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Enterprise Risk Management Quality and Financial Distress Risk: A Real Earnings Perspective

(Kualiti Pengurusan Risiko Perusahaan aan Risiko Kesusahan Kewangan: Perspektif Pendapatan Sebenar)

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ABSTRACT

Motivated by the recent decline in performance and liquidity crisis of African firms orchestrated by the COVID-19 pandemic, this research examines the impact of real earnings management (REM) on financial distress risk (FDRisk), and whether enterprise risk management quality (ERMQ) moderates the effect. The study provides new insights on whether firms with robust enterprise risk management (ERM) systems performs better than their counterparts with no ERM systems. This research examines the impact of real earnings management (REM) on FDRisk, and whether ERMQ moderates the effect. The study employs the least square dummy (LSDV) variable two-way fixed effect estimator to analyse panel data from 186 non-financial firms operating in nine (9) sub-Saharan African countries. The findings indicate that REM worsens FDRisk. The results also suggest that firms that implement high-quality enterprise risk management attenuate the negative effect of REM on FDRisk. We further find that "board governance" and "corporate disclosure" quality are likely channels through which REM exacerbates FDRisk. This study offers an empirical explanation of how REM worsens FDRisk and the alleviating role of ERMQ, as corporations in weaker corporate governance (CG) regions seek strategies to discourage REM and improve firms' financial health.

Keywords: Real earnings management; enterprise risk management quality; financial distress risk; channels analysis; sub-Saharan Africa; corporate governance.

ABSTRAK

Didorong oleh penurunan prestasi dan krisis kecairan yang melanda firma-firma di Afrika akibat pandemik COVID-19, kajian ini meneliti kesan pengurusan pendapatan sebenar (REM) terhadap risiko kesusahan kewangan (FDRisk), serta sama ada kualiti pengurusan risiko perusahaan (ERMQ) dapat menyederhanakan kesan tersebut. Kajian ini menawarkan perspektif baharu sama ada firma yang mempunyai sistem pengurusan risiko perusahaan (ERM) yang kukuh menunjukkan prestasi yang lebih baik berbanding firma yang tidak mengamalkan sistem tersebut. Menggunakan kaedah penganggaran kesan tetap dua hala dengan pembolehubah dummy kuasa dua terkecil (LSDV), kajian ini menganalisis data panel daripada 186 firma bukan kewangan yang beroperasi di sembilan (9) negara sub-Sahara Afrika. Hasil kajian menunjukkan bahawa pengurusan pendapatan sebenar memburukkan FDRisk. Namun begitu, firma yang mengamalkan pengurusan risiko perusahaan yang berkualiti tinggi dapat mengurangkan kesan negatif REM terhadap FDRisk. Kajian ini turut mendapati bahawa tadbir urus lembaga dan tahap pendedahan korporat bertindak sebagai saluran yang memperkuat kesan buruk REM terhadap FDRisk. Secara keseluruhan, kajian ini memberikan penjelasan empirikal tentang bagaimana REM memberi kesan negatif terhadap FDRisk serta menonjolkan peranan penting ERMQ, khususnya dalam konteks firma yang beroperasi dalam persekitaran tadbir urus korporat yang lemah dan memerlukan strategi mitigasi untuk mengekang REM dan memperkukuh kedudukan kewangan mereka.

Kata kunci: Pengurusan pendapatan sebenar; kualiti pengurusan risiko perusahaan; risiko kesusahan kewangan; analisis saluran; sub-Sahara Afrika; tadbir urus korporat.

INTRODUCTION

Previous studies mostly concentrated on corporate conditions that incentivise earnings management (EM) strategies (Campa & Camacho-Miñano 2015; Li et al. 2020). Interestingly, only a few studies have considered how manipulations of real business activities, – that is, real earnings management (i.e., when managers distort real activities and alter the scale and timing of normal operational activities) itself, – are linked to corporate outcomes, specifically, the risk of financial distress (i.e., a condition when a firm is unable to fulfil its term short- and long-term debt obligations, which heightens the probability of default). These studies only used data from developed

markets such as the US and China (e.g., Zang 2012; Li et al. 2020). This suggests that the general notion prevalent in earnings management literature revolves around corporate pressures, such as financial distress, changes in credit rating indices, and violation of debt covenants, motivate managers to engage in earnings manipulation and not vice versa.

However, the recent spate of accounting scandals such as Steinhoff, Tongaat, EOH, the Guptas[1], and Eskom[2] not only exposed the failure of South Africa's governance, institutional, and financial image but also cast doubt on its leadership attributes as a harbinger of sound corporate governance in sub-Saharan Africa (SSA). Newiak et al. (2022) find that countries such as Botswana, Rwanda, and Seychelles are developing sound governance mechanisms because of their political commitment, corporate assurance, and societal acceptance. Reports have also shown that investors have left the South African stock and bond markets because of the surge in corporate scandals.[3] The subsequent liquidity crises experienced by these firms' ex-post accounting scandals suggest that the earnings management-financial distress relationship is bidirectional and that firms' earnings management practices could trigger financial distress. Earlier research has documented that manipulation of normal business activities negatively impacts future earnings, cash flow, and financial performance (Cohen & Zarowin 2010; Zang 2012; Campa 2015; Li et al. 2019), and if these persist, it may worsen a firm's capacity to fulfil its immediate and future debt commitments (Li et al. 2020; Campa & Camacho-Miñano 2015). Hence, it is imperative to examine whether real earnings management (REM) practices trigger financial distress risk (FDRisk).

