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Incentivizing Sustainability

Executive Compensation Tied to ESG Goals: Analysis of Nordic Public Companies

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Summary

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Key Words: ESG-linked compensation, ESG Performance, Financial Performance, Corporate Governance, Motivation

Purpose: To investigate the relationship between ESG-linked executive compensation and the performance of Nordic publicly listed companies in terms of both ESG and financial metrics.

Methodology: The econometric approach utilized in this study involves fixed effects panel regressions. The regressions use ESG scores and financial performance metrics as dependent variables, with ESG-linked executive compensation (a dummy variable) as the main explanatory variable. We introduce controls for firm characteristics, including year effects. Additionally, an exploratory study is conducted using manually collected data on a smaller sub-sample to analyse the impact of the size of ESG-linked compensation on performance.

Theoretical perspectives: The theoretical perspective for this paper consists of Corporate Governance, Agency theory, Shareholder- and Stakeholder theory, as well as theories cornering motivation i.e., Social-Approval, Self-Approval, and Reciprocity.

Empirical foundation: Our sample consists of publicly listed Nordic companies, covering the period from 2014 to 2022, with a final dataset comprising 1,272 firm-year observations. Additionally, a smaller sub-sample was analysed to specifically assess the impact of the size of ESG-linked compensation on performance.

Conclusions: The study finds that while ESG-linked executive compensation positively impacts ESG performance, its effect on financial performance is less consistent. These results suggest that while ESG-linked pay structures may enhance sustainability outcomes, their financial benefits are not immediately evident.

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1. Introduction

This section covers the background of the study, a problem discussion, along with the purpose and research questions that will be investigated. The primary findings and our contribution to the area of research are presented after this.

1.1 Background

The concept of Environmental, Social, and Governance (ESG) was formalized in the early 2000s, building on the principles of socially responsible investing that emerged in the 1960s (UN Global Compact, 2004). The UN Global Compact's "Who Cares Wins" report, which promoted the integration of ESG into financial markets, was a significant turning point, having been released in 2004 (UN Global Compact, 2004). The incorporation of ESG principles into investment decisions has been growing (Spierings, 2022), as companies and investors adopt a longer-term outlook and consider potential risks and possibilities in the future. This is seen as a way to restore public confidence in the markets and build a successful economic future. Progress has been made as researchers and investors develop analytical frameworks that justify the integration of ESG into investment research (UN Global Compact, 2004). An important turning point in the worldwide fight against climate change was the adoption of the Paris Agreement in 2015, and as it highlights the need for significant reductions in greenhouse gas emissions, this international treaty has encouraged businesses all over the world to adopt more aggressive ESG practices (European Council, 2024).

The Global Reporting Initiative introduced the Sustainability Reporting Guidelines in 2019, providing a standardized framework for organizations to disclose their economic, environmental, and social impacts (GRI, 2019). In the Nordic region, specific regulations have driven the adoption of ESG practices. Stakeholders increasingly demand responsible business practices and transparent sustainability reporting (Spierings, 2022). This has influenced corporate behaviour, for example by Sweden's mandatory sustainability reporting requirements, leading to more transparent and accountable business practices (Grant Thornton, 2022).

ESG, derived from the triple bottom line concept, covers environmental, social, and governance dimensions, providing a common language for assessing corporate sustainability (Crace & Gehman, 2023). According to a report by PwC (2022), over 80% of institutional investors now consider ESG criteria when making investment choices. In the Nordic region, companies are leading the way in ESG adoption, with a significant increase in the number of firms linking executive compensation to ESG performance metrics (Sullivan & Bujno, 2021). Despite the lack of a universally accepted definition, frameworks like Refinitiv ESG Scores offer methods for evaluating ESG performance, using over 630 variables from diverse sources (Refinitiv, 2023).

Furthermore, ESG's integration into corporate governance can be understood through various theoretical perspectives. Agency theory highlights the principal-agent relationship, where aligning executive incentives with shareholder interests can mitigate conflicts and improve performance (Jensen & Meckling, 1976). To align these interests, incentive systems that incorporate ESG performance are essential. Friedman's (1962) shareholder theory asserts that a corporation's primary goal is to maximize shareholder value. In contrast, Freeman et al.'s (2010) stakeholder theory argues that companies should consider the interests of all stakeholders, including employees, consumers, and the public. This approach emphasizes balancing various demands to create value for all parties involved. It is important to understand the impact of motivation on individual behaviour within corporate governance, and recognizing determinants of motivation is essential for developing effective incentive structures within organizations (Benabou & Tirole, 2003). Hence, linking executive compensation to ESG performance signals a company's genuine commitment to sustainability. This alignment can enhance a company's credibility and signal to stakeholders its dedication to improving ESG outcomes.

The increasing integration of ESG principles into corporate governance and executive compensation strategies reflects a broader commitment to sustainable business practices (Spierings, 2022). By aligning executive incentives with ESG performance, companies can enhance their sustainability outcomes, thereby building long-term value and trust among investors, employees, and the broader community. As businesses continue to navigate the complexities of ESG integration, it becomes clear that such measures are not merely regulatory obligations but are of strategic importance for sustainable growth and competitive advantage in the global marketplace.

1.2 Problem Discussion

ESG factors have clearly become integral to corporate governance and investment decisions in recent years. The Nordic region, known for its progressive stance regarding sustainability (Potter, 2024), provides a fitting context for examining this relationship. Previous studies have demonstrated that strong ESG practices can enhance corporate reputation, stakeholder trust, and long-term viability (Khan & Gupta, 2023; Saha & Khan, 2024). For example, Sweden's requirements for mandatory sustainability reporting have significantly influenced corporate behaviour, fostering greater transparency and accountability (Cohen et al., 2023; Homroy, Mavruk & Nguyen, 2023).

Despite the increasing integration of ESG factors into corporate strategy, there remains a gap in understanding the specