assumed that the individual's social life is a contract series. Mustapha and Ahmad (2011) found that the theoretical perspective of "Agency" recommends; that without guidelines (regulation), the penchant of firms' interest for audit (independent) is an element of the degree of the separation between control and ownership.

According to the prior empirical literature, the two CG structures by which the firms' financial distress can be affected are discussed below.

2.2. Previous studies:

Prior scholarly efforts assessing the potential effect of the board composition and ownership structures on financial distress likelihood have been inconclusive. For instance, Donker et al. (2009), Al-Tamimi (2012); Pramudena (2017); Tabasum et al. (2018) indicate a negative relationship between managerial ownership with financial distress. Besides, Fich and Slezak (2008) suggest that managerial ownership is negatively associated with businesses' bankruptcy, though they find a positive association between board size and financial distress. In contrast, Fich and Slezak

(2008) report no link between institutional ownership and the likelihood of financial distress. These heterogeneous findings are supplemented by Ananto et al. (2017), that find no impact of institutional ownership on financial distress and no correlation between board size and the financial distress of firms. However, Manzaneque et al. (2016) present a positive influence of board size on financial distress probabilities. Subsequently, these mixed findings reiterate the necessity for additional studies to establish comprehensive evidence on the impact of CG mechanisms on financial distress likelihood, specifically in developed economies.

The mainstream of earlier studies has focused on developed economies and suggests that CG arrangements are perhaps effective measures by which companies diminish the possibility of financial distress in developed settings, such as the US (e.g., Wu & Wu, 2005; Lajili and Zéghal, 2010), Canada (Elloumi and Gueyie, 2001), Netherlands (Donker et al., 2009; Santen and Soppe, 2009), Spain (Manzaneque et al., 2016; Mangena et al., 2020), the European Union (Baklouti et al., 2016), and Australia (Miglani et al., 2015). However, fewer studies focused on examining the CG-financial distress nexus among a sample of UK companies compared to their developed counterparts (Mariano et al., 2021). Also, the UK literature on financial distress lacks examining the collective impact of various CG mechanisms on financial distress likelihood. For example, Akbar et al. (2017) focus on the effects of board characteristics on financial distress, while Mariano et al. (2021) are limited to a single measure for ownership structure. Also, there is a dearth of sectorial studies that examine the CG-financial distress link from the perspective of manufacturing companies in the UK. Thus, our study addresses this *empirical* research gap by examining the impact of various CG structures, including board characteristics and

ownership structures, on the likelihood of financial distress among a sample of FTSE 350 manufacturing firms from 2014 to 2019.

Theoretically speaking, previous studies in the UK argue that without well-structured boards, firms can easily fall into agency conflicts, which prejudice their financial system and increases their financial distress prospects (Migliani et al., 2015; Mariano et al., 2021; Akbar et al., 2017). Accordingly, we believe that agency theory provides the richest possible understanding of the CG-financial distress link in the UK. Our study, therefore, builds upon a robust theoretical framework to explain the potential impact of CG arrangements on the financial distress of manufacturing firms in the UK.

2.3. *Hypothesis Development:*

2.3.1. Board Size and Financial Distress

Prior studies indicate an influential role of the size of the board of directors in lowering the possibilities of financial distress. Manzaneque et al. (2016) found a negative association between board size and the possibility of financial distress among a selected sample of Spanish firms. Theoretically, Adams and Mehran (2012) argue that board size plays an essential role in improving the transparency of institutions, reducing the asymmetric gap between information and agency costs. This is expected to enhance companies' financial performance and minimize the likelihood of financial distress. Also, Berger et al. (2016) find a negative impact of board size on the financial distress of banks. In the UK setting, McNulty et al. (2013) report that large-sized boards are unlikely to confront bankruptcy in future.

Furthermore, De Andres and Vallelado (2008) find a negative association between board size and financial distress. They added that board size is associated with directors' capability to scrutinize managers' behaviour, as the largest boards are

more effective in improving financial performance indicators and not taking risky decisions, maintaining lower chances of financial distress incidence. Likewise, Aebi et al. (2012) indicate that large institutions require large boards to mirror the complexity of their work and the existence of expertise and financial resources.

Moreover, Darrat et al. (2016) suggest that having a larger-sized board reduces the financial distress chances for firms. Additionally, De Andres and Vallelado (2008) find an inverted U-shaped link between board size and firm financial performance to sustain financial stability. Therefore, we formulate the first hypothesis as follows:

H1: There is a significant negative relationship between board size and financial distress likelihood.