This study, which focuses on firms operating in SSA, is important and relevant for the following reasons. First, firms in SSA use more debt than equity capital to finance their operations, because most SSA markets have more developed financial institutions than stock markets (Matemilola et al. 2019; Machokoto et al. 2020). However, lenders are wary of advancing funds to firms in financial distress, because most SSA countries are ranked low in institutional protection for lenders (Matemilola et al. 2019). This hypothetical scenario presents a compelling incentive for CEOs and/or CFOs to manipulate reported earnings, to conceal the genuine financial health of their companies. Second, studies investigating the REM-FDRisk nexus in emerging markets, such as SSA, characterized by weak corporate governance and corruption are limited (Adegbite 2015; Matemilola et al. 2019; Kimani et al. 2021). The connection between REM and its effects on corporate outcomes in the SSA region has garnered the interest of researchers, investors, creditors, and regulators. This is because existing empirical evidence suggests that REM practices are less susceptible to detection by external stakeholders and can negatively impact future firm outcomes, including innovation, performance, dividend payouts, and stock performance (Cohen & Zarowin 2010; Bereskin et al. 2018; Al-Shattarat et al. 2022; Boachie & Mensah 2022). Zang (2012) posited that top management tends to opt for REM over accrual-based earnings management (AEM) since it is challenging to persuade reputable auditors to sanction aggressive accounting practices. REM stems from the understanding that investors and creditors, in a bid to manage transaction and information costs associated with investment and financing decisions, rely significantly on earnings information such as earnings changes supplied by firm managers to the capital market (Zang 2012; Al-Shattarat et al. 2022). Under such circumstances, managers are aware that poor earnings records may convey a bad signal to external stakeholders such as credit rating agencies, stock analysts, and capital market participants. Hence, managers are motivated to moderate this signal by overstating earnings through real activities that deviate from the normal operations and investment processes. Following the global financial crisis, regulators and experts have recommended that robust corporate governance (CG) procedures might prevent REM. Several studies have proposed government connections, gender diversity, audit committee quality, ownership structure, board quality, audit activities, and company innovation. (Buchanan et al. 2021; Wen et al. 2023). The efficacy of conventional internal governance (i.e., CG) mechanisms in mitigating REM continues to be a topic of discussion and debate. Adegbite (2015) argues that conventional CG instruments do not adequately reduce the effect of REM on performance in emerging economies. Moreover, recent research in developed economies suggests that corporate governance factors, like the quality of external audit monitoring, are becoming ineffective in detecting and preventing REM (Pacheco-Paredes & Wheatley, 2021; Buchanan et al. 2021). For example, Buchanan et al. (2021) opined that external auditing, which requires express communication with the board of directors to sanction and punish erring managers who engage in REM, could be compromised and ineffective. REM is an opportunistic behaviour that misaligns the contractual interests of principals (shareholders and creditors) and agents (top management) as a result of corporate pressures such as violation of debt covenants (Li et al. 2020), changes in credit rating metrics (Campa & Camacho-Miñano 2015), and meeting earnings forecasts (Zang 2012). One indicator of FDRisk is the prevalence of earnings-enhancing REM (Campa & Camacho-Miñano, 2015; Campa 2019; Li et al. 2020). Mitigating REM practices requires internal control mechanisms that can curb managerial opportunism and excessive risk-taking and align shareholders' and creditors' risk-return objectives with managers.

According to agency theory, an effective risk governance framework aligns managers' and shareholders' risk-return objectives, protects shareholder wealth, and preserves managers' jobs and current and future earnings. (Baxter et al. 2013; Florio & Leoni 2017). Eckles et al. (2014) and Lundqvist and Vilhelmsson (2016) find that effective risk management systems reduce earnings and cash flow volatility, and help firms meet financial obligations. Nguyen and Vo (2020) add that capital market participants value high-quality enterprise risk

management (ERM), as long as the cost savings from avoiding financial distress outweigh the cost of implementing an ERM system. Modern corporations adopt ERM to bolster risk governance, particularly in mature markets. Researchers opined that firms slow to adopt ERM faced severe impacts from the 2008 financial crisis (e.g., Lechner & Gatzert 2018). ERM proficiently manages firm risks and their sources within a unified strategic framework (Eckles et al. 2014; Lechner & Gatzert 2018). ERM protects stakeholder wealth by reducing managerial opportunism and overzealousness (Florio & Leoni 2017).

As such, this study investigates the link between REM and FDRisk, and whether ERMQ matters in this relationship in emerging market contexts. Because weak institutional frameworks inhibit risk governance in most SSA markets (Adegbite 2015; Matemilola et al. 2019), this study aims to understand how REM impacts corporate liquidity and how capital markets in SSA respond to firms voluntarily implementing high-quality ERM in the face of rampant REM.

To fulfil the objectives of this research, a panel dataset comprising information from 186 non-financial companies spanning the period between 2014 and 2020 was assembled, yielding a total of 1302 firm-year observations. The least square dummy variable (LSDV) two-way fixed effect estimator was used to assess the impact of REM practices on FDRisk. This method accounts for year-, industry-, and country-specific effects, and the results showed that REM practices significantly increase FDRisk by decreasing firms' financial soundness, despite controlling for other factors that may influence FDRisk. The moderating effect analysis reveals that ERMQ matters for FDRisk and reduces the negative effect of REM on FDRisk. Our findings are consistent using other measures of financial distress risk, subsample and channel analyses, autocorrelation, the impact of the COVID-19 pandemic, and endogeneity analysis.

Our research contributes to corporate governance and finance literature in three ways. First, we extend the literature linking REM and FDRisk, particularly in the context of an emerging market. While this investigation has been carried out in other developed countries (e.g., Wang et al. 2018), the literature on this nexus in emerging countries is scant. Although, Viana et al. (2022) conducted a study to examine the relationship between earnings management and financial distress, with a focus on Big4 auditors' role in 20 emerging markets. However, the authors placed greater emphasis on AEM. Hence, our study enriches the literature by considering how REM affects FDRisk in an emerging market setting. This is imperative because of the opacity of REM during audit processes. Second, scholars have documented that good internal control mechanisms can constrain REM (Agustia et al. 2020; Li et al. 2020). However, the influence of ERMQ as an internal control mechanism remains unclear, particularly for firms in financial distress. Our study attempts to address this gap. Thirdly, we enhance the risk management literature by presenting empirical evidence that highlights the significance of ERM as a potent corporate governance mechanism to curb managerial opportunism within financially distressed firms. Our findings inform managers of the long-term implications of REM practices on their job security, and shareholders and lenders on how the quality of ERM matters in safeguarding their wealth.

This article's other sections are structured as follows. The second section presents the literature and empirical review on the connections between REM, FDRisk, ERMQ, and FDRisk, as well as testable hypotheses. In the third section, the research methodology is presented. The fourth section focuses on the outcomes and robustness tests. The fifth section discusses the findings and concludes the paper.

LITERATURE REVIEW

UNDERPINNING THEORIES

There are two theories that underpin this study, the agency theory and the resource-based view (RBV). The agency theory (Jensen & Meckling 1979) suggests that managers, acting as agents, might prioritize their own goals over those of the shareholders, who are the principals. Consequently, agency theorists argue that REM can exacerbate FDRisk due to factors such as managerial self-interest, information asymmetry, and moral hazard. By manipulating core operational activities, managers can obscure poor performance and take excessive risks, which are likely to lead to delayed responses to financial difficulties and an increase in FDRisk (Roychowdhury 2006; Zang 2012). Furthermore, signaling theory suggests that managers might convey negative signals to investors and creditors by engaging in REM (Cohen & Zarowin 2010). This practice can be interpreted as a negative indicator, pointing to potential financial difficulties and poor management (Wang et al. 2018). REM is a signal that can trigger to adverse market reactions, such as a decline stock prices or a rise in financing costs (Wen et al. 2023).

