



DETERMINANTS OF TURNAROUND

*The impact of Financial Resilience, ESG
Performance and the moderating role of Reputation*

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Abstract

Drawing on legitimacy theory, this research investigates the effect of financial resilience and ESG performance on the likelihood of turnaround. To do so, this research uses a sample of 706 firms in the software and R&D industry with a total of 2132 observations in the period 2006-2023. This research argues that financial resilience and ESG performance increase the likelihood of turnaround; this relationship is moderated by reputation. Partial support is found for the former, which shows that financial resilience lagged 2 years increases the chance of turnaround; however, results indicate a curvilinear relationship, meaning that the effect accelerates at the ends of financial resilience. In terms of the latter, no support is found. Similarly, reputation is found to moderate the relationship between turnaround and financial resilience lagged 2 years, but not financial resilience lagged 1 year and ESG performance. This research provides new insights relevant to the literature on financial resilience, ESG performance, reputation, turnaround, and legitimacy theory.

Table of contents

ABSTRACT	1
INTRODUCTION	3
OBJECTIVE AND RESEARCH QUESTION	5
OUTLINE	6
THEORETICAL BACKGROUND	7
LEGITIMACY THEORY	7
FINANCIAL DISTRESS AND TURNAROUND	8
FINANCIAL RESILIENCE.....	9
ESG DEFINITIONS AND MOTIVES	10
REPUTATION.....	11
HYPOTHESES	12
FINANCIAL RESILIENCE & TURNAROUND	12
ESG PERFORMANCE & TURNAROUND	13
THE MODERATING EFFECT OF REPUTATION	14
METHODOLOGY	15
EMPIRICAL SETTING	15
DATA SOURCES.....	15
VARIABLES.....	16
DEPENDENT VARIABLE	17
INDEPENDENT VARIABLES	17
MODERATOR	18
CONTROL VARIABLES	19
<i>Firm age</i>	19
<i>Firm size</i>	19
<i>Country</i>	19
<i>Industry</i>	19
RESEARCH ETHICS	20
RESULTS	20
METHOD OF ANALYSIS	20
UNIVARIATE ANALYSIS	20
BIVARIATE ANALYSIS	21
ASSUMPTIONS.....	22
MIXED EFFECTS LOGISTIC REGRESSION	23
ROBUSTNESS CHECK.....	26
DISCUSSION	27
FINANCIAL RESILIENCE.....	27
ESG PERFORMANCE	28
THE MODERATING ROLE OF REPUTATION	29
LIMITATIONS	30
CONCLUSION	30
REFERENCES	31
APPENDIX A	49
APPENDIX B	50
APPENDIX C	51
APPENDIX D	52

Introduction

The global economy is currently facing major challenges. Geopolitical instability is growing, and economic uncertainty is rising due to escalating trade tensions and shifting trade policies. (Barbiero & Stein, 2025; Organization for Economic Co-operation and Development, 2025). Due to these increasing external pressures, firms have become more financially vulnerable. Insolvency rates are on the rise, and firms that were first considered stable are now facing bankruptcy (OECD, 2025). These developments put a new sense of urgency on understanding financial distress and how firms can decrease the risk of insolvency. Previous literature has shown that not all firms face equal chances of going bankrupt. How is it possible that some firms can turn around while direct competitors end up going bankrupt? Research has focused on multiple possible indicators to measure the likelihood of firms going bankrupt (Altman, 2015; Dieperink, 2024). This can be broadly divided into financial and non-financial indicators.

This research uses legitimacy theory to explain how financial and non-financial drivers can influence the likelihood of turnaround. Legitimacy is concerned with the firm's perception as meeting social expectations (Chen & Robers, 2010; Stroumpoulis & Kopanaki, 2022; Suchman, 1995) and explains why some firms perform better than others. Firms that are seen as legitimate can expect resources or favorable policies from society and the government (Du et al., 2022; Oliver & Holzinger, 2008). On the other hand, lacking legitimacy harms a firm's performance (Stevens et al., 2015) or even threatens the firm's existence (Clementino & Perkins, 2021; Du et al., 2022).

The first stream of literature that emerged on predicting bankruptcy focused on financial indicators (Altman, 1968; Hillegeist et al., 2004; Shi & Li, 2019). Financial indicators are based on accounting transactions (Mahtani & Garg, 2018) such as cash flow from operations to total liabilities and working capital to assets ratio (Altman et al., 2015). Building on this, recent research has looked at resilience to determine organizational viability (Khurana et al., 2022; Sajko et al., 2020). Although the definition of resilience in an organizational context varies, it generally refers to a firm's ability to deal with changes in the environment and remain viable during those changes (DesJardine et al., 2019; Liang & Li, 2024). The most important aspects are thus, the ability to stay stable whilst being flexible (Bhamra et al., 2011; Huang et al., 2020; Khurana et al., 2022; Ortiz-de-Mandojana & Bansal, 2016). Financial resilience, specifically, refers to the ability to make use of financial resources, such as slack resources (Kennedy & Linnenluecke, 2022), in times of disruption (DesJardine et al., 2019).

More recently, a stream emerged that focused on non-financial indicators (Altman et al., 2015; Dieperink et al., 2024). Research concluded that non-financial indicators increase prediction accuracy over a longer period, compared to solely relying on financial indicators, where accuracy decreases quickly after one year (Altman et al., 2015). Some examples of non-financial indicators are: firm age, number of employees, and management structure. This research uses ESG performance as a non-financial determinant of turnaround. ESG, which stands for environmental, social, and governance, assesses a firm's conduct along these three dimensions (Liu et al., 2023b). Stakeholders are becoming more aware of the impact a firm has on both people and the environment, child labor and polluting activities are no longer tolerated. Legislation focusing on this topic has grown exponentially. While ESG compliance is partly mandated by legislation and may be viewed as a formal obligation, prior literature shows that engaging in ESG activities can yield benefits for the firm (Du et al., 2022; Khamisu et al., 2024).

Both financial and non-financial indicators have been used to assess the risk of a distress situation. When a firm is in distress, it faces the risk of bankruptcy. Bankruptcy is something to be avoided as the consequences are far-reaching for the firm, investors, and even a country's economy (Shi & Li, 2019; Sun et al., 2014), as it leads to heavy financial losses, job losses, and financial instability (Wang & Wu, 2017). Previous research has shown that job losses, even with the intention of survival, might still negatively impact firm performance (Guthrie & Dada, 2008). To survive and mitigate the consequences, the firm has to turn around. Turnaround means, in short, that the firm can recover after having faced survival-threatening corporate decline (Barker III et al., 2024; Schmitt & Raisch, 2013). The ability to identify signals of a decreased chance of turnaround allows for a timely intervention, whilst also helping creditors avert some costs associated with bankruptcy filings, as it enables effective financial decision making and risk management (Tinoco & Wilson, 2013).

Additionally, reputation plays a critical role in stakeholder decision-making during distress situations. From a legitimacy perspective, reputation can either enhance or undermine the benefits of being perceived as legitimate (Clementino & Perkins, 2021; Giráldez-Puig et al., 2025). A bad reputation directly affects the legitimacy of a firm by acting in a way that is not desired, proper or appropriate and thus not holding up their end of the bargain (Bansal & Clelland, 2004; Ren et al., 2022). Therefore, a bad reputation reduces the positive effects of financial resilience and ESG performance on turnaround.

Most studies focus on corporate financial performance or insolvency risk (Giráldez-Puig et al., 2025; Lee & Isa, 2024; Shakil, 2021). They neglect the fact that distress is

sometimes inevitable. Understanding which factors contribute to turnaround when the firm is in distress is therefore of great importance. Knowing which factors increase the likelihood of turnaround enables management to anticipate possible distress situations – a gap this research aims to address. Moreover, these studies often rely on either financial or nonfinancial indicators to predict corporate performance or insolvency risk; research integrating both perspectives remains scarce. Yet a combination of the two may yield more accurate predictions. This is the second gap this research addresses. Lastly, legitimacy theory is widely used in social and environmental literature (Ren et al., 2022; Stroumpoulis & Kopanaki, 2022), its relevance in financial literature remains unexplored. Even though legitimacy theory can explain why some firms might perform better than similar counterparts, even focusing on just financial aspects.. This perspective helps management understand the importance of good relationships with stakeholders in order to ensure corporate survival. This is the last theoretical gap this research addresses.

Objective and research question

This research addresses the following research question : *How do financial resilience and ESG performance influence the likelihood of turnaround following insolvency across the US, UK, and EU, and how does reputation moderate this relationship?* The next chapter examines the three hypotheses which lead to the answer on the research question. Figure 1 illustrates the conceptual model of this research, which integrates all the hypotheses to test the relationship between the various constructs.

