ESG-based executive compensation, a blessing in disguise

How ESG-based executive compensation affects the financial performance of a firm, via the ESG performance of a firm and how this relationship is being influenced by the environmental concern in a country.

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Management summary

Increasing environmental pressures are imperative to address nowadays. While individuals in a society increasingly feel concerned about the environmental situation and engage in activities that prevent the downfall of the environment, society desires the same active engagement of firms. In this view, firms progressively invest in their ESG performance and pursue ESG objectives in their business operations. However, there exists ambiguity on the extent to which investing in the improvement of ESG performance is beneficial for the financial performance of firms. Furthermore, existing literature does not agree on the most efficient way to enhance their ESG performance.

In this view, this research aims to examine the effectiveness of installing ESG-based executive compensation contracts in improving ESG performance. Moreover, it seeks to enlighten whether this improvement in ESG performance also causes an enhancement of the financial performance of a firm. Furthermore, this thesis investigates whether the extent to which a country is environmentally concerned strengthens the effect of these compensation contracts on ESG performance as international differences in the effectiveness of ESG-based executive compensation emerged from existing literature.

By means of SEM, using path analysis, a sample of 663 firms from France, Germany, Italy and Sweden is examined. This research reveals that having ESG-based executive compensation contracts installed enhances the ESG performance of a firm. Additionally, it can be concluded that an increase in ESG performance also causes an increase in the financial performance of a firm. Following empirical analysis, ESG performance mediates the effect between ESG-based executive compensation and financial performance. No empirical evidence is found for the moderating nature of the environmental concern in a country.

This research adds to the literature by providing evidence in the ongoing discussion about the role of ESG performance in a firms financial performance. Additionally, it contributes to the discussion regarding the effectiveness of performance-based incentivization in enhancing firm performance on desired corporate objectives. Ultimately, this research provides academics with suggestions for future research on this insignificant effect. Furthermore, other implications for academics as well as for practitioners are provided.

Preface

The thesis you are about to read is the result of an extensive analysis of whether ESG-based incentives for executives are effective in improving the ESG performance of a firm and whether this improvement in ESG performance enhances a firm's financial performance. The increasing pressure on the environment requires both private individuals and firms to make collective efforts to alleviate this pressure. In addition, trying to encourage certain behaviors among people, such as executives within firms, is something that intrigues me. Therefore, I am thrilled to conclude my Master of Science in International Management with a thesis that addresses these interests.

I would like to thank my supervisor Bart Dormans for his excellent guidance during the thesis process, during which I received a lot of useful feedback.

In addition, I would like to take this opportunity to thank my family and personal environment which has always supported me throughout my years at Tilburg University. I hope to enjoy the inspiration and joy in life they bring me for a long time to come.

Finally, I hope you will enjoy reading my thesis 'ESG-based executive compensation, a blessing in disguise'.

Willem van Hoof

Table of contents

CHAPTER 1 – Introduction

1.1 Introduction

As economic growth slows down and development moves into a new phase, the idea emerges that firms should not compromise the environment in their urge for development. Rather, companies ought to proactively adopt social responsibilities and protect the interests of their stakeholders (Guosheng et al., 2023). In this view, a firm's investment in Environmental, Social and Governance (ESG) elements of their business has shown considerable upside in recent years, which in turn has been supported by growing investor interest (Mohammad & Wasiuzzaman, 2021).

The ESG performance of a firm is considered to be "a metric for evaluating their commitment to environmental protection and social responsibility" (Chen et al., 2023, p. 2). It operationalizes how well a firm performs in terms of ESG-related concepts. For firms nowadays, performing well on ESG is increasingly seen as conforming to social norms, as firms are expected to understand their impact on the environment to be accepted by their stakeholders (Pérez et al., 2022; Kent et al., 2021). The ESG performance of a firm is often linked to its general performance since a firm's ESG performance is associated with its reputation, its stakeholder's willingness to cooperate, and the firm's access to resources that are essential to success (Lee et al., 2023; Backhaus et al., 2002). Furthermore, investors, as well as consumers, become increasingly conscious in engaging with firms whose values align with their own (Kumar, 2023). Where investors increasingly place value on a firm's ESG performance when considering their investment in terms of allocation and magnitude (Boffo and Patalano, 2020; Baker et al., 2022), consumers show more positive responses to firms that demonstrate social and environmental responsibility (Morar, 2019). Indubitably, investors and consumers engaging with firms is essential to the firm's performance and continuance and thus, this underlines the importance of ESG performance (Boufounou et al., 2023).

Partly due to this increase in consumer and investor interest, existing literature mainly suggests a positive correlation between ESG performance and financial performance (Friede et al., 2015; Clark et al., 2014). However, while extensive research has been done in the past, opposing findings exist on the relationship between ESG performance and financial performance. Therefore, additional research on this relationship is required to draw useful conclusions on the importance of the ESG performance of a firm.

Overall, it can be concluded that integrating ESG performance in a firm's operations can create a possible competitive advantage and thus, boost a firm's general performance.

Furthermore, the ESG performance possibly causes an improvement in financial performance. Therefore, improving a firm's financial performance by enhancing the ESG performance seems an interesting relationship to dive into. The question remains on how this ESG performance can be optimally improved by firms.

To achieve their ESG commitments, signal that ESG is a priority, and respond to the expectations of investors and stakeholders, a wide variety of firms often install ESG-based executive compensation (Spierings, 2022). Installing executive compensation packages, linked to corporate objectives, to improve specific aspects of performance can be explained through the agency theory by Jensen and Meckling (1976). The theory proposes that agents (executives) are self-interested and thus, likely to pursue this self-interest at the expense of the principal (owners) when interests are not aligned. In turn, principals are allowed to control the agent by using incentives to restore interest alignment. In this view, the literature identifies financial incentives as a primary tool to achieve interest alignment (Deckop et al., 2006). Hence, firms use financial incentives to encourage their executives to achieve sufficient ESG performance, eventually for the firm to conform to the previously discussed social norm. Concisely, firms can install ESG-based executive compensation to enhance ESG performance. Nonetheless, opposing findings exist concerning the effectiveness of linking executive pay to ESG performance. Investors question whether the ESG targets used to measure ESG performance are sufficiently rigorous, whether environmental targets are too long-term to link them to executive pay, and argue that increasing disclosure on ESG performance also helps in achieving commitments (Spierings, 2022). However, different researches conclude that incentivizing via executive compensation does pay (Cohen et al., 2023; Mahoney & Thorn, 2006; Homroy et al., 2022). Due to these opposing findings, it is useful to further examine how ESG-based executive compensation can be used to improve ESG performance.

Whereas ESG-based executive compensation seems to improve ESG performance to a certain extent, the degree to which these ESG-based executive compensations are effective relies on the extent to which executives prioritize the ESG objectives in the compensation contract over other corporate objectives. Since executive compensation contracts often consist of multiple performance goals on a variety of corporate objectives, the attention of executives has to be diverted over these different objectives (Bebchuk & Tallarita, 2022). In these so-called multitasking environments, executives often prefer pursuing short-term and easily measurable objectives (Schrenk, 2007). Literature does not yet elaborate extensively on how these differences in executive decision-making, regarding which objectives are pursued, affect the relationship between incentives and performance. However, in the context of ESG

performance, Baraibar-Diez et al. (2019) find that the effectiveness of ESG-based executive compensation on ESG performance varies between different European countries. Hence, the idea emerges that other factors come into play when assessing the effectiveness of ESG-based executive compensation on ESG performance; factors that are likely to vary internationally.

Throughout history, extensive research has already been devoted to explaining human behavior. This human behavior is also relevant to the multitasking problem described earlier, where executives have to decide which the corporate objectives are prioritized. In the context of this research, installing ESG-based executive compensation is considered as pro-environmental behavior. Pro-environmental behavior is defined as all actions performed by individuals with the goal to mitigate negative environmental effects (Kollmuss & Agyeman, 2002; Zaidi & Azmi, 2022). In this view, explaining executive's pro-environmental behavior in the multitasking problem adds to the literature on the effect of executive compensation on ESG performance. Furthermore, the underlying factor that partially defines whether or not executives prioritize ESG objectives over other corporate objectives can be uncovered.

To uncover this underlying factor, it is useful to look at the different aspects of human behavior. When explaining human behavior in general, the motivation of an individual is widely considered as an influential factor (Simpson & Balsam, 2015; Bandhu et al., 2024). Motivation exists of intrinsic and extrinsic motivation of which the extrinsic motivation can be affected by external factors (Deci, 1971; Deci & Ryan, 2002). Therefore, the idea emerges that there are external factors that vary on an international level, as discussed previously, that are of influence in forming the motivation of an executive to perform certain behavior. Ryan and Deci (2000) mention social pressures as external factor that can influence motivation, which ties in with the previously discussed social norm. These insights can be connected with the stakeholder theory, where the stakeholders of a firm become increasingly important for the business operations of a firm due to their growing influence (Clement, 2005). In this view, stakeholder values can serve as social pressure concerning the extrinsic motivation of executives.

The environmental concern of individuals can be considered as one of these stakeholder values that are able to serve as social pressure (J. González-Benito & Ó. González-Benito, 2008). The environmental concern captures the extent to which an individual is concerned about the well-being of the environment and is willing to take action regarding this concern (Bamberg & Möser, 2007; Ester & Van der Meer, 1982). Having a high environmental concern in a society can thus cause a society to be willing to take action concerning the well-being of the environment. Taking action can then be translated further into applying social pressure towards firms and its executives to perform pro-environmental behavior as well. While executive green

behavior has been investigated in research (Mancha et al., 2014), no research is devoted on how external factors, like the environmental concern of the society, affect this green behavior. Relating this to the multitasking problem that executives experience in compensation contracts; when the environmental concern of a society serves as an influential variable in executive decision-making in the multitasking environment, this environmental concern plays a significant part in the determination of the effectiveness of ESG-based executive compensation on the ESG performance of a firm. Concisely, the environmental concern in society will affect the strength of the influence of ESG-based executive compensation on the ESG performance of a firm. As the environmental concern varies between countries (Meyerl, 2016), this would also be a possible explanation for the international differences in the effectiveness of ESG-based executive compensation that Baraibar-Diez et al. (2019) discovered.

Considering the arguments above, the idea emerges that ESG-based executive compensation experiences opposing findings concerning its effectiveness on the financial performance of a firm via its ESG performance. Therefore, the search continues to another factor that is of significant influence on this relationship to justify the opposing findings that exist in the literature. In this view, the international differences in environmental concern emerge as a factor of potential influence. As environmental concern affects the decision-making process in executive behavior through motivation, this environmental concern is a credible, internationally varying factor of interest in explaining these opposing findings. When executives prioritize ESG objectives over other objectives in their compensation contracts due to external influences that differ on an international level, the effect of ESG-based executive compensation on ESG performance is enhanced. Literature still leaves a gap on this behalf and therefore, the following problem statement is derived.

1.2 Problem Statement

To what extent does ESG-based executive compensation affect the financial performance of a firm, via the ESG performance of a firm? And to what extent is the relationship between the ESG-based executive compensation and the financial performance of a firm via its ESG performance being influenced by the environmental concern in a country?