Meanwhile, the RBV (Barney 1991) highlights the significance of internal resources and capabilities in securing a competitive edge and mitigating risks (Hillman & Dalziel 2003). ERM can serve as a valuable resource that alleviates the adverse impact of REM on the risk of financial distress (Florio & Leoni 2017). Firms with strong ERM capabilities are better equipped to navigate financial challenges. We contend that ERM serves as a strategic resource, aligning managerial interests with those of shareholders, thereby reducing REM practices and the likelihood of FDRisk. Moreover, corporate risk management theory underscores the significance of managing

risks to safeguard firm value. This theory posits that ERM facilitates proactive risk management. By implementing effective ERM, firms can identify and mitigate risks associated with REM, such as FDRisk.

REAL EARNINGS MANAGEMENT AND FINANCIAL DISTRESS RISK

Corporations are typically regarded as financially distressed when they grapple with a liquidity crisis, which impedes their ability to fulfil both short- and long-term debt obligations (García & Herrero 2021; Pham et al. 2022). On the other hand, REM entails making value-damaging business decisions that deviate significantly from optimal and have direct adverse consequences on future revenue and profits, which is disadvantageous to investors and lenders (Cohen & Zarowin 2010; Wen et al. 2023). The agency theory posits that managers could potentially prioritize private benefits over shareholder wealth, leading to poor firm performance and liquidity issues (Jensen & Meckling 1979; Fama & Jensen 1983). This suggests that the link between REM and FDRisk is premised on the former's impact on future operating performance. However, the current evidence regarding the relationship between REM and financial performance (FP) has been inconclusive. Certain research has indicated that REM might be motivated by managerial opportunism, which could potentially have an unfavourable effect on financial performance (e.g., Zang 2012; Cohen & Zarowin 2010). Al-Shattarat et al. (2022) call this opportunistic REM hypothesis. Cohen and Zarowin (2010) and Zang (2012) state that REM has a direct cash flow effect on firms. Changing real business activities can negatively impact financial performance because of suboptimal operational outcomes and economic and financial stress, thus affecting current and future FP and increasing FDRisk (Roychowdhury 2006; Zang 2012; Al-Shattarat et al. 2022). On the contrary, the signalling proposition for *REM* posits that executives are motivated to employ REM to communicate with shareholders and bondholders and to prevent outside interference (Jiraporn et al. 2008; Gunny 2010; Al-Shattarat et al. 2022). Managers may opt for REM by ceasing investments with negative net present value or underperforming projects unrelated to the firm's generic strategy, which boosts current and future operating performance, avoids wastage and inefficiencies, and enhances a firm's liquidity capabilities (Roychowdhury 2006; Zang 2012; García Lara et al. 2020). Citing the earnings management hypothesis, Wang et al. (2018) argue that managers may deliberately deceive investors by aggressively manipulating real earnings to bolster firm performance and access external funding. However, the resulting reversal of manipulated real activities[4] and realization of true and fair firm performance will result in investors reducing their misled assessments of true firm value and provision of funding (Wang et al. 2018), thereby increasing the likelihood of distress risks.

Regardless of the perspective, theoretically, indulging in REM means that managers may have to forgo positive NPV investments that are ordinarily financed by the usual research and development, selling, general and administrative, and advertising expenses. Avoiding investments with a positive NPV can have a detrimental impact on a company's long-term operational success (Cohen & Zarowin 2010; Li 2019). This may inflict serious liquidity problems on firms and raise the possibility and severity of financial distress risk. Matemilola et al. (2019) reported that the quality of governance institutions in major African countries is poor, allowing managers to indulge in unethical practices. This suggests that weak CG and institutional quality incentivize top management to manipulate reported earnings for private gains. Ipino and Parbonetti (2017) suggest that the switch from AEM strategies for REM has risen outside the European Union after IFRS adoption. We, therefore, argue that opportunistic REM practices are prevalent among sub-Saharan African firms, and hypothesize as follows:

H_1 All things being the same, real earnings management (REM) increases (reduces) financial distress risk (FDRisk) in distressed (healthy) firms.

ENTERPRISE RISK MANAGEMENT QUALITY AND FINANCIAL DISTRESS RISK

Three main mechanisms explain why the ERMQ should reduce FDRisk. First, ERMQ lowers firms' exposure to risk, which in turn decreases FDRisk. COSO (2009) documents that ERM is a governance and internal control mechanism established at the board level to reduce and align managerial risk appetite with an approved firm's risk tolerance level. Theoretically, managers, especially overconfident CEOs, tend to underestimate risk and engage in less hedging, which can cause their firms to experience financial distress (Florio & Leoni 2017; Kuo et al. 2021). Therefore, ERM minimizes managerial overconfidence risks by constraining risky projects and aligning with board-approved risk levels (Kuo et al. 2021). Eckles et al. (2014) documented that ERM adoption enhances US firms' capability to reduce risk per dollar and stock return volatility. Al-Amri and Davydov (2016), while investigating the ERM systems found that firms with high-quality plans had a 63% decrease in operating risk and a 35% reduction in losses. Oyewo (2022) shows that ERM improves Nigerian banks' long-term performance and serves as a sustainability strategy for managing turbulent financial crises.

Second, ERMQ can bolster a firm's financing situation, thus reducing FDRisk. Berry-Stölzle and Xu (2018), using a restricted sample of US insurers, document that ERM adoption considerably reduces an insurer's cost of capital and improves access to finance. Shad et al. (2022) find that ERM adoption is negatively correlated with

the cost of capital suggesting that ERM reduces financial risk by lowering the cost of capital and enhancing investment efficiency by mitigating fluctuations in earnings and equity prices.(Pagach & Warr 2015).