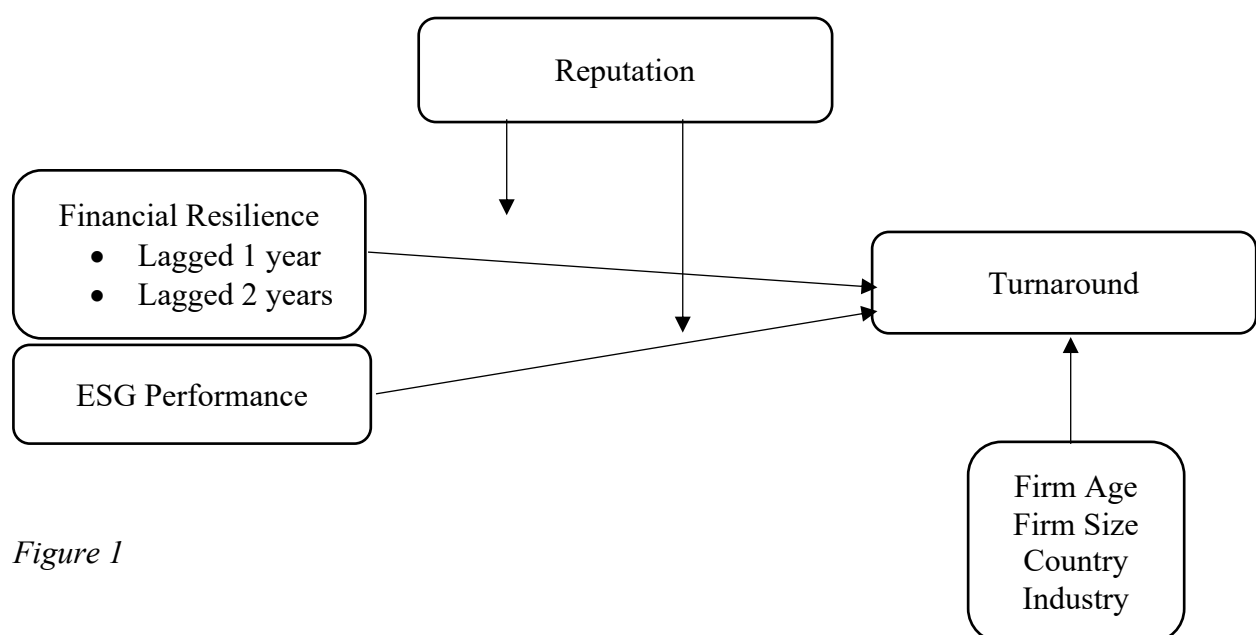


Figure 1

Outline

First, the theoretical background outlines the foundation for the hypotheses. Subsequently, the methodology section elaborates on the empirical setting, measurement of variables and research ethics. Followed by the analysis method and a presentation and interpretation of the results. Lastly, a discussion of research contribution, future research directions and limitations is outlined.

Theoretical background

Legitimacy theory

This research uses legitimacy theory as a lens to shed light on the effect of financial resilience and ESG performance on turnaround. Legitimacy theory emphasizes that firms get a license to operate from society by adhering to the norms and values (Du et al., 2022; Henisz et al., 2014). This means that before a firm can do any business in a country, it first needs to gain approval of key stakeholders (Kuo & Chen, 2013; Shakil, 2021). This approval is called organizational legitimacy. Gaining legitimacy is important because it affects the way the firm is viewed and understood, but also how stakeholders might react to the firm (Kuo & Chen, 2013; Suchman, 1995). When a firm is perceived as legitimate, it can expect better access to resources and favorable policies from society and the government (Du et al., 2022; Oliver & Holzinger, 2008). In practice this means that its ability to recruit and retain employees is enhanced (Aldrich & Fiol, 1994), its relationship with partners is strengthened (DiMaggio & Powell, 1983; Oliver, 1991; Turban & Greening, 1997) and unsystematic stock market risk and the risk of firm failure decreases (Bansal & Clelland, 2004; Kuo & Chen, 2013). On the other hand, the lack of legitimacy may harm a firm's performance (Stevens et al., 2015) or even threaten a firm's existence (Clementino & Perkins, 2021; Du et al., 2022). It is, therefore, of strategic importance to gain and maintain legitimacy (Deephouse, 1999).

From the aforementioned definition, two views emerged, namely institutional and strategy legitimacy (Chen & Roberts, 2010; Kuo & Chen, 2013; Suchman, 1995). These views agree on the importance of legitimacy, however, they differ in how legitimacy is obtained (Chen & Roberts, 2010). Institutional legitimacy draws on institutional theory, saying that firms create legitimacy through adhering to expectations of society, using links to institutional structures (Baldini et al., 2018; Chen & Roberts, 2010; DiMaggio & Powell, 1983). Strategic legitimacy tries to identify different strategies that firms might use to create legitimacy (Chen & Roberts, 2010; Kuo & Chen, 2013; Lindblom, 1994; Oliver, 1991;). Researchers adhering to the strategic stream emphasize how firms make use of symbols to enhance their legitimacy (Chen & Roberts, 2010; Shahab et al., 2018). Thus, firms can exercise some degree of control over the legitimacy they have (Kuo & Chen, 2013; Oliver, 1991). According to Aerts and Cormier (2009, p. 3): *“Organizations are able to make strategic choices to change their legitimacy situations and cultivate the resources through corporate actions by adapting their activities and changing perceptions”*. This research focuses on the latter view, as it assumes

that financial resilience and ESG performance enhance legitimacy, whereas a bad reputation may damage it. Firms can therefore exercise control over their legitimacy.

Legitimacy theory has been mostly applied to social and environmental contexts (Aerts & Cormier, 2009; Baldini et al., 2018; Ren et al., 2022). Environmental legitimacy is “*the generalized perception or assumption that a firm’s corporate environmental performance is desirable, proper, or appropriate*” (Bansal and Clelland, 2004, p. 94). Firms with strong environmental legitimacy face a lower risk of environmental incidents, reducing the chances of legal sanctions, stakeholder-imposed penalties, high insurance costs, and remediation costs (Galletta et al., 2023; Godfrey, 2005; Khanna & Damon, 1999; Kuo & Chen, 2013). Although legitimacy has been applied very limitedly to the financial context, it could explain why some firms with similar finances may face a different degree of insolvency risk. A firm that has lower financial resilience could be seen as not in line with stakeholder expectations, which damages their legitimacy (Baldini et al., 2018). In both contexts, it explains why firms performing well on ESG and/or that are financially resilient can enjoy various benefits (Aldrich & Fiol, 1994). This is according to Du et al. (2022) because legitimate firms seem to hold up their end of the bargain and therefore are better at attracting investors and employees, but are also better at retaining them. Stakeholders use their cognitive maps to assess the legitimacy of the firm; knowing which factors shape their cognitive maps allows them to increase their legitimacy. Lastly, legitimacy theory is often used to predict firm survival (Achbah & Fréchet, 2024; Singh et al., 1986). Obtaining and maintaining legitimacy, therefore, becomes a competitive advantage (Godfrey, 2005; Khanna & Damon, 1999; Sharma & Vredenburg, 1998; Shrivastava, 1995).

Financial distress and turnaround

Financial distress is the situation in which a firm faces financial difficulties (Sun et al., 2014), which can be driven by internal, e.g., managerial error, and external, e.g., changes in environment, causes (Filatotchev & Toms, 2006). Although there is no exact definition of financial distress (Shi & Li, 2019), it is argued that financial distress can be divided into four categories: failure, insolvency, bankruptcy, and default (Alshahrani et al., 2022; Sun et al., 2014). Financial distress does not mean the firm will fail; however, significant and continuous decline could eventually lead to bankruptcy. Financially distressed firms face increased cost of capital, a reduction in external funding sources, worse credit ratings, and an increase in the willingness of managers to take on risks (Alshahrani et al., 2022; Zhang et al., 2023). Bankruptcy

has a significant impact on stakeholders, investors, and even the country's economy (Roumani et al., 2019). It is therefore important that firms avoid bankruptcy by turning around. Turnaround occurs only when a firm faces a survival-threatening decline situation. It is argued a survival-threatening decline occurs, when resource losses, if continued, will cause the firm to fail (Barker III et al., 2024). This is in line with insolvency, which refers to the inability of a firm to pay its debts (Sun et al., 2014). Subsequently, if this goes on for an extended period of time, the firm might have to file for bankruptcy. In an attempt to avoid this, the firm can employ different strategies to turn around. Literature distinguishes two stages within turnaround strategies: the retrenchment stage, and the recovery stage (Filatotchev & Toms, 2006; Schmitt & Raisch, 2013). Retrenchment, which consists of asset, cost, and employee retrenchment, is used to gain stability, while the recovery stage is more growth-oriented (Filatotchev & Toms, 2006; Schmitt & Raisch, 2013; Tangpong et al., 2015). The ultimate goal is a successful turnaround, which means the firm can match or exceed the performance before decline (Barker III et al., 2024). This is only achieved if the firm engages in both retrenchment and recovery strategies.

Looking at financial distressed firms from a legitimacy theory perspective, previous literature argues that being in a financially distressed situation could damage the firm's reputation (Achbah & Fréchet, 2024). Insolvency procedures are made available to the public, which exposes the firm's financial situation. Consequently, stakeholders might withdraw, and direct, and indirect costs are put on the firm. However, poor performance in an already considered legitimate firm is more easily believed to be reversible (Desai, 2008; Slangen et al., 2023).

Financial resilience

In the literature, there is little consensus regarding the conceptualization of organizational resilience (Duchek, 2020; Iftikhar et al., 2021; Liang & Li, 2024). This is the result of the interdisciplinary use of resilience (DesJardine et al., 2019), where it can refer to a range of concepts, e.g., a capability, capacity, outcome, or strategy (Kennedy & Linnenluecke, 2022). Across all definitions, two constructs remain: 1) a systems perspective, and 2) the ability to remain stable while also being flexible (DesJardine et al., 2019; Huang et al., 2020; Liang & Li, 2024). A systems perspective argues that a firm operates within an environment that consists of interconnected elements (Desjardine et al., 2019). These connections make it difficult to predict what the outcome of a disturbance will be. Sometimes a firm has to change

radically, while at other times no change is needed (Plowman et al., 2007). In both cases, the firm can preserve its core functions and recover from changes in the environment, helping it stay viable where less resilient firms might struggle (Desjardine et al., 2019; Ortiz-de-Mandojana & Bansal, 2016). Stable in this context means the firm is able to maintain its core attributes, such as function and identity, despite the disruptions (Kennedy & Linnenluecke, 2022). Flexibility refers to the firm's ability to adapt to these changes (DesJardine et al., 2019; Huang et al., 2020; Ortiz-de-Mandojana & Bansal, 2016). These concepts can be considered paradoxical (Liang & Li, 2024).

Financial resilience is a subcategory of organizational resilience and encompasses the use of internal and external resources to remain resilient (Duchek, 2020; Kennedy & Linnenluecke, 2022). In practice, this means that the firm can prepare, respond, and adapt to both incremental and radical change by creating financial policies that minimize budget deficits (Hussain & Papastathopoulos, 2021). This can be done through borrowing from multiple and different sources, increasing capital, and selling assets. Based on this, the current and future cash flow are important factors to determine financial resilience (Homayoun et al., 2024).