2.3.2. Board Independence and Financial Distress:

Independent directors make the board financially experienced to appreciate many financial complexities and risks that enable boards to contribute to firms' financial stability (García-Meca and Sánchez-Ballesta, 2010). Hence, the "domino effect" concept has been used for independent directors to put pressure on boards to enhance their companies' financial reporting by additional involvement in voluntary disclosure, offering trust to shareholders, thus attaining an increase in financial performance effectiveness and reducing financial distress (Samaha et al., 2012). Dong et al. (2017) find a negative link between independent directors and financial distress. Frankel et al. (2011) explain this negative impact by arguing that independent non-executive directors tend to support less risky investments, assisting firms in avoiding losses and, therefore, protecting their image as they aim to reduce the likelihood of financial distress. In another context, Elloumi and Gueyie (2001) support a negative association between board independence and financial distress, whereas Daily and Dalton (1994) find a positive impact of independent directors on financial distress. These

heterogeneous findings raise some concerns about board independence effectiveness as a CG mechanism meant to help reduce the possibilities of financial distress. For instance, Lajili and Zéghal (2010) find no relation between board independence and financial distress in the US. The UK combined CG Code recommends that independent directors should make up half of a firm's board. This is expected to diminish the issue of information asymmetry and thus reduce agency costs (Knyazeva et al., 2013). Thus, we address this need for further research to examine the impact of independent directors on financial distress by examining the following hypothesis:

H2: There is a significant negative relationship between independent directors and financial distress probabilities.

2.3.3. Board Gender Diversity and Financial Distress:

The agency theory favours board gender diversity as it suggests that a greater diversity of interests and opinions on the board might maintain managerial discretion within appropriate bounds (Francoeur et al., 2007). Carter et al. (2003) provide some reasons for the necessity of women's representation on boards. They indicate (i) improved diversity of opinions in the boardroom, (ii) extra strategic input, (iii) influence on leadership styles and decision-making process, (iv) supply of female mentors and role models, (v) enhancing firm image, (vi) women's availability and capabilities, (vii) inadequate experienced male directors, and (viii) confirming better boardroom behaviour. These reasons suggest that female officers are competent resources. Crucially, a female director may bring different norms, perspectives, values, and understanding to the board function (Ruigrok et al., 2007). Hence, greater gender diversity is expected to enhance financial performance (Carter et al., 2003), negatively affecting financial distress (Santen & Donker, 2009). There we test the third hypothesis as follows:

H3: There is a significant negative relationship between female directors and financial distress probabilities.

2.3.4. Audit Committee Size and Financial Distress:

The size of an audit committee is expected to enhance the quality of firms' financial performance and maintain a high level of financial stability (Salloum et al., 2015). This means that audit committee size reduces risky decisions. Crucially, larger audit committees are more likely to have independent members, enabling them to control firms' financial reporting and performance (Choi et al., 2004). This reduces the audit fees paid to external auditors, which helps stabilize the financial position of firms and minimizes their financial distress chances (Baxter and Cotter, 2009). Theoretically, large audit committees tend to support the disclosure of financial risks, reducing information asymmetry and increasing the market value of shares, which, in turn, decreases financial distress likelihood (Samaha et al., 2012; Jiang et al., 2011). This leads us to develop the following hypothesis:

H4: There is a significant negative relationship between audit committee size and financial distress possibilities.

2.3.5. Audit Committee Independence and Financial Distress:

Audit committee independence is defined by the ratio of non-executive directors on audit committees (Salloum et al., 2014). An audit committee is deemed independent when non-executive directors dominate it. Executive directors might weaken the audit committee's effectiveness by manipulating a board's decision-making process (Ruiz-Barbadillo et al., 2007). The high existence of executive members also restricts the volume of information held by board directors. Thus, a more significant percentage of independent members improve monitoring management performance (Xie et al., 2003), which indicates that more independent members on audit committees have a

high level of coverage of audit matters, decreasing the agency cost and the potential of financial distress (Ghafran and O'Sullivan, 2013).

Empirical evidence suggests that independent audit committees tend to maintain the independence of the external audit, ensuring information objectivity and reliability (Vinten & Lee, 1993; Masli et al., 2022). In the same way, prior scholarly efforts (Al-Najjar, 2011; Salloum et al., 2014) indicate that the existence of non-executive directors in audit committees is likely to protect the interests of shareholders and reduce the likelihood of financial distress by ensuring high quality of financial statements. Carcello and Neal (2000), Indarti et al. (2021), and Jia (2019) also find a negative impact of audit committee independence on the going concern of financially distressed firms. The combined CG code in the UK indicates that all listed firms have a duty to create an audit committee of at least three independent directors or otherwise explain the non-compliance. Thus, our fifth hypothesis is developed as follows:

H5: There is a significant negative relationship between the independence of audit committees and financial distress likelihood.