Third, ERMQ can further attenuate the likelihood of FDRisk and enhance the creditworthiness of a corporation because of its ability to improve information dissemination concerning the corporation's risk profile. Financial and operational complexity can pose challenges for investors and creditors when evaluating a company's financial health and risk profile. (Hoyt & Liebenberg 2011). ERM can enhance corporate openness and enable firms to provide quality information to investors and creditors regarding their risk governance mechanisms, and signal their dedication to sound risk management practices (Hoyt & Liebenberg 2011; Hunziker 2019). Therefore, ERM reduces information asymmetry regarding firms' risk governance, which critically influences investors', creditors', and suppliers' decisions (Hunziker 2019). This suggests that firms implementing high-quality ERM might experience a reduction in the costs of external capital, and therefore, FDRisk. Additionally, ERMQ is positively related to a firm's corporate reputation (Pérez-Cornejo et al. 2019), and highly reputable firms exhibit an inverse association with financial distress risk because they have access to finance at reduced costs and favourable conditions (Shad et al. 2022).

Taken together, the extant literature supports the notion that high-quality ERM lowers firms' exposure to risk and enhances their financing conditions, which is anticipated to translate into a decrease in FDRisk. Prior findings have shown that high-quality ERM improves and protects shareholders' wealth (Eckles et al. 2014), improves corporate transparency (Hunziker 2019), mitigates firm exposure to risk (Florio & Leoni 2017; Kuo et al. 2021), and heighten access to funds at affordable costs and conditions (Shad et al. 2022). Following these arguments, we propose the following hypothesis:

H_2 All things being the same, firms with high-quality enterprise risk management (ERM) experience lower financial distress risk (FDRisk).

ENTERPRISE RISK MANAGEMENT QUALITY, REAL EARNINGS MANAGEMENT, AND FINANCIAL DISTRESS RISK

ERM is an internal risk-governance mechanism instituted at the board level to align and balance managerial interests with those of shareholders and creditors (Florio & Leoni 2017; Kuo et al. 2021). Hence, ERM prevents managers from being self-serving or opportunistic. ERM mandates managers to make corporate decisions that are beneficial to all stakeholders and to shun stakeholders' wealth expropriation through practices such as REM (Eckles et al. 2014). Additionally, the quality of ERM systems serves as an informational cue that signals firms' dedication to risk governance and the protection of stakeholders' resources and interests (Hunziker 2019). EMRQ enhances confidence in minimal agency costs and information asymmetry among external stakeholders, and increases the likelihood of obtaining affordable, flexible bailout terms from capital markets during liquidity crises, reducing financial distress risk (Shad et al. 2022). Hoyt and Liebenberg (2011) and Wang et al. (2018) argue that external investors can adopt ERM to envisage and anticipate risks associated with a firm's internal control quality, thereby reducing the costs of acquiring information. ERM is a tool that depicts a company's internal control system quality and any compromise in an ERM system undermines internal governance veracity and can lead to an increase in REM practices amongst managers (Wang et al. 2018). Consequently, this study conjecture that the implementation of robust ERM programmes could potentially mitigate the incidence of REM and improve the usefulness of disseminated financial information to potential users. This could facilitate firms in securing external financing and minimize the probability of experiencing FDRisk. Thus, we propose the following hypothesis:

H_3 All things being the same, enterprise risk management quality (ERMQ) moderates real earnings management (REM) practices on financial distress risk (FDRisk).

METHODOLOGY

RESEARCH DESIGN, DATA SOURCES, AND SAMPLE

This research compiled panel data for 186 non-financial companies listed on nine sub-Saharan stock exchanges between 2014 and 2020, except finance and utility companies. Firms that lacked ERMQ and financial data were not included in the analysis. The table presented below illustrates the sample distribution by country and year. ERMQ data were obtained from annual and corporate governance reports. The FDRisk estimates (i.e., the Altman Z-score) and accounting data needed to calculate the control variables were obtained from the S&P Capital IQ database. All finance and utilities firms were excluded due to their specialised accounting regulations. Our choice of the nine stock exchanges is based on the level of development of the selected exchanges, consistency in trading activities, and data availability for selected firms listed on these exchanges for the study period.

TABLE 1. Sample size distribution

Panel A: Sample distribution of firms by country		
Country	Number of Firms	Percentage
Botswana	4	2.15
Ghana	2	1.08
Kenya	12	6.45
Malawi	3	1.61
Mauritius	13	6.99
Namibia	1	0.54
Nigeria	33	17.74
South Africa	113	60.75
Tanzania	5	2.68
Total	186	100.0
Panel B: Sample distribution by the Fama and French 5 industry classification		
Industry	Number of Firms	Percentage
Business equipment, Telephone & Television Transmission	23	12.37
Consumer durables, non-durables, wholesale, retail & services	69	37.10
Healthcare, medical equipment & drugs	7	3.76
Manufacturing & Energy	37	19.89
Mines, construction, building materials, and transportation	50	26.88
Total	186	100

Source: Authors' own estimation

VARIABLES SPECIFICATION

FINANCIAL DISTRESS RISK (FDRISK)

The two common methods for FDRisk assessment include (1) the accounting data approach, based on income and leverage fluctuations (Li et al. 2020), and (2) the market data approach, as indicated by fluctuations in stock returns, (Andreou et al. 2021). Although commonly employed in developed market research, this approach is inappropriate for analysing emerging markets, such as sub-Saharan Africa, which is highly unpredictable and influenced by speculative investors (Li et al. 2020). Altman et al. (2017) demonstrated that the Altman Z-score surpasses market-oriented models in predicting FDRisk. This research utilized the Altman Z-score to assess FDRisk in emerging market firms. The Z-score, otherwise known as the financial stability score (Pham et al. 2022), is employed as an alternative proxy of FDRisk for robustness test. A high Z-Score denotes a lower FDRisk. A detailed explanation of FDRisk1 and FDRisk2 is presented in Appendix A.