ESG definitions and motives

Climate change, the extinction of animals, depletion of natural resources, poor working conditions, and corporate scandals have made people more aware of the impact firms have on the environment, society, and corporate governance (Baldini et al., 2018; Khamisu et al., 2024; Kuo & Chen, 2013). The term ESG was first officially mentioned in the UN report 2004 (United Nations; Global Compact). It is believed that ESG disclosure has its roots in the broader movement towards corporate sustainability. Stakeholders now rely on nonfinancial reports in order to assess whether a firm's performance is desirable, proper, or appropriate (Bansal & Clelland, 2004); this assessment contributes to their decision on prospective investments in a firm (Liu et al, 2023a). Reasons to engage in ESG practices are manifold; however, there seem to be two main drivers (Solimene et al., 2025). First of all, in many countries, laws and regulations oblige firms to maintain specific standards and to disclose certain information. Second, the pressure from stakeholders to behave in line with their expectations and to become more transparent is growing (Khamisu et al., 2024; Solimene et al., 2025). It shows that the firm is not solely focused on profit-making but also has an altruistic orientation (Godfrey et al., 2009).

ESG, in the literature, is often used interchangeably with Corporate Social Responsibility (CSR) (Duque-Grisales & Aguilera-Caracuel, 2021; Mashayekhi et al., 2024). Although ESG closely resembles CSR, emphasizes ESG environmental responsibility, social responsiveness, and corporate governance (Liu et al., 2023a). The latter was not included under CSR (Park et al., 2023). Through engaging in ESG activities, firms try to improve their legitimacy to build a good reputation with investors, creditors, and the public. Literature argues that this enhanced legitimacy allows the firm to form closer business ties with other firms, both upstream and downstream, enrich the supply of raw materials, and increase sales, which improves corporate financial performance (Che et al., 2024). Enabling them greater access to cheaper external financial resources and subsidies (Deng et al., 2023).

However, researchers findings are mixed. Some scholars have found a positive relationship between financial performance and ESG, arguing that it increases customer loyalty and therefore increases firm value (Albuquerque et al., 2019; Alshahrani et al., 2022; Attig et al., 2013; DasGupta, 2022; Gillan et al., 2021; Godfrey et al., 2009; Nguyen et al., 2021). Additionally, previous literature concluded that better ESG performance allows firms better access to resources (Che et al., 2024; Deng et al., 2023; Shakil, 2021). Others found no or ambiguous relationships (Becchetti et al., 2015; Duque-Grisales & Aguilera-Caracuel, 2021). Lastly, some found a negative relationship between ESG and corporate performance, arguing that it indicates agency problems within the firm (Buchanan et al., 2018).

There have been various explanations why these outcomes might differ, of which one can be attributed to the country the firm operates in (Liu et al., 2023b; Shin et al., 2023). Another important factor, according to previous literature, is size (Bansal & Clelland, 2004; Drempetic et al., 2020). Bigger firms would get more attention from stakeholders, making it even more important for them to engage in ESG activities. Additionally, more information is available about those firms, contributing to a higher ESG score. Lastly it has been argued that the inconsistencies in results might be due to outdated measures (Wu et al., 2024).

Reputation

The definition by Fombrun is often used to define reputation (Bundy et al., 2021; Miotto et al., 2020). Fombrun (2018, p. 144) defines reputation as “ *a perceptual representation of a company's past actions and future prospects that describes the firm's overall appeal to all its key constituents when compared with other leading rivals*”. It means, thus, stakeholders predict future performance based on the evaluation of firm performance over time (Nguyen et al.,

2021). This is created based on experiences with the firm and communication and symbolism that gives information about the actions of the firm to the stakeholder (Nguyen et al., 2021). Reputation takes time to build (Miotto et al., 2020). It is a valuable resource as reputation provides certainty and takes away concerns among stakeholders. A positive reputation builds credibility and support among different stakeholders. It can therefore also be seen as a competitive advantage, differentiating one firm from another (Miotto et al., 2020).

Previous literature has shown a link between reputation and firm results, concluding that better-reputed firms perform better financially than competitors and are more valued (Miotto et al., 2020). Furthermore, it is argued that only firms that provide positive economic, social, and environmental impacts for all stakeholders may be well-reputed (Miotto et al., 2020). Different stakeholders, however, may have different perceptions of a firm based on their expectations of the firm (Bundy et al., 2021).

Following Giráldez-Puig et al. (2025) ESG controversies are used to measure reputation. ESG controversies are a way to measure a firm's exposure to negative media coverage regarding ESG practices, which are considered controversial, scandalous, or questionable (Lee & Isa, 2024). When a firm faces ESG controversies, its reputation can be severely impacted (Shakil, 2021). Stakeholders might begin to doubt their integrity and ability to act in line with their expectations (Lee & Isa, 2024). Previous literature has found that ESG controversies increase stock price volatility exponentially, affecting firms' risk (Galletta et al., 2023; Shakil, 2021).

Hypotheses

Financial resilience & turnaround

Based on the previously discussed literature and legitimacy theory, this research argues that financial resilience will influence insolvency outcomes positively, increasing the chances that the firm can turn around. Legitimacy is created by the actions of the firm being perceived as desirable, proper, or appropriate, which leads to the creation of goodwill (Pal et al., 2014). This intangible resource can temporarily shield a firm in times of distress (Pal et al., 2014). Being perceived as legitimate increases a firm's ability to attract and maintain investors (Sandberg et al., 2022). Financial resilience signals that the firm is viable and has effective management (Liu et al., 2023b). Based on this, investors may want to make decisions that benefit the firm even though the returns are not immediate (Huang et al., 2020; Thürmer et al., 2020; Tucker, 2017).

Their decisions are based on the feeling of safety and stability (Huang et al, 2020), which is created through legitimacy, as a firm that has been resilient for an extended period is more likely to be perceived as safe and stable. Additionally, a firm's resilience enables it to remain stable while being flexible, as these are the two main characteristics of resilience. This allows the firm to respond adequately in times of crisis (DesJardine et al., 2019). The face of severe losses calls upon the ability to remain stable. How quickly the firm can recover from the crisis depends on the flexibility of the firm (DesJardine, et al., 2019). Previous literature has shown that resilience decreases the likelihood of bankruptcy (Pal et al., 2014) and similarly increases the likelihood of turnaround. Therefore this research hypothesizes that:

Hypothesis 1: firms with stronger financial resilience in the preceding years are more likely to turn around

ESG performance & turnaround

Next, this research hypothesizes, using legitimacy theory, that ESG performance positively influences the chances of a firm to turn around. Legitimacy theory has been a highly influential theoretical perspective when it comes to environmental research (Aerts & Comier, 2009; Ren et al., 2022). According to strategic legitimacy, legitimacy is somewhat controllable by firms (Oliver, 1991). This is done through cultivating practices that are believed to be legitimate by its social environment (Aerts & Cormier, 2009). Firms use ESG practices as a way to show that it acts in line with what society thinks is desirable, proper, or appropriate (Baldini et al., 2018; Bansal & Clelland, 2004; Kuo & Chen, 2013). According to legitimacy theory, societal acceptance is important for firm survival (Singh et al., 1986). As aforementioned, contradictory findings have been reported regarding the relationship between ESG and firm value, risk, and corporate financial performance (Alshahrani et al., 2022; Duque-Grisales & Aguilera-Caracuel, 2021; Mashayekhi et al., 2024; Shin et al., 2023). However, the majority of the literature has yielded positive findings of ESG-performance on corporate performance (Gillan et al., 2021; Lee & Raschke, 2023). The inconsistencies in results might be due to different and/ or outdated measures (Wu et al., 2024), but also size and the country the firm operates in could play a role (Bansal & Clelland, 2004; Drempetic et al., 2020; Liu et al., 2023b; Shin et al., 2023).

From a legitimacy theory perspective, it can be argued that legitimate firms have better relationships with key stakeholders, including customers, employees, and investors (Alshahrani et al., 2022). This results in better access to resources (Achbah & Fréchet, 2024;

Bansal & Clelland, 2004; Du et al., 2022). In times of distress, this is critical for firms to survive (Huang et al., 2020). Additionally, legitimate firms get more favorable policies from society and the government (Du et al., 2022). In practice, this means that legitimate firms will continue to have a license to operate, despite being in a distress situation (Ren et al., 2022). ESG practices enhance the legitimacy of a firm, allowing it to reap the benefits. Therefore, the second hypothesis is as follows:

Hypothesis 2: Firms with better ESG performance are more likely to turn around

The moderating effect of reputation

Lastly, this research argues that, from a legitimacy theory perspective, reputation moderates the relationship between both financial resilience and turnaround and ESG performance and turnaround. Consequently, this relationship weakens for firms with bad reputations but strengthens for those with good reputations. Legitimacy and reputation are closely related concepts (Doh et al., 2010; Miotto et al., 2020). Both legitimacy and reputation are based on the approval of firm's behavior by stakeholders (Miotto et al., 2020). A positive reputation improves legitimacy by spreading brand awareness and enhancing stakeholder trust (Deephouse et al., 2017). Based on the firm's reputation, stakeholders can assess whether the firm meets their expectations (Lee & Isa, 2024). Therefore, a good reputation will improve firm results, increase financial performance, and firm value (Duque-Grisales & Aguilera-Caracuel, 2021; Miotto et al., 2020; Shakil, 2021), as the firm shows that its activities are proper, desirable and appropriate (Nguyen et al., 2021; Singh et al., 1986). On the other hand, it might cost billions for a firm to repair the damages that come from a bad reputation (Lee & Isa, 2024), as it damages the legitimacy of a firm, which is difficult to repair (DasGupta, 2022). Less reputable firms face an exponential increase in stock price volatility, affecting firms' risk and insolvency risk (Giráldez-Puig et al., 2025). Based on the aforementioned reasons, this research argues that ESG controversies damage the reputation and, therefore, hurt the legitimacy of a firm. On the contrary, a good reputation will enhance legitimacy and therefore enforce the positive relationship between financial resilience and turnaround. The reason for this is that employees and customers are more likely to stay in a firm that is perceived as legitimate (Kuo & Chen, 2013). Similarly, a legitimate firm is more likely to attract investors (Du et al., 2022). This results in the following hypotheses :

