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Article

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GENERAL & APPLIED ECONOMICS | RESEARCH ARTICLE

An econometric analysis of financial distress determinants from an emerging economy governance perspective

Navitha Singh Sewpersadh¹

Abstract: During times of distress, companies are compelled to reassess operational policies and reengineer strategic formulations to discern value maximising uses for limited resources. The executive's agility to react to financial distress determines the probability of bankruptcy. Proper governance drives sound and sustainable, value maximising decision-making, while inept practices lead to value diminishing, self-serving behaviour that financially constrains companies, resulting in an acceleration of financial distress. This study examined the correlation between financial distress and corporate governance within a sample of 116 listed South African companies using the GMM estimation. Key financial distress determinants were found to be audit committees and shareholder activism (proxied by equity ownership) that may deter investor apathy, "director opportunism" and CEO dominance. Also, long-tenured CEOs and post-graduate directors possess contextually enriched latent knowledge that may assist distressed firms, particularly if the trade-offs between director's remuneration and governance is well managed. Furthermore, the K-score model served as a robust financial distress proxy since it allowed the interrogation of grey zone companies. These findings provided financial distress determinants aiding decision-making for ailing businesses to avoid



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Navitha Singh Sewpersadh is an associate professor in the college of accounting at the University of Cape Town. She is a double board-certified chartered accountant registered with SAICA and CIMA. Navitha also has extensive industry experience working in the public sector and Mondi Ltd before finally pursuing an academic career. She serves as a convenor for the master's programme in corporate governance and risk management. She also supervises honours and masters' students' research. Navitha's research area of interest is governance and finance, and she has published several articles in highly ranked journals in this area which can be found on her research page <https://www.researchgate.net/profile/Navitha-Sewpersadh>. She also serves as a reviewer for several accredited and highly ranked international journals.

PUBLIC INTEREST STATEMENT

For decades, the overarching pursuit of short-term profits leads corporate decision-makers away from sustainable choices at the expense of the entity and its stakeholders. Therefore, corporate governance breaches have led to the financial distress and even closure of many businesses. Corporate governance plays an essential part of public trust for the way businesses function in the capital markets. This research identified important pillars of oversight, such as audit committees and shareholder activism, that provide a societal benefit in preventing the degradation of governance standards that lead to financial distress. A key contribution to theory was the concept of director opportunism, where directors become entrenched in the behaviour of realising increased wealth from serving in as many boards as they can. This research also highlights the importance of recognising that well-remunerated directors may be motivated to exercise better governance.

liquidation, which can be of use to regulatory bodies and policymakers in developing sustainable governance strategies.

Subjects: Finance; Business, Management and Accounting; Industry & Industrial Studies

Keywords: Agency; CEO; corporate governance; directors; financial distress; shareholder activism

JEL Classification: E32; G32; G33

1. Introduction

Growing concerns have placed the efficacy of contemporary governance frameworks under scrutiny, accompanied by global demand for transformation and improved regulations. Key causes leading to the demise of several large corporations were the dysfunctional corporate governance practices that facilitated the manipulation of pertinent financial information to mask the true condition of a firm. For example, Toshiba's board oversight failure led to the overstatement of profits in its financial statements (Melé et al., 2017). Such omissions can also prejudice shareholder interests and negatively impact a firm's performance, leading to financial distress or corporate failure (Li et al., 2008). Good governance safeguards an organisation from future financial distress by strengthening the foundation for rigorous financial performance and enticing investment (Ehikioya, 2009). Governance frameworks are essential for setting a sound ethical foundation, determining corporate ownership structures and protecting minority shareholders from expropriation. Particularly, the CEO with a primary goal of value maximisation, is accountable for the company's performance, whilst setting an ethical corporate culture by complying with honest governance practices Sewpersadh (2019a).

Knowledge of potential indicators of impending distress becomes imperative for economic sustainability and stakeholder protection. The extant literature has proposed and examined several possible indicators on developed economies but provides limited literature from an emerging market perspective. According to Eldomiaty (2007), emerging economies are epitomised as having relatively incomplete and less efficient markets, with higher information asymmetry than the developed markets. For these reasons, emerging markets cannot rationalise their financing decisions with a clear theoretical approach (Eldomiaty, 2007). However, South Africa (SA) is uniquely positioned amongst emerging economies due to its increased shareholder activism in recent years, highly developed capital markets, and sophisticated legislative and governance regulations. The Companies Act No. 71 of 2008 (herein termed the "Companies Act"), together with the King report,¹ provide several core regulations in SA relating to financial distress, such as shareholder rights, governing boards duties and auditors. These reforms were essential due to SA's history of corporate governance failures, notably Fidentia, JCI-Randgold, Leisurennet, Masterbond and MacMed (Sarraf, 2004). More recently, three massive corporate failures distressed capital markets and shattered public trust, namely African Bank Investment Ltd (collapsed due to bad debt), Group Five Ltd (sustained significant financial losses) and Steinhoff International Holdings (practiced various accounting irregularities). These corporate failures provide evidence that strategically sound corporate governance is needed as a control measure over a company's leverage to avoid financial distress Sewpersadh (2019b). Despite this history, there are currently no SA studies examining corporate governance as a financial distress determinant.

Sewpersadh (2020) emphasised the need for pre-emptive strategies to recover ailing companies by developing early warning systems rather than post-mortem exercises. Accordingly, this study examines whether governance practices serve as financial distress determinants in SA. Companies listed on the Johannesburg Stock Exchange (JSE) were selected as the sample population for investigating the influence of corporate governance on financial distress due to their rigorous listing requirements. In light of the numerous corporate governance breaches and the large number of liquidations in SA, this study is particularly relevant, given the high level of information asymmetries in the financial markets and the consequent importance of governance mechanisms for stakeholder protection. Particularly during times of financial distress, there is an increased risk of fraudulent financial reporting because

executives may be more inclined to “manage” their reported earnings to conceal or postpone a firm’s distressed condition (earnings management).

2. Literature review

2.1. Financial distress theory

Financial distress represents the decline of a company’s earning power, increasing the probability that it may not settle its obligatory payments of interest and debt capital, consequently affecting its credit risk profile (Gordon, 1971). Similarly, the Companies Act defines financially distressed companies as “... reasonably unlikely to be able to pay all of their debts as they fall due and payable within the immediately ensuing six months, or it appears to be reasonably likely that the company will become insolvent within the immediately ensuing six months” (RSA Parliament, 2009). Cybinski (2001) proposed the financial distress continuum theory during which companies experience various stages of distress before failure or a recovery and, thus, should be placed on a success-failure continuum (Sewpersadh, 2020). However, failure prediction studies place firms dichotomously into failed and non-failed categories (see Annexure A), which does not account for the various financial distress stages. Financial distress can be temporary, whereby recovery depends on early distress detection and the success of turnaround strategies, the failure of which pushes the company into a severely declined state, in which it becomes insolvent and not viable, leading to a corporate failure (Sewpersadh, 2020). Many firms fall into financial distress every year due to the insufficiency of cashflows, resulting from various reasons such as matured markets, new competitors, technological evolution, management malfunctions and a declined stage in the product lifecycle. Ailing firms tend to remain in business and continue to fund economic activities even though the most efficient response to financial distress is a capacity reduction. This practice leads these companies to bankruptcy² and eventually to liquidation.³

There are several costs associated with financial trouble, such as direct and indirect bankruptcy costs and liquidation costs. Direct bankruptcy costs accrue from the legal process, such as legal, accounting, filing and advisory fees and other administrative expenses (Altman, 1984; Nigam & Boughanmi, 2017; Senbet & Wang, 2012). Additionally, there are the costs of the diminishing of assets caused by the conflict between the owner and creditor substitution (Altman, 1984). According to Senbet and Wang (2012), the total direct bankruptcy costs for the former energy giant Enron were estimated to be over \$1 billion. Although this assessment denotes roughly 1.6% of the firm’s pre-bankruptcy value, this high cost infers the consumption of many resources in the bankruptcy process. Whereas, Lehman Brothers had a pre-bankruptcy asset value of \$639 billion and legal costs totalling \$1.5 billion as of November 2011 (Senbet & Wang, 2012).

Often overlooked in distressed companies are the indirect bankruptcy costs, such as the loss of creditors and stakeholders, and the costs of the company’s value reduction due to managers’ actions to protect their own self-interests, such as asset substitution (Altman, 1984). Other indirect bankruptcy costs are the intra-group conflicts of interest, holdout problems, foregone sales and competitive positions, higher operating costs (Senbet & Wang, 2012), and the foregone investment opportunities (Nigam & Boughanmi, 2017). Moreover, large-scale risky decisions made by management may also infringe on good governance practices leading to non-monetary consequences, such as shoddier customer service, higher employee turnover and a breakdown in trust between employees and employers (Altman, 1984). Liquidation costs are also incurred in the disposal of an organisation’s assets through its sale and the closure of its operations (Senbet & Wang, 2012).