REAL EARNINGS MANAGEMENT (REM)

REM is the explanatory variable and estimated in line with Kim et al. (2020) using REM_abCFO, REM_abDEXP, and REM_abPRC. REM_abCFO (residuals from Equation (1) and REM_abDEXP (residuals from Equation (2)) are multiplied by -1 and REM_abPRC (residual from Equation (3)). Our REM variable is the summation of the weighted mean values of all three components. Each REM component is calculated using the residuals from the following models:

$$\frac{REM\_abCFO_{i,t}}{Assets_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{Assets_{i,t-1}} + \beta_2 \frac{Reveneue_{i,t}}{Assets_{i,t-1}} + \beta_3 \frac{\Delta Revenue_{it}}{Assets_{i,t-1}} + \varepsilon_{i,t} \quad (1)$$

$$\frac{REM\_abDEXP_{it}}{Assets_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{Assets_{i,t-1}} + \beta_2 \frac{Revenue_{i,t-1}}{Assets_{i,t-1}} + \varepsilon_{i,t} \quad (2)$$

$$\frac{REM\_abPRC_{it}}{Assets_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{Assets_{i,t-1}} + \beta_1 \frac{Revenue_{i,t}}{Assets_{i,t-1}} + \beta_2 \frac{\Delta Revenue_{i,t}}{Assets_{i,t-1}} + \beta_3 \frac{\Delta Revenue_{i,t-1}}{Assets_{i,t-1}} + \varepsilon_{i,t} \quad (3)$$

Where $\text{REM\_abCFO}_{\text{i,t}}$ is company i's cash inflow from operating activities in year *t*. $\text{Assets}_{\text{it}-1}$ is the value of total assets in the previous year. $Revenue_{i,t}$ is company i's gross revenue from sales in year *t* and $\Delta\text{Revenue}_{\text{it}}$ is the change in gross revenue from sales from year t-1 to t. $\text{REM\_abPRC}_{\text{it}}$ is company *i*'s cost of production in year *t* consisting of the cost of goods sold and the change in stock of inventories. $\text{REM\_abDEXP}_{\text{it}}$ is company *i*'s discretionary expenditure comprising R&D, marketing, advertising, SG&A costs. Regrettably, the majority of companies within our sample do not possess R&D cost data. Consequently, we are compelled to rely on zero R&D cost assumptions, conforming to the methodology employed in prior studies (e.g., Boubaker et al. 2020).

ENTERPRISE RISK MANAGEMENT QUALITY (ERMQ)

Several notable studies have investigated the measures of ERMQ within companies. Beasley et al. (2005) proposed a five-stage method to assess the ERMQ, but has been criticized for being mostly qualitative (Florio &

Leoni 2017; Bailey 2022). Researchers have also used external databases, such as the S&P ERM rating (e.g., Baxter et al. 2013). Florio and Leoni (2017) and Adam et al. (2021) noted that ERM ratings are limited to financial services and developed markets, and do not always reflect the risk culture, philosophy, and process. The third measure type was the self-developed ERMQ index. COSO (2004) proposed that ERM should be managed by senior executives, so most self-developed ERM indices measure ERMQ with a chief risk officer (CRO) (e.g., Pagach & Warr 2011) or a risk committee (Florio & Leoni 2017). Beasley et al. (2008) highlighted the limitation of CRO variables in capturing ERMQ depth. Florio and Leoni (2017) developed an ERM measure that captures both qualitative and quantitative aspects. They stressed the importance of CROs and risk committees in ERM implementation but emphasized ERM sophistication (proxied by risk assessment frequency, level, and method) as essential for qualitative ERM. Bailey (2022) citing resource-based theory, states that ERM quality relies on the expertise of CROs and not just their presence. He proposed ERMQ measures that reflect variations in CROs' expertise and argued that CROs with finance, actuary science, risk management, and MBA expertise yield superior ERM outcomes. Perez-Cornejo et al. (2019) created an ERM index comprising three elements: (1) ERM scope following stock market guidelines, (2) ERM definition based on COSO (2004) and ISO 31000, including risk mapping and risk register use, and (3) ERM process involving risk control, management, and strategic alignment. In this study, the suggestions of previous research were harmonized. This study constructed an ERMQ index, following Florio and Leoni (2017), Perez-Cornejo et al. (2019), and Bailey (2022). A detailed explanation of the ERMQ index constructed in this study is presented in Appendix A.

CONTROL VARIABLES

We adjusted for company-specific and country-level control variables, such as profitability (*PROF*), leverage (*LEV*), market-to-book (*MTB*) ratio, firm size (*SIZE*), loss (*LOSS*), cash-to-assets ratio (*SLACK*), asset tangibility (*TANG*), and GDP growth rate (*GDPgrt*), which have been shown to significantly affect *FDRisk* (Boubaker et al. 2020; Alshahrani et al. 2023). Industry-, year-, and country-fixed effects are also included. Appendix A presents a comprehensive description of all variables used in this study. All non-dichotomous variables were winsorized at the 1% level (Gunny 2010).

EMPIRICAL ESTIMATION MODELS

The following models were constructed to evaluate the formulated hypotheses:

$$FDRisk_{i,t} = ב_0 + ב_1 REM_{i,t} + \sum_{j=1}^{n=8} ב_j Controls_{i,t} + ב_2 IndustryFE_i + ב_3 YearFE_t + ב_4 CountryFE_z + \varepsilon_{i,t} \quad (4)$$

$$FDRisk_{i,t} = ב_0 + ב_1 ERMQ_{i,t} + \sum_{j=1}^{n=8} ב_j Controls_{i,t} + ב_2 IndustryFE_i + ב_3 YearFE_t + ב_4 CountryFE_z + \varepsilon_{i,t} \quad (5)$$

$$FDRisk_{i,t} = ב_0 + ב_1 REM_{i,t} + ב_2 ERMQ_{i,t} + ב_3 REM \text{ x } ERMQ_{i,t} + \sum_{j=1}^{n=8} ב_j Controls_{i,t} + ב_4 IndustryFE_i + ב_5 YearFE_t + ב_6 CountryFE_z + \varepsilon_{i,t} \quad (6)$$

$FDRisk_{i,t}$ is the dependent variable proxied using the Altman Z-score, $REM_{i,t}$ stands for real earnings management of company *i* in year *t*. $ERMQ_{i,t}$ stands for the enterprise risk management quality index of the company *i* in year *t.* $Controls_{i,t}$ is a vector of the control variables enumerated above. Finally, $\varepsilon_{i,t}$ is the random error term. The least square dummy variable (LSDV) fixed effect estimator is suitable for empirical single-country studies or cross countries and industries studies because allows the inclusion of year, industry, and firm-fixed effects in its specifications (Baltagi 2001; Feng et al. 2020; Halder & Malikov 2020).

EMPIRICAL RESULTS

DESCRIPTIVE STATISTICS

Table 2 presents the descriptive statistics for the full sample. On average, the Z-score is 0.97. The mean of REM is -0.005 indicating that averagely sub-Saharan African (SSA) firms engage in low-level *REM* (signalling hypothesis). Prior research suggested that weak CG climate and corruption in developing countries like SSA led to more opportunistic REM by firms. However, our statistics show otherwise (Matemilola et al. 2019; Kimani et al. 2020). The mean ERMQ value is 1.87. This value is similar to the mean *ERM* value of 1.97 reported by Wang

et al. (2018). Table 3 illustrates the Pearson correlation coefficients among all variables, demonstrating that none of them exceed 0.8, thereby indicating a lack of significant multicollinearity issues (Hair et al. 2019) (See: Appendix B).