Hypothesis 3a: *Reputation moderates the relationship between financial resilience and turnaround, such that a bad reputation will weaken this relationship while a good reputation will strengthen this.*

Hypothesis 3b: *Reputation moderates the relationship between ESG performance and turnaround, such that a bad reputation will weaken this relationship while a good reputation will strengthen this.*

Methodology

Empirical setting

The hypotheses will be tested using a sample of firms in the software industry and the R&D industry. This context is chosen because firm failure rate is significantly higher in the software industry compared to other industries (Roumani et al., 2019). Furthermore, firm failure rates are high because of the competitive landscape they are in, due to short product life cycles and continuously changing customer needs (Roumani et al., 2019). Lastly, this industry is attractive to study because of the implications it has on the economy at a local, national and global level (Roumani et al., 2019) as it affects firms in all industries that are using their products (Li et al., 2010). In order to ensure there is enough data available the industry Research, Development and Testing Services (SIC-code 873) was added. This industry is chosen because of its interconnectedness with the software industry. The use of data, artificial intelligence and machine learning is reshaping the context of research rapidly (Alenezi & Akour, 2025). Meaning that the Research, Development, and Testing Services industry can no longer survive without the integration of the software from the Computer Programming, Data Processing, and Other Computer Related Services (SIC-code 737). Similarly, an increase in R&D increases the demand for the development of new software and IT services.

Data sources

The LSEG database is used to build a sample of firms that have been insolvent. The sample includes publicly listed firms that have been insolvent and were able to turn around, or went bankrupt. From this sample the firms across EU, UK and US have been acquired. Then the firms with the SIC codes 737 and 873 were selected. All further relevant data has also been obtained from the LSEG database.

Variables

This research includes one dependent variable, two independent variables, one moderating variable and four control variables. Table 1 provides an overview of the conceptualization and transformation needed for analysis purposes.

Type variable	Variable	Label	Operationalization	References	Categories	Transformation
Dependent variable	Turnaround	Insolvency	CAR + ROA ≤ 0	Lepetit & Strobel, 2015	-2494.9033 - -.0012	
Independent variable	Financial resilience	Z''-score, lagged 1	Z''-score = $6.56 * X1 + 3.26 * X2 + 6.72 * X3 + 1.05 * X4$ Lagged 1 year in time	Dieperink, 2024	-2056.6145 - 1722.1914	Squared
	Financial resilience	Z''-score lagged 2	Z''-score lagged 2 years in time	Dieperink, 2024	-5613.1005 - 3761.8874	Squared
Independent variable	ESG performance	ESG score	ESG score	Giráldez-Puig et al., 2025	0-100	
Moderator	Reputation	ESG controversies	ESG controversies score	Giráldez-Puig & Moreno, 2025	0-100	
Control variable	Firm size	Total assets	Total assets	Rico et al., 2021	6.3952 – 28.9699	Logistic transformation Cubed
	Firm age	Total years after founding year	Total years	Achbah & Fréchet, 2024	-12 t/m 203	Squared
	Country	Country	The country they are registered in	Shin et al., 2023	n/a	Dummified
	Industry	Industry	SIC code	Rico et al., 2021	n/a	Dummified

Table 1 Variable summary

Dependent variable

The dependent variable is turnaround and is operationalized as insolvency outcome. This variable is chosen because firms can only turnaround after having faced a life-threatening decline (Barker III et al., 2024; Schmitt & Raisch, 2013). Prior research (Achbah & Fréchet, 2024; Lepetit & Strobel, 2015) uses insolvency as a prime example of a firm being in financial distress. The determination of turnaround is twofold. First the firm must have been insolvent. This can be measured through the following equation (Lepetit & Strobel, 2015).

$$(CAR + ROA) \leq 0$$

CAR is the capital-asset ratio and ROA stands for return on assets. If this is 0 or smaller than it means that the firm is unable to pay off its debts (Lepetit & Strobel, 2015).

Two things can follow when a firm has been insolvent. The firm can either go bankrupt or turn around and survive (Rico et al., 2021). Turnaround is measured on a year-by-year basis. For each year a firm is insolvent, turnaround is examined in the following year (t+1) by becoming solvent again. Turnaround is coded as a binary variable where 1 indicates turnaround and 0 indicates no turnaround (the firm remained insolvent). Since each year of insolvency represents a separate observation, firms can appear in the sample for multiple consecutive years. Turnaround is measured as

$$(CAR + ROA) > 0$$

If the outcome is bigger than 0 the firm is no longer unable to pay its debts and can therefore be considered solvent again.

Independent variables

This research uses two independent variables to predict turnaround. These are financial resilience and ESG performance. This builds on prior literature that shows both financial resilience and ESG performance can affect corporate financial performance (Che et al., 2024), which also includes insolvency and bankruptcy (Altman, 2015; Giráldez-Puig et al., 2025; Shi & Li, 2019; Tinoco & Wilson, 2013).

The first variable is financial resilience. This is measured using the Altman Z'-score. The Altman Z-score is used to measure financial stability of a firm (Lepetit & Strobel, 2015; Shahab et al., 2018) and is often used in literature to predict bankruptcy (Boubaker et al., 2020; Pal et al., 2014; Shi & Li, 2019). Although it has been used in numerous settings, it has been shown to be best applicable to manufacturing firms (Altman et al., 2015). The Z'-score was brought into existence in order to account for this problem. It is a variation on the Z-score, but

is applicable to both public and private firms in both manufacturing and non-manufacturing industries (Dieperink et al., 2024; Opuni-Frimpong, 2019). The Altman Z'' -score can be measured as follows.

$$Z''\text{-score} = 6.56 * X_1 + 3.26 * X_2 + 6.72 * X_3 + 1.05 * X_4$$

The variables are composed as follows:

X_1 = Working capital / total assets

X_2 = retained earnings / total assets

X_3 = earnings before interest and taxes / total assets

X_4 = book value of equity / book value of liabilities

A high Z'' -score means high financial resilience. The lower the score the more probable bankruptcy is.

The second independent variable is ESG performance. ESG performance is measured through the proxy ESG-score. Which has been often used as a proxy of ESG performance (Drempetic et al., 2020; Shakil, 2021). The ESG-score is composed of three scores across the three pillars (Environmental, Social, and Governance). This results in a score ranging from 0-100. A score between 0-25 indicates poor ESG performance and insufficient degree of transparency in reporting ESG data. If the firm has a score between 25-50, it indicates a satisfactory ESG performance and a moderate degree of transparency in reporting ESG data. The score 50-75 shows that the ESG performance is good and there is an above average degree of transparency in reporting ESG data. Lastly, a score between 75-100 means excellent performance and a high degree of transparency in reporting ESG data (London Stock Exchange Group, 2024).

Moderator

Based on prior research the moderator reputation is included (Doh et al., 2010; Giráldez-Puig et al., 2025). This is measured using the proxy ESG controversies. ESG controversies entail the exposure to controversies regarding ESG of the firm. LSEG allocates a score to each firm based on the severity and the frequency of the controversies, between 0-100. If a firm has no controversies, it gets a score of a 100. A score below 50 indicates subpar performance (Giráldez-Puig et al., 2025).

Control variables

Several control variables were included to mitigate potential misinterpretation of the findings. Prior research has shown that the selected control variables can confound or impact the relationship of interest (Achbah & Fréchet, 2024; Curran, 2017; Fu et al., 2018; Rico et al., 2021).

Firm age

Firm age is measured by: year of insolvency – founding year (Achbah & Fréchet, 2024). Prior research shows that age plays a role in the probability of the firm going bankrupt (Rico et al., 2021). An explanation for this is that younger firms are more likely to go bankrupt due to liability of newness (Aldrich & Fiol, 1994; Rico et al., 2021; Singh et al., 1986). Whereas older firms, on the other hand, have had more time to establish relationships with stakeholders and their actions are therefore more likely to be perceived as desirable or tolerable compared to younger firms (Achbah & Fréchet, 2024).

Firm size

Firm size is measured using the logarithm of a firm's total assets in the year that insolvency occurred. Previous research found that firm size influences firm performance (Rico et al., 2021). The general consensus is that large firms are more likely to turn around (Achbah & Fréchet, 2024; Tangpong et al., 2015).

Country

Prior research has shown that national circumstances can contribute to corporate performance (Shin et al., 2023). First of all, the national economy can impact insolvency risk, as during a recession firms are more likely to go bankrupt (Mann & Byun, 2017). Second, how important people find ESG practices depends on their values which varies across countries, affecting the need for engaging in ESG practices in order to be perceived as legitimate (Suchman, 1995). Similarly, national or regional regulations may influence the degree to which firms are obliged to engage in ESG practices (Baldini et al., 2018; Gillan et al., 2021). Lastly, legislation regarding insolvency might differ across countries which could either hinder or enable turnaround (Fu et al., 2018).

Industry

To account for potential industry effects, industry is included as a control variable. Even though the industries are closely related, there might be still some differences between the two.

Similarly, there might be differences within the same industry, therefore the four digits SIC code is included to see the differences between the industries as they operate in different environments (Rico et al., 2021), facing different legislation and expectations of stakeholders (Mashayekhi et al., 2024).

Research ethics

This research adheres to the ethical guidelines outlined in the APA Ethic code, to ensure integrity and quality of the research process. In addition, the databases used safeguard the anonymity of the firms involved. Assumptions based on literature are made explicit and research findings will be published to ensure transparency. AI tools (ChatGPT and Claude) are used to check SPSS formulas, STATA codes or to identify mistakes in STATA handling during the analysis.