1.3 Research Questions

1. What role does ESG performance play in the general performance of a firm?
2. What is the effect of ESG performance on a firm's financial performance?
3. What is the effect of ESG-based executive compensation on a firm's ESG performance?
4. To what extent does ESG performance explain the relationship between ESG-based executive compensation and the financial performance of a firm?
5. What is the role of environmental concern in a country in explaining executive behavior?
6. To what extent does the environmental concern in a country influence the relationship between ESG-based executive compensation and the financial performance of a firm, via its ESG performance?

1.4 Conceptual Model

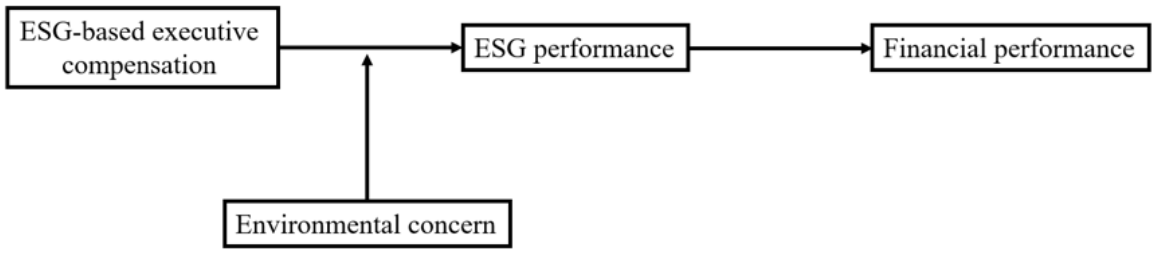


Figure 1 – The conceptual model

1.5 Structure of this thesis

This research will ultimately examine whether installing ESG-based executive compensation affects the financial performance of a firm, via the firm's ESG performance. Furthermore, this research aims to determine whether the environmental concern in a country moderates this effect. To draw useful conclusions concerning the aforementioned goal, this thesis will consist of five chapters in total. The following chapter contains an extensive analysis of the literature that already exists in the context of this thesis. Furthermore, this chapter states the hypothesis of this thesis which will be substantiated by the insights from the existing literature. In Chapter 3, the method of analysis will be discussed, which will be followed by the

results of the analysis in Chapter 4. In the final chapter of this thesis, Chapter 5, the findings from Chapter 4 will be reflected upon within the discussion section. Additionally, this final chapter contains a discussion of the limitations of this research and the recommendations for future research.

CHAPTER 2 – Literature review

The following chapter contains a thorough analysis and discussion of the already existing literature on the variables that are of interest in this thesis. All the relevant variables and the relationships between the variables will be addressed. Furthermore, hypotheses concerning these relationships will be drawn.

2.1 ESG Performance

Due to the sustainability threats caused by economic development, the concept of doing well by doing good has been increasingly incorporated into doing business over the last few years. Globally, firms gradually realize they bear extensive responsibility concerning the environmental and social externalities that are associated with business operations (Daugaard & Ding, 2022). These responsibilities can either be addressed through adherence to regulations, via reacting to social pressures, or by proactively engaging in pro-environmental business initiatives (Hörisch et al., 2015). As a result of this trend, sustainable performance and traditional key performance indicators (KPIs) are now regularly recognized together (O'Connor et al., 2021). These sustainable performance indicators define a firm's environmental, social, and governmental (ESG) performance, which is assessed by reporting on ESG indicators (Aydoğmuş et al., 2022). For the continuance of this thesis, a firm's ESG performance will reflect the firm's performance on these ESG indicators.

Literature on ESG performance frequently uses Freeman's stakeholder theory (1984) to explain why there is an increasing interest in ESG performance for businesses, as stakeholders and organizations have reciprocal ties and interactions. The theory states that a firm's stakeholders, which are defined as entities or groups without which a firm cannot exist, contribute to the value creation of the company and are affected by its activities in terms of their well-being (Freeman, 1984). In this view, the stakeholder theory underlines the importance of building strong relationships with all stakeholders of a firm to enhance both mutual value-creation and corporate legitimacy (Freeman, 1984; Daugaard & Ding, 2022; Michelon & Parbonetti, 2010). While building strong relationships, it is key for firms to consider all entities and groups sufficiently and see that all are satisfied to ensure long-term value creation (Kumar, 2023). Thus, since ESG performance indicates a firm's exposure to long-term risks that are related to its environmental, social, and governmental externalities (Kumar, 2023), stakeholder theory proposes that for a firm to ensure long-term value creation, the firm should hold its impact on its stakeholders regarding these externalities into account.

Furthermore, stakeholders expect firms to understand their impact on the environment to accept a firm (Pérez et al., 2022). Without a 'social license to operate', which is a perception of fairness, appropriateness, and deservingness of trust, a firm is not accepted by its stakeholders (Pérez et al., 2022; Boutillier, 2014). Literature shows that, depending on the level of conflict or cooperation, stakeholders can impact the financial value of a firm (Boutillier, 2014). This impact can either be expressed by an increase in costs (Franks et al., 2014; Henisz et al., 2013), or for example project delay (Goldman Sachs, 2009). ESG indicators and a firm's performance on these metrics can be used as an instrument to comply with the expectations of society in terms of fairness, appropriateness and deservingness of trust regarding the business operations (Pérez et al., 2022). Hence, a sufficient ESG performance of a firm is essential to the continuance of business operations through the significant importance of a social license to operate.

2.2 Financial performance

Next to the impact on the financial value of a firm through the social license to operate, literature frequently links ESG performance to the financial performance of a firm. However, ambiguous results emerge concerning the link between ESG performance and financial performance (Weber, 2008).

A firm's ESG performance is imperative to corporations through the increase in consumer and investor interest that is allocated to firms that have aligning values (Kumar, 2023). Investors become increasingly keen on including ESG metrics in their investment decisions since sufficient ESG performance is often linked with adequate risk management (Boffo & Patalano, 2020; Hong & Kacperczyk, 2009). Furthermore, investors experience the influence of societal values on their investment decisions, as a result of the increase in societal attention to climate change and responsible business conduct. Lastly, as corporations and financial institutions are increasingly moving from short-term to long-term perspectives concerning risks and returns, also investors are drawn into this pattern (Boffo & Patalano, 2020). Therefore, since ESG performance seems to ensure the continuance of business operations and thus, ensures investors of future cash flows, investing in firms with ESG goals is of increasing interest. Next to that, consumers spread positive word-of-mouth and are more likely to repeatedly engage with firms that address ESG performance in their business operations (Boufounou et al., 2023; Tong et al., 2013; Jose et al., 2015). In addition, consumers are willing to pay a higher price to firms that perform in an environmentally and socially

responsible manner (Narayanan & Singh, 2023). Both the increase in investor and consumer interest is likely to have a positive impact on the financial performance of a firm.

However, Weber (2008) addresses that several studies find opposing findings concerning the effectiveness of performing well on CSR, which is strongly related to ESG activities. CSR can both have a positive or a negative effect on the financial performance of a firm, due to the inverse U-shape curve between economic performance and CSR that has also been addressed in the research of Horváthová (2010). The latter paper explains that investing in ESG and thus, increasing ESG performance, is only beneficial up until the point where the economic benefits of ESG performance are maximized. Intuitively, this is a valid statement. However, determining whether these economic benefits are maximized is challenging. Therefore, this explanation still leaves a gap on whether, and when, ESG performance is positively related to the financial performance of a firm.

Therefore, despite the opposing findings that exist in the literature, Friede et al. (2015) conducted an extensive analysis of a variety of empirical studies concerning the relationship between the ESG performance of a firm and its financial performance. As a result, the study provided aggregate evidence (based on more than 2000 empirical studies) that investing in ESG pays for a firm. Moreover, this impact of ESG on financial performance remains stable over time. This provides evidence for a positive relationship between the ESG performance of a firm and its financial performance. Therefore, this thesis states the following hypothesis:

H1: The ESG performance of a firm has a positive relationship with the financial performance of the firm.

All in all, a firm's increase in ESG performance tends to improve the long-term mutual value creation through strong stakeholder relationships and causes the firm to experience a positive (or at least no negative) impact on financial value through the social license to operate. Furthermore, the firm likely enjoys an increase in investor and consumer interest. Therefore, it can be concluded that a firm's ESG performance is an essential component of a firm's general performance.

2.3 ESG-based executive compensation

Since ESG performance seems to be positively related to financial firm performance, the owners of the firms are likely to exploit certain means that enhance their performance via ESG performance. To control and direct a firm as desired by the owners, governance mechanisms are often used to regulate the processes and structure of a firm when there is a separation of ownership and control (Abdallah & Ismail, 2017; Horsthuis, 2019). In this view, the literature proposes performance-based compensation as one of these governance mechanisms to boost performance (Chen & Jermias, 2012). These performance-based compensations allocate and communicate the weighted importance of certain pre-set objectives and encourage executives to achieve these objectives (Chen & Jermias, 2012; Merchant & Van Der Stede, 2003). Intuitively, performance-based compensation is awarded to the executive when objectives are achieved.

The effectiveness of performance-based compensation on the desired increase in performance can be explained by the agency theory by Jensen and Meckling (1976). This theory elaborates on the agency relationships within a firm when there is a separation of ownership and control. Agency relationships are defined as contracts between a principal and an agent, where the principal engages the agent in pursuing corporate objectives. This engagement involves transferring decision-making authority from the principal to the agent (Jensen & Meckling, 1976). Within these agency relationships, the agency theory assumes that both principal and agent are utility maximizing, which causes that the agent might not always act in the best interest of the principal. When the agent does not act in the best interest of the principal, a principal-agent problem arises where interests between ownership and control are not aligned. In the context of this thesis, the owners of a firm engage certain executives in achieving company objectives. For example, a principal-agent problem between owners and executives could be that the owners (shareholders) favor long-term gains over short-term gains, while this might be the other way around for executives. According to the theory, principals are allowed to control the actions of the agent by installing appropriate incentives, where financial incentives have been identified as a primary incentive to ensure interest alignment (Deckop et al., 2006).

In accordance with this perspective, firms frequently implement performance-based compensation to improve company performance across a range of components, including ESG performance (Spierings, 2022; Bebchuk & Tallarita, 2022). For clarification, given that literature uses a variety of terminology for performance-linked compensation specifically concerning ESG performance, this thesis uses the term ESG-based executive compensation to

indicate this type of performance-based compensation. This terminology is in line with the definition of Bebchuck and Tallarita (2022), which states that ESG-based executive compensation are "incentives for CEOs and top executives to improve the welfare of stakeholders and reduce their companies' negative externalities" (Bebchuk & Tallarita, 2022, p. 1).

Combining all insights in this paragraph, firms increasingly install ESG-based executive compensations that are awarded to the executive when certain pre-set objectives regarding the ESG performance of a firm are achieved. This ESG performance is evaluated based on ESG indicators, as has been stated in the beginning of paragraph 2.1, for which objectives are communicated to the executives. According to the agency theory of Jensen and Meckling (1976), installing these ESG-based executive compensations should align the interests of the owners with the interests of the executives concerning the firm's ESG performance. As a result, executives are more motivated to achieve the ESG objectives.