2.3.6. Ownership concentration and Financial Distress:

The previous literature discusses two problems related to ownership concentration, i.e., free ride and expropriation (Claessens et al., 2002; La Porta et al., 2000; 2003; Shleifer and Vishny, 1986). The situation is not the same when we examine the impact of ownership concentration on financial distress. In this case, large shareholders may suffer significant losses from their investment in a financially distressed firm. Therefore, they will likely carry out a critical monitoring function on opportunistic managerial behaviour (Manzaneque et al., 2016). In other words, large shareholders have enough motivation to increase firm value by decreasing information asymmetries

and addressing agency costs, leading to firms' financial recovery (Claessens et al., 2002).

On the other hand, some prior studies indicate that ownership concentration might generate an asymmetric information gap between large and minority shareholders (Jensen, 1993). Thus, large shareholders may push managers toward their private interests at the expense of minority shareholders (La Porta et al., 2000). In this scenario, minority shareholders may suffer expropriation of their wealth, increasing the financial distress likelihood of companies (Lee & Yeh, 2004).

Accordingly, the effect of ownership concentration on financial distress likelihood is not clear. Nevertheless, drawing on Lee and Yeh (2004), we argue that greater ownership concentration is likely to increase the likelihood of financial distress likelihood (Donker et al., 2009; Elloumi and Gueyie, 2001; Mangena and Chamisa, 2008). Therefore, we develop the sixth hypothesis as follows:

H6: There is a significant positive relationship between ownership concentration and financial distress likelihood.

2.3.7. Institutional Ownership and Financial Distress:

Institutional owners tend to limit firms' financial distress compared with those owned by individuals, families or governments due to their concentration on short-term earnings (Ashraf et al., 2016; Shehzad et al., 2010). Previous studies suggest a negative association of institutional ownership with financial distress (Filsaraei & Moghaddam, 2016; Tabasum et al., 2018; Widhiadnyana and Wirama, 2020). In this situation, institutional investors seem to affect the use of a firm's financial resources to reduce the financial distress possibilities. From a theoretical perspective, institutional investors have vast expertise and resources that make them capable of monitoring the administration's performance effectively, assessing any deviations within firms and

preventing the implementation of risky decisions that may distress firms' financial stability (Dong et al., 2014). Thus, we posit the following hypothesis:

H7: There is a significant negative relationship between institutional ownership and financial distress possibility.

2.3.8. Managerial Ownership and Financial Distress:

Managerial ownership appears to influence firms' profitability positively, reducing their financial distress probabilities (Aebi et al., 2012). This claim is supported by Calomiris and Carlson (2016), indicating that managerial ownership can enhance firms' financial performance, lowering the possibility of financial distress. Based on an agency theoretical stance, Ashraf et al. (2016) argue that managerial ownership is employed as a mechanism by which a firm alleviates the agency cost and avoids risky decisions that might affect its financial stability. This view has been empirically endorsed by Ashraf et al. (2016), indicating that firms with a higher level of managerial ownership tend to be more risk-averse and preserve more financial stability than those owned by various shareholders. Based on this, our eighth hypothesis is:

H8: There is a significant negative relationship between managerial ownership and financial distress likelihood.

3. Research Design

3.1. Sample consideration

The study aims to evaluate the impact of CG characteristics like board composition and ownership structures on the firm's likelihood of falling into financial distress in the context of UK-based manufacturing firms. Data related to 110 FTSE350 manufacturing companies were collected from the Bloomberg database against different dimensions of the dependent and independent variables of the study, which were then sorted into a panel dataset.

The population of this study focuses on non-financial firms operating in the UK, with complete data from 2014 to 2019. We exclude financial firms for two reasons. First, financial institutions have heavier financial regulations than non-financial institutions, which may be differently associated with their financial performance and distress possibilities (Shahwan & Habib, 2020). Second, financial sectors have stricter CG provisions that might influence the association between CG structures and financial distress (Mangena et al., 2020).

Also, we limit our focus to the manufacturing industries among the non-financial firms due to their specific financial and operational nature. Crucially, this selection was motivated by the following reasons. First, we follow Altman (1968), which uses Altman's Z-Score to gauge a publicly traded manufacturing firm's likelihood of bankruptcy. Second, drawing on a body of previous studies (e.g., Gill and Biger, 2013; Chiang and Lin, 2007; Shahwan, 2015), we select to study the CG-financial distress nexus in manufacturing firms for consistency and comparability reasons. Third, to the best of our knowledge, no study examined this association in the context of manufacturing firms in the UK; thus, we empirically extend prior studies in the UK by focusing on manufacturing firms. Finally, manufacturing firms are accountable for 58.6% of the total net market capitalization of the FTSE350 index (See the note in Table 1). This gives economic importance to bringing new insights from manufacturing firms in the UK.

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Table 1 shows the composition of FTSE 350 sectors and firms based on FTSE Russell (2021). Table 1 shows that about 48% of FTSE 350 are manufacturing companies. This reflects the importance of conducting a sectorial study focusing

specifically on manufacturing companies among the FTSE 350 firms. Applying our sampling criteria resulted in including a final sample of 110 FTSE manufacturing firms with complete CG and financial distress data, representing around 66% of the total FTSE manufacturing firms, which is believed to be a representative sample statistically. This also resulted in 660 firm-year observations.