Results

Method of analysis

Mixed effects logistic regression analysis is used to test the hypotheses. This method extends regression analysis by taking into account the binary dependent variable (Hair et al., 2018). It also accounts for the lack of independence among observations. When assessing insolvency some firms are found to be insolvent over an extended period of time, with the longest being seven years. This means a firm can be in the data sample up to seven times. Since the outcome of insolvency might depend on the specific firm the observations cannot be seen as independent. Mixed effects logistic regression accounts for this as it incorporates random intercept for the grouping variable. The ISIN code is used to group the observations together.

Univariate analysis

For each observation unit (ISN + year) that had missing values, the total window of observation for that particular unit was deleted. This also includes observations with only missing values in the control variables. Given the large sample size, missing data is listwise excluded, resulting in the sample (N = 2132). Following Kuswanto et al. (2015) the sample is split into two to create a training sample (N=1492) which contains 70% of the data and a holdout sample (N=640) containing 30% of the data (Devi, 2023). The next step is to analyze the descriptive statistics in the training sample for the continuous variables in order to assess skewness, it

should fall in the range of -3 to +3, and kurtosis, range of -7 to +7. Financial resilience lagged 1 and lagged 2 fall both out of the range for kurtosis and are also skewed. Even though normality of distribution is not a requirement for mixed effects logistic regression it is skewed and kurtotic in such a way that it could affect the results. Therefore, the descriptive statistics are analyzed for potential outliers. According to Hair et al. (2018) outliers are observations that deviate from the normal distribution within the dataset. For all continuous variables a boxplot was created to visually identify outliers. when analyzing the boxplots only financial resilience lagged 1, financial resilience lagged 2, and firm age contain outliers. Winsorizing is used to deal with this, which means that the data of the outliers is replaced with the next highest score that is not an outlier (Field, 2024). Financial resilience lagged 1 is winsorized at the upper percentile of 96.7 and the lower percentile of 3.7. Financial resilience lagged 2 is winsorized at the upper percentile of 96.8 and the lower percentile 4.7. Age is winsorized at the upper percentile of 98.3. Appendix A shows the boxplots of financial resilience lagged 1, financial resilience lagged 2 and firm age before and after winsorizing. The boxplots of other variables are not presented as they do not contain outliers. After this step, Table 2 reports the descriptive statistics.

Variable	N	Minimum	Maximum	Mean	S.D.	Skewness statistic	Kurtosis statistic
Turnaround	1492	0	1	.15	.357	1.97	1.85
Financial resilience lagged 1	1492	-24.97	28.54	1.77	10.61	.03	1.37
Financial resilience lagged 2	1492	-27.49	30.42	1.20	11.68	-.05	1.3
ESG performance	1492	.26	87.54	32.92	13.64	.799	.88
Reputation	1492	1.14	100	94.92	18.25	-3.68	12.45
Firm age	1492	0	48.62	12.72	9.55	1.59	2.98
Firm size	1492	8.08	26.96	12.84	1.53	.50	4.65

Table 2 Descriptive statistics

Bivariate analysis

After the data preparation and univariate analysis, the correlation matrix is analyzed. Table 3 provides the Pearson correlation for all the variables and provides insight into the relationship between the variables. Hair et al., 2018 classify correlations as follows: values of 0.1 indicates weak correlation, values of 0.3 indicates medium correlation and values of 0.5 indicates strong

correlation. Values exceeding 0.9 indicate possible multicollinearity. An examination of Table 3 that there are no extremely high correlations with two exceptions. Financial resilience lagged 1 and financial resilience lagged 2 are strongly correlated ($r: .566$), this is expected as financial resilience lagged 1 year and lagged 2 years both indicate poor performance, which results in insolvency. The second exception is firm size correlates strongly with ESG performance ($r: .421$). This can be expected as there is usually more information available for bigger firms. Drempetic et al. (2020) found a highly significant relationship between the availability of data and ESG scores, irrespective of the quality and content of the information available. This suggests that larger firms are more likely to have a high ESG score.

	1	2a	2b	3	4	5	6
Dependent variable							
1. Turnaround	1						
Independent variable							
2a. Financial Resilience lagged 1	-.030	1					
2b. Financial Resilience lagged 2	.020	.566	1				
3. ESG performance	.191	.090	.109	1			
Moderator							
4. Reputation	-.105	-.010	-.009	-.114	1		
Control variable							
5. Firm age	.291	-.096	-.025	.270	-.061	1	
6. Firm size	.256	.209	.223	.421	-.219	.142	1

Table 3 Correlation matrix

Assumptions

After the univariate and bivariate analysis, assumptions are tested. Logistic regression only has two assumptions. The first one being independence of observations and the second linearity. The assumption of independence is violated, because a firm can occur multiple times in the sample if they have been insolvent in multiple years. The outcome of insolvency could depend on the firm; therefore, these observations cannot be seen as independent. Mixed effects logistic regression takes this into accounts, and groups those observations together. The second assumption is linearity of the logit. In order to test this the Box-Tidwell test was conducted. However, this method cannot be applied to variables containing zero or negative values, due to the nature of the natural logarithm for these values. Instead, to account for non-linearity,

squared terms were added for these variables. In the final model both the original and squared terms are included to address the possible violation of linearity. Appendix B shows the results of the Box Tidwell Test for ESG performance, Reputation, Firm size and Firm age. Firm size ($p < .001$) and age ($p < .001$) are significant, this indicates nonlinearity. The squared term for firm age is therefore also included in the final model. Squaring the variable size did not solve the problem, therefore size is cubed. The test was performed again. This time nothing was significant, indicating that linearity is no longer a problem.

Mixed effects logistic regression

Table 4 reports the results of mixed effects logistic regression in order to assess the role of financial resilience, and ESG performance on turnaround. This also includes the moderating role of reputation. The analysis includes six models, each one sequentially building on the previous model by adding a new variable. The variables are added based on the order of hypotheses. Control variables are entered first in model 1. All models are found significant ($p < .05$) and each model improves the explanatory power. Both the log-likelihood (-471.374 to -461.775) and Pseudo R^2 (.2259 to .2417) increase across the models, indicating improved model fit.

Hypothesis 1 argues that there is a positive relationship between financial resilience lagged 1 year and lagged 2 years and turnaround. Regarding financial resilience lagged 1 no support can be found. Table 4 shows a negative relationship with turnaround; however, this is not significant across all models. On the other hand, a positive relationship between financial resilience lagged 2 years and turnaround is established. Financial resilience lagged 2 years is significant in model 2-4, in model 5 and 6 the squared term is significant, this indicates a nonlinear relationship between financial resilience lagged 2 years and turnaround. This is shown in Figure 2. Hypothesis 1 is therefore partially supported.

Hypothesis 2 argues that ESG performance has a positive effect on turnaround. No support was found for hypothesis two. As seen in Table 4 the relationship is positive, however not significant.

Furthermore, hypotheses 3a and 3b looked at the moderating role of reputation. Hypothesis 3a argued that reputation moderates the relationship between financial resilience and turnaround. Model 4 examines the moderating role of reputation regarding financial resilience lagged 1 year. No support can be found for this hypothesis. Model 5 introduces the interaction effect between financial resilience lagged 2 years and reputation. In contrast to the

1-year lag, there is a positive and significant relationship ($\beta: .00004, p < .05,$) between financial resilience lagged 2 years squared and reputation, meaning that reputation moderates the relationship between financial resilience lagged 2 years and turnaround. However, this relationship is nonlinear. Hypothesis 3a is thus partially supported. Hypothesis 3b predicted that reputation moderates the relationship between ESG performance and turnaround. No support was found for this hypothesis.

Finally, zooming in on the control variables, firm age has U-shaped relationship with turnaround (linear term: $\beta = -0.0164, p > .05.$; squared term: $\beta = 0.0012, p < .05$) Similarly, firm size has been found to have a U-shaped relationship with turnaround (linear term $\beta = -1.0427, p < .05$; cubic term: $\beta = 0.0023, p < .05$). Country and industry are both categorical Appendix C shows the results for these control variables. Belgium was used as a dummy for country. Only Spain was significantly different compared to Belgium ($\beta: -2.1676 p < .05$). This means that firms in Spain are less likely to turn around compared to Belgium. In case of industry, industry 7371 was omitted. Only industry with the SIC code 8731 was significantly different ($\beta: -1.8406 p < .05$). Firms in this industry are less likely to turnaround compared to the ones in industry 7371.