2.4 ESG-based executive compensation and ESG performance

Providing executives with performance-based compensation schemes to align their interests with the interests of the firm has been widely studied in the past (Belghitar & Clark, 2015; Brockman et al., 2010; Elston & Goldberg, 2003). In Jensen and Meckling's agency theory (1976), aligning the interests of the firm with those of the executive comes down to the owners of the firm wanting to influence the executive's desire and willingness to perform certain behavior. Combining these insights with the definition of motivation –the desire and willingness to perform certain behavior (Brown, 2007)–, the idea emerges that the incentives from the agency theory serve as a motivational factor within the behavior of an executive.

Concerning human behavior and decision-making in general, the motivation of an individual is often considered an explanatory variable (Simpson & Balsam, 2015; Bandhu et al., 2024). Bandhu et al. (2024) explain that human behavior is determined by a variety of psychological, social, cultural elements, economic and environmental factors, where the motivation of an individual is a psychological factor. Concisely, ESG-based compensation has an effect on a firm's ESG performance through the psychological factor of human behavior; the motivation within the decision-making of an executive. Furthermore, Boachie-Mensah and Dogbe (2011) discuss the use of pay structures as a cause of desired behaviors via the reinforcement theory. In line with this theory, certain executive behavior, can be incentivized by awarding certain compensation that is linked to this desired executive behavior. Concerning this thesis, these insights suggest that ESG-based executive compensation serves as a means to

induce motivation among executives to achieve ESG targets and thus, boost a firm's financial performance via its ESG performance.

Nonetheless, despite that financial incentives seem to be an effective tool in aligning interest and motivating executives to achieve certain desired targets, these incentives also might induce unintended short-term oriented behavior of executives which is less beneficial in terms of ESG performance (Zeng et al., 2023; Laux & Laux, 2009; Bebchuk & Fried, 2003).

Performance-based compensation often exists of multiple performance measures for executives. For example, financial performance measures like income ratio, or earnings per share can be used (Le et al., 2020). Next to that, non-financial performance measures like customer satisfaction and process improvement are among the possibilities (Ibrahim & Lloyd, 2011). Furthermore, the nature of different performance measures may vary from a short-term orientation to a long-term orientation. Due to this variety in incentives, the attention of the executive has to be diverted. Therefore, executives may allocate more attention to performance categories which the executive holds more relevant for firm performance. Further elaborating on this, as ESG-based executive compensation is often more long-term oriented and assessed on indicators that are hard to measure, executives might divert focus from these ESG objectives to more short-term, easily measurable objectives (Bebchuk & Tallarita, 2022; Holmström & Milgrom, 1991). In this view, Schrenk (2007) proposes that this diversion of focus to the short-term, easily measurable objectives caused by the risk-aversive tendencies in executive decision-making when operating in a so-called 'multitasking environment'. A multitasking environment is described as an environment in which executives are responsible for multiple objectives that are interrelated in a complex manner (Schrenk, 2007). Therefore, when executives need to divert attention over multiple objectives in a compensation contract, this can be considered as operating in a multitasking environment. Due to the difficult measurability and long-term orientation of ESG objectives, the risk-aversiveness in the multitasking environment result in executives likely preferring to allocate more attention to easily measurable objectives. Additionally, since ESG performance often has a more indirect effect on financial performance, risk-aversiveness again might cause executives to prefer other objectives over ESG objectives. The risk-aversiveness in executive decision-making might therefore cause that having ESG-based executive compensation installed as incentive to motivate the executives does not necessarily imply that ESG performance increases.

Due to these opposing effects of performance-linked compensation, extensive research has been done in the context of the effect of ESG-based executive compensation on ESG performance.

For example, Zeng et al. (2023) found that installing executive equity incentive plans has a significant positive effect on the ESG performance of a firm. This effect is even stronger when the incentive plan exists for stock options instead of restricted stock. Next to that, Cavaco et al. (2020) indicate that including ESG metrics in executive compensation contracts shows considerable upside concerning the ESG performance of a firm. Moreover, also Haque (2017) and Ji (2015) provide empirical evidence of the effectiveness of ESG-based executive compensation in encouraging individuals to embrace long-term social and environmental objectives.

Given that most of the empirical research that has been done in this context indicates a positive relationship between ESG-based executive compensation and actual ESG performance, this thesis also adopts this hypothesis and states the following:

H2: Installing ESG-based executive compensation will lead to a higher ESG performance as opposed to not installing ESG-based executive compensation.

Following the literature review and combining the insights that emerged from the argumentation above, it seems that using ESG-based executive compensation as an incentive for executives is likely to improve a firm's ESG performance as it is more likely that ESG objectives are prioritized (Jensen & Meckling, 1979; Boachie-Mensah & Dogbe, 2011; Zeng et al., 2023; Cavaco et al., 2020). Next to that, ESG performance proved to be one of the determinants of the financial performance of a firm via the increase in investor and consumer interest, the likelihood of capital allocation by investors, the willingness to pay of consumers (Boufounou et al., 2023; Tong et al., 2013; Jose et al., 2015; Narayanan & Singh, 2023; Kumar, 2023). Therefore, this research proposes that ESG-based compensation affects the financial performance of a firm via its ESG performance. In this view, the following hypothesis is formulated:

H3: The ESG performance of a firm mediates the effect between the ESG-based executive compensation and the financial performance of a firm.

2.5 The moderating effect of environmental concern

While considering all information that has been reviewed on the relationship between ESG-based executive compensation on a firm's ESG performance, Baraibar-Diez et al. (2019) identify international differences in the effectiveness of ESG-based executive compensation as an incentive for better ESG performance in Europe. While in Spain, ESG-based compensation schemes positively affected the ESG performance of firms in that country, this effect was significantly less strong for firms in the United Kingdom. Additionally, for French and German firms, incentives had no considerable effect on ESG performance. The research explains these international differences, among others, through cultural factors and differences in behavioral patterns between countries. However, reaching back to the previously discussed multitasking problem that occurs among executives when firms operate a compensation scheme with multiple objectives, the idea emerges that there might be other factors at play in executive behavior and decision-making that may underlie these international differences.

The previously discussed executive decision-making in the multitasking environment affects performance on objectives when executives prioritize certain objectives over others. Building on this, when executives differ in decision-making and behavior, this may cause (international) differences between firms concerning performance. Concisely, the decision-making behavior of an executive is a determining element in whether ESG objectives are prioritized and thus, a determining element in the effectiveness of ESG-based executive compensation on the ESG performance of a firm.

Earlier in this study, the idea emerged that performance-based executive compensation can serve as one of the factors that can increase performance through an executive's motivation to perform desired behavior. Combining the insights of the international differences in the effectiveness of ESG-based executive compensation with the effect of ESG-based executive compensation working through the motivation of an executive, it is plausible that there is another factor that varies on an international level that affects this motivational mechanism within the decision-making of an executive.

In the context of consumer behavior, environmental concern is widely used as an explanation of their pro-environmental behavior (Mainieri et al., 1997; Kim & Choi, 2005). However, there is a gap in the literature concerning the effect of environmental concern on pro-environmental behavior in the context of executive decision-making. Environmental concern is defined as "the degree to which a person recognizes environmental problems and is ready to contribute to their solution" (Ester & Van der Meer, 1982). Although this definition covers the environmental concern per individual, there is evidence that the environmental concern varies

on an international level (Diekmann & Franzen, 2018). This then leads to the consideration of this environmental concern as a factor of interest regarding the international differences in the effectiveness of ESG-based compensation. The idea emerges that this environmental concern in a country is a possible internationally varying factor that affects the motivational mechanism between ESG-based executive compensation and ESG performance as discussed earlier in this paragraph.

As previously addressed, motivation can be defined as the desire and willingness to perform certain behavior (Brown, 2007) and is one of the determining factors in the effectiveness of ESG-based executive compensation on ESG performance. Motivation to perform certain behavior can exist of intrinsic and extrinsic motivation (Deci, 1971). Primarily extrinsic motivation important when examining the influence of the environmental concern in a country on the behavior and decision-making of executives, as this concerns motivation that is external to the behavior (Deci & Ryan, 2002). This type of motivation is usually derived from rewards, punishments, or social pressures (Ryan & Deci, 2000). Mainly the latter is of importance when discussing environmental concern as a variable of interest, as pressures from external stakeholders are of importance in determining the environmental performance (Ramanathan et al., 2014). Therefore, when the environmental concern of these external stakeholders is high, these external stakeholders are willing to contribute to a solution to environmental problems (following the definition of environmental concern); they apply certain pressure as stakeholders. As the stakeholders of a firm become increasingly important for the continuance of the firm due to the increasing expectations regarding the decision-making of executives (Clement, 2005), these stakeholder pressures are of increasing importance for a firm's operations.

Research indicates that stakeholder pressure is one of the most prominent determinants of pro-environmental behavior (Clement, 2005; Yu & Choi, 2016). Hence, as these social stakeholder pressures affect the extrinsic motivation of an executive, these stakeholder pressures are likely to affect executive decision-making concerning pro-environmental actions. The social pressure that exists when environmental concern is high in a country causes that executives are being externally motivated to perform pro-environmental behavior. This extrinsic motivation to perform pro-environmental behavior increases the likelihood that executives prioritize ESG objectives over other objectives, which enhances the effectiveness of ESG-based executive compensation on ESG performance. Since the environmental concern varies on an international level, also the social pressure varies on this international level. Therefore, the idea emerges that executives are not equally externally motivated across

countries. Hence, this is a plausible explanation for the previously discussed international differences in the effectiveness of ESG-based executive compensation on the financial performance of a firm via its ESG performance.

Concisely, when environmental concern in a country is high, social pressure causes an increase in the manager's extrinsic motivation. Subsequently, this executive is more likely to prioritize ESG objectives over other corporate objectives. Hence, the firm's ESG performance increases which causes an increase in financial performance. Therefore, the following hypothesis arises:

H4: The environmental concern in a country positively moderates the effect of ESG-based executive compensation on the financial performance of a firm, via the ESG performance of a firm.

CHAPTER 3 – Method

After the literature review presented in Chapter 2, the following chapter will discuss the empirical design that ensures that meaningful conclusions can be drawn regarding the proposed hypotheses.

3.1 Research design and sample composition

3.1.1 Research design

To be able to get a better understanding of the relationship between ESG-based executive compensation and the ESG performance of a firm while examining whether the environmental concern influences the strength of this relationship, quantitative data analysis will be performed. This type of data analysis is appropriate as this thesis has the goal to explore and describe the relationship between variables (Saunders et al., 2009, p. 414). Moreover, quantitative data analysis is feasible as ESG is an increasingly important element in doing business nowadays. Therefore, sufficient data is available regarding the ESG performance of firms and the compensation contracts that firms use.

In this research, the effect of ESG-based executive compensation on ESG performance will be analyzed across countries to draw useful conclusions on whether the environmental concern is of significant influence on this relationship. In terms of generalizability, as the firms in the sample are operating in a variety of industries, general conclusions can be made on the relevant relationships.