3.2. *Measurement of Variables*

Table 2 shows the operational definitions of research variables. In examining the hypotheses of this study, we divide the measurement of variables into four stages. First, we measure the likelihood of financial distress as a dummy variable, scoring one for financially distressed firms and zero otherwise. Crucially, we follow earlier studies in constructing a measure for financial distress based on Altman's Z-Score¹ model (see Pindado et al., 2008; Tinoco and Wilson, 2013; Mangena et al., 2020), where firms with a Z-score less than 2.9 is given the value one and zeroed otherwise. Second, CG mechanisms are measured using the board of directors characteristics (i.e., the board size, independent directors, board gender diversity), audit committee characteristics (audit committee size and independence) and ownership structures (i.e., ownership concentration, managerial ownership and institutional ownership) using data collected mainly from Bloomberg database during the period from 2014 to 2019. Third, in an attempt to address the potential endogeneity concerns related to omitted variables, we use a set of firm-level factors to control for the examined relationships (Wooldridge, 2010), which are selected in line with prior work (e.g., Chen et al., 2020; Mangena et al., 2020). Specifically, we control for firm size and profitability

¹ The Z-score is the distance to default which is calculated as a sum of the return on assets (ROA) plus Capital Assets Ratio (CAR) scaled by the standard deviation of ROA.

using the logarithm of total assets (Log_TA) and the return on assets (ROA) ratio, respectively. See Table 2 for further details.

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3.3. Model Specifications:

Logistic regression analysis is selected to carry out the statistical analysis of our study as the dependent variable (financial distress) is a binary variable (Mangena et al., 2020). Specifically, a panel logistic regression analysis is chosen for the following reasons. Firstly, the study's sample incorporates firm (panel) and year (time) variables which are longitudinal panel data (Baltagi, 2005); secondly, a time-variant association is available between the outcome (dependent variable) and the predictors (independent variables) (Wooldridge, 2010). According to Baltagi (2005), conducting a panel regression analysis eliminates any possible risk of estimation bias and can alleviate multicollinearity risk. Crucially, we conduct a random-effects (RE) panel logistic regression analysis to test the baseline research model based on Hausman's test (*Hausman's test: p-values >0.05*). Consequently, our research model can be specified as follows:

$$FD_{it} = \beta_0 + \beta_1 BZ_{it} + \beta_2 BIND_{it} + \beta_3 BGD_{it} + \beta_4 ACZ_{it} + \beta_5 ACI_{it} + \beta_6 OWNC_{it} + \beta_7 IOWN_{it} + \beta_8 NOWN_{it} + \beta_9 TA_{it} + \beta_{10} ROA_{it} + \mu_{it} + \varepsilon_{it}$$

Where FD represents the dependent variable, which is evaluated against the different dimensions of the independent variables and control variable, including board size (BZ), board independence (BIND), board gender diversity (BGD), audit committee size (ACZ), audit committee independence (ACI), ownership concentration (OWNC), institutional ownership (IOWN), managerial ownership (MOWN), total assets (TA) as a proxy for firm size and return on assets (ROA) ratio as a measure for firm financial performance. β_0 represents the value of FD when the summation of independent and control variables equals zero. Moreover, β_1 to β_{10} represent the coefficient of

regression, and μ_{it} is the error of estimate between the entities, while ϵ_{it} represents the error of estimate within the entities.

4. Empirical Findings

4.1. Descriptive Statistics

The varying number of observations against the dependent and independent variables of the study shows that the panel dataset organized for the given study is unbalanced. In contrast, out of a total of 657 observations, the number of observations that stands valid is 519 observations. Table 3 presents the descriptive statistics of the research variables. The mean value of the financial distress measure is 76.95%. This average is consistent with those reported in developed countries worldwide. For instance, Mangena et al. (2020) present a mean value of financial distress of 75% for a sample of Spanish firms. Similarly, Baklouti et al. (2016) show a mean value of 61.2% for the financial distress of firms in the EU. This means that firms in the UK are also likely to face financial distress situation.

Table 3 also shows that the average percentage of institutional ownership in the selected companies from 2014-2019 is 26.23%. Similarly, the average percentage of ownership concentration in the selected companies from 2014-2019 is evaluated as 27.03%. However, with respect to the board composition, the mean value of board size is 8.23. This means that the sampled boards consist of, on average, 8.23 directors, which ranges between a minimum of 3 and a maximum of 16 directors. The mean value of board independence as measured by the percentage of independent non-executive directors to the total number of directors is 13.64%, which is followed by the board gender diversity with a mean value of %12.62. It means that, on average, the selected companies have about 14% of independent members, while the average percentage of female members on the boards of these companies is evaluated as

approximately 13% of the board. The descriptive statistics of CG structures in our study are in line with those of previous CG studies in the UK (see McNulty et al., 2013; Mariano et al., 2021; Gerged et al., 2020).