BASELINE REGRESSION RESULTS

Table 4 presents the estimates of the baseline regression models. In Model (1), the Altman Z-score was regressed on REM without the control variables. In Models (2), which corresponds with H_1 and evaluates the direct impact of REM on FDRisk, the control variables were added. In Models (3), which corresponds to H_2, show the results of the influence of ERMQ on FDRisk. Finally, the result of the moderating effect of ERMQ on the REM-FDRisk nexus is presented in Model (4). This corresponds to H_3. A higher Z-score translates to a lower FDRisk.

Table 4 reports the regression results of the relationship between REM and FDRisk as well as the moderating effect of ERMQ. As depicted in Models (1) and (2), REM practices increase FDRisk without and with the inclusion of control variables. The coefficients are – β= *-1.5008* (*p<0.01*) and β= *-0.2420* (*p <0.01*), respectively. These results indicate that REM practices worsen their liquidity positions. According to Li (2019), some REM strategies such as reduction or outright stoppage of business activities that support the future growth of the firm like research and development, employee pieces of training, and sales promotion have direct negative cashflow consequences and could make firm forgo future streams of income that could be used to meet both short- and long-term financial obligation. Hence H_1 is supported. Models (3) of Table 4 report the regression results of the link between ERMQ and FDRisk. The results reveal that ERMQ reduces FDRisk[5]. The coefficients are β=*0.0440* (*p<0.01*). This suggests that ERMQ matters for firms' creditworthiness. According to Hunziker (2019), high-quality ERM signals commitment on the part of a firm to sound risk governance and attracts corporate financiers to advance funds at reasonable rates and conditions. This result validates H_2 and is similar to the findings of Eckles et al. (2014) and Al-Amri and Davydov (2016).

Model (4) depicts the results of the moderating influence of ERMQ on the nexus between REM and FDRisk. The results indicate a positive moderating effect of ERMQ on the REM-FDRisk connection (β=*0.3167; p<0.01*) suggesting that the presence of high-quality ERM improves firms' ability to meet financial obligations by constraining cash flow volatility orchestrated by REM strategies that adversely impact cash flow and performance. The results confirm H_3 and are consistent with the results of Miglani et al. (2015) and Bravo-Urquiza and Moreno-Ureba (2021) that sound internal control mechanisms curtail managerial opportunism and reduce the FDRisk.

TABLE 4: Baseline Regression Results
Real earnings management, enterprise risk management quality, and financial distress risk

	Model (1)	Model (2)	Model (3)	Model (4)
REM	-1.5008***	-0.2420***		-0.2327***
	(0.0000)	(0.0060)		(0.0061)
ERMQ			0.044***	0.0537***
			(0.0099)	(0.0017)
REM x ERMQ				0.3167***
				(0.0077)
PROF		1.7659***	1.9797***	1.9451***
		(0.0000)	(0.0000)	(0.0000)
LEV		-1.4438***	-1.3255***	-1.3766***
		(0.0000)	(0.0000)	(0.0000)
MTB		0.1351***	0.1419***	0.1334***
		(0.0000)	(0.0000)	(0.0000)
SIZE		-0.0486***	-0.0556***	-0.0571***
		(0.0000)	(0.0000)	(0.0000)
LOSS		-0.1254***	-0.1145**	-0.1060**
		(0.0075)	(0.0166)	(0.0211)
SLACK		0.8035***	0.9163***	0.7029***
		(0.0000)	(0.0000)	(0.0001)
TANG		-0.4861***	-0.4410***	-0.4848***
		(0.0000)	(0.0000)	(0.0000)
GDPgrt		0.0092	0.0148*	0.0071*
		(0.2355)	(0.0580)	(0.0673)
Constant	1.1236***	1.8051***	1.6235***	1.5675***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Observations	1302	1302	1302	1302
R-squared	0.2777	0.6967	0.6658	0.6695
Adj R^2	0.2716	0.6890	0.6606	0.6641
F-stat	58.6586***	130.8973***	167.3491***	142.339***
Industry Dummies	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes
Country Dummies	Yes	Yes	Yes	Yes

Note: *A higher Z-score translates to a lower FDRisk*. Industry, year, and country fixed effects are accounted for in all regressions. The numbers in parentheses are p-values based on robust standard errors. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. All the variables are defined in Appendix A.

ROBUSTNESS TESTS

Robustness tests were conducted to demonstrate the reliability of the findings[6]. In this subsection, we briefly discuss the results of the robustness checks. First, we replaced the Altman Z-score with Almedia and Campello's (2007) model and equity ratio as alternative measures of FDRisk following Alshahrani et al (2023) and Megginson et al. (2019) (See: Models (1) and (2) in Appendix C). We recorded results consistent with the baseline model in Table 4.

Second, using the median value of ERMQ to split the sample into high versus low ERMQ firms, we re-estimated Equation (6). The subsample analysis result is consistent with H_3. ERMQ moderating effects is positive and significant for the high ERMQ group (See: Models (3) and (4) in Appendix C).

Third, to further confirm the consistency of our baseline findings, we regressed FDRisk on different measures of REM. We used alternative measures of REM as separate explanatory variables for FDRisk. We also estimated the interaction effects of each component of REM with ERMQ on FDRisk. These results show that all alternative REM measures significantly increased FDRisk except for abnormal cash flow from operation (*CFOREM*). Moreover, the moderation analysis shows that ERMQ significantly reduces the negative impact of these alternative REM measures on FDRisk. This is consistent with the baseline results in Tables 4 (See: Appendix D).