2.2. Measuring financial distress

More accurate measures and models (see Table 1 below) have emerged in recent decades to provide early warning signals of financial distress, particularly from a developing economy perspective.

Table 1. Financial distress models

Author	Method	Description
Beaver (1968)	Univariate model	Cash flow to total debt to be the best failure predictor out of thirty financial ratios.
Altman (1968; 1993)	Z-score model	Using MDA ⁴ established Z-score model comprises of liquidity, profitability, leverage and solvency categories. Z-scores between 1,81 ⁵ and 2,67 is the “ignorance zone”.
De la Rey (1981)	K-score model	Established K-score model using Altman’s MDA method. K-scores between—0,19 to + 0,2 is the ignorance zone and companies with scores below –0,19 are distressed, while scores above + 0,2 are healthy.
Zmijewski (1984)	Probit-based model	This model is comprised of financial ratios measuring a firm’s performance, leverage and liquidity.
Altman (2005)	EMS Z model	EMS (Emerging market Z-score) model was developed as an alternative to the original Z-score, which was for publicly traded manufacturing companies. The EMS Z-model was tested on Mexican companies before and after the Mexican Peso crisis of 1994 and other emerging economies such as Argentina, Brazil and Southeast Asian countries.

Table 1 above shows the most widely used models in financial distress studies. The majority of the corporate failure and credit scoring academic literature emanated from the United States and, thus, could not be used in other countries with less defined markets. Recognising this problem, Altman (2005) enhanced his Z-score model and developed the EMS Z model. Coelho (2014) examined both the Z-score and EMS Z Model on SA companies listed on the Alt-X from 2008 to 2012. It was found that the Z-score was better at predicting corporate failure than the EMS Z model. Due to the omission of the market value of equity in the variables, the Z-score outperformed the EMS Z model. Although the Z-score is widely used as a failure prediction model, it originated in developed markets, hence, its application to emerging economies may not be suitable. The EMS Z model has the limitation of assuming that market value could be skewed in emerging markets due to the lack of liquidity. Although SA is an emerging market, there is active trading that does not disconnect the equity prices from the value of a company. For this reason, the K-score model was selected as a measure of financial distress.

2.3. Corporate governance

Due to its broad societal impact, corporate governance provides for a wide adaptation of ground-ing theories whereby a firm’s value system is congruent with the values of the larger social system under legitimacy theory. As part of a legitimisation process, a holistic view is taken between the firm and its stakeholders as to how they may conform with social perceptions, expectations or values (Dowling & Pfeffer, 1975). Institutional theory relates to how firms protect their legitimacy (Scott 1995) by conforming to generally accepted social norms and/or institutional practices imposed on them for better performance (DiMaggio & Powell, 1983; Shleifer & Vishny, 1997). For instance, corporate governance practices are norms and procedures followed to assure investors receive a return on the capital invested in a firm (Shleifer & Vishny, 1997), which is an integral part of shareholder protection underpinned by the agency theory (Berle & Means, 1932). The agency theory highlighted conflicts that arise when management (agent) act for their own self-interest rather than for that of the owner (principal) (Berle & Means, 1932) fuelled by the ownership-control separation (Jensen & Meckling, 1976). This practice also leads to agents possessing more company information than the principals, which leads to information asymmetry. Asymmetric information may be used opportunistically by the agents (managerial opportunism) to benefit themselves or commit fraud, often to the detriment of both the company and society. Therefore, director

shareholding may serve as a mechanism to control such conflicts. Given the importance of the governing board as oversight and strategic drivers, executive remuneration becomes a key motivator for the performance and retention of directors. However, in a highly institutionalised and management-based organisation, the board may serve merely a supportive role (management hegemony (Hung, 1998; Mace, 1971), making major shareholders a key monitoring mechanism.

The resource dependence theory (Aldrich & Pfeffer, 1976; Pfeffer & Salancik, 1978) recognises that directors may provide valuable strategic resources, thus, making the appointment of directors an avenue to access greater capital resources. Hillman and Dalziel (2003) categorized two capital resources from directors namely, their knowledge, skills and expertise (human capital) and the resources available through directors' network relationships (relational capital). Although, highly networked directors may also increase the risks of sharing the firm's strategies, directors' absenteeism, neglecting their fiduciary duties and a disconnect to the firms strategic vision (Sewpersadh, 2019c).

Societal concerns of opportunism and asymmetric information directly links to signalling theory where the sender (CEO) has more information than the receiver (board/shareholders) necessitating interaction to reduce this information gap (Spence, 1973, 2002). A key activism mechanism is equity ownership that encourages active participation where senders (shareholders) convey signals to receivers (CEO) reducing the information gap. Activism supports the directors' fiduciary duty to "*any group or individual who can affect or is affected by the achievement of the firm's objectives*" as conceptualised in the stakeholder theory (Freeman, 1984, p. 49). Similarly, stewardship theory envisions executives and management as stewards who protect and maximize shareholders' wealth through alignment of their interests with those of the principals (Davis et al., 1997; Donaldson & Davis, 1991) and fulfil their tasks and responsibilities for the betterment of the firm rather than act in a self-serving manner.

Notably, the governance theories provide for conflicts within themselves. For instance, under agency theory, the board's role would be to oversee management's decision-making on behalf of shareholders. However, under stewardship theory, this process may sacrifice the benefits of the board and management working collaboratively. Independent directors are more willing to drive a holistic agenda than one driven by profits (stakeholder theory) and are required to safeguard shareholder interests (agency theory). Although, when the firm has superior performance, it is attributed mainly to the executive directors on the board since they have a better understanding of the firm's needs than the independent directors (management hegemony theory).

2.4. Empirical literature and hypothesis development

Premised on the literature review, key causes of the demise of several large corporations were identified as well as their associated variables, such as incompetent boards (board independence, networks, qualifications and remuneration), dominant CEOs (CEO duality, CEO tenure), dysfunctional management behaviour (director shareholding, major shareholding) and a lack of ethics (audit committee size and independence). These key concepts are encapsulated in four governance categories: shareholder activism, CEO influence, governing board attributes and audit committee.

2.4.1. Shareholder activism

Share ownership aligns agent and principal interests, thus reducing agency costs, non-value maximising behaviour and high-risk investments. However, over the years apathetic investor behaviour has been an enabler for directors' opportunistic behaviour that have led to corporate governance failures (Strätling, 2012). Although in recent years, shareholder activism has replaced investor apathy. By virtue of their investment, shareholders can use their voting power to become

active governance participants, which may inhibit managerial opportunism, information asymmetry, and managerial entrenchment

2.4.1.1. Major shareholders (outside blockholders). Agency theorists argue that major shareholders have a significant financial incentive to monitor their investment and leverage their voting power to impact strategic decision-making, thus inhibiting managerial opportunism and reducing information asymmetry (Li et al., 2008; Jensen & Meckling, 1976; Sewpersadh, 2019b; Shleifer & Vishny, 1986). High levels of shareholder activism are enacted by major shareholders' substantial voting power that allows them to directly monitor and replace management more efficiently than dispersed ownership. In this context, major shareholders serve as an oversight and control mechanism to protect their substantial investment, thus making directors hesitant to adopt self-serving, high-risk and unprofitable strategies due to fears of dismissal from office – a process which reduces the probability of financial distress. Some arguments are for dispersed ownership because of the risk of major shareholders redistributing wealth from other investors to themselves (major shareholder expropriation) due to their power and self-interest (King Committee, 2016; Li et al., 2008; Shleifer & Vishny, 1997). Although, Coffee (2005) adds that the Anglo-Saxon dispersed ownership system of governance is predisposed to the practices of earnings management as experienced in the United States, whereas concentrated ownership economies (the European system) are less vulnerable (Soltani, 2014). Research has found that higher levels of ownership concentration are associated with lower probabilities of financial distress (Abdullah, 2006; Li et al., 2008; Mariano et al., 2021; Miglani et al., 2015). Based upon a measure of the cumulative percentage of major shareholders, this study hypothesises that:

H1. Firms with major shareholders are associated with a lower probability of financial distress.

2.4.1.2. Director shareholding. From the agency perspective, directors with firm shareholdings have their interests aligned with shareholders and, therefore, are incentivised to maximise the firms' share value (Jensen, 1993; Jensen & Meckling, 1976; Shleifer & Vishny, 1997), and make hostile takeovers less probable but, consequently, strengthen managerial entrenchment⁶ (Stulz, 1988). Agency costs are reduced since the directors share the same financial risk as shareholders, making them unlikely to take risky decisions that might negatively affect their wealth, which diminishes bankruptcy risk. Alternatively, directors with adequate shareholding tend to dominate the board and, thus, may expropriate from outside shareholders without the consequence of losing their position and compensation (Fama & Jensen, 1983). However, research has found that director ownership signals a higher likelihood of firm survival (Parker et al., 2002) and are associated with lower probabilities of financial distress (Abdullah, 2006; Fich & Slezak, 2008; Li et al., 2008; Manzanque et al., 2016; Miglani et al., 2015). Based upon a measure of directors' cumulative shareholding, this study hypothesises that:

H2. Increases in director ownership are associated with a lower probability of financial distress.