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Moreover, the standard deviation values against the given variables show that the ownership structure of all the companies in relation to all the three measures of ownership variables, i.e., shareholder's, institutional and managerial ownership have the highest standard deviation, which means that these measures are distributed over an extensive range of values. While the standard deviation and mean values of FDL, which is used as a proxy variable for financial distress, show that the distribution is highly concentrated to the central point. Similarly, for board composition, the variables like board independence and audit committee independence show high standard deviation values, which means a considerably higher variation between the selected companies concerning these measures.

4.2. Correlation Analysis

Pearson correlation analysis is conducted to evaluate the underlying strength of the relationship between independent and dependent variables of the given study. Table 4 presents the findings of conducting a Pearson correlation analysis. The bivariate two-tailed analysis shows that three out of five measures of the board composition show a significant negative correlation with the firm's likelihood of financial distress, where the coefficient of correlation for board independence is -0.037, significant at $p < 0.05$, board gender diversity is -0.009, significant at $p < 0.01$, and audit committee independence is -0.042, significant at $p < 0.05$. However, measures like board size and audit committee size are not correlated with the firm's likelihood of financial distress, $p > 0.05$ and 0.01. Moreover, with respect to the ownership measures, institutional

ownership significantly and negatively impacts the firm's likelihood of financial distress with a correlation coefficient of -0.022, significant at $p < 0.05$, although ownership concentration was positively correlated with financial distress with a correlation coefficient of -0.009, significant at $p < 0.05$. However, managerial ownership shows an insignificant correlation with the firm's likelihood of financial distress, i.e., $p > 0.05$. Generally speaking, the coefficients' nature shows that any residual non-normalities in the distribution of the research variables might be mild and are comparable to those of earlier studies (e.g., Akbar et al., 2017; Mangena et al., 2020; Mariano et al., 2021). In Addition, the VIF has been separately tested and indicates that the multicollinearity issues are unlikely to cause a severe statistical concern that may influence the robustness of our findings.

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4.3. *Baseline Regression Analysis*

Table 5 shows the findings of conducting a random-effects logistic regression model to examine the CG-financial distress nexus in the context of FTSE 350 manufacturing firms. Model 1 of Table 5 offers the findings of conducting a random-effects logistic regression model as a baseline analysis to overcome the issue of firm-level heterogeneities. In an attempt to address the endogeneity concerns, Model 2 of Table 5 shows the findings of estimating a 2-step Heckman regression model. Overall, Table 5 indicates that both CG indicators, including board composition and ownership structures, can be effectively employed to reduce the financial distress likelihood in the UK. Our study supports a stream of prior CG-to-financial distress studies (e.g., Frankel et al., 2011; Ashraf et al., 2016; Dong et al., 2017; Akbar et al., 2017; Shahwan & Habib, 2020) and is robust to different statistical issues, such as the firm-level heterogeneity and endogeneity. Crucially, our evidence adds to the ongoing debate

on CG effectiveness by suggesting more effective influences of CG factors as mechanisms through which firms can minimize the possibility of being financially distressed in the future.

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Model 1 of Table 5 reports that board size (BZ) is negative, albeit insignificantly, attributed to financial distress. This means that H1 has not been statistically supported. This result agrees with Ananto et al. (2017), that find no impact of board size on the financial distress of Indonesian firms. In contrast, this result contradicts McNulty et al. (2013), which indicates that large-sized boards are unlikely to face bankruptcy in the UK. Crucially, we argue that board size *per se* may not play a sufficient role in enhancing firms' transparency, reducing information asymmetry and limiting financial distress opportunities in the UK. This means that other CG board characteristics, such as board independence and diversity, might be more effective in reducing financial distress possibilities in the UK.

Also, our results suggest that board independence (BIND) has a negative relationship with financial distress likelihood at a 5% level of significance (see Model 1 of Table 5). This suggests that H2 has been statistically accepted. This result is also in line with a shred of previous studies (e.g., García-Meca and Sánchez-Ballesta, 2010; Samaha et al., 2012; Dong et al., 2017; Akbar et al., 2017; Shahwan & Habib, 2020). In this context, Dong et al. (2017) suggest that board independence is negatively related to the financial distress of firms in China. Likewise, Akbar et al. (2017) find a negative association between board independence and the financial distress of US firms. From a theoretical view, independent directors on a firm's board can effectively monitor management behaviour, reducing financial distress not only to

protect shareholders' interests but also to maintain their value in the market, which is primarily determined by their monitoring tasks (Fama and Jensen, 1983).