3.1.2 Sample composition

This study examines the development of the ESG score of firms that either employ or do not employ ESG-based executive compensation, using data of relevant firms from 2020 to 2022. This analysis examines the financial performance of the firms in the sample in the year 2022. However, to perform this analysis accurately, the independent and control variables have had certain time lags imposed on them. The rationale for this will be provided in section 3.2.2. Additionally, the analysis involves determining whether a country's environmental concern influences the relationship between ESG-based compensation and a firm’s ESG score. Furthermore, it is examined whether any rise in ESG score, resulting from the usage of ESG-based executive compensation, is reflected in the firm's financial performance.

The sample that will be used to provide useful answers to the previously indicated problem statement is a selection of European firms. These European firms were chosen since

Baraibar-Diez et al. (2019) identified the international differences in the effectiveness of ESG-based executive compensation on a firm's ESG performance within Europe. Therefore, by selecting certain European countries, these international differences that Baraibar-Diez et al. (2019) find are also likely to occur in the selected sample.

Using the LSEG database, all relevant data on ESG-based executive compensation and ESG performance is retrieved for firms in European countries that are part of the European Economic Area (EEA) and have available data on the environmental concern within this country. To ensure a properly sufficient sample per country after cleaning the data, Sweden, Germany, France and Italy are selected for the analysis. Concerning other countries with firms that would fit the sample were excluded from the analysis due to insufficient sample size (less than one hundred before data cleaning). In total, the sample consists of 901 firms across the four countries, of which 143 were removed due to a lack of data concerning their ESG performance and financial performance. Furthermore, the firms without performance-based compensation contracts installed in general for all of the years under investigation were deleted. Therefore, the final sample consisted of 667 firms in total. Of these firms, 132 are French, 211 are German, 96 are Italian, and 228 are Swedish.

The financial performance in the year 2022 is chosen due to its recency and the general lack of information on ESG-based executive compensation and ESG scores before 2020 in the LSEG database. Furthermore, the ESG-related information regarding the year 2023 is not yet added to the database for a considerable amount of firms.

3.2 Constructs

3.2.1 Dependent variable

Financial performance – The financial performance of the firm is used as an indicator of the general performance of a firm (Gentry & Shen, 2010). To examine the financial performance of a firm, literature uses a variety of measures. These measures financial performance exist of accounting-based measures as well as market-based measures (Gentry & Shen, 2010). Examples of accounting-based measures are the return on equity (ROE) and the return on assets (ROA), while Tobin's Q is often used as a market-based measure (Gentry & Shen, 2010; Combs et al., 2005; Hult et al., 2008). Lubatkin and Shrieves (1986) state that market-based measures include more relevant information into the measures and are therefore superior to accounting-based measures. In contrast, Bromiley (1990) mentions that using market-based measures is not optimal, as the assumption of market efficiency is underlying these performance measures. Since Tobin (1984) questions the market efficiency assumption,

these market-based measures also have its disadvantages. The discussion continues when Charkravarthy (1986) mentions that accounting-based measures are exposed to the risk of executive manipulation.

Due to these opposing findings, Gentry and Shen (2010) performed a cross-industry analysis concerning this matter. As the analysis indicated that both types of measures capture distinct dimensions of the financial firm performance, it would be most reliable to test both accounting-based measures and market-based measures in this thesis. However, when gathering the essential data to compute the Tobin's Q for the firms in the analysis of this thesis via the formula used by Nirino et al. (2021), the idea emerged that the computed Tobin's Q was unreliable due to its extreme values for all firms. Therefore, within this thesis, the financial performance of a firm will be analyzed by means of the accounting-based measure, return on equity (ROE). Furthermore, a robustness check will be performed using the return on assets (ROA), as both measures are accounting-based.

The return on equity and the return on assets of a firm is a percentage which indicates the profitability ratio of a firm, as indicated by the LSEG database from which these data are derived. Via the ROE of the firm, this research will determine whether the compensation contracts related to the ESG performance indeed have a positive effect on the financial performance of a firm in 2022, as has been frequently hypothesized in literature (Friede et al., 2015).

3.2.2 Independent variables

ESG performance – To examine the ESG performance of a firm, researchers often use the ESG score of a firm to indicate to what extent a firm performs well on the ESG pillars. Velte (2017) uses the ESG score of a firm to examine the relationship between the ESG performance of a firm and its financial performance for firms in Germany. Additionally, Tarmuji et al. (2016) use the same method in the context of the relationship between ESG performance and economic performance. As these papers are approximately covering a topic in the same context, this thesis adopts the ESG score as an indicator of ESG performance.

A firm's ESG performance is typically assessed by external organizations such as MSCI or LSEG (MSCI, n.d.; LSEG, 2023). The data concerning ESG performance is derived from the LSEG database. The ESG scores that this database provides based the ESG score on their underlying ESG data framework and are based on company data regarding ESG performance. The ESG performance of a firm in this thesis is indicated on a continuous scale from zero to one hundred, where a score of zero indicates the lowest ESG performance.

To ensure the absence of reverse causality, one-year time lag is applied to the ESG performance measure when analyzing its relationship to financial firm performance. This method is in line with existing literature in this context. Bae et al. (2019) uses a two-year time lag when examining the relationship between ESG performance and sales growth. Furthermore, Velte (2017) also applies a one-year time lag when examining the relationship between ESG performance and financial firm performance. As the latter paper relates more closely to the problem statement of this thesis, the one-year time lag is adopted in this research. To clarify, to analyze the financial performance in 2022, the ESG performance in 2021 is included in the model.

ESG-based executive compensation – ESG-based executive compensation is a performance-based compensation mechanism that firms use as an incentive for their executives to perform a certain desired behavior. This definition is in line with the that of Chen and Jermias (2012), combined with insights from the agency theory that Jensen and Meckling (1976) propose.

To examine the relationship between ESG-based executive compensation and the financial performance of a firm via its ESG performance, this thesis uses the variable Policy Executive Compensation ESG Performance from the LSEG database to differentiate firms that use ESG-based compensation contracts from firms that do not. This measure is a binary variable which assumes one when the firms in the dataset have a compensation contract for their executives installed which consists of at least one ESG-related objective. When a firm does have a long-term compensation contract installed in general, but the contract does not contain any ESG-related performance indicators, the value assumes zero. This method is used in previous research in approximately the same context as Homroy et al. (2022) examined the relationship between executive compensation and the ESG outcomes of a firm. Furthermore, Keddie and Magnan (2023) also uses the binary approach of ESG-based executive compensation to examine its relationship with excess annual cash bonus compensation in firms.

In the paper of Homroy et al. (2022), when examining the relationship between ESG-based executive compensation and the ESG performance of a firm, a one-year time lag is applied to the ESG-based executive compensation measure. As Homroy et al. (2022) conducted their research in approximately the same context as this research, this one-year time lag of ESG-based executive compensation is also applied in this analysis. This one-year time lag concerns the regression of ESG-based executive compensation on the ESG performance of the firm. However, since this ESG performance is also lagged by one year concerning the financial

performance, the ESG-based executive compensation has a two year lag with compared to the financial performance of the firm. To clarify, to analyze the financial performance in 2022, the ESG-based executive compensation measure in 2020 is included in the model.

The data concerning the ESG-based executive compensation measure are derived from the LSEG database.

Environmental concern – To examine the moderating role of the environmental concern in a country on the relationship between the ESG-based executive compensation and the financial performance of the firm via its ESG performance, the environmental concern measure of a country needs to be computed. The environmental concern will reflect the extent to which the public in a country is concerned about the well-being of the environment and is ready to contribute to a solution, following the definition of Ester and Van der Meer (1982).

In previous literature, the environmental concern is mostly computed using an experiment. For example, N. Czap and H. Czap (2010) determined the level of environmental concern of the respondents based on the responses in a questionnaire that was developed by Xiao and Dunlap (2007). Furthermore, Liu et al. (2023) computed the environmental concern of the Chinese public by analyzing the online search behavior of the individuals in the target area. Depending on the frequency of online searches of specific keywords, an environmental concern score was computed. Wu et al. (2022) adopted this same method of online keyword search among the individuals in the target area. However, while considering the magnitude of the data in this research and the need for the environmental concern statistics of the public in multiple countries, this thesis computes the environmental concern score otherwise.

Therefore, the data that is used for this variable is derived from the Special Eurobarometer 490 and the Special Eurobarometer 513, respectively conducted in 2019 and 2021 (European Union, 2019; 2021). As the environmental concern is a moderating variable and interacts with the ESG-based executive compensation for its effect on the ESG performance of a firm, the environmental concern is also lagged by two years. To clarify, to analyze the financial performance in 2022, the environmental concern measure in 2020 is included in the model.

For the determination of the environmental concern of the respondents, respondents in European countries were asked about their opinion on the most serious problem the world is facing in general. Respondents were allowed to indicate their opinion the world's most serious problem. When the well-being of the environment, between a variety of other options, is chosen as the main concern of the respondent, this respondent is considered to be environmentally

concerned. The score that is computed is a score between zero and one hundred, which reflects the percentage of respondents that is environmentally concerned.

As the empirical analysis for this thesis includes the environmental concern in 2020, assumptions need to be made concerning the environmental concern in this year. Therefore, for the data that is needed for the environmental concern in 2020, a mean between the scores of 2019 and 2021 will be computed and assumed.

The environmental concern of the public in the selected European countries are listed below in Table 1. Keep in mind that the environmental concern statistics in 2020 is an assumption. Furthermore, the environmental concern statistics in 2019 and 2021 are only relevant for the estimation of the statistics in 2020. These will not be used further in the study.

Table 1 – Environmental Concern Statistics

	ENVIRONMENTAL CONCERN		
Country	*2019*	*2020*	*2021*
France	23	37	51
Germany	30	45	60
Italy	19	30	41
Sweden	50	62	74
Mean		47.0799	

3.2.3 Control variables

Firm size – When assessing the ESG performance and the financial performance of a firm, previous research often controls for the size of a firm, as the size of a firm can introduce certain economies of scope that are difficult to mimic for other firms (Derwall, 2007; Velte, 2017). Firm size is calculated by taking the natural logarithm of the total assets of the firm, as has previously been done by Velte (2017), and Lutfiah and Widia (2023). Velte (2017) states that the effect of firm size on the ESG performance and the financial performance of a firm can be positive, as well as negative. As all financial variables in the LSEG database are reported in local currency, the total assets of the Swedish firms are recalculated to Euro by taking the average exchange rate between the Swedish krona and the Euro in that year. Therefore, only the total assets of the Swedish firms are adjusted to the Euro following the exchange rate; 10.636 EUR/SEK in 2022 (Exchange-Rates.org, n.d.). As this control is for financial firm performance, the natural logarithm of the total assets in 2022 is included in the model.

Leverage – When assessing the financial performance of a firm, Bebchuk et al. (2004) control for the leverage of a firm. This leverage is calculated as a ratio of the total debt of the firm against the common equity of the firm. These values are directly adopted from the LSEG database. As leverage negatively affects the profitability of a firm (Triayuni et al., 2023), this is a useful variable to control for when examining the financial performance of a firm. As this control is for financial firm performance, the leverage ratio from 2022 is included in the model.