2.4.2. CEO influence on board

The CEO is the central role player in setting the 'tone at the top' and is also ultimately responsible for the decision-making and defining the characteristics of the controlled environment (Sewpersadh, 2019a). Agency theorists highlights potential conflicts between CEOs and shareholders since CEOs may exploit internal knowledge to maximize their personal wealth, which can hinder the goal of maximizing shareholder value (Jensen & Meckling, 1978). For these reasons, CEO duality and CEO tenure were examined as financial distress determinants.

2.4.2.1. CEO dominance. The chairperson of the board should be an independent non-executive director (King Committee, 2016). When the CEO is also the board's chairperson, it reduces the effectiveness of the board's ability to monitor the CEO (Beasley, 1996). The empirical literature reviewed had inconsistent findings on this issue, whereby in some studies CEO duality was associated with the risk of bankruptcy (Bansal & Sharma, 2016; Lakshan & Wijekoon, 2012), whilst others did not find any significant association between CEO duality and financial distress (Abdullah, 2006; Manzaneque et al., 2016; Miglani et al., 2015). However, Sewpersadh (2019b) found that CEO duality increases the degree of leverage in a company, leading to increased financial distress risk. Based upon the use of an indicator variable for the presence of CEO duality, this study hypothesises that:

H3. The presence of CEO duality in firms is associated with a higher probability of financial distress.

2.4.2.2. CEO tenure. Executives' characteristics drive decision-making and, ultimately, firm performance, which is encapsulated in the upper echelon theory (Hambrick & Mason, 1984). Although, CEOs may use asymmetric information opportunistically under the agency theory, CEO tenure becomes important since being part of the company's upper echelon, their experience may drive strategies during distress (Sewpersadh, 2019a). Generally, shareholders prefer sustainable long-term return on their investment with increases in the share price whilst CEOs may have short-term motives that are closely aligned to their tenure and compensation models. Firm performance is also driven by the CEO tenure theory breaking down their performance over five seasons (Hambrick & Fukutomi, 1991). During the first and second season of tenure, CEOs are likely to respond to their mandate by experimenting with new strategic approaches and actively seeking to meet the governing board and shareholders' expectations. The selection of an enduring theme during their third season is when CEOs select their *modus operandi*, namely, organisational strategies, structure, policies and their own operating style (their paradigm). As their tenure increases leading to the fourth season, CEOs are likely to reach the stage of "convergence," during which their task interest decreases and moves closer to the "dysfunction" stage, which is the fifth season. Similarly, the three life cycle stages (learning, harvest and decline) as proposed by Miller and Shamsie (2001) characterize the learning and performance practices over the course of executive tenures. In contrast to these theories, Finkelstein's (1992) power theory proposes that CEOs accumulate power, based upon their expertise and prestige, in line with increases in CEO tenure. The study by Darrat et al. (2016) found that the bankruptcy of a firm is negatively related to CEO tenure. In times of distress, the CEOs' accrued prestige and structural power, along with their enhanced knowledge of the economic market, is essential for turnaround strategies. Furthermore, CEOs who have pioneered the firm's specific "tried and tested" paradigms that contributed to their earlier successes may better assist the distressed firm than non-tenured CEOs. Based upon a measure of the number of years the same individual served as CEO, this study hypothesises that:

H4. CEO tenure in a firm is associated with a lower probability of financial distress.

2.4.3. Governing board attributes

In times of distress, the governing board advances the firm's strategic direction whilst adapting to the unpredictable market conditions and pursuing growth-orientated strategies for shareholder value maximisation and managing the firm's risks. Although CEOs set the "tone at the top", the governing board oversees the CEOs' actions to ensure that a strong tone at the top permeates the entity to protect stakeholder interests. The governing board is responsible for its own composition, ensuring a balance of proficiencies (King Committee, 2009).

2.4.3.1. Director remuneration. “Executive remuneration should be aligned to company purpose and values and be clearly linked to the successful delivery of the company’s long-term strategy” (FRC, 2018 pg. 13). Agency theory contends that director remuneration creates an incentive for directors to perform well, which may reduce agency costs. Although, there may be a misalignment between a firm’s financial performance and executive pay that provokes discontentment among shareholders whereby major shareholders may engage in a disinvestment strategy. Sound governance should determine director remuneration in relation to the firm’s performance, thus, constraining excessive payments. Market forces may lead to optimal pay structures that compensate directors for governing in shareholders’ best interests (Jensen & Murphy, 1990; Jensen & Meckling, 1976). Therefore, executive pay creates trade-offs between governing and compensation. Poorly remunerated directors may not feel incentivised to reduce managerial opportunism or, alternatively, provide opportunities to collude. For instance, Lee (2009) found that firm performance increases with performance-related payments to directors. Lakshan and Wijekoon (2012) found a significantly negative association between directors’ remuneration as a percentage of profit or loss and corporate failure status. More recently, Mariano et al. (2021) found that director remuneration is negatively related to financial distress. Based upon a ratio of directors’ remuneration to profit and loss as a measure, this study hypothesises that:

H5: Director’s remuneration is associated with a lower probability of financial distress.

2.4.3.2. Board members: human capital. Under the resource dependence theory, board members with higher qualifications may provide greater access to resources through their networks. Agency theorists believe that governing board members are the ultimate decision-makers (Fama & Jensen, 1983) and, as such, should possess qualifications relevant to the firm’s industry (King Committee, 2016). Previous large corporate failures exhibited poor governance due to CEO dominance over decision making based on the board members’ reliance on the CEO’s expertise. The resource dependence theory makes the competence of board members a key component of ethical leadership and, as such, postulates that board members should have sufficient knowledge of the company, its industry, capital and value drivers and regulatory environment, to lead effectively with due care and diligence (Sewpersadh, 2019c). For instance, Ehikioya (2009) found superior firm performance when board members have the appropriate knowledge and skills. The management hegemony theory has an opposing belief, whereby, due to information asymmetry and not being involved operationally, the governing board serves a ceremonial role because managers are the company’s actual strategic drivers and decision-makers (Hung, 1998; Sewpersadh, 2019c). Sewpersadh (2019) found that boards comprising a majority of members with professional and postgraduate qualifications negatively impacts profitability due to the lack of consensus between directors. However, some professional bodies do not require members to have postgraduate qualifications, which may lead to adverse decision making. Thus, this study focused on directors with postgraduate qualifications only to examine the board’s ability to provide strategic decisions in times of distress. Based upon the ratio of the number of postgraduate board members, this study hypothesises that:

H6: A higher percentage of postgraduate board members are associated with a lower probability of financial distress.

2.4.3.3. Board networks: relational capital. Resource dependence theorists contend that a vital component of firm survival is the ability to procure and preserve resources (Pfeffer & Salancik, 1978) through making external linkages so that entities can cope with exogenous pressures such as competition, regulation and social forces (Boyd, 1990). Directors’ relational capital makes strategic resources available to the firm through their networking relationships (Hillman &

Dalziel, 2003), a process which is particularly useful for distressed firms. However, there must be a balance to ensure that directors devote sufficient time to their duties. Sewpersadh (2019c) found that highly networked directors are risky to profitability and growth due to their overcommitment to multiple boards that exacerbates their disconnect to the respective firms' business strategies. Based upon a ratio of the number of networking board members, this study hypothesises that:

H7. Firms with board networks are associated with a higher probability of financial distress.

2.4.3.4. Board Independence: reputational capital. Agency theory advocates for the monitoring and controlling of management's decision-making and contends that independent directors on boards can reduce these agency costs (Fama & Jensen, 1983). Independent directors have reputational capital that incentivises them to curtail restatement occurrences (Beasley, 1996), thus, the board should consist of mostly independent non-executive directors (King Committee, 2016). This practice is due to independent boards being more willing to remove ineffective management (Daily et al., 2003), thus representing shareholders' interest better than inside directors do in times of financial distress (Fich & Slezak, 2008). Further, such board members help minimize the information asymmetry and the agency issue between stockholders and management (Fich & Slezak, 2008). Manzanque et al. (2016) found that lower proportions of independent directors are associated with the risk of bankruptcy. On the contrary, other researchers have found that independent boards negatively affect accounting performance (Ammari et al., 2016) and is positively correlated with financial distress (Bhabra & Eissa, 2017). In times of distress, inside directors are faced with an increased risk of job losses and, therefore, are more motivated to turn around a distressed firm than independent directors (Fich & Slezak, 2008). Furthermore, premised on the management hegemony theory, the value contribution lacking from independent directors is due to the deficiency of strategic market knowledge and sufficiency of time. Therefore, independent directors present a constraint to the strategic vision of executives who are incentivised towards reviving their ailing company. Sewpersadh, (2020) found that a majority of independent board members decreases a firm's profitability due to their detachment from the firm's operations which amplifies information asymmetry. These factors inhibit the ability of independent directors to assist in times of financial distress (Sewpersadh, 2020). Based upon a ratio of the number of independent board members, this study hypothesises that:

H8. Firms with a high proportion of independent board members are associated with a higher probability of financial distress.