Regarding H3, our findings indicate a negative impact of board gender diversity (BGD) and financial distress at a 1% level of significance. This means that H3 has been statistically supported. This result is consistent with a stream of previous studies (e.g., Carter et al., 2003; Ruigrok et al., 2007; Santen & Donker, 2009). For example, Carter et al. (2003) suggest that female directors can bring different norms, perspectives, values, and understanding to the board function; hence, greater board gender diversity is likely to enhance firms' financial performance (Carter et al., 2003), and negatively affect financial distress likelihood (Santen & Donker, 2009).

In relation to assessing the influence of audit committee function proxies, including audit committee size (ACZ) and audit committee independence (ACI), on the financial distress possibilities, our findings are twofold. First, audit committee size (ACZ) is insignificantly associated with financial distress, not supporting H4. This is not consistent with a significant body of literature (e.g., Samaha et al., 2012; Jiang et al., 2011). We argue that the size of audit committees is an insufficient mechanism through which firms can support the disclosure of financial risks and reduce information asymmetry that is expected to increase the market value of shares and decrease financial distress likelihood. Therefore, in the following hypothesis, we examine the impact of audit committee independence on the likelihood of financial distress. Second, model 1 of Table 5 shows that, contrary to audit committee size (ACZ), audit committee independence (ACI) is negatively associated with financial distress at a 1% significance level, which adds statistical credibility to H5. This finding is tied to those of prior literature (e.g., Vinten & Lee, 1993; Carcello and Neal, 2000; Al-Najjar, 2011; Salloum et al., 2014) that suggests that the existence of non-executive

directors on audit committees is likely to protect the interests of shareholders and reduce the likelihood of financial distress by ensuring high quality of financial statements.

Regarding the influences of ownership structures on financial distress, our results are mixed. Specifically, ownership concentration (OWNC) is positively attributed to financial distress probabilities at a 1% level of significance (See Model 1 of Table 5). This supports H6 statistically. This result is in line with some prior studies that indicate that ownership concentration might generate an asymmetric gap of information between large and minority shareholders. Thus, large shareholders may push managers toward their private interests at the expense of minority shareholders, increasing the financial distress likelihood of companies (Jensen, 1993; Lee & Yeh, 2004; La Porta et al., 2000; Mangena and Chamisa, 2008; Donker et al., 2009). Following Lee and Yeh (2004), we argue that greater ownership concentration increases the likelihood of financial distress likelihood. Therefore, we recommend adopting a more balanced ownership structure between large and minority shareholders among the sampled companies.

In contrast, Model 1 of Table 5 shows that institutional ownership (IOWN) is negatively attributed to financial distress at a 5% significance level. This means that H7 is approved empirically. This result is consistent with a stream of previous studies that suggest that institutional ownership negatively impacts financial distress (e.g., Filsaraei & Moghaddam, 2016; Tabasum et al., 2018; Widhiadnyana and Wirama, 2020). From a theoretical perspective, institutional investors have vast expertise and capabilities that enable them to monitor the financial performance of the administration effectively, preventing the implementation of risky decisions that may distress the financial stability of firms and providing financial consultants in times of crisis (Dong et

al., 2014). Regarding H8, our results indicate an insignificant influence of managerial ownership (MOWN) on the likelihood of financial distress among the selected sample. This rejects H8 empirically. This result contradicts prior literature that suggests that managerial ownership can enhance firms' financial performance lowering the possibility of financial distress (Aebi et al., 2012; Calomiris and Carlson, 2016; Ashraf et al., 2016). We argue that managerial ownership *per se* is an insufficient mechanism by which a firm can alleviate the agency cost and avoid risky decisions that, in turn, might affect its financial stability. In this context, we argue that institutional ownership and less concentrated (more balanced) ownership structures are believed to be more effective in addressing the agency cost, reducing the information asymmetry and limiting the financial distress opportunities than managerial ownership, which is believed to have no impact on financial distress likelihood of the sampled UK FTSE 350 manufacturing firms.

Remarkably, however, not the main concern of this study, the used control variables have been negatively associated with the probabilities of financial distress in the UK. For example, large-sized firms (FSIZ), as measured by the logarithm of total assets (TA), tend to be less exposed to financial distress likelihood in the context of UK FTSE 350 manufacturing firms. Similarly, firms' profitability (ROA) is negatively attributed to financial distress in our study (refer to Model 1 of Table 5). Our findings in this regard are consistent with prior financial distress literature in developed economies (see McNulty et al., 2013; Mariano et al., 2021; Mangena et al., 2020).

4.4. Robustness Analysis:

Drawing on Chung et al. (2015) and Mangena et al. (2020), we overcome the endogeneity concern by conducting a two-staged Heckman (1979) model that fits a research model with a binary dependent variable (financial distress). The results of

running a two-stage Heckman regression model are shown in Model 2 of Table 5. These findings are also largely similar to those reported in Model 1 of Table 5. Model 2 shows that board composition and ownership structures are heterogeneously associated with financial distress probabilities in that they might have either reduced or increased the financial distress of the sampled firms.