Fourth, although we provided empirical evidence that REM practices can accentuate FDRisk, the mechanisms underlying this relationship remain unclear. Studies relying on agency theory have shown that opportunistic managerial practices, such as REM are prevalent under conditions of weak board governance and poor corporate disclosure (Matemilola et al. 2019; Boachie & Mensah 2022). Hence, we conjecture that board governance and corporate disclosure quality can explain the REM-FDRisk nexus. To explore these potential mechanisms, we split the extent of board governance and corporate disclosure into strong and weak groups for the former and poor and sound groups for the latter. Next, we examined the association between REM and FDRisk in these groups. We anticipate that the adverse impact of REM on FDRisk will be significant for the weak (poor) board governance (corporate disclosure) quality groups. Table 5 highlights the measures of board governance and corporate disclosure quality. We re-estimate *Equations* (4) and (6). As expected, the coefficients of REM are negative and significant for firms with weak board governance and poor corporate disclosure, but insignificant for firms characterized by strong board governance and sound corporate disclosure. These results suggest that REM amplifies FDRisk by exploiting poor board governance and corporate disclosure. We further examined whether ERMQ could mitigate the negative effects of REM on FDRisk in the affected groups. The results show that ERMQ positively moderates the negative REM-FDRisk relationship in firms with weak board governance and poor corporate disclosure quality (See: Appendix E).

ENDOGENEITY TESTS

First, we employed a two-stage least squares (2SLS) estimator to address possible endogeneity issues (Wang et al. 2018). We adopt the whistleblowing policy as an instrumental variable. We argue that whistleblowing policy is directly linked to REM. (Erin & Bamigboye 2020; Lin et al. 2023) and not to FDRisk, thereby qualifying it as a valid instrument (See: Appendix F). Taken together, the results of the *2SLS* show a positive and statistically significant role of ERMQ on the negative effect of REM-FDRisk, confirming our baseline results.

DISCUSSION AND CONCLUSION

DISCUSSION

The recent COVID-19 pandemic has orchestrated a southward trajectory in the performance of firms globally, and African firms are worse off (Takyi & Bentum-Ennin 2021). We argue that poor performance indices can motivate managers to engage in REM to show short-term recovery and commendable financial results, masking their firms' true state of affairs. Moreover, REM has been reported to exert a devastating effect on future performance, and hence, may adversely impact firms' liquidity positions. We investigate whether the opportunistic or signalling hypothesis drives REM strategies among financially distressed firms and whether REM practices reduce or worsen FDRisk. We also examine the moderating effects of ERMQ on the REM-FDRisk nexus using panel data comprising non-financial sub-Saharan African firms between 2014 and 2020. We find that distressed firms engage in high-level REM *by* aggressively cutting down on R&D, advertising, and maintenance expenses; staff training and development budgets; overproduction; selling off assets; and giving large sales discounts (Gunny 2010; Al-Shattarat et al. 2022) to avoid reporting losses that further exacerbate the long-term financial performance and capability of the firm to honour financial obligations, suggesting that REM increases FDRisk. We also find that ERMQ moderates the effects of REM and FDRisk by suppressing REM strategies in distressed firms (Oreshile 2025). Our findings are robust to alternative measures of REM, alternative measures of

FDRisk, and endogeneity. The medium analysis also reveals that the negative association between REM and FDRisk is significant only for firms with weak board governance and poor corporate disclosure quality.

As such, investors, particularly wary of risks and costs linked to information asymmetry in regions with weak governance like Sub-Saharan Africa (SSA), may value a company's ERM processes, tools, and systems. These elements signal robust internal controls and risk governance, essential for informed investment decisions and understanding the extent of managerial opportunistic tendencies in SSA firms (Gordon et al. 2009; Zang 2012, Florio & Leoni 2017; Wang 2018). Shareholders can increase their wealth by aligning managerial interests and effectively managing the firm's risk relationships and interconnections, as suggested by agency and corporate risk management theories. Research indicates that excessive manipulation of real earnings can negatively impact a company's current and future financial stability and liquidity (Campa 2019; Li 2019). Research by Wang et al. (2018) demonstrates that efficient ERM is associated with reduced earnings manipulation, more robust internal control systems, and enhanced quality of financial reporting. Hunziker (2019) adds that organizations with strong ERM systems are more likely to obtain credit reducing financial constraint and potential distress than those without ERM.

IMPLICATIONS

This study's results have several theoretical and practical implications. First, supporting the agency theory, the study presents empirical evidence of the relevance of internal governance mechanisms in ERM to constrain REM practices and prevent financial distress. Second, the findings which rests upon signalling theory, also suggest that firms adopting high-quality ERM communicate lower managerial opportunism and greater commitment to risk governance.

In terms of practical implications, the findings provide valuable signals to investors and creditors and could eliminate a firm’s potential financing constraints and reduce the cost of debt and the probability of experiencing liquidity crises. Third, we show through the disaggregated ERMQ component analysis, the crucial aspects of ERMQ that investors, creditors, shareholders, and policymakers should consider when assessing the quality of risk governance to restrain managerial opportunism in REM practices in their investee firms. The study suggests that sub-Saharan Africa's Securities and Exchange Commissions should expand mandatory risk governance regulations to include non-financial listed companies. Implementing robust enterprise risk management can bolster market confidence, reduce corporate misconduct, and lessen the risk of systemic liquidity crises.

LIMITATIONS

While this study offers some new insights, it is not without its limitations. One such limitation is the sample size used in the research. The limited amount of data has resulted in a small final sample size. Future research could focus on examining a larger group of non-financial firms. Secondly, the findings of this research are confined to non-financial companies that are listed on the nine African stock exchanges. Future studies might broaden the scope to encompass financial and utility companies, taking into account the fiduciary connections among banks, clients, investors, suppliers, and creditors, as well as the crucial role of integrity in the financial sector. Exploring the differences between financial and non-financial companies could be a fascinating endeavor. Finally, we did not evaluate the out-of-sample reliability of our ERMQ metric, so our interpretations and conclusions are confined to non-financial companies in the sub-Saharan Africa region.

NOTES

1. https://www.vanityfair.com/news/2019/03/how-the-gupta-brothers-hijacked-south-africa-corruption-bribes.
2. https://mg.co.za/news/2023-03-03-cabinet-board-knew-about-eskom-corruption-and-did-nothing/
3. https://dailyinvestor.com/investing/27386/investors-dumping-south-african-shares-and-bonds/?source=newsletter
4. Li et al. (2019) suggest that real earnings management strategies can have varying effects on profitability and cash flows. Sales rebates and overproduction can inflate earnings but reduce profitability and operating cash flows. When current-period operating cash flows are low despite high earnings, a return to normal levels may occur in the future. However, high earnings in the next period indicate strong persistence. The relationship between price discounts, overproduction, and earnings persistence is complex and not straightforward.
5. The greater the Z-Score, the lower the financial distress risk the firm experiences.
6. For brevity, the results of our robustness tests results (Appendix C-F) would be made available on request.