2.4.4. Audit committee

The Companies Act (Section 94) identifies the audit committee's roles as supervising the financial reporting process, ensuring that financial reports are of a high quality, and overseeing the external auditors (Government Gazette, 2009). Prior studies have found that a separate audit committee was associated with a lower likelihood of financial distress (Lakshan & Wijekoon, 2012; Miglani et al., 2015).

2.4.4.1. Audit committee size. It is recommended that three independent directors are sufficient to carry out their statutory duties in terms of the Companies Act (King Committee, 2016). A large size audit committee tends to be less cohesive compared to a smaller one (Rahmat et al., 2009). Alternatively, premised on the resource dependence theory, an audit committee with a small number of members has a deficiency in the diversity of skills and expertise and, therefore, may become unproductive. However, caution should be exercised in this matter since an increase of audit committee members beyond the optimal size may render the audit committee ineffective. Studies have found no significant relationships between financial distress and audit committee size (Rahmat et al., 2009; Salloum et al., 2014). Although, the effectiveness of an audit committee

increases when it approaches its optimal size, more resources are needed in times of distress. Based upon the actual number of audit committee members, this study hypothesises that:

H9. Audit committee size is associated with a lower probability of financial distress.

2.4.4.2. Audit committee Independence. Financial decline can arise ten years before a firm files for bankruptcy (Hambrick & Aveni, 1992) thus, scrutinizing firms' financial reports is a key to detecting early warning signals of financial distress. Although the governing board is responsible for the overall quality of a company's financial statements (King Committee, 2016), the responsibility is delegated to the audit committee. The audit committee should solely comprise of independent non-executive directors (King Committee, 2016) since such composition deters management from deviating from their duty of protecting shareholders' interests (Fama & Jensen, 1983) and reduces the possibility of fraud (Beasley, 1996). The audit committee also appoints the external auditor who reduces asymmetric information and provides assurance on the financial statements. Although, some studies did not find any association between audit committee independence and financial distress (Elloumi & Gueyié, 2001; Salloum et al., 2014), other studies have found that audit committee independence decreases the likelihood of bankruptcy (Darrat et al., 2016) and the appetite for leverage (Sewpersadh, 2019b). Based upon an indicator variable for the audit committee being solely comprised of independent directors, this study hypothesises that:

H10. Audit committees comprised solely of independent directors are associated with a lower probability of financial distress.

3. Research methodology

The sample was extracted from the JSE and excluded companies with secondary listings and those listed in the basic materials, oil and gas, and financial industries (Sewpersadh, 2020). Companies were excluded if there had been a change of sector outside the sample sectors and any reverse acquisitions (due to the lack of comparability for the sample period). For statistical analysis, companies that delisted within the first three years of the sample period were excluded. The implementation of the above listed exclusions resulted in a sample of 116 companies and 661 firm-year observations from the period 2011 to 2016. Secondary data for the sample was extracted from the IRESS research domain for all the model variables.

In addressing this study's research objectives, panel data models were used since these compensate for lack of time-series depth, increase the degrees of freedom and potentially lower the standard errors of the coefficients (Hsiao, 2003). The existence of reverse causality between the financial distress measure and the different corporate governance variables renders both fixed and random effects estimators biased. Similarly, the use of instrument variables as an econometric approach has been commonly used to mitigate the simultaneity concern, however, this approach is not designed to address the dynamic endogeneity that arises in the relationship between corporate governance and company performance (Wintoki et al., 2012). The generalised method of moments (GMM) estimation pools economic data from population moment conditions to a sample that can yield estimates of the unknown parameters (Wooldridge, 2010). The GMM estimation accounts for the dynamic partial lag adjustments in firms' financial performance over time and controls for variable simultaneity and unobserved heterogeneity. Some corporate governance variables are time-invariant and are usually plagued by endogeneity, thus, Arellano and Bond (1991) recommended an estimator that uses the lags of the explanatory variables in levels as instruments. An instrument matrix is built using the lags of the different explanatory variables and an initial weighting matrix is identified. There should be an absence of serial correlation in ϵ_1 and ϵ_2 for the validity of instruments. Therefore, this study employed the one-step GMM, first difference (FD-GMM). This study's sample satisfies one of the strict conditions of GMM estimation since the data set has a small $T = 6$ and a large $N = 661$. To alleviate survivorship bias, delisted companies was included.

This study also employed the two-step GMM, system GMM (SYS-GMM) due to the limitations of FD-GMM's weak instruments and correlation issues. SYS-GMM has greater finite-sample properties and uses both lagged and differenced variables as instruments, but it needs a "steady-state" assumption throughout the period of analysis (Arellano & Bover, 1995; Blundell & Bond, 1998). Explanatory variables such as industry type, reinvestment rate, enterprise value and board size control some of the dynamics over the observation period. These control variables decrease likely correlation across individuals' idiosyncratic disturbances in the GMM estimation. The SYS-GMM with robust errors is constant in the existence of any form of heteroscedasticity and autocorrelation (Arellano & Bover, 1995; Blundell & Bond, 1998).

3.1. Model specification

The econometric specification of this model is that financial distress is determined by how an organisation is governed, captured by independent variables and control variables, and is expressed as follows:

$$FDistrit = \beta_0 + \beta_1 MajorSit + \beta_2 DShareit + \beta_3 CeoDit + \beta_4 CeoTenit + \beta_5 DQualit + \beta_6 DRemit + \beta_7 BNetit + \beta_8 BIndept + \beta_9 ACSizeit + \beta_{10} ACindit + CVit + \mu_i + \epsilon_{it} \quad (1)$$

$$i = 1, \dots, 661; N; t = 2011, \dots, 20167 \quad (2)$$

The β represents the regression coefficient, μ_i denotes an unobserved time-invariant company fixed-effect, and ϵ_{it} represents the serially uncorrelated error term. The CV_{it} denotes the control variables used in this regression. The dependent variable ($FDistrit$), formulated as follows: $K = -0.01662a + 0.0111b + 0.0529c + 0.086d + 0.0174e + 0.01071f - 0.068881$ (see Table 2). The K-score as a financial distress proxy categorises firms into three classes, namely healthy ($>+0.2$), grey zone (-0.19 to $+0.2$), and financially distressed (<-0.19). The lower the value of the K-score, the more probable bankruptcy becomes. The model variables are defined in Table 2 below:

Table 2. Variable definitions

Dependent variable			
FDistr	Financial distress	$K = -0.01662$ (total external financing/total assets x 100) + 0.0111 (EBIT/ total assets x 100) + 0.0529 (total current assets and listed investments/total current liabilities) + 0.86 (income after tax/average total assets x 100) + 0.0174 (net cash flow/average total assets x 100) + 0.01071 (stock/inflation-adjusted total assets x 100) — 0.068881	De la Rey, 1981; Sewpersadh 2020
Independent variables			

(Continued)

Table2. (Continued)

MajorS	Major Shareholders	Cumulative percentage of the shares held by major shareholders (5 percent or more of shares)	M. C. Daily & Dalton, 1994a; Abdullah, 2006; Mokarami & Motefares, 2013; Miglani et al., 2015; Shahwan, 2015; Manzaneque et al., 2016
DShare	Director shareholding	Cumulative percentage of directors' shareholding in the firm	M. C. Daily & Dalton, 1994a; Abdullah, 2006; Miglani et al., 2015; Manzaneque et al., 2016
CeoD	CEO duality	"1" if the board chairman and CEO roles are combined, "0" otherwise	M. C. Daily & Dalton, 1994a; Elloumi & Gueyié, 2001; Abdullah, 2006; Lakshan & Wijekoon, 2012; Miglani et al., 2015; Darrat et al., 2016; Manzaneque et al., 2016
CeoTen	CEO tenure	Number of years served as CEO	Mokarami & Motefares, 2013; Darrat et al., 2016
DRem	Director remuneration	Director's emoluments as a ratio of profit before tax	Lakshan & Wijekoon, 2012
BQual	Board Qualifications	Percentage of post graduate board members	
BNet	Board Networks	Percentage of board members serving on other boards	M. C. Daily & Dalton, 1994a
BIndep	Board independence	Percentage of independent directors on the board	Elloumi & Gueyié, 2001; Abdullah, 2006; Mokarami & Motefares, 2013; Lakshan & Wijekoon, 2012; Miglani et al., 2015; Manzaneque et al., 2016; Bhabra & Eissa, 2017
ACInd	Audit committee independence	"1" if all audit committee members are independent directors; "0" otherwise	Elloumi & Gueyié, 2001; Abdullah, 2006; Rahmat et al., 2009
ACSize	Audit committee Size	Total number of committee members	Rahmat et al., 2009
Control variables (cvit)			
Industry	Industry	Type of industry	
Bsize	Board size	Total number of board members	
EntVal	Enterprise Value	<i>(Market capitalization—cash and cash equivalents+ preferred stock +debt)/Share</i>	
Growth	Cash reinvestment Ratio	<i>(Cash from operating activities/ fixed Assets +intangible assets + Net Current Assets) x100</i>	