To the extent that our results are not statistically different in all these checks as compared with the main estimation (i.e., random-effects logistic regression model), we are fairly confident that our primary results are robust and have not been severely affected by the possible occurrence of endogeneity issues.

5. Conclusion

The study investigated the possible impacts of CG characteristics, including board composition and ownership structures, on the UK FTSE 350 manufacturing firms' likelihood of falling into financial distress. After performing multiple statistical analyses, the study found that board composition measures, such as board independence, board gender diversity, and audit committee independence, significantly and negatively influence the firm's likelihood of financial distress. However, board size and audit committee size show an insignificant impact on the firm's likelihood of financial distress. The study found that institutional ownership has a significant negative relationship with the firm's likelihood of financial distress, whereas ownership concentration is positively attributed to financial distress. In contrast, managerial ownership shows an insignificant relationship.

We argue that both board composition and ownership structures influence the firm's likelihood of financial distress, but the impact depends upon the different dimensions of such CG characteristics. For example, board and audit committee sizes

are ineffective mechanisms to overcome financial distress compared with other board characteristics, such as board independence and gender diversity. Also, a more balanced ownership structure between the majority and minority shareholders can be more efficient in reducing the likelihood of financial distress among the sampled FTSE350 manufacturing firms.

The study also offers practical implications for policymakers, government bodies, and manufacturing firms in the UK. Crucially, we suggest that the board of governance and management of organizations should implement policies that ensure the required level of independence of the board and audit committee members to give independent insights into the company's financial performance. Similarly, boards should have sufficient gender diversity to encourage female directors to contribute to the firm's financial performance effectively, which is attributable to reducing the possibility of financial distress. Furthermore, the ownership structure of companies should be balanced to incorporate equal numbers of institutional and large shareholders so that adequate pressure can be maintained on the management, which in turn reduces the likelihood of financial distress.

Since the study has evaluated UK FTSE 350 manufacturing firms only; therefore, it is limited in its scope regarding the generalization of its findings to other countries and industries because every country and industry has different dimensions and CG practices. Similarly, the study considered quantitative characteristics of the board composition and ownership structures, while both factors carry specific qualitative attributes as well; such as accountability measures, the extent of responsibility and authority assigned and transparency in the selection/election procedures, which might have a direct implication on the firm's performance. Additionally, future studies are recommended to explore the impact of alternative

control and/or moderating variables, such as female non-executive directors, female CEO or chairperson, on the potential financial distress of manufacturing firms in the UK.

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Table 1:

FTSE 350 sectors, firms and our sample

ICB Code	ICB Industry	FTSE 350		
		No. of Cons	Net MCap (GBP m)	Wgt %
10	Technology	15	45,861	1.97
15	Telecommunications	6	51,816	2.22
20	Health Care	14	235,663	10.11
35	Real Estate	26	68,946	2.96
30	Financials	114	492,469	21.12
40	Consumer Discretionary	61	285,195	12.23
45	Consumer Staples	20	365,051	15.65
50	Industrials	58	304,573	13.06
55	Basic Materials	20	237,903	10.20
60	Energy	8	173,517	7.44
65	Utilities	9	70,869	3.04
Totals		351	2,331,862	100.00

Sampling Criteria				
ICB Code	ICB Industry	Initial Sample	Final Sample	Sample%
40	Consumer Discretionary	61	30	49.18%
45	Consumer Staples	20	13	65%
50	Industries	58	47	81.03%
55	Basic Material	20	15	75%
60	Energy	8	5	62.5%
Totals		167	110	65.86%

Note: No. of Cons is the number of total constituents, and Net MCap is the net of market capitalization in millions of pounds. The total Net MCap of manufacturing sectors is 1,366,239, representing 58.6% of the total Net MCap of the FTSE350 index. Wgt% is the weighting of companies within a particular sector out of the total number of FTSE 350. The source is FTSE 350 (2021).

Table 2:
Measures for dependent and independent variables

Variable	Measures
Dependent variable	
Financial Distress (FD)	We measure the financial distress likelihood as a dummy variable that takes the value of one for financially distressed firms and zero for those non-distressed firms. Specifically, based on Altman's Z-Score model, a firm with a Z-score less than 2.9 is given one and zeroed otherwise (Pindado et al., 2008; Tinoco and Wilson, 2013; Mangena et al., 2020).
Independent variables	
Board Size (BZ.)	We use the number of directors on boards as a proxy for the board size.
Board Independence (BIND)	We use the percentage of independent non-executive directors as a measure of board independence
Board Gender Diversity (BGD)	We employ the percentage of women on board as a measure of board gender diversity
Audit Committee Size (ACZ)	We use the number of audit committee members as a proxy for the size of the audit committee.
Audit Committee Independence (ACI)	We use the percentage of independent members on audit committees as a measure of audit committee independence.
Ownership Concentration (OWNC)	We use the percentage of shares owned by large shareholders to the total number of shares. Large shareholders are those who own %3 of shares or more.
Managerial Ownership (MOWN)	Managerial ownership is equal to the proportion of shares owned by board members and their relatives to the total number of shares outstanding
Institutional Ownership (INOWN)	Institutional ownership is equal to the proportion of common shares held by the institutions.
Control Variables	
Total Assets (TA)	We use the logarithm of total assets as a proxy for firm size.
Return on Assets (ROA)	We use the return on assets ratio as a proxy for financial performance or firms' profitability.