3.3 Empirical analysis

This thesis aims to examine the effect of ESG-based executive compensation on the financial performance of a firm via its ESG performance across different countries, and the possible influence of the environmental concern of the public within the country. Therefore, a causal relationship needs to be identified between the financial performance of the firm and its explanatory variables ESG-based executive compensation, environmental concern, and ESG performance. As mentioned in paragraph 3.2.2, the longitudinal data that is obtained from the firms in the sample is transformed into cross-sectional data, which is appropriate to be able to include the time lags that are essential to test the proposed model properly.

When causality among variables is expected, Structural Equation Modeling (SEM) is a statistical data analysis method that is often used (Tarka, 2017). Using the SEM method, allows this research to interpret causality between the parameters in this research to a certain extent (Pearl, 2021). The method estimates the correlation between the exogenous and endogenous variables in the model. Exogenous variables are the independent variables in a structural equation model, while endogenous variables act like dependent variables in at least one of the regressions in the model. However, these endogenous variables can act like independent variables in another regression within the model (Gunzler et al., 2013). Concerning the variables in this thesis, the exogenous variables are ESG-based executive compensation, environmental concern, their interaction term the control variables. The endogenous variables are ESG performance and the financial performance of the firm. Important to note is that SEM officially does not prove causality. However, SEM allows for interpreting parameters as causal effects (Pearl, 2021). Therefore, inferences about causality between the parameters in this research can be made using SEM. The SEM method is widely recognized in sociology, as it can be used to predict unobserved values; latent values that are defined by other observed values (Alwin & Hauser, 1975). However, SEM can also be used to examine the causal relationship between observed values, which is more relevant to this research (Pearl, 2021). To examine the causal relationship between these observed values in this thesis, as all measures are derived from a

database, path analysis can be conducted. Path analysis can be seen as a special case of SEM, which deals with observed values (Murti, 2016). Therefore, path analysis is appropriate to examine the causal relationship between the observed values of this research.

Further elaborating on the method of data analysis, path analysis can be used to make the distinguishment between causal sources; direct, indirect, and total effects can be estimated by performing path analysis (Tarka, 2017; Wright, 1918; Wright, 1934). Being able to make this distinguishment in causal sources is especially useful when discussing the mediation part of the analysis in this thesis, as this concerns an indirect effect. Performing a path analysis on the model ensures that every so-called path between the variables in the model can be assessed separately concerning the effect strength and significance. Furthermore, by exploiting the post estimation opportunities of the method, the explanatory power of the model can be assessed.

To draw useful conclusions concerning the hypotheses of this thesis, the computed model exists of two regression analyses:

1. Regression of ESG performance on the financial performance of the firm, controlled by firm size and leverage ratio.
2. Regression of ESG-based executive compensation, environmental concern, and its interaction term on the ESG performance of the firm.

Based on these regressions, a model can be computed using the SEM Builder and the analysis can be performed afterwards. While computing this model, the interaction term of environmental concern and ESG-based executive compensation is manually computed and added to the model, as the SEM method does not allow to add moderation on a relationship. Furthermore, SEM assumes covariance between all the exogenous variables (StataCorp LLC, 2023, p. 13). Therefore, covariances are added in the computed model which is indicated by the double-headed arrows. Additionally, all endogenous variables have an error term included in the model (StataCorp LLC, 2023, p. 134). The main analysis, paragraph 4.2 will elaborate more extensively on how the model looks in the SEM builder.

After analyzing the results that become apparent when running the SEM in Stata, useful conclusions can be drawn regarding the previously stated hypotheses.

CHAPTER 4 – Results

Within this chapter, the results of the empirical analysis that was covered in Chapter 3 will be discussed. Furthermore, a robustness check will be performed to verify the strength of the main analysis.

4.1 Descriptive statistics

When testing for outliers, all independent variables, control variables and interaction terms are regressed on the ROE of a firm. Based on the leverage values, no outliers were found. From testing for outliers via Cook's Distance, eleven outliers emerged of which four outliers matched with the test for outliers based on the standardized residuals. Therefore, while the four firms emerged from both of the outlier tests that were mentioned last, these were removed from the sample. As a result, for the continuance of this analysis, the sample consists of 663 firms. Of the 663 firms that remain in the sample, 312 have no ESG-based executive compensation contract installed and 351 do have an ESG-based executive compensation contract installed. Respectively, this is 47.06% and 52.94% of the sample. As both percentages are around 50%, the sample is sufficiently equally distributed concerning the ESG-based executive compensation measure. This improves the generalizability of the results after analysis.

When inspecting the descriptive statistics in Table 2 below, it can be stated that the ESG performance for firms in the France sample is higher when ESG-based executive compensation contracts are installed (M_{YES} = 69.4231, SD = 14.5992) as opposed to when no ESG-based executive compensation contracts are installed (M_{NO} = 52.2126, SD = 18.8316). This increase in the mean ESG performance is also noticeable regarding the firms in the German (M_{YES} = 62.2791, SD = 19.6472 & M_{NO} = 48.418, SD = 19.9971), Italian (M_{YES} = 68.0372, SD = 13.7507 & M_{NO} = 55.8679, SD = 13.3075) and Swedish (M_{YES} = 54.4932, SD = 19.7909 & M_{NO} = 43.5552, SD = 18.3852) sample. From these data, the idea emerges that having ESG-based executive compensation contracts installed indeed improves the ESG performance of a firm.

However, what is interesting to note is that the ESG performance of the firms in the Swedish sample has the lowest mean ESG performance of the firms in the other countries. This while the environmental concern measure, of which the values were stated in paragraph 3.2.1, was the highest for Sweden. According to the literature review in Chapter 2, a high environmental concern would imply a higher ESG performance of the firms in a country.

Nonetheless, visual inspection of the means is not a decisive test to reject this hypothesis. Therefore, this will be further elaborated on in the main analysis that follows in the next section.

Table 2 – Means and standard deviations of dependent variables, mediator, moderator and control variables

Country	ESG_comp	Variable	Mean	Std. dev.	Min	Max
France	No	ROE	9.5570	24.0466	-71.91	55.55
		ROA	4.2933	4.2933	8.8973	19.99
		ESG score	52.2126	18.7316	12.69	86.16
		Firm size	14.8444	1.6833	11.4252	18.6698
		Lev. ratio	104.513	101.2695	3.89	396.39
	Yes	ROE	8.7795	14.8926	-67.85	52.99
		ROA	3.8863	7.2023	-50.58	22.51
		ESG score	69.4231	14.5992	26.13	94.58
		Firm size	16.2492	1.7103	12.1402	21.7024
		Lev. ratio	120.545	137.5694	1.57	1079.94
Germany	No	ROE	11.1185	14.2453	-30.95	77.33
		ROA	5.1773	7.5337	-14.05	52.8
		ESG score	48.418	19.9971	5.49	90.24
		Firm size	14.3674	1.8973	11.0610	21.0081
		Lev. ratio	85.898	97.9304	1.66	628.26
	Yes	ROE	2.2019	42.1573	-360.44	51.78
		ROA	3.0656	6.1400	-21.69	17.73
		ESG score	62.2791	19.6472	15.87	93.38
		Firm size	15.4460	2.3510	10.1155	20.6718
		Lev. ratio	104.9103	139.034	1.27	963.3

Italy	No	ROE	5.6690	48.4148	-293.38	41.56
		ROA	4.0814	6.0932	-26.72	13.53
		ESG score	55.8679	13.3075	29.29	78.45
		Firm size	14.5387	1.5075	12.3799	18.8258
		Lev. ratio	131.7552	160.9059	8.2	869.51
	Yes	ROE	11.4998	13.4859	-44	43.08
		ROA	4.1230	3.9823	-2.53	18.1
		ESG score	68.0372	13.7507	38.06	92.72
		Firm size	15.8151	2.0125	11.9192	20.6834
		Lev. ratio	172.7083	173.807	10.11	966.63
Sweden	No	ROE	2.4820	30.5254	-98.56	118.79
		ROA	-.5398	19.7839	-86.03	48.6
		ESG score	43.5552	18.3852	6.72	85.44
		Firm size	13.1059	2.1473	8.0298	19.4080
		Lev. ratio	85.4419	191.9455	0	1953.62
	Yes	ROE	7.0305	29.4085	-133.8	67.36
		ROA	2.3810	18.8017	-81.74	36.78
		ESG score	54.4932	19.7909	11.94	91.53
		Firm size	13.6187	2.0816	9.1258	19.621
		Lev. ratio	69.6888	72.0878	0	444.05

4.2 Assumption tests

Before the data can be properly analyzed, a few assumption tests are essential to ensure the significance of the final model. To test these assumptions, all of the variables are included in the regression; the dependent variables, as well as the independent variables and the control variables. Following Wooldridge (2012) the assumptions for normality, linearity, homogeneity of variances, and multicollinearity will be tested.

First, all independent variables, interaction terms and control variables are regressed on the dependent variable ROE. When testing for the normality assumption, a Shapiro-Wilk test is performed to check for normality (Stata, n.d. - b). Following the results, no normality can be found for the regressed model on ROE ($W(663) = .6306$, $p < .001$), as presented in Table 8 in Appendix B. However, this absence of normality is less of a problem when sample sizes are above two hundred, which is the case for the sample in this thesis (Hair et al., 2013).

The second assumption that will be tested, is the assumption of linearity. Ensuring linearity helps maintain the validity of your model. A violation of this assumption may cause the model's estimates to be incorrect or biased. Using the Ramsey RESET test, it can be concluded that linearity cannot be assumed as the test indicates an insignificant p-value (F(3, 653) = 5.12 p = 0.0017) (Schaffer, 2005). Furthermore, also by visual inspection of the scatterplot, linearity cannot be assumed.

To address these issues with linearity, other regression models are estimated. Linearity can be assumed when the control variable firm size is removed from the model. If firm size is removed, linearity can be assumed as a significant results emerges from the Ramsey RESET test (F(3, 653) = .74 p = 0.5304). Furthermore, also by visual inspection of the scatterplot presented in Figure 6 in Appendix B, linearity can be assumed.

Since the size of a firm is a control variable that is used frequently in literature in the context of this thesis (Velte, 2017; Derwall, 2007, Lutfiah & Widia, 2023), another regression was performed with the number of employees as a measure of firm size instead of the natural logarithm of the total assets. This method is previously performed by Dogan (2013). However, as the explanatory power of the general regression model went down (R^2 = .0281 with number of employees against R^2 = .0608 with the natural logarithm of total assets), the control variable for the size of the firm was dropped from the model to ensure linearity.

To test whether heteroskedasticity is a problem within the model, the Breusch–Pagan test was performed to test the homoskedasticity assumption (Stata, n.d. – a). The test results indicate that there is evidence of heteroskedasticity (χ^2 = 110.99, p < .01). To deal with this problem, the data analysis will be performed by using robust standard errors.