4. Results and discussion

4.1. Descriptive statistics and correlation analysis

The samples descriptive statistics are presented in Table 3 below. The variance inflation factor (VIF) has been included to test for the degree of multicollinearity that may affect the regression model coefficient estimates and make them potentially unstable with inflated standard errors for the

Table 3. Descriptive summary of variables

Variable	Descriptive statistics						Collinearity diagnostics before regression						After regression	
	Obs	Mean	Median	Std Dev	Min	Max	VIF	Sort VIF	Tolerance	R-Squared	VIF	1/VIF		
K score	661	0.1705	0.15	1.057	-4.43	3.57	1.22	1.1	0.8222	0.1778	n/a	n/a		
Major shareholders	661	45.2691	44.5	21.579	0	93	1.32	1.15	0.7585	0.2415	1.24	0.8086		
Director shareholding	661	14.3177	4.55	19.136	0	74.71	1.34	1.16	0.7446	0.2554	1.34	0.7447		
CEO duality	661	0.0242	0	0.154	0	1	1.11	1.05	0.9027	0.0973	1.1	0.9053		
CEO tenure	661	8.3873	6	8.786	0	41	1.1	1.05	0.9050	0.0950	1.1	0.9111		
Director remuneration	661	30.8592	4.0	564.850	-941.63	14,464.84	1.08	1.04	0.9300	0.0700	1.07	0.9312		
Board qualifications	661	72.5747	75	17.361	18.2	100	1.28	1.13	0.7822	0.2178	1.27	0.7899		
Board networks	661	58.9068	57.14	18.832	12.5	100	1.41	1.19	0.7068	0.2932	1.41	0.7071		
Board												independence		
661	51.6899	50	13.063	14.29	91.67	1.49	1.22	0.6730	0.3270	1.47	0.6791			
Audit committee size	661	3.3858	3	0.673	2	6	1.43	1.2	0.7001	0.2999	1.43	0.7015		
Audit committee												independence		
661	0.8593	1	0.348	0	1	1.29	1.14	0.7760	0.2240	1.29	0.7762			
Industry	661	2.8534	3	1.329	1	6	1.27	1.13	0.7880	0.2120	1.16	0.8604		
Board size	661	10.0484	10	2.816	4	25	1.54	1.24	0.6478	0.3522	1.54	0.6492		
Enterprise value	661	71.1650	27	147.843	-102.56	2155.85	1.29	1.13	0.7773	0.2227	1.28	0.7808		
Growth	661	10.0643	10.31	45.285	-536.66	789.47	1.03	1.01	0.9739	0.0261	1.03	0.9741		

coefficients. VIFs are calculated by regressing a predictor against every other predictor in the model, which provides the R-squared values. High R-squares and VIF values indicate multicollinearity present in the variables. Usually, a variable with VIF values greater than 10 may warrant further scrutiny. Tolerance is used to check on the degree of collinearity, where a low tolerance value (<0.1) suggests that the variable may be deemed a linear combination of other independent variables. As shown in Table 3 the VIF, tolerance and R-squared values are low and within the acceptable range for all the model's variables. This fact also holds true when retested after regression.

The descriptive statistics presented in Table 3 above show a median K-score of 0.15 (mean = 0.17), whereby half of the sample firms were in the upper grey zone category (-0.19 to $+0.2$). Grey zone companies are neither healthy nor distressed but intervention to improve firm performance is required for them to become healthy. As illustrated in Annexure A (included at the end of this article), the grey zone has been often overlooked in financial distress studies. The mean and median of major shareholders is 45%, thus, illustrating high shareholder activism, with a maximum of 93%, whereas director shareholding's median is less than 5% (4.5%). Due to independence concerns, King III stipulated a 5% threshold for directorial shareholding, although, King IVTM does not set any thresholds other than to state that consideration should be given to a director's shareholding, which may be significant to his/her individual wealth. Directors' remuneration as a measure of profit before tax showed a high standard deviation (564), illustrating the disparity of pay levels in the sample group. Some companies had all their board members (100%) with postgraduate qualifications and serving on other boards (networking), however, the median is 75% and 57%, respectively. Some companies had a maximum of 92% of their board members who were independent directors.

The Pearson correlation coefficients are presented in Table 4. According to Tabachnick et al. (2007), correlation coefficients of 80% or above signal the presence of a multicollinearity problem which is not present in this study. Table 4 shows that major shareholders, CEO tenure, director qualifications and audit committee size are significantly positively associated with financial distress. Board networks, board independence and industry type, however, are significantly negatively associated with financial distress.

4.2. Regression results

The model's estimates are presented in Table 5 below. For the GMM, the Hansen *J* statistics for these results are greater than 0.25, which is an indicator of valid instruments according to Roodman (2009). As illustrated by the high *p*-value, the over-identification tests do not reject the null hypothesis, accordingly, the different instruments are exogenous as a whole. The tests of serial correlation also do not reject the null hypothesis of no serial correlation, therefore, the instruments are not associated with the differenced residuals. In Table 5 below, major shareholders, CEO duality, director remuneration, board networks, audit committee size and independence were significantly associated with the K-score without controlling extraneous variables. Director shareholdings and CEO tenure becomes significant when controlled for industry type (Model 2). Board qualifications became significant when controlled for board size (Model 3).

H1. Firms with major shareholders are associated with a lower probability of financial distress.

Consistent with Li et al. (2008) and Miglani et al. (2015), the study results support that major shareholders are positively correlated with the K-score and, thus, reduce the probability of financial distress ($p < 0.01$ – 0.05). This finding is consistent with the agency theory, whereby major shareholders leverage their voting power to influence strategic decision-making and have the means,

Table 4. Pearson's correlation

	FDistr	Majors	DShare	CeoD	CeoTen	DQual	DRem	BNet	BIndep	AcSize	AcInd	Industry	BSize	EntVal	Growth
FDistr	1														
Majors	0.1520***	1													
	0.0001														
DShare	0.0127	0.2098***	1												
	0.7443	0													
CeoD	-0.031	0.0749*	-0.0022	1											
	0.4259	0.0542	0.7553												
CeoTen	0.0782**	0.0909**	0.2250***	0.0637	1										
	0.0445	0.0194	0	0.1019											
DQual	0.1060***	-0.0881**	-0.1209***	-0.0491	0.0872**	1									
	0.0064	0.0235	0.0018	0.2071	0.0249										
DRem	0.0158	0.0425	0.0464	0.2453***	-0.024	-0.0015	1								
	0.6852	0.2749	0.2339	0	0.5381	0.6696									
BNet	-0.1446***	0.0023	-0.2224***	0.0802**	-0.0527	0.3740***	-0.0034	1							
	-0.0002	0.7527	0	0.0393	0.1763	0	0.931								
BIndep	-0.0740*	-0.1900***	-0.3131***	-0.0691*	-0.1551***	0.2756***	-0.0325	0.2948***	1						
	0.0574	0	0	0.076	0.0001	0	0.4045	0							

(Continued)

Table4. (Continued)