Table 3:
Descriptive Statistics

Variable	No. obs	Mean	Std. Dev	Min	Max
BZ	657	8.23	2.007	3	16
BIND%	647	13.638	62.49	10	91.67
BGD%	656	12.621	20.91	0	75
ACZ	651	3.84	1.28	2	8
ACI%	644	98.33	6.95	50	100
OWNC	547	27.033	1.017	.008	167.37
INOWN	656	26.236	1.032	.084	169.31
MOWN	660	12.54	7.235	0	83.68
TA	653	7339.78	28752.89	4.736	295194
ROA	653	4.346	12.365	-70.602	43.486
FD	660	0.769	0.425	0	1
Valid N (Listwise)	519				

Note: The research variables are operationally defined in Table 2. For board characteristics, BZ is board size, BIND% is board independence, BGD% is board gender diversity, ACZ is audit committee size, and ACI% is audit committee independence. For ownership structures, OWNC is ownership concentration, INOWN is institutional ownership, and MOWN is managerial ownership. For controls, TA is total assets as a proxy for firm size, and ROA is the return on assets as a proxy for firms' profitability. For the outcome, FD represents the financial distress of firms.

Table 4:
Pearson Correlation

	BS	BIND	BGD	ACZ	ACI	INOWN	OWNC	MOWN	TA	ROA	FD
BS	1										
BIND	.108**	1									
BGD	.371**	.148**	1								
ACZ	.211**	-.005**	.084*	1							
ACI	.028*	-.040**	-.041**	-.019*	1						
INOWN	-.184**	-.035*	-.152**	.044*	-.055*	1					
OWNC	.039*	.131**	.150**	.072*	.000*	-.021**	1				
MOWN	.032**	.003*	-.025**	.033*	.041*	-.043**	.087*	1			
Log_TA	.433**	.202**	.166**	.049*	.019*	-.050**	.005*	.054*	1		
ROA	.102**	.014**	.255**	.101*	-.033*	-.012**	.065**	-.027*	.008**	1	
FD	.262**	-.037*	-.009**	.089*	-.042*	-.022*	-.009*	.173	.248**	.281*	1

Note: The research variables are operationally defined in Table 2. ** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed). For board characteristics, BZ is board size, BIND% is board independence, BGD% is board gender diversity, ACZ is audit committee size, and ACI% is audit committee independence. For ownership structures, OWNC is ownership concentration, INOWN is institutional ownership, and MOWN is managerial ownership. For controls, TA is total assets as a proxy for firm size, and ROA is the return on assets as a proxy for firms' profitability. For the outcome, FD represents the financial distress of firms.

Table 5:
Panel Logistic Regression Models

	Model 1 Random-Effects Logistic Regression Model	Model 2 Two-stage Heckman Model
BZ	-0.020 (0.024)	-0.840* (0.006)
BIND	-0.001* (0.017)	-0.008*** (0.003)
BGD	-0.003* (0.014)	-0.003*** (0.000)
ACZ	-0.059 (0.040)	-0.012 (0.003)
ACI	-0.001* (0.015)	-0.011*** (0.001)
OWNC	0.002*** (0.093)	0.018*** (0.003)
INOWN	-0.001** (0.012)	0.022*** (0.003)
MOWN	-0.006 (0.051)	-0.021 (0.004)
Log_TA	-3.578*** (0.000)	-0.006*** (0.001)
ROA	-0.002* (0.004)	-0.016*** (0.001)
_cons	1.219** (0.634)	0.068** (0.031)
No. OBS	519	519
Adjusted R ²	41.2%	-
Hausman Test	prob > chi2 = 0.584	
Lambda	-	.157** (.065)

Note: The research variables are operationally defined in Table 2. For board characteristics, BZ is board size, BIND% is board independence, BGD% is board gender diversity, ACZ is audit committee size, and ACI% is audit committee independence. For ownership structures, OWNC is ownership concentration, INOWN is institutional ownership, and MOWN is managerial ownership. For controls, TA is total assets as a proxy for firm size, and ROA is the return on assets as a proxy for firms' profitability. For the outcome, FD represents the financial distress of firms. *Standard errors are in parentheses* *** $p < .01$, ** $p < .05$, * $p < .1$