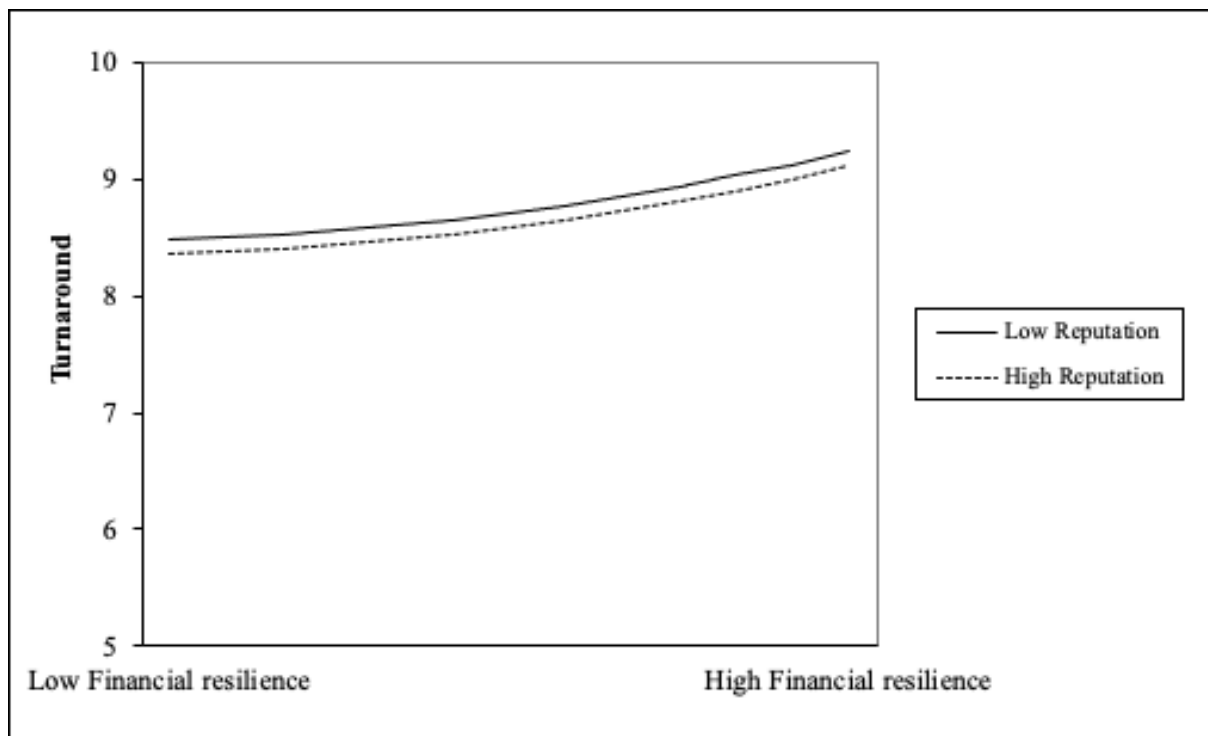


Figure 2 Visual relationship between turnaround and financial resilience moderated by reputation.. The coefficients have been inflated by 10x for interpretation purposes

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Financial resilience lagged 1 year		-.0163	-.0162	-.1125	-.0183	-.0668
Lag1_sq		-.0008	-.0008	.0100	-.0007	-.0213
Financial resilience lagged 2 years		.0305**	.0304**	.0317**	-.0109	.0249
Lag2_sq		-.0006	-.0005	-.0006	.0037**	.0066**
ESG performance Reputation			.0034	.0032	.0040	.0013
Lag1xRep				-.0082	-.0017	-.0062
Lag1_sqxRep				.0010		.0005
Lag2xRep				.0001		.0002
Lag2_sqxRep					.0004	.0001
ESGperxRep					-.00004***	-.0001**
Firmage	-.0108	-.0142	-.0161	-.0180	-.0164	-.0164
Firmage sq	.0012*	.0012**	.0012**	.0013**	.0012**	.0012**
Size	-.7556**	-.9317**	-.9502**	-.9328**	-1.0252**	-1.042**
Size cub	.0020***	.0022***	.0022***	.0021***	.0023***	.0023***
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Country	Yes	Yes	Yes	Yes	Yes	Yes
Chi ²	125.58***	200.22***	127.99***	123.07***	200.69***	124.79***
Pseudo R ²	.2259	.2318	.2320	.2350	.2379	.2417
Log likelihood	-471.374	-467.817	-467.685	-465.870	-464.108	-461.775
Intercept	5.3693*	7.1021**	7.1804**	7.9326**	8.1151**	8.6519**
Observations	1487	1487	1487	1487	1487	1487
Number of firms	633	633	633	633	633	633

Table 4 Mixed effects logistic regression

* significant at p -value $<.1$, ** significant at p -value $<.05$, *** p -value at $<.01$

Hypothesis	Expected sign	Empirical conclusions
Hypothesis 1: <i>Firms with stronger financial resilience in the preceding years are more likely to turn around</i>	+	Partially supported
Hypothesis 2: <i>Firms with better ESG performance are more likely to turn around</i>	+	Not supported
Hypotheses 3a: <i>Reputation moderates the relationship between financial resilience and turnaround, such that a bad reputation will weaken this relationship while a good reputation will strengthen this</i>	+	Partially supported
Hypotheses 3b: <i>Reputation moderates the relationship between ESG performance and turnaround, such that a bad reputation will weaken this relationship while a good reputation will strengthen this</i>	+	Not supported

Table 5 Summary of hypotheses and empirical conclusions

Robustness check

Through conducting a robustness analysis, the research findings are validated. Following Kuswanto et al. (2015), the models are tested on the holdout sample in order to test the robustness on unseen data and to evaluate generalizability. The model was estimated on the training sample and applied to the holdout sample using the same variable transformations and winsorization thresholds. As Table 6 shows the performance metrics indicate that the model maintains strong predictive power. The accuracy was 0.86 and specificity 0.97 and an AUC of 0.82. This shows that the model is able to identify non-turnaround cases well. Sensitivity, on the other hand, was relatively low (0.24), the model's ability to identify turnaround is worse, however it is still acceptable given the class imbalance. Looking at the Proportional chance criterion of 0.60 and the maximum chance criterion of .80 the robustness of the model is further supported. Appendix D shows the prediction classification of models 1-6.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Accuracy	0.8547	0.8578	0.8562	0.8609	0.8547	0.8578
Sensitivity	0.2188	0.2292	0.2396	0.2292	0.2292	0.2396
Specificity	0.9669	0.9688	0.9651	0.9724	0.9651	0.9669
Precision	0.5385	0.5641	0.5476	0.5946	0.5366	0.5610
PCC	0.5928	0.5999	0.6023	0.6008	0.6032	0.5971
MCC	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
AUC	0.8055	0.8003	0.8042	0.8249	0.7927	0.8161

Table 6 Summary hold out sample

Discussion

The objective of this research was to examine how financial resilience and ESG performance could affect the chances of turnaround through the lens of legitimacy theory. Legitimacy theory emphasizes that firms need to obtain a social license to operate (Curran, 2017; Du et al., 2022; Lee & Raschke, 2023) to be perceived as legitimate. When the firm has gained legitimacy, it enjoys better access to resources, enhanced reputation, better relationships with investors, customers, and employees (Achbah & Fréchet, 2024; Du et al., 2022; Shakil, 2021), which are critical assets to ensure firm survival (Miotto et al., 2020). Based on legitimacy theory, it was expected that both financial resilience and ESG performance would increase legitimacy and therefore increase the likelihood of turnaround. A linear relationship was to be expected. Furthermore, it was to be expected that reputation would either strengthen or weaken the effect, as it could enhance or decrease legitimacy.

Financial resilience

This research builds on the study by Dieperink et al. (2024) by testing if the relationship between financial resilience and turnaround is characterized by a positive linear effect. This expectation forms the basis of hypothesis 1, which predicts that financial resilience both lagged 1 year and lagged 2 years has a positive impact on turnaround. Support was found for financial resilience lagged 2 years, but not for financial resilience lagged 1 year. Interestingly, the squared variable financial resilience lagged 2 is significant, this indicates a curvilinear relationship (U-shape) with turnaround, suggesting diminishing effects for medium resilience. This finding is in line with previous literature, which also concluded a non-significant relationship between financial indicators and turnaround (Dieperink et al., 2024). However, it contradicts literature that finds financial ratios to be good identifiers for bankrupt and non-bankrupt firms (Altman, 1986; Zhang et al., 2023). A plausible rationale for this finding is that a firm is already in a state of distress, and financial ratios therefore lose their predictive power.

The significant finding of financial resilience lagged 2 years might be explained by the fact that organizational change takes time (Aalbers et al., 2014; Guthrie & Dada, 2008). Additionally, since firms in the data sample experience in general insolvency for at least 2 consecutive years, a 1-year lag is likely to capture firms still within their insolvency period, so nonsignificant findings for financial resilience lagged 1 year can be expected.

Through the lens of legitimacy theory, these findings can refine existing insights from prior research (Altman, 2015; Mann & Byun, 2017), as it examines the impact of financial resilience on the likelihood of turnaround. Explaining how a financially resilient firm enhances its legitimacy and therefore increases the chance of turning around. Beyond these theoretical contributions framed on the firm level, this research enhances the broader context in which a firm operates. By understanding how financial resilience impacts their relationship with important stakeholders, managers can think of ways to enhance the legitimacy of the firm to increase their chances of turnaround in distress situations.

Further research could explore the nonlinear relationship between financial resilience and turnaround. Additionally, future research could examine whether findings extend to firms experiencing only moderate financial difficulties, given that financial ratios are argued to be good indicators of financial distress; however, their explanatory power might diminish in extreme distress situations, such as insolvency.

ESG performance

This research additionally extends the literature on ESG performance and corporate financial performance relationship (Liu et al., 2023b; Shahab et al., 2022), by testing whether ESG performance and its relationship with turnaround is characterized by a positive linear effect. This is conceptualized in hypothesis 2. No support was found for the relationship between ESG performance and turnaround. This contradicts findings of earlier work that better ESG performance lowers the likelihood of bankruptcy and increases financial performance (Alshahrani et al., 2022; DasGupta, 2022; Giráldez-Puig et al., 2025; Mashayekhi et al., 2024). A plausible explanation for this finding is that ESG in the software and R&D industry does not matter as much compared to other industries (Maschayekhi et al., 2024). Furthermore, this research looks at the effect of ESG as a whole without specifying which part of ESG might play a role. So, for instance, the environmental, social, or governance pillar may have an effect, but the three combined may not. This is in line with previous finding, which found that the social and governance pillar are more important compared to the environmental pillar in some industries (Mashayeki et al., 2024; Sandberg et al., 2022).

Through the lens of legitimacy theory, these findings can refine existing insights from prior research (Alshahrani et al., 2022; Che et al., 2024; Gillan et al., 2021), extending this by explaining ESG performance specifically in a turnaround context, suggesting that legitimacy mechanisms may differ during periods of insolvency.

Beyond these theoretical contributions framed on the firm level, this research provides important insights for managers operating in times of distress. The nonsignificant relationship between ESG performance and turnaround suggests that during insolvency periods, stakeholders may prioritize other factors over ESG-related activities to determine organizational legitimacy. Managers might be better off prioritizing financial ratios when seeking to restore legitimacy.