	FDistr	Majors	DShare	CeoD	CeoTen	DQual	DRem	BNet	BIndep	AcSize	AcInd	Industry	BSize	EntVal	Growth
AcSize	0.0751*	0.1382***	0.1923***	-0.0025	-0.1089***	0.0536	-0.03	0.0523	0.2698***	1					
	0.0537	0.0004	0	0.7483	0.0051	0.1691	0.4411	0.1792	0						
AcInd	0.0104	0.0780**	-0.1939***	-0.0212	0.0312	0.2252***	0.0138	0.2654***	0.2955***	-0.1497***	1				
	0.7889	0.0449	0	0.5864	0.4228	0	0.7232	0	0	0.0001					
Industry	-0.2312***	-0.1000**	0.1185***	-0.0387	0.0581	-0.1149***	0.0097	0.1137***	-0.1673***	-0.0607	-0.0693*	1			
	0	0.0101	0.0023	0.3202	0.1354	0.0031	0.7036	0.0034	0	0.119	0.0748				
BSize	-0.0386	-0.2464***	-0.3507***	-0.0412	-0.1071**	0.1317***	-0.052	0.1441***	0.1638***	0.4276***	0.1090***	-0.1021***	1		
	0.3215	0	0	0.2903	0.0058	0.0007	0.1816	0.0002	0	0	0.005	0.0086			
EntVal	-0.0274	-0.2945***	-0.1959***	-0.0143	-0.0078	0.1612***	-0.0248	0.1631***	0.2087***	0.2090***	0.1166***	-0.1008***	0.3690***	1	
	0.4818	0	0	0.7128	0.63421	0	0.5251	0	0	0	0.0027	0.0095	0		
Growth	0.0472	-0.0933**	-0.0905**	0.0105	0.012	-0.0206	0.0051	-0.0292	0.0067	0.0146	-0.01	-0.0123	0.0753*	0.012	1
	0.2255	0.0165	0.0199	0.7884	0.7572	0.5975	0.6953	0.453	0.7631	0.7078	0.7968	0.7518	0.053	0.756	

Standard errors in parentheses *** p < 0.01, ** p < 0.05, * p < 0.1

Table 5. GMM estimation results. Dependent variable: financial distress: K-Score (FDistrit)

Variables	Model 1		Model 2		Model 3		Model 4		Model 5	
	FD-GMM	SYS-GMM	FD-GMM	SYS-GMM	FD-GMM	SYS-GMM	FD-GMM	SYS-GMM	FD-GMM	SYS-GMM
Shareholding										
Major shareholders	0.0101*	0.00914*	0.0127***	0.00905**	0.0126***	0.00936**	0.0138***	0.00939**	0.0138***	0.00975**
	0.00406	0.00355	0.00448	0.00399	0.00446	0.00421	0.00476	0.00471	0.00446	0.00438
Director shareholdings	0.0105	0.00435	0.00521*	0.00305*	0.00529*	0.00233*	0.00532**	0.00241**	0.00501**	0.00242**
	0.0117	0.00455	0.0106	0.00485	-0.0109	0.0052	-0.0112	-0.00545	-0.0109	-0.0052
CEO characteristics										
CEO duality	-0.323*	-0.312*	-0.643**	-0.408**	-0.677**	-0.450**	-0.745**	-0.460**	-0.668**	-0.554**
	-0.237	-0.163	-0.247	-0.167	-0.263	-0.2	-0.304	-0.194	-0.262	-0.214
CEO tenure	0.0105	0.0102	0.0136*	0.0139**	0.0143*	0.0137**	0.0157**	0.0165**	0.0140*	0.0151**
	0.00782	0.00729	0.00743	0.00617	0.00755	0.0061	0.0079	0.00736	0.0073	0.00651
Board characteristics										
Director remuneration	0.00122***	0.00101***	0.00132***	0.00104***	0.00135***	0.00105***	0.00142***	0.00113***	0.00133***	0.00109***
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Board qualifications	0.00565	0.00324	0.0107	0.00484	0.0115*	0.00721*	0.0131*	0.00745*	0.0109*	0.00748*
	0.00596	0.0129	0.00717	0.012	0.00693	0.0138	0.00705	0.0136	0.00654	0.0137
Board Networks	-0.0304**	-0.00573*	0.0216*	-0.00532*	0.0230*	-0.00634*	0.0289**	-0.00553*	0.0233**	-0.00520*
	-0.0124	-0.00915	-0.0124	-0.0104	-0.0123	-0.0115	-0.0121	-0.0122	-0.0107	-0.0118
Board independence	0.00822	0.00404	-0.00176	0.00067	-0.00467	0.00157	-0.00655	-0.000722	-0.00475	-0.000593
	-0.0081	-0.0071	-0.00829	-0.00722	-0.00862	-0.0075	-0.00857	-0.0079	-0.00843	-0.00788
Audit committee										
Audit committee size	0.293***	0.232***	0.299***	0.220**	0.267**	0.259**	0.264**	0.325**	0.258**	0.285**
	0.125	0.0747	0.107	0.0878	0.115	0.127	0.123	0.129	0.113	0.129
Audit committee independence	1.543**	0.878*	1.638**	1.002**	1.506**	1.043**	1.558**	1.005**	1.487**	1.008**
	0.69	0.456	0.633	0.484	0.631	0.504	0.663	0.516	0.595	0.498

(Continued)

Table5. (Continued)

Variables	Model 1		Model 2		Model 3		Model 4		Model 5	
	FD-GMM	SYS-GMM	FD-GMM	SYS-GMM	FD-GMM	SYS-GMM	FD-GMM	SYS-GMM	FD-GMM	SYS-GMM
Control variables										
Industry			-0.309***	-0.286	-0.311***	-0.292	-0.333***	-0.388*	-0.315***	-0.387*
			-0.0819	-0.212	-0.082	-0.22	-0.0832	-0.232	-0.0772	-0.205
Board size					-0.0168	0.0224	-0.0145	0.0694	-0.0101	0.051
					-0.0341	-0.0567	-0.0365	-0.0585	-0.0351	-0.0571
Enterprise Value							-0.000585*	-0.000811**	-0.000599**	-0.000736**
Growth							-0.00031	-0.00037	-0.00029	-0.00034
									0.00151	0.00189
									-0.00154	-0.00209
Constant	2.515***	2.057**	3.545***	2.824***	3.672***	2.742**	3.726***	2.495**	3.604***	2.721***
	0.872	0.837	0.79	0.997	0.83	1.049	0.862	0.915	0.789	0.876
Observations	661	661	661	661	661	661	661	661	661	661
Number of id	116	116	116	116	116	116	116	116	116	116
Hansen	46.61	60.19	44.59	60.61	44.46	59.27	42.53	57.07	43.23	56.13
Hansen p-value	0.571	0.709	0.613	0.664	0.578	0.677	0.618	0.718	0.547	0.717
AR(2)	0.384	0.202	0.437	0.241	0.387	0.246	0.486	0.326	0.448	0.324
AR(2) p-value	0.701	0.84	0.662	0.81	0.711	0.829	0.627	0.886	0.654	0.801
Standard errors in parentheses *** p < 0.01, ** p < 0.05, * p < 0.1.										

NB: Statistically, the K-score measures financial distress inversely, thus the smaller the K-score values, the higher the risk of financial distress. Accordingly, for the hypotheses results, a positive correlation will have increases in the explanatory variable with increases in the response variable, K-score that results in decreases to financial distress, and vice versa for the negative correlation.

incentives and economic justification for scrutinising and removing ineffective management. Therefore, in highly regulated countries such as SA, major shareholders exercise shareholder activism in controlling managerial opportunism and reducing information asymmetry, thus mitigating the risk of bankruptcy. Historically, SA had an absence of major shareholders, which gave rise to several agency conflicts and high executive remuneration to the disadvantage of employees and non-controlling shareholders (Sarraf, 2004). However, the results of this study may not be extrapolated to countries with a weak regulatory environment in which there are risks of major shareholder expropriation and earnings management.

H2. Increases in director shareholding are associated with a lower probability of financial distress.

The results delineated in Table 5 above support the hypothesis that director shareholding is positively correlated with the K-score, leading to a decrease in the probability of financial distress ($p < 0.05$). This finding is consistent with the agency theory, whereby the alignment of interests of shareholders and directors with equity shareholding, results in the more efficient use of company resources, which minimises financial distress. Directors with equity are incentivised to drive value maximising proposals, thus reducing financial risks.

H3. The presence of CEO duality in firms is associated with a higher probability of financial distress.

In Table 5 above there is a 5% significance supporting the hypothesis that CEO duality is negatively correlated with the K-score. CEO duality increases the probability of financial distress in a company due to the risks of managerial opportunism, information asymmetry and agency conflicts that compromise the governing board's oversight role. Together with the increase in CEO's decision-making discretion, these risks may lead to a CEO dominated board as envisioned in the agency theory. In a CEO dominated board, the relationship between the CEO and the governing board can be so collusive that there is no room for implementing an ethical environment with sound internal controls. In this situation, CEOs may try to influence the company's culture for their own self-serving interests by showing a strong tendency for risk-taking and aggressive earnings management. This fact was evidenced in the Steinhoff International Holdings and African Bank Investment Ltd failures, when the CEO dominated the governing board.

H4. CEO tenure in a firm is associated with a lower probability of financial distress.