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APPENDIX A

Variable	Measurement	References
Dependent variables		
Financial distress risk (*FDRisk*)	Altman Z-score (baseline model)	Liu et al. (2021)
AC_Model (*FDRisk1*)	$\text{Cash}_{i,t}+0.715 * \text{receivables}_{i,t} + 0.547 * \text{inventory}_{i,t} + 0.535 * \text{NPPE/total assets}_{i.t}$	Alshahrani et al. (2022)
Equity ratio (*FDRisk2*)	Book value of equity/total assets	Megginson et al. (2019)
Independent variables		
Real earnings management (REM)	$\frac{(\text{ABCFOREM} + \text{ABDISEXPREM}) \text{ x} - 1 + \text{ABPRODREM})}{3}$	Kim et al. (2020)
REM_abPRC	Abnormal production cost REM model	Roychowdhury (2006)
REM_abDEXP	Abnormal discretionary expenses REM model	Roychowdhury (2006)
REM_abCFO	Abnormal cash flow expenses REM model	Roychowdhury (2006)
Moderator variable		
Enterprise risk management quality (ERMQ)	The ERMQ index is a summation of dummy scores from the following ERM system attributes:	
1. CRO	A dummy score of 1 for the appointment of Chief Risk Officer (CRO), 0 otherwise	Baxter et al. (2013)
2. CRO expertise	A dummy score of 1 if CRO has a degree in accounting, business, finance, actuarial science, insurance, & risk management, 0 otherwise	Bailey (2022)
3. Risk_com	A dummy score of 1 if there is a separate risk committee/audit & risk committee, 0 otherwise	Florio & Leoni (2017)
4. Risk map	A dummy score of 1 if a risk map is employed in the risk assessment process, 0 otherwise	Perez-Cornejo et al. (2019)
5. Risk register	A dummy score of 1 if a risk register is maintained by the CRO or risk committee, 0 otherwise	Qazi & Simsekler (2021)
6. ERM philosophy	A dummy score of 1 if there is an express statement on the entrenchment of risk management philosophy and culture, 0 otherwise	Bohnert et al. (2018)
7. ERM board function	A dummy score of 1 if ERM is expressly classified as a strategic or board function, 0 otherwise	Florio & Leoni (2017)
8. ERM framework	A dummy score of 1 if the COSO/ISO 31000 risk management framework is adopted, 0 otherwise	Qazi & Simsekler (2021)
9. Risk assessment frequency	A dummy score of 1 if risk assessment activities are performed at least twice a year, 0 otherwise	Florio & Leoni (2017)
10. Risk assessment scope	A dummy score of 1 if risk assessment activities are enterprise-wide, 0 otherwise	Florio & Leoni (2017)
11. Risk assessment method	A dummy score of 1 if the risk assessment method entails the usage of qualitative and quantitative methods, 0 otherwise	Florio & Leoni (2017)
12. Financial risk treatment method	A dummy score of 1 if the prescription of treatment of financial risks such as credit risk is clearly stated, 0 otherwise	Florio & Leoni (2017)
13. Non-financial risk treatment method	A dummy score of 1 if the prescription of treatment of non-financial risk such as reputation risk is expressly stated, 0 otherwise	Florio & Leoni (2017)
14. Combined assurance model	A dummy score of 1 for the implementation of the combined assurance model (CAM), 0 otherwise[1].	Qazi & Simsekler (2021)
Control variables		
LEV	Book value of total debt divided by book value of total assets	Fosu et al. (2016)
MTB	The market value of equity is deflated by the book value of equity.	Boubaker et al. (2020)
SIZE	The natural logarithm of the book value of total assets	Erin and Bamigboye (2020)
LOSS	A dummy variable that equals 1 if net income is negative in the current year, 0 otherwise	Boubaker et al. (2020)
SLACK	Cash and cash equivalents divided by the book value of total assets	Boubaker et al. (2020)
TANG	The value of the net property, plant, and equipment deflated by the book value of total assets	Alshahrani et al (2023)
GDPgrt	The annual GDP growth rates	World Bank database
Channel variables		
Corporate disclosure	CDT score[2]	Munisi & Randøy (2013)
Board governance score	BDG score[3]	Boachie & Mensah (2022)

[1] Combined assurance is the effective and holistic coordination and management of a firm's risk profile using increasing collaboration between internal and external risk management assurance providers.

[2] Corporate disclosure is constructed using 11 items: (1) adoption of IFRS (2) disclosure of the composition of CEO remuneration (3) disclosure of the composition and profiles of audit committee members (4) disclosure of the composition and profiles of remuneration committee members (5) disclosure of the composition and profiles of nomination committee members (6) Disclosure of the remuneration of members of the senior management team (7) the presence of a whistleblowing mechanism (8) disclosure and breakdown of share ownership (9) statement of commitment to sound CG practices (10) presence of a written code of conduct and (11) statement of adherence to the principles of corporate citizenship.

[3] Board governance score is constructed using 10 items: (1) board independence (2) audit committee independence (3) number of board meetings (4) number of audit committee meetings (5) audit committee meeting attendance rate (6) board meeting attendance rate (7) board gender diversity (8) independence board financial expertise (9) audit committee financial expertise and (10) audit committee size.

APPENDIX B

Pearson Correlation Coefficients

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) FDRisk	1.000										
(2) REM	-0.449***	1.000									
(3) ERMQ	0.161***	-0.100***	1.000								
(4) PROF	0.570***	-0.524***	0.009	1.000							
(5) LEV	-0.379***	-0.022	-0.148***	-0.096***	1.000						
(6) MTB	0.457***	-0.492***	-0.044	0.549***	0.223***	1.000					
(7) SIZE	-0.199***	0.017	0.167***	-0.020	0.208***	0.120***	1.000				
(8) LOSS	-0.223***	0.224***	-0.070**	-0.502***	-0.059**	-0.188***	-0.153***	1.000			
(9) SLACK	0.309***	-0.144***	0.018	0.208***	-0.136***	0.082***	-0.150***	-0.100***	1.000		
(10) TANG	-0.245***	0.068**	-0.122***	0.063**	0.005	0.061**	0.229***	-0.137***	-0.274***	1.000	
(11) GDPgrt	0.051*	0.011	-0.270***	0.079***	-0.086***	0.089***	-0.113***	-0.052*	-0.103***	0.127***	1.000

Note: This table presents the correlation matrix for the full sample. The coefficients are all below 0.8 and small, suggesting no serious multicollinearity issues (Hair et al. 2019). All the variables are defined in Appendix A. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respecti