To test for multicollinearity, the correlation matrix of the independent variables was computed, together with the VIF scores. The VIF score of the ESG-based executive compensation and its interaction term with the environmental concern were 17.91 and 17.25 respectively. Therefore, the environmental concern was centered to address this issue and improve the interpretation of the variable (Little et al., 2007). After centering the environmental concern, the correlation matrix emerges as presented in Table 3 below and the VIF scores are as presented in Table 9 in Appendix B. Furthermore, correlation scores do not indicate any concerns. All in all, the analysis continues with the centered value of environmental concern.

Table 3 – Correlation matrix

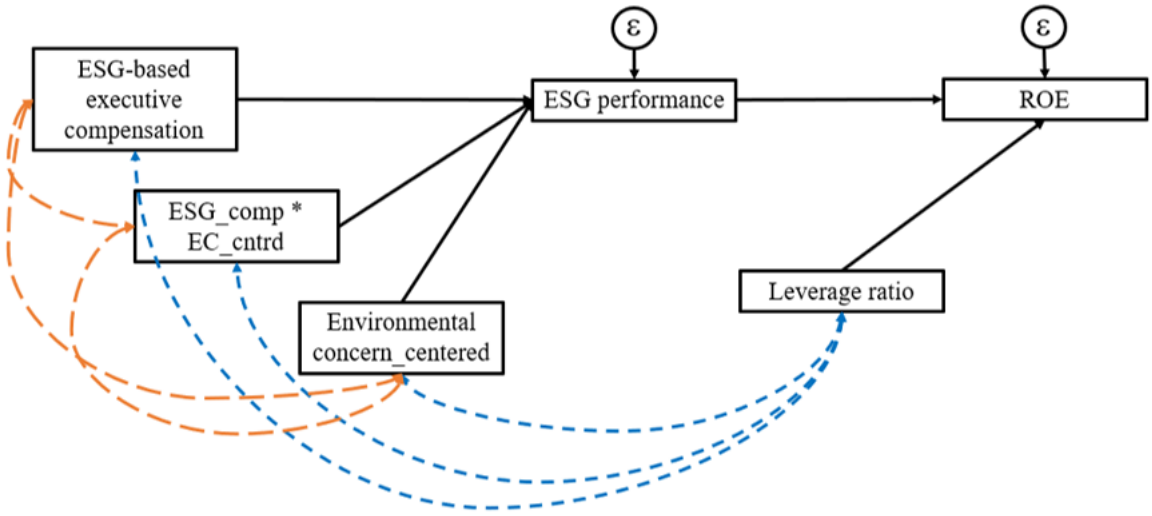
	ESG comp.	*EC*	*ESG comp.*EC*	*ESG score*	*Lev. ratio*
ESG comp.	1				
EC_c	-0.1741	1			
ESG comp.*EC_c	-0.1139	0.73	1		
ESGscore	0.3798	-0.3128	-0.252	1	
Lev. ratio	0.0578	-0.1634	-0.165	0.1848	1

After centering the environmental concern measure, assumptions for normality, linearity, and heteroskedasticity were re-tested. Here, no deviations were found compared to before centering environmental concern.

4.3 Main analysis

Before being able to perform the main moderated mediation analysis to test the proposed conceptual model, the model was built using the SEM builder in Stata. When properly built, interpreting the results from the analysis ensures that useful conclusions can be drawn concerning the strength and significance of the relationships between the variables. Therefore, while including the endogenous and exogenous variables in this study as presented in paragraph 3.3, the structural equation model is built as presented in Figure 2 below. Within the figure, the boxes represent the observed values from the dataset and the black arrows represent the paths between the variables. These paths represent the effect of one observed variable on another. Furthermore, all covariances between exogenous variables are represented by the double-headed arrow with the dashed line. To improve the clarity of the figure, the covariances between the control variable (leverage ratio) and the independent variables (ESG-based compensation, centered environmental concern, and the interaction term) has a different color than the covariances between the independent variables. Despite the color difference, all of these arrows represent covariance.

Figure 2 – Structural Equation Model for ROE



When running the analysis after building the model, the robust standard errors were used in the regression as emerged from the assumption tests in paragraph 4.2. To enable the results to be interpreted, the regression output that is relevant to perform the desired path analysis is presented in Table 4 below.

Table 4 – Regression output SEM for ROE

	Coef.	Robust SE	Z	P value	[95% conf.	interval]
Structural						
ESG score						
ESG-based comp.	13.5588	1.4313	9.47	0.000***	10.7536	16.3640
*ESG comp. * EC_ctrd.*	-.1425	0.1148	-1.24	0.215	-0.3676	0.0826
Environmental conc._ctrd.	-.3579	0.0812	-4.41	0.000***	-0.5170	-0.1988
_cons	48.5356	1.0390	46.71	0.000***	46.4991	50.5720
ROE						
ESG score	.2181	0.0560	3.89	0.000***	0.1083	0.3279
Leverage ratio	-.0115	0.0087	-1.31	0.189	-0.0286	0.0056
_cons	-4.1913	3.7499	-1.12	0.264	-11.5409	3.1584

*Note: *p < .05, **p < .01, ***p < .001*

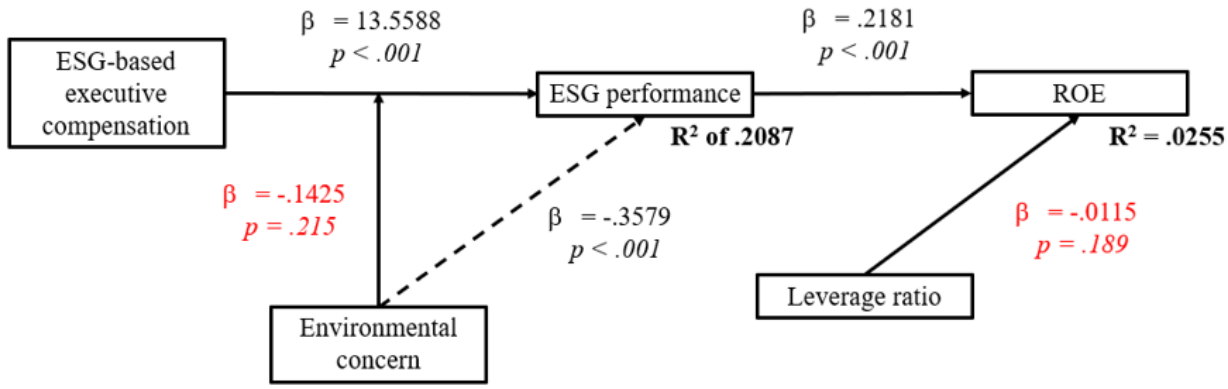
The first part of the SEM output in Table 4 represents the analysis of the relationship of the exogenous variables ESG-based executive compensation, environmental concern, and their interaction term with the endogenous variable ESG performance. From this analysis emerges that ESG-based executive compensation has a significant positive direct effect on the ESG performance of a firm ($p < .001$) with a coefficient of 13.5588. The environmental concern measure is centered, as suggested after assumption tests. Therefore, this coefficient implies that firms that have ESG-based executive compensation contracts installed are estimated to have an ESG score that is 13.5588 higher as opposed to firms that do not have these contracts installed, assuming the mean of the environmental concern measure ($M_{EC} = 47.0799$). From further examining Table 4 emerges that the interaction term between ESG-based executive compensation and environmental concern does not have a significant negative effect on the ESG score of a firm ($p = .215$) with a coefficient of -0.1425. Although the interaction term does not have a significant effect on the ESG score, a significant direct negative effect of environmental concern on the ESG score of a firm emerged from the results in the table with a coefficient of -0.3579 ($p < .001$). This coefficient implies that for every one-unit increase in the environmental concern in a country, firms experience a decrease of 0.3579 in their ESG score.

The second part of the SEM output in the presented Table 4 represents the analysis of the ESG performance of a firm on the financial performance of a firm. While interpreting these results, the model that predicts the ESG performance is held into account. From the results emerged that the ESG score of a firm has a significant positive effect on the ROE of a firm ($p < .001$) with a coefficient of 0.2181. This implies that when the ESG score of a firm increases by one unit, the ROE of a firm increases by 0.2181 percentage points. Furthermore, the control variable leverage ratio has a coefficient of -0.0115. However, the leverage ratio is not a significant predictor of ROE ($p = .189$).

A post estimation of the goodness of fit of the model provides an R^2 of .2087 for the regression on the ESG score of the firm. Therefore, it can be concluded that 20.87% of the variance in the ESG score of a firm can be explained by the independent variables ESG-based executive compensation, the environmental concern, and their interaction term. The same post estimation provides an R^2 of .0255 for the regression of the ESG score and the control variable on the ROE of a firm. Hence, 2.55% of the variance in ROE can be explained by the ESG score of a firm (which is predicted by ESG-based executive compensation, the environmental concern, and their interaction term) while controlling for the leverage ratio. The R^2 of the overall model is 21.13%, as presented in Table 10 in Appendix C.

To be able to accept or reject the stated hypotheses from Chapter 2, the results will be examined using Figure 3 presented below. Within the figure, all effects are presented as the paths between the variables, which enables path analysis. Additionally, the effect size and significance of the effects are indicated in the figure.

Figure 3 – Conceptual model with coefficients and significance



The literature review in Chapter 2 started with the relationship between the ESG performance of a firm and its financial performance. After examining Figure 3 it can be stated that the ESG performance significantly predicts the ROE of a firm ($p < .001$) with an effect size of 0.2181. Therefore, the first hypothesis of this research can be accepted. Furthermore, from the figure emerges that the ESG-based executive compensation measure is a significant predictor for the ESG performance of a firm ($p < .001$). Accordingly, also H2 is accepted. To test whether ESG performance mediates the relationship between ESG-based executive compensation and financial performance, the indirect effects in the model need to be analyzed. These indirect effects are presented in Table 5.

Table 5 – Regression output SEM of indirect effects on ROE

	Coeff.	Robust SE	Z	P value	[95% conf.	Interval]
ROE22						
ESG comp. > ESG score > ROE	2.9575	0.8315	3.56	0.000***	1.328	4.5871
*ESG comp. * EC_ctrd. . > ESG score > ROE*	-0.0311	0.0256	-1.21	0.225	-0.0813	0.0191
EC > ESG score > ROE	-0.0781	0.0278	-2.81	0.005**	-0.1326	-0.02358

Note: *$p < .05$, **$p < .01$, ***$p < .001$

As the indirect effect of ESG-based executive compensation on the ROE of the firm via its ESG performance is significant ($p < .001$) with a coefficient of 2.9575, it can be concluded that ESG performance mediates the relationship between the ESG-based executive compensation and the financial performance of a firm. Therefore, H3 is accepted. Furthermore, from Table 5 emerges that the ESG performance also significantly mediates the effect between environmental concern and ROE ($p = .005$) with a coefficient of -0.0781.

Returning to the interpretation of Figure 3, it can be found that the relationship between ESG-based executive compensation and a firm's ESG performance is not significantly influenced by environmental concern ($p = .215$). Therefore, H4 is rejected and moderated mediation is ruled out.