The hypothesis that increases in CEO tenure correlate with increases in the K-score, leading to a lower probability of financial distress is supported ($p < 0.1-0.05$) in this study. This finding is reinforced by Finkelstein's (1992) power theory, whereby CEOs have structural power by virtue of their position, but tenure accrues expert and prestige power to the CEO. Therefore, this study contributes to existing research by adding the distress dimension, whereby the long-tenured CEOs propensities may not produce exponential growth in healthy companies but are fundamental in distressed companies, premised on the belief that long-tenured CEOs amass knowledge about their organization, culture, processes and key sources of information. The accrued prestige and structural power of tenured CEOs and their firm-specific 'tried and tested' paradigms contribute to their expert knowledge of the competitive economic market, which is essential to turn companies around. The theories of five seasons and three life cycle stages that recommend shorter termed CEOs may be more applicable for healthy companies seeking innovative growth potentials for profit maximisation rather than distressed companies seeking a means of survival.

H5. Director's remuneration is associated with a lower probability of financial distress.

Consistent with the agency theory, the hypothesis that director remuneration is significantly positively associated with higher K-scores leading to lower probabilities of financial distress is supported ($p < 0.01$) by this study's findings. Executive pay should be aligned to the company's long-term strategy (FRC, 2018), whereby directors get fairly compensated for reducing agency conflicts and governing in accordance with shareholders' best interests. These results are reinforced by previous studies that found higher remuneration motivates directors in their oversight role, which leads to better company performance (Lakshan & Wijekoon, 2012; Lee, 2009).

H6. A higher percentage of postgraduate board members are associated with a lower probability of financial distress.

The hypothesis that more postgraduate board members lead to lower financial distress probability is supported by the significantly positive result ($p < 0.10$) exhibited in this study. This finding is consistent with resource dependence theory, whereby directors are valuable strategic resources and board human capital theory, whereby competence is a key contributor to financial performance. Directors need to be sufficiently qualified to lead effectively and exercise due care and diligence when carrying out their fiduciary duties.

H7. Firms with board networks are associated with a higher probability of financial distress.

The results delineated in Table 5 above support the hypothesis that a board with a high percentage of networking directors leads to lower K-scores and a higher probability of financial distress. In the research sample, some boards had 100% of their directors serving on other boards. This fact can be perceived as director opportunism, whereby directors use their networks to benefit themselves by attaining directorships on numerous boards, instead of contributing their resources to the distressed firm. This situation does not support resource dependence theory since directors' main objective is not organisational survival but monetary gain. There must be a balance between duty and financial reward to ensure sufficient time is devoted to their directorial duties. High levels of networking directors may exasperate asymmetric information due to overly committed directors and director absenteeism which is detrimental to the survival of ailing firms.

H8. Firms with a high proportion of independent directors on their boards are associated with a lower probability of financial distress.

This hypothesis is not supported in Table 5 above.

H9. Audit committee size is associated with a lower probability of financial distress.

The hypothesis that the audit committee size is associated with a lower probability of financial distress is supported ($p < 0.1$) in this study. This finding is consistent with resource dependence theory, whereby due to the audit committee's level of responsibility, more director resources are required, particularly in times of distress. This result contrasts with those of studies that found no association between financial distress and audit committee size (Rahmat et al., 2009; Salloum et al., 2014).

H10. Audit committees comprised solely of independent directors are associated with a lower probability of financial distress.

The study results support the hypothesis that firms with independent audit committees are significantly positively correlated with their K-score ($p < 0.05$), leading to lower probabilities of financial distress. This finding is consistent with the agency theory, whereby audit committees serve as key governance mechanisms to reduce agency conflicts and controlling managerial opportunism. Other studies support this finding, whereby independent audit committees were negatively associated with bankruptcy (Darrat et al., 2016) and leverage (Sewpersadh, 2019b). The audit committee plays a significant role in ensuring the reliability, transparency and adequate disclosure of financial reporting, thus preventing poor quality or fraudulent financial reporting. A robust audit committee is one that is independent, a situation that is essential for public trust in the capital market.

The summary of this study's hypotheses findings can be found in [Table 6](#) below.

Table 6. Summary of hypotheses findings

Hypothesis	Theory	Expected sign	Actual sign	Supported/Not
H1. Firms with major shareholders are associated with a lower probability of financial distress.	Agency; Shareholder activism	(+) ⁷	(+) ^{***}	Supported
H2. Increases in director shareholding are associated with a lower probability of financial distress.	Agency; Stewardship	(+)	(+) ^{**}	Supported
H3. The presence of CEO duality in firms is associated with a higher probability of financial distress.	Agency	(-)	(-) ^{**}	Supported
H4. CEO tenure in a firm is associated with a lower probability of financial distress.	Upper echelons; Power	(+)	(+) ^{**}	Supported
H5. Director's remuneration is associated with a lower probability of financial distress.	Agency	(+)	(+) ^{***}	Supported
H6. A higher percentage of postgraduate board members are associated with a lower probability of financial distress.	Resource dependence; Human capital	(+)	(+) [*]	Supported
H7. Firms with board networks are associated with a higher probability of financial distress.	Resource dependence; Relational capital	(-)	(-) [*]	Supported

(Continued)

Table6. (Continued)

Hypothesis	Theory	Expected sign	Actual sign	Supported/Not
H8. Firms with a high proportion of independent board members are associated with a higher probability of financial distress.	Management hegemony; Information asymmetry	(-)	(-)	Not Supported
H9. Audit committee size is associated with a lower probability of financial distress	Resource dependency	(+)	(+)**	Supported
H10. Audit committees comprised solely of independent directors are associated with a lower probability of financial distress	Agency	(+)	(+)**	Supported

5. Conclusion

Overall, this study found that corporate governance practices serve as financial distress determinants. It was found that the K-score model serves as a robust financial distress proxy that allowed the often-overlooked grey zone companies to be examined. The grey zone represents a large category of companies since on average, half of the SA firms were on the higher end of the grey zone. This study also found that ownership structure is a key aspect when evaluating governance relationships between inside and outside shareholders. Greater shareholder activism in the form of major shareholders and director shareholding was positively correlated to the K-score (higher performance), thus negatively associated to financial distress probabilities. Major and director shareholders have voting power that enables active engagement with company decision-making. In contrast to investor apathy, this control mechanism may inhibit managerial opportunism, information asymmetry and managerial entrenchment, thus, driving value maximising activities. Consistent with agency theory, equity shareholding aligns agent and principal interests, thus, reducing agency costs and non-value maximising behaviour as well as high-risk investments. However, in a weak regulatory environment, there are risks of shareholder expropriation and earnings management.

In assessing CEO dominance, this study found that CEO duality increases the probability of financial distress due to the risks of a CEO dominated board that impedes on the board's oversight duty. Consistent with upper echelon theory and power theory, CEO tenure was significantly positively correlated with the K-score, therefore, negatively associated with financial distress probabilities. This finding is a key contribution under CEO tenure theory, since long-tenured CEOs may not produce the exponential growth in healthy companies but may prove to be fundamental to distressed companies. It was also found that during times of distress, CEOs with tenure are suitable turnaround strategists since they are empowered with contextually enriched latent knowledge and strategic market insights.

Board characteristics are key in assessing board competence. This study examined the trade-off between oversight and compensation, it was found that director remuneration was negatively correlated with financial distress. Executives need to be motivated to exercise governance, maintain shareholder value and control managerial opportunistic behaviour. Consistent with agency theory, the board's human capital is positively correlated with higher K-scores, thus lowering

financial distress probabilities. This study contends that during times of distress, focused decision-making and expert power are required from the governing boards, which is not achievable in the presence of director opportunism. The results showed that highly networked boards had higher probabilities of financial distress. A key theoretical contribution to assessing board competence is the concept of “director opportunism” which is a situation where directors use their networks to increase personal wealth by attaining directorships on as many boards as they can. Consistent with resource dependence and agency theory, this study found that audit committee size and independence was positively associated with the K-score leading to lower probabilities of financial distress.

6. Recommendations

A key recommendation is that further research into the grey zone companies should be undertaken since it presents an opportunity for growth. Board networks under the resource dependence theory also provide for insightful future research. Further research on the trade-offs between director remuneration and oversight will benefit and inform regulatory governing bodies.

7. Limitations

Diverse economic conditions and/or weak regulatory environment in other countries may influence model variables differently.

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Availability of data and material

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Author's contributions

There are no other authors to this paper. The author declares that all contributions to this paper are completely her own with no assistance from any other person.