Further research could explore the different components separately to better understand the effect on turnaround. Disaggregating ESG into individual components may reveal that they each have different effects on turnaround, as the combined score may mask these variations. Additionally, it could be insightful to include a lagged variable of ESG performance, given that it takes time to build legitimacy.

The moderating role of reputation

Another theoretical contribution arises from the moderating effect of reputation. First partial support was found for hypothesis 3a. The moderating effect of reputation was found to be nonsignificant on the relationship between financial resilience lagged 1 year and turnaround. On the other hand, the moderating effect of reputation was found to be small but significant in the financial resilience lagged 2 years relationship. This suggests that firms with established reputations benefit less from high financial resilience. This might be because their reputation already establishes their legitimacy among stakeholders, meaning that financial resilience and reputation might substitute for each other in providing legitimacy (Doh et al., 2010; Miotto et al., 2020). Second, no support was found for hypothesis 3b, meaning that there is no evidence for a positive moderation effect of reputation on the relationship between ESG performance and turnaround. These findings contradict arguments from prior literature, where reputation was found to moderate the relationship between ESG performance and corporate financial performance (Lee & Isa, 2024; Shakil, 2021). A reason for these findings could be, in the light of legitimacy theory, that reputation takes a long time to build as it consists of reliability, credibility, responsibility, and trustworthiness (Giráldez-Puig et al., 2025). If a firm has a high score on ESG controversies, it may take multiple years for it to establish a good reputation.

Limitations

While this study aims to advance strategic management literature, it is important to consider the findings in light of its limitations. Firstly, this sample focuses on the high-tech industry, which may limit the generalizability of the findings in other contexts. Secondly, the sample includes only firms that are insolvent and thus facing severe financial difficulty; the findings may therefore not apply to firms that are facing only moderate downturns. Building on this, the reason for insolvency is not accounted for, even though, according to Achbah and Fréchet (2024), it matters what the cause is of the financial distress situation. Lastly, due to winsorizing of the independent variable, financial resilience, and the control variable, firm age, for interpretation and statistical reasons, it is important to take into account that this could potentially distort the results.

Conclusion

In general, no support is found for variables indicating turnaround, except for financial resilience lagged 2 years. The nonsignificant finding for ESG performance is not surprising, as there have been mixed findings on the relationship between ESG performance and corporate financial performance. However, the nonsignificant finding of financial resilience lagged 1 year is surprising and contrasts with previous literature. Therefore, the findings call for further investigation of financial resilience and ESG performance, and the moderating role of reputation on turnaround.

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Appendix A

This appendix shows the boxplots for the variables: financial resilience lagged 1 year, financial resilience lagged 2 years and Firm age. Figure 3 and Figure 5 shows the variables before winsorizing Figure 4 and 6 illustrate the variables after winsorizing