4.4 Robustness check

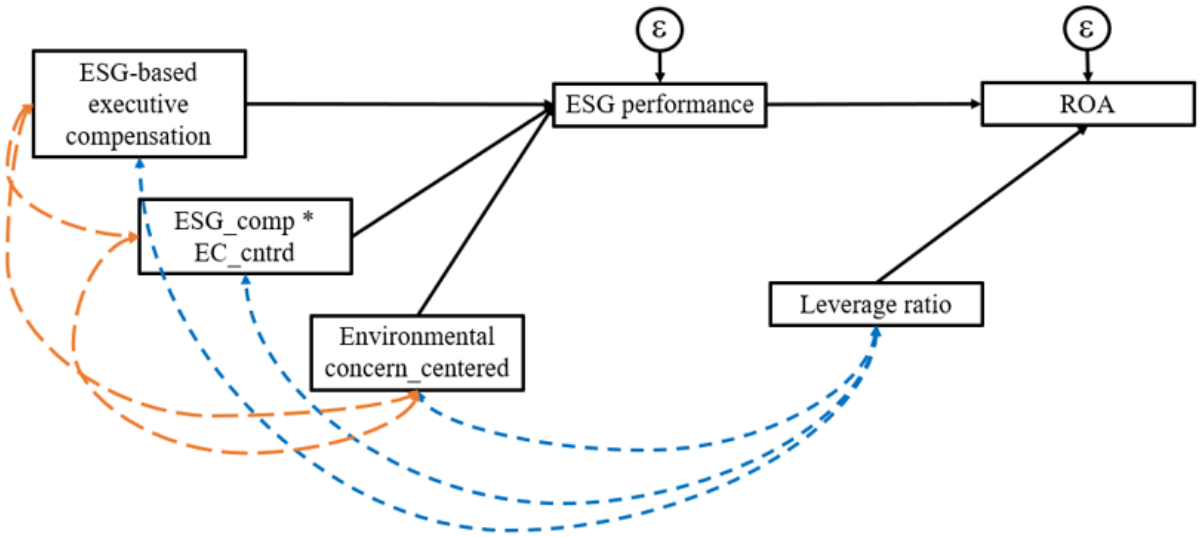
4.4.1 Assumption tests

As ROE is not the only measure that indicates the financial performance of a firm and to test the robustness of the outcomes in paragraph 4.3, the regression analysis will be performed on the ROA of a firm (Gentry & Shen, 2010; Combs et al., 2005; Hult et al., 2008). After the tests for outliers, performed as described in paragraph 4.1, another seventeen outliers were removed from the sample. Therefore, this sample existed of 646 firms in total. As before, no normality can be found by the Shapiro-Wilks test while performing the assumption checks for the regression on ROA ($W(646) = .5771$, $p < .001$). These results are indicated in Table 11 in Appendix D. However, due to the large sample size, this is less of a problem (Hair et al., 2013). Furthermore, linearity can be assumed by performing the Ramsey RESET test ($F(3, 637) = 2.03$ $p = 0.1079$). Additionally, there is no evidence of heteroskedasticity ($\chi^2 = 1.20$, $p = .2737$). As no other independent variables or control variables are included in this regression, compared to the regression on ROE, the VIF scores remain unchanged.

4.4.2 Robustness analysis

Following the same procedure as described in paragraph 4.3, a structural equation model was built using Stata as presented in Figure 4.

Figure 4 – Structural Equation Model for ROA



The regression output that emerged from the robustness check is presented in Table 12 in Appendix D.

The robustness check has an R^2 of .1950 for the regression on the ESG score of the firm. The regression of the ESG score and the control variable on the ROA of a firm provides an R^2 of .0299. The R^2 of the overall model is .2133, as presented in Table 11 in Appendix D. Therefore, it can be concluded that the overall model explains 21.33% of the variance in the ROA of a firm.

By examining the results, from the results of the SEM analysis on the ROA of the firm emerges that the ESG score of a firm has a significant positive effect on the ROA ($p < .016$) with a coefficient of 0.0356. This implies that when the ESG score of a firm increases by one unit, the ROA of a firm increases by 0.0356 percentage points. Also, the leverage ratio significantly predicts the ROA ($p < .001$) with a coefficient of -.0078.

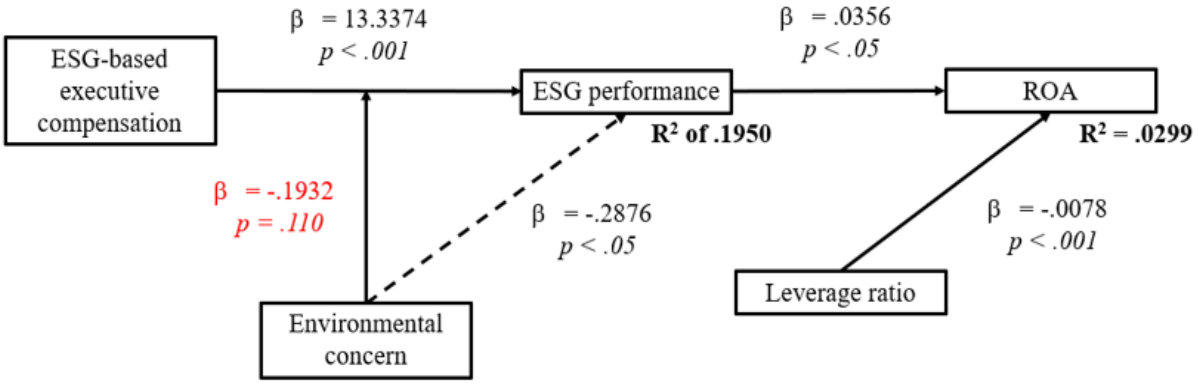
Furthermore, it can be concluded that ESG-based executive compensation has a significant positive direct effect on the ESG score of a firm ($p < .001$) with a coefficient of 13.3374. Therefore, having ESG-based executive compensation contracts installed is estimated to have an ESG score that is 13.3374 higher as opposed to firms that do not have these contracts installed, assuming the mean of the environmental concern measure ($M_{EC} = 46.7523$).

From further examining the indirect effects arises that the ESG score significantly mediates the relationship between ESG-based executive compensation and the ROA ($p < .05$) with a coefficient of .4745. While the ESG score also mediated the effect between environmental concern and ROE, this does not go for ROA as ($p = .0530$).

Additionally, the environmental concern has no moderating effect on the relationship between ESG-based executive compensation and ESG score ($p = .11$). However, also in this model, the environmental concern has a direct effect on the ESG performance of a firm ($p < .01$) with a coefficient of -.2876. Hence, when the environmental concern in a country increases by one unit from its mean, the ESG score decreases by 0.2876.

All in all, from the robustness check confirms the findings from the main analysis. All effect sizes and the significance of the effects are indicated in Figure 5.

Figure 5 – Conceptual model with coefficients and significance



CHAPTER 5 – Conclusion, Discussion and Recommendations

In this chapter, the conclusions regarding the empirical analysis will be drawn and the results that emerged from this analysis will be discussed. Additionally, this chapter will elaborate on the limitations of this research and will provide useful recommendations for both academics and practitioners.

5.1 Conclusion

Following the analysis of the results in Chapter 4, significant relationships between the variables of interest in this research were identified. As a result, H1, H2 and H3 are accepted while H4 is rejected.

Installing ESG-based executive compensation significantly increases ESG performance, which consequently translates into an improvement in a firm's financial performance. This positive effect is identified for both the ROE and ROA of the firms in the sample. Therefore, the ESG performance emerged as a significant mediating variable between ESG-based executive compensation and the financial performance of a firm.

Despite these significant findings, the hypothesized influence of the environmental concern in a country on the relationship between ESG-based executive compensation and the financial performance of a firm did not prove to be a significant effect. Concerns emerged about this hypothesis given that firms in the country with the highest level of environmental concern in the sample, Sweden, had on average the lowest ESG performance. These concerns were confirmed in the main analysis. Therefore, the environmental concern in a country is not a significant moderating variable on the relationship between ESG-based executive compensation on the financial performance of a firm via its ESG performance. Yet again, this absence of a significant effect is found in the main analysis, as well as in the robustness check.

All in all, mediation was discovered but no moderation was discovered. Hence, moderated mediation is ruled out.

Additionally, certain upfront unexpected direct effects were identified within Chapter 4. For example, environmental concern emerged as a significant predictor of a firm's ESG performance, which implies that the ESG performance of a firm decreases when the environmental concern in a country increases. Elaborating further on this relationship, this decrease in ESG performance as a result of an increase in environmental concern consequently translates into a decrease in the financial performance of a firm, as the ESG performance proves

to be a significant mediator in this relationship. However, this mediating effect of ESG performance between environmental concern and the financial performance of firms does not hold in the robustness check.

5.2 Discussion

Despite that three out of four hypotheses are accepted and useful conclusions are drawn concerning the problem statement that this research addresses, a thorough discussion of the findings is in order. Furthermore, the opposing findings that emerged from Chapter 4 need to be discussed.

Although the stated hypothesis regarding the relationship between ESG performance and the financial performance of a firm is accepted within this thesis, the financial performance is only indicated by accounting-based measures ROE and ROE. Existing research advocates for using both accounting-based and market-based measures like Tobin's Q (Ibhagui & Olokoyo, 2018; Gentry & Shen, 2010). Therefore, the relationship between ESG performance and financial performance can only be confirmed for the accounting-based measures, which is disadvantageous as these are exposed to executive manipulation (Charkravarthy, 1986).

Furthermore, as the firm size measures of total assets and the number of employees caused an absence of linearity in the model, there is no control for firm size in the model. However, existing research frequently controls for firm size when analyzing financial performance, due to certain economies of scope that may arise from superior firm size (Derwall, 2007; Velte, 2017). Hence, these economies of scope are not taken into account while analyzing the data concerning the financial performance which could cause a distorted result. Also, Putri et al. (2022), Meiryani et al. (2020), and Lopez-Valeiras et al. (2016) indicate certain explanatory power of firm size in financial performance. Therefore, it would have been more beneficial for the results of this thesis to control for firm size. Furthermore, controlling for R&D expenses would have been an improvement in the model (Velte, 2017; Kogut & Zander, 1992; Andersen & Dejoy, 2011). However, the LSEG database did not provide data on the R&D expenses of the firms in the sample.

Additionally, the ESG performance measure provided by the LSEG database is computed based on self-reported data by the company. Therefore, LSEG provides an ESGC score, in which an extra component is included which controls the ESG score for media controversies that have a significant influence on the firm's operations (LSEG, 2023). These controversies are not included in the regular ESG score that LSEG provided and therefore may be computed more independently from the company itself. Nonetheless, after careful

consideration, this thesis continued its analysis with the ESG score without the control for the controversies, as the composition of this measure remained relatively unclear, and the correlation between the ESG score and ESGC score was .9289. However, not taking these controversies into account again might cause distorted results.