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Annexure A Empirical studies on corporate governance and financial distress

No	Author	Title of paper	Methodology	Financial distress indicator	Corporate governance variables	Main findings
1	D. C. Hambrick & D'Aveni, 1992	Top team deterioration as part of the downward spiral of large corporate bankruptcies	Manova and logit analysis	Filed under Chapter 11 of bankruptcy code	Team size, expertise, tenure, CEO dominance, compensation and independent directors	As company declines top management teams are lost and there are fewer outside directors, lower team compensation, shorter tenures, and greater CEO dominance as company declines.
2	M. C. Daily & Dalton, 1994a	Corporate governance and the bankrupt firm: An empirical assessment	Logistic regression analysis	Filed under Chapter 11 of bankruptcy code	CEO duality and independent directors	Firms with CEO duality and lower proportions of independent directors are associated with bankruptcy.
3	C. M. Daily & Dalton, 1994b	Bankruptcy and corporate governance: the impact of board composition and structure	Logistic regression analysis	Filed under Chapter 11 of bankruptcy code	CEO duality and board composition	During the time of crisis, CEO duality does not deal with the decline as effectively when CEO duality is absent. In times of firm decline, stronger boards can formulate suitable strategies to address firm's decline.
4	Eloumi & Gueyie, 2001	Financial distress and corporate governance: an empirical analysis	Logistic regression analysis	Negative earnings per share during the last five years.	Independent directors, CEO duality, CEO turnover, and audit committee.	Findings were that independent outside directors enhance firms' financial conditions and financially distressed firms are less likely to have audit committees composed solely of outsiders. Failed to detect any significance of CEO duality in financially distressed or healthy firms.

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No	Author	Title of paper	Methodology	Financial distress indicator	Corporate governance variables	Main findings
5	Abdullah, 2006	Board structure and ownership in Malaysia: the case of distressed listed companies	Pooled logistic regression analysis	An affected listed issuer as classified in the Bursa Malaysia Practice Note 4.	Board independence, CEO duality and ownership structure	Insignificant findings on board independence and CEO duality with financial distress. Whereas non-executive directors and outside blockholders are negatively associated with financial distress
6	Li et al., 2008	Ownership, independent directors, agency costs and financial distress: evidence from Chinese listed companies	Binary logistic analysis	Special Treatment as per Chinese Securities Regulatory Commission	Ownership structure, independent directors, managerial agency costs and audit's opinion	Large shareholders' ownership and the state ownership have negative effects on the probability of distress whereas managerial ownership is unrelated with the distress status. Managerial agency costs was positively associated with the probability of financial distress but auditors' opinion was negatively related to the likelihood of financial distress

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No	Author	Title of paper	Methodology	Financial distress indicator	Corporate governance variables	Main findings
7	Rahmat et al., 2009	Audit committee characteristics in financially distressed and non-distressed companies	Logistic regression analysis	Suspended from Bursa Malaysia Practice Note 4.	Audit committee size, its independence, activity and accounting knowledge	The findings show that financial distress has a significantly negative association with financial literacy of the audit committee and the quality of external audit. However, there were insignificant findings between financial distress and the three other independent variables, size, composition and the frequency of meetings of an audit committee.
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(Continued)

(Continued)						
No	Author	Title of paper	Methodology	Financial distress indicator	Corporate governance variables	Main findings
8	Lakshan & Wijekoon, 2012	Corporate governance and corporate failure	Logistic regression analysis	Either companies had been incurring losses OR had negative cash flow for 3 years continuously or more.	Board size, CEO duality, outside directors, outsider's ownership, audit opinion, audit committee existence and board members remuneration	The findings support that outside director ratio/ board independence whereas audit committee existence and board members remuneration were negatively associated with financial distress. While board size, auditor's opinion and outside ownership are not significant determinants of failure. The existence of a separate audit committee was associated with a lower likelihood of financial distress, but CEO duality is positively related with the likelihood of corporate failure.
9	Mokarami & Motefares, 2013	Corporate governance and predicting bankruptcy of firms using survival analysis	Survival analysis, longitudinal data and Cox Regression	Applied a definition of financial distress	Board size, ratio of non-executive directors, CEO change and major ownership	Findings were that a significant relationship exists between CEO turnovers and bankruptcy. However, insignificant relationships were found between bankruptcy and the other variables i.e. percentage of non-executive directors, board size, major ownership.
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No	Author	Title of paper	Methodology	Financial distress indicator	Corporate governance variables	Main findings
10	Miglani et al., 2015	Voluntary corporate governance structure and financial distress: evidence from Australia	Logit regression	Zmijewski financial score	Board independence, blockholder ownership, CEO duality, director ownership, audit committee and audit opinion	Findings show greater levels of blockholder ownership, director ownership and audit committee existence are associated with lower likelihood of financial distress. The findings for CEO duality, audit opinion and board independence were inconsistent between the different statistical analyses in this study. This study found causal evidence that adopting corporate governance structures voluntarily leads to lower levels of financial distress, rather than financial distress detection leading to corporate governance structural reform.

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No	Author	Title of paper	Methodology	Financial distress indicator	Corporate governance variables	Main findings
11	Shahwan, 2015	The effects of corporate governance on financial performance and financial distress: evidence from Egypt	LAV regression model and Logistic regression model	Altman's Z-score	Constructed a corporate governance index (CGI) with governance disclosure and transparency; board composition; shareholders' rights and investor relations; and ownership and control structure	The study found that the overall score of the CGI, on average, suggests that the quality of CG practices within Egyptian-listed firms was relatively low. The results did not support the positive association between corporate governance practices and financial performance and there was an insignificantly negative relationship between corporate governance practices and the likelihood of financial distress.

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No	Author	Title of paper	Methodology	Financial distress indicator	Corporate governance variables	Main findings
12	Darrat et al., 2016	Corporate governance and bankruptcy risk.	Logit model	Filed under Chapter 11 of bankruptcy code	CEO duality, CEO shareholding, CEO tenure, CEO turnover, CEO age, CEO compensation, insider holding, institutional holding, audit committee independence.	The findings were that having larger boards reduces the risk of bankruptcy only for complex firms. The proportion of inside directors on the board is inversely associated with the risk of bankruptcy in firms that require more specialist knowledge and that the reverse is true in technically unsophisticated firms. Bankruptcy is more likely when the CEO serves as board chairman. CEO turnover, bankruptcy is less likely when the CEO has been replaced within the previous 3 years and that bankruptcy is negatively related to CEO tenure.
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No	Author	Title of paper	Methodology	Financial distress indicator	Corporate governance variables	Main findings
13	Manzanaque et al., 2016	Corporate governance effect on financial distress likelihood: evidence from Spain	Conditional logistic regression	Binary variable, 1 if either EBITDA is lower than its financial expenses for two consecutive years; and/or a fall in its market value occurs between two consecutive periods or 0.	Ownership concentration, large directors' ownership, CEO duality and large board size.	The findings reveal that board ownership, proportion of independent directors and board size decrease probability of financial distress. However, the findings were insignificant regarding ownership concentration, institutional large or non-institutional large shareholders and CEO duality with the probability of financial distress. The results show a negative relationship between large board size and the probability of financial distress.
14	Parkinson, 2016	Corporate governance during financial distress – an empirical analysis	Case study approach	In a formal business rescue proceeding	Detailed analysis of the decisions taken by directors, creditors and shareholders.	The findings reveal that in times of financial distress, directors' attention shifts away from shareholders' interests to those of creditors' interests.

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No	Author	Title of paper	Methodology	Financial distress indicator	Corporate governance variables	Main findings
15	Mariano et al. (2021)	Can we predict the likelihood of financial distress in companies from their corporate governance and borrowing?	A binomial logistic model	Dummy variable 1 when companies are considered financially distressed and 0 otherwise	Ownership concentration, independence indicators, CEO duality, director remuneration and corporate loans are considered, as well as the UK Corporate Governance Code.	The results indicate that companies with low ownership concentration and a low degree of independence are more likely to incur financial distress. Larger boards and better director remuneration can reduce likelihood OF financial distress and the existence of corporate loans can increase this likelihood. Empirical consideration of corporate borrowing is a new contribution to the literature.

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Notes

1. King III was the SA code of corporate governance which was superseded by King IVTM.
2. A legislative test of insolvency that determines bankruptcy is whether the fairly estimated liabilities exceed the fairly valued assets of the debtor.
3. Liquidation denotes the sale of the debtor's assets and distribution of proceeds to the claimants.
4. MDA = Multiple discriminant analysis
5. The study revealed using the Z-score model with a cut-off score of 2.675, was between 82% and 94% accurate in forecasting bankruptcy (Altman, 2000). However, this study also showed that there was a high incidence of Type II error i.e. classifying the firm as distressed when it does not go bankrupt and, therefore, a recommendation of using a lower Z-score cut-off of 1,81 (Altman, 2000).
6. Where CEOs gain favour with the board due to past good performance, but become entrenched, directing excessive firm growth and increasing the probability of dominating the board to their benefit, leading to non-value-maximising managerial behaviour.
7. A positive correlation is when the explanatory variable is correlated to higher K-scores thus lower financial distress probabilities.



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