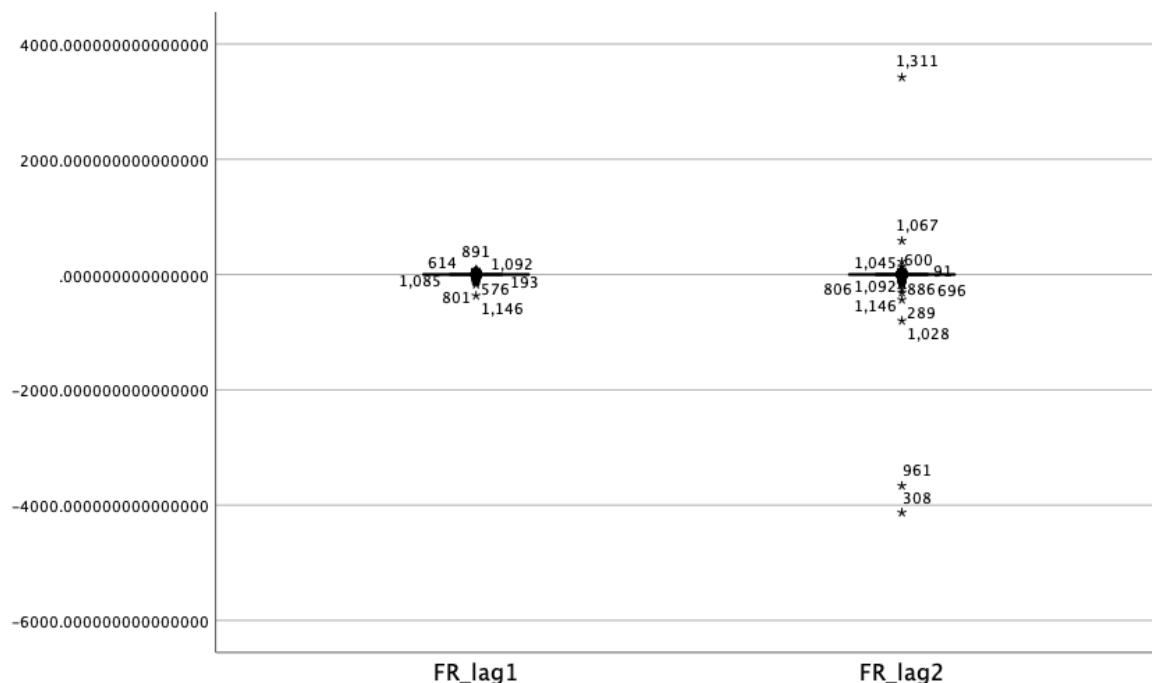


Figure 3 Boxplot before winsorizing financial resilience lagged 1 and lagged 2

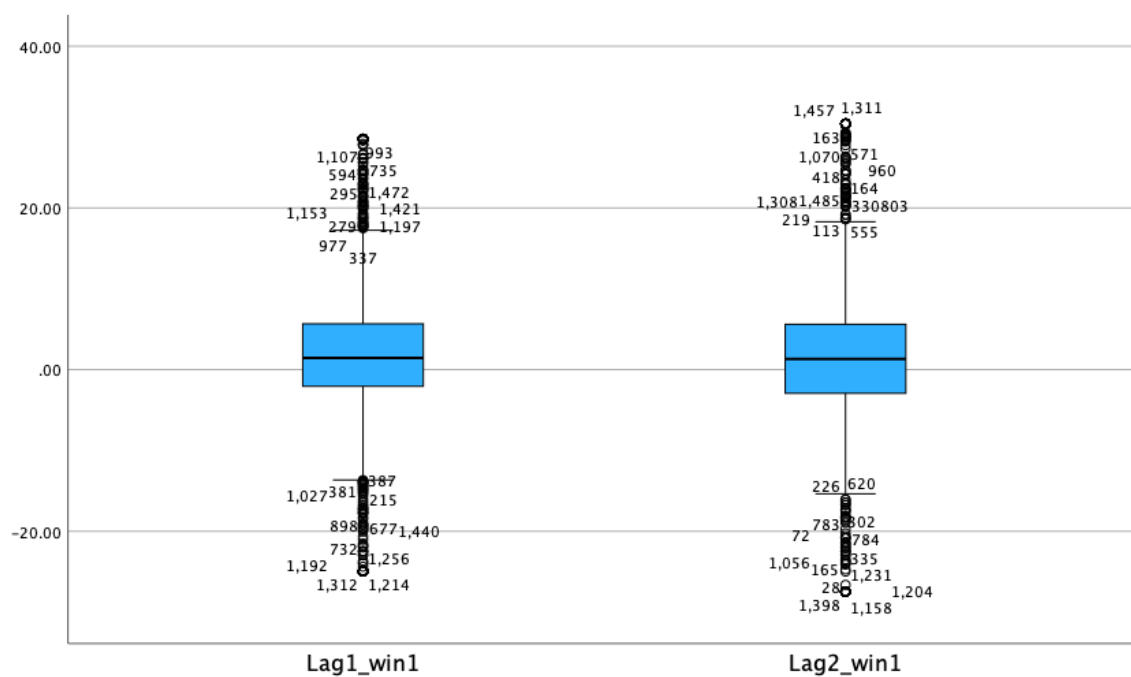


Figure 4 Boxplot after winsorizing financial resilience lagged 1 and lagged 2

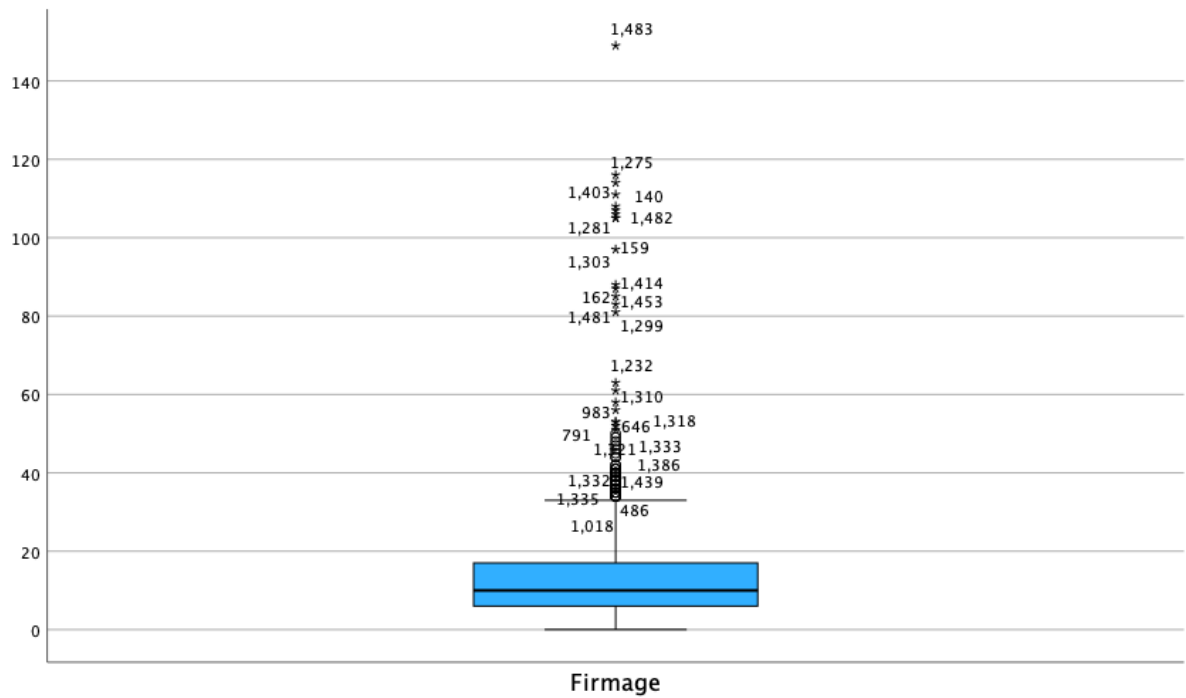


Figure 5 Boxplot before winsorizing firm age

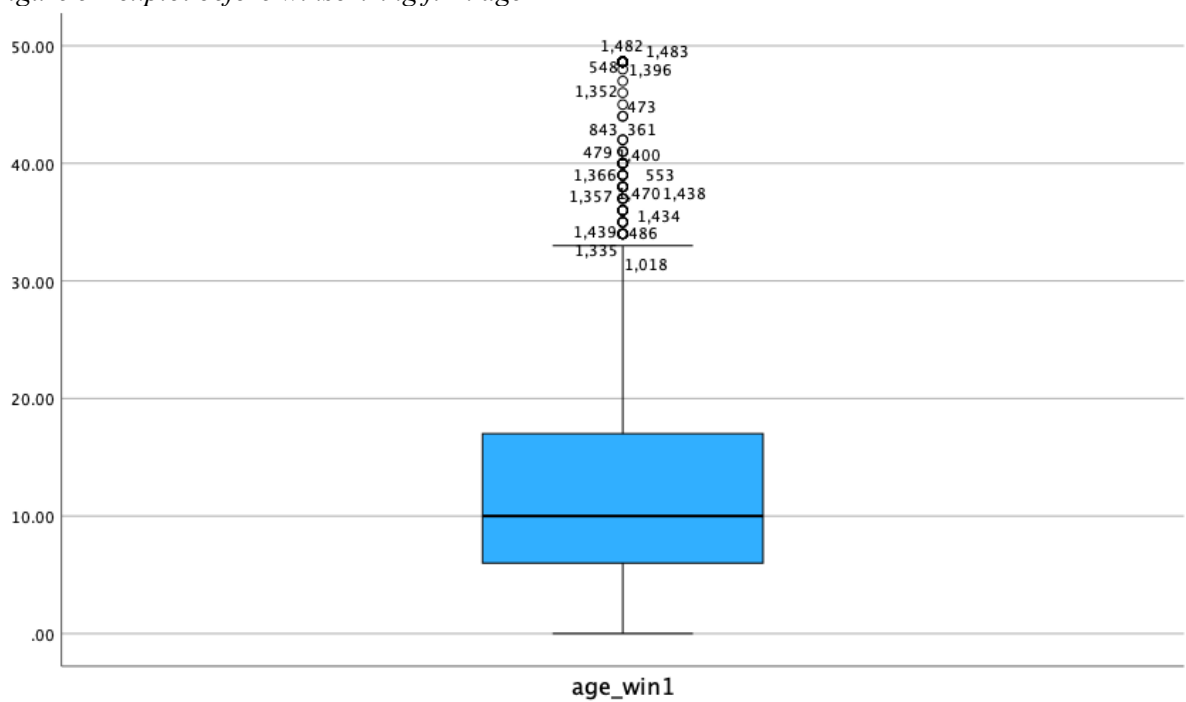


Figure 6 Boxplot after winsorizing firm age

Appendix B

This appendix includes the Box-Tidwell test that was conducted to check the linear relationship. Categorical variables were left out as they cannot be linear. Financial resilience is not included because it contains negative values, which would need to be squared already.

Table 7 shows the results before including square and cubed variables. Table 8 illustrates the results after squaring age and cubing size. Age and size are no longer significant. Indicating that these need to be included in the model to account for nonlinearity of the variables age and size.

	B	S.E.	Wald	df	Sig.	Exp(B)
ESG	.039	.094	.167	1	.683	1.039
lnESG	-.007	.020	.105	1	.746	.993
ESGCont	-.069	.089	.590	1	.443	.934
lnESG	.013	.018	.529	1	.467	1.013
Age	-.182	.071	6.552	1	.010	.833
LnAge	.061	.018	11.606	1	<.001	1.063
Size	-7.176	2.263	10.054	1	.002	.001
LnSize	2.117	.634	11.148	1	<.001	8.308
Constant	21.070	8.173	6.645	1	.010	1414162145.867

Table 7 Before including squared and cubed variables

	B	S.E.	Wald	df	Sig.	Exp(B)
ESG	.020	.093	.048	1	.827	1.021
lnESG	-.003	.020	.022	1	.883	.997
ESGCont	-.061	.090	.469	1	.494	.940
lnESG	.012	.018	.419	1	.517	1.012
Age_sq	.004	.002	2.646	1	.104	1.004
LnAge_sq	.000	.000	1.121	1	.290	1.000
Size_tr	-.006	.004	2.303	1	.129	.994
LnSize_cub	.001	.000	2.896	1	.089	1.001
Constant	-1.711	1.489	1.416	1	.234	.170

Table 8 After including squared and cubed variables

Appendix C

This appendix shows the outcome of the mixed effects logistic regression for the categorical variables industry and country. Table 9 shows the results for industry in which 7371 is used as the reference category. Table 10 shows the results for country, where BE is used for reference.

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<i>Industry</i>						
7372	-.3171	-.2807	-.2800	-.3195	-.3099	-.3402
7373	-.0552	.0135	.0007	-.06206	-.0205	-.0492
7374	.1071	.1347	.1404	.0863	.1388	.1048
7375	-.2904	-.2249	-.2250	-.2413	-.2137	-.2063
7379	-.0496	-.0868	-.0809	-.0825	-.0999	-.0974
8731	-1.8229***	-1.7601***	-1.7712***	-1.8402***	-1.8071***	-1.8406***
8732	0	0	0	0	0	0
8734	2.2683*	2.938**	2.9188**	2.8517*	3.1669**	3.0992*

Table 9 Results mixed effects logistic regression for industry: reference industry 7371

*significant at p-value <.1, ** significant at p-value <.05, *** p—value at <.01

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<i>Country</i>						
BG	0	0	0	0	0	0
CH	0	0	0	0	0	0
DE	-1.2980	-.12300	1.2108	-1.2771	-1.2325	-1.2251
DK	-.7014	-.6336	-.6099	-.6011	-.5672	-.5588
ES	-2.1667**	-2.1199**	-2.1533**	-2.1137**	-2.1772**	-2.1676**
FI	-.1984	-.2122	-.1727	-.1841	-.2078	-.1773
FR	-.5408	-.4501	-.4398	-.5387	-.4419	-.4615
GB	.3572	.3583	.3702	.3818	.3363	.3944
GR	0	0	0	0	0	0
IE	.7082	.9803	1.0552	.7696	.6101	.7697
IT	-.0630	-.1492	-.1231	-.1301	-.1668	-.1396
NL	-2.051	-1.9644	-1.924	-2.0085	-1.9949	-2.0029
NO	-.3589	-.04442	.0592	.0947	.1201	.1301
SE	-1.2025	-1.0793	-1.0126	-1.0153	-.9907	-.9610
US	-1.4981**	-1.3867**	.7115*	.7523*	-1.3522*	-1.3289*

Table 10 Results mixed effects logistic regression for country: reference country BE

*significant at p-value <.1, ** significant at p-value <.05, *** p—value at <.01

Appendix D

This appendix includes the tables as produced by the robustness check. The model, as created through the training set ,is applied to the holdout set. The outcomes are as follows:

Turnaround	Pred_class_Model1		
	0	1	
0	526	18	544
1	75	21	96
Total	601	39	640

Table model 1: Accuracy = 0.8547 Sensitivity = 0.2188 Specificity = 0.9669 Precision = .5385 PCC = 0.5928 MCC = 0.8500 AUC = .8055

Turnaround	Pred_class_Model2		
	0	1	
0	527	17	544
1	74	22	96
Total	601	39	640

Table model 2: Accuracy = 0.8578 Sensitivity = 0.2292 Specificity = 0.9688 Precision = 0.5641 PCC = 0.5999 MCC = 0.8500 AUC = .8003

Turnaround	Pred_class_Model3		
	0	1	
0	525	19	544
1	73	23	96
Total	598	42	640

Table model 3 Accuracy = 0.8562 Sensitivity = 0.2396 Specificity = 0.9651 Precision = 0.5476 PCC = 0.6023 MCC = 0.8500 AUC = .8042

Turnaround	Pred_class_Model4		
	0	1	
0	529	15	544
1	74	22	96
Total	603	37	640

Table model 4: Accuracy = 0.8609 Sensitivity = 0.2292 Specificity = 0.9724 Precision = 0.5946 PCC = 0.6008 MCC = 0.8500 AUC = .8249

Turnaround	Pred_class_Model5		
	0	1	
0	525	19	544
1	74	22	96
Total	599	41	640

Table model 5: Accuracy = 0.8547 Sensitivity = 0.2292 Specificity = 0.9651 Precision = 0.5366 PCC = 0.5971 MCC = 0.8500 AUC = 0.7927

Turnaround	Pred_class_Model6		
	0	1	
0	526	18	544
1	73	23	96
Total	599	41	640

Table model 6: Accuracy = 0.8578 Sensitivity = 0.2396 Specificity = .9669 Precision = 0.5610 PCC = 0.6032 MCC = 0.8500 AUC = 8161