Whereas the hypothesis regarding the relationship between ESG-based executive compensation and the ESG performance of a firm is accepted, this result only distinguishes between having and not having ESG-based executive compensation installed. While the ESG-based executive compensation measure is a binary variable, this measure misses information concerning the extent to which ESG objectives are included in the compensation contracts. In this thesis, no conclusions can be drawn with respect to the effect of having single or multiple ESG objectives included in the compensation contracts. For example, Tonello (2024), Bebchuk and Tallarita (2022), and Flammer et al. (2019) conducted their analysis with ESG-based executive compensation using a keyword search in the proxy statements of the firms to get a clearer understanding of to which extent ESG objectives are incorporated. Being able to draw useful conclusions on the significance of the effects of including more ESG objectives in a compensation contract would certainly improve the results of this research. Therefore, this is a clear limitation.

Furthermore, as the hypothesis regarding the influence of environmental concern on the relationship between ESG-executive compensation and ESG performance was rejected, discussion on the proposed hypothesis is in order. As indicated in paragraph 3.2.2, the environmental concern measure is an assumption, as data is missing on the environmental concern of the countries in the sample. For the year 2020, the mean between the 2019 and 2021 values was adopted as environmental concern measure. However, the true values might deviate from the estimated value between the 2019 and 2021 values, which would affect the results of the analysis. Next to that, the environmental concern measure only consisted of one item. Therefore, the construct is relatively weak due to its vulnerability to measurement errors (Allen et al., 2022). Additionally, this construct instability is a possible explanation for the significant negative direct effect between environmental concern and ESG performance. Theoretically, as well as intuitively, it seems contradictory that ESG performance directly decreases due to the environmental concern in a country.

Concerning the theoretical argumentation for the rejected hypothesis, existing literature states that stakeholder pressure is one of the most prominent determinants of pro-environmental behavior (Clement, 2005; Yu & Choi, 2016). Therefore, these pressures would encourage executives to pursue ESG objectives in a multitasking environment. However, as this

hypothesis is rejected, the idea emerges that executives are under higher pressure from another factor than they are pressured by the societal stakeholders. For example, Damert and Baumgartner (2018) indicate that external political pressures are of higher influence than societal pressures, which would explain that the environmental concern in a country does not have an effect on executive decision-making in a multitasking environment. Additionally, it cannot be ruled out that the environmental concern among individuals did not translate into certain activism and application of stakeholder pressure towards firms. Despite that environmentally concerned individuals are expected to contribute to the solution of environmental pressures according to its definition (Ester & Van der Meer, 1982), it cannot be confirmed that this causes activism. Lastly, the lack of significant results concerning environmental concern may have emerged as this study did not cover analysis of panel data, due to the scarcity of ESG data before 2020. As environmental concern has increased drastically in 2021 as presented in paragraph 3.2.2, the possibility that environmental concern has a stronger influence on executive decision-making remains. As a result, the absence of significant results regarding the moderating influence of environmental concern can arise.

All in all, however significant, the results of this research should be interpreted in line with the limitations mentioned above. Furthermore, the following paragraph will provide certain suggestions for future research, mainly based on the limitations that are mentioned in this discussion. Additionally, it will elaborate on the implications of the results for academics, as well as for practitioners.

5.3 Implications and recommendations

Due to the increasing environmental pressures that exist nowadays, it is vital to address these pressures. Society expects firms to actively engage in relieving these pressures and therefore, firms need to earn their license to operate. To actively engage in relieving the earth of environmental pressures, these firms increasingly choose to invest in their ESG performance and explore ways to increase ESG performance efficiently. Incentivizing executives using ESG-based executive compensation has proven to be a viable solution to this issue, as has been confirmed by this study. Hence, it is wise for firms to implement ESG-based compensation contracts when an enhancement of ESG performance is desired. Additionally, it is advised for firms to continue to invest in an improvement of their ESG performance, as this enhances the financial performance of a firm. Furthermore, as financial incentivization emerged as a significant influence on ESG performance, it is tactful for firms to explore other ways of

incentivization to enhance ESG performance. Also for academics, it is useful to engage in the search for other ways of incentivization.

Elaborating further on the discussion in the previous paragraph, it is interesting for academics to follow up on the limitations of this research. As the market-based measures are neglected when examining the financial performance, future research can be conducted on the effect of ESG performance on these financial performance measures. This might also resolve the issues this study experienced regarding the control variable firm size. It is plausible that adding firm size as a control variable, while examining market-based measures, will improve the model as previous literature confirms its influence on financial performance (Derwall, 2007; Velte, 2017; Putri et al. 2022; Meiryani et al., 2020; Lopez-Valeiras et al., 2016).

Moreover, academics are recommended to examine the relationship between ESGC scores and financial performance further, as the control for controversies might change the interpretation of the results in this study. Despite the high correlation statistics, it remains plausible that these controversies add information to the ESG score of a company. This extra information might improve the interpretation of the results. However, academics are advised to conduct extensive research regarding the computation and influence of these controversies on the ESG score before adopting the ESGC score in the model.

Furthermore, it is interesting to examine the influence of the extent to which ESG objectives are included in the compensation contract, as discussed in the previous paragraph. For academics, applying a keyword search in the proxy statements of the firms in the sample to identify the number of ESG objectives in the compensation contracts will improve the interpretability of the results.

Lastly, for academics, a suggestion is to investigate the role of the environmental concern concerning executive decision-making in multitasking environments, as no significant effect was identified concerning this moderating influence. To successfully conduct this investigation, the construct instability needs to be addressed, as discussed in the previous paragraph. Additionally, panel data analysis can be used in the future, which possibly identifies a more significant influence of environmental concern on executive decision-making, due to the increase in percentage or influence over the years. Furthermore, the literature needs to be reviewed, where papers that address other external influences in executive decision-making are examined. Building on this, executive decision-making in a multitasking environment can be explored using qualitative research, where this decision-making process within executives can be uncovered properly.

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Appendix A – Disclosure of the use of AI Tools

Below are examples of the way that AI tools were used in order to successfully complete this thesis.

Table 6 – Disclosure of the use of AI Tools

Tool	Date of access	URL	Query
ChatGPT	Between 13/03/'24 & 20/05/'24	https://chatgpt.com/	How can I ideally structure the paragraph on the argumentation of a hypothesis?
	May & June '24	https://chatgpt.com/	I get the following error notification in Stata; …. What can I do to resolve this issue?
Consensus	Between 01/01/'24 & 20/04/'24	https://consensus.app/search/	Provide papers on performance-based incentives to align interests
SCISPACE	Between 01/01/'24 & 20/04/'24	https://typeset.io/	Provide papers on the effect between ESG performance and financial performance
Grammarly	11/06/'24	https://app.grammarly.com/	Suggestions by tool: 'by means of' → 'using' / 'with respect to' → '~~with respect~~ to'

Appendix B – Assumption tests

Table 7 – Shapiro-Wilk test for ROE

		Shapiro–Wilk test ROE			
Variable	*Obs*	*W*	*V*	*z*	*Prob>z*
ROE22_resid	663	0.6306	160.346	12.358	0.0000

Figure 6 – Scatterplot for linearity ROE

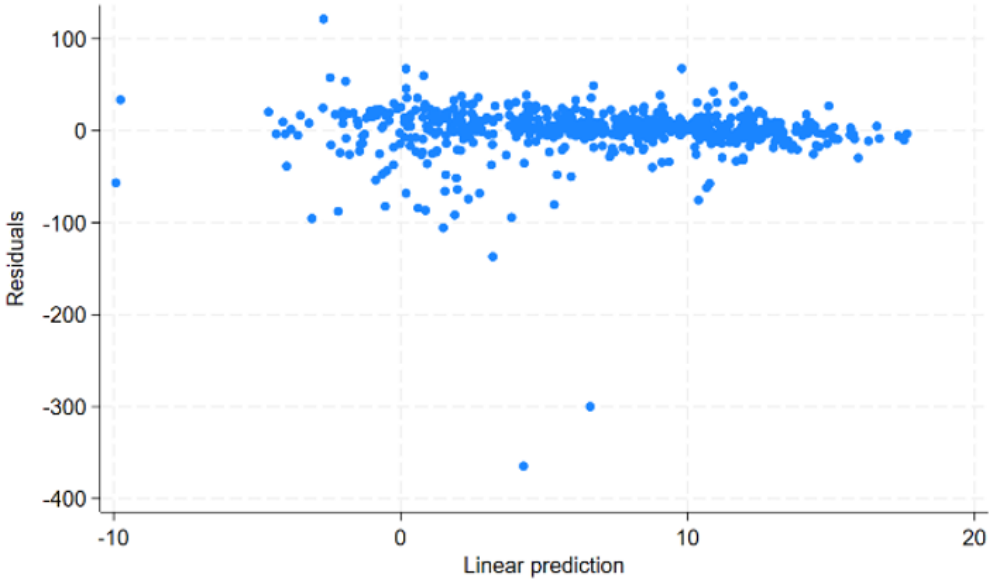

Table 8 – VIF scores

Variable	VIF	1/VIF
EC	2.24	0.446629
Interaction	2.15	0.46408
ESGscore	1.29	0.776207
ESG comp.	1.17	0.851072
Lev. Ratio	1.05	0.949348
Mean VIF	1.58	

Appendix C – Main analysis

Table 9 – Model fit for ROE

Dependent variables	Fitted	Variance Predicted	Residual	R-squared	mc	mc2
Observed						
ESG score	404.965	84.499	320.466	0.2087	0.4568	0.2087
ROE	823.891	21.020	802.871	0.0255	0.1597	0.0255
Overall				0.2113		

Appendix D – Robustness analysis

Table 10 – Shapiro-Wilk test for ROA

		Shapiro–Wilk test ROA			
Variable	*Obs*	*W*	*V*	*z*	*Prob>z*
ROA22_resid	646	0.5771	179.331	12.616	0.000

Table 11 – Model fit for ROA

Dependent variables	Fitted	Variance Predicted	Residual	R-squared	mc	mc2
Observed						
ESG score	392.568	76.563	316.006	0.1950	0.4416	0.1950
ROA	55.588	1.664	53.924	0.0299	0.1730	0.0299
Overall				0.2133		

Table 12 – Regression output SEM for ROA, including indirect effects

	Coef.	SE	Z	P value	[95% conf.	Interval]
Structural						
ESG score						
ESG-based comp.	13.3374	1.4214	9.38	0.000***	10.5514	16.1234
*ESG comp. * EC_ctrd.*	-.1932	0.1209	-1.60	0.11	-0.4303	0.0438
Environmental conc._ctrd.	-.2876	0.0882	-3.26	0.001**	-0.4604	-0.1147
_cons	49.1143	1.0376	47.33	0.000***	47.0806	51.1480
ROA						
ESG score	.0356	0.0148	2.40	0.016**	0.0066	0.0646
Leverage ratio	-.0078	0.0020	-3.82	0.000***	-0.0118	-0.0038
_cons	2.9794	0.8769	3.4	0.001**	1.2607	4.6981
Indirect effects						
ROA						
ESG comp. > ESG score > ROE	.4745	.2037	2.33	.0200**	.0752	.8738
*ESG comp. * EC_ctrd. . > ESG score > ROE*	-.0069	.0052	-1.33	.1830	-.0170	.0033
EC > ESG score > ROE	-.0102	.0053	-1.94	.0530*	-.0206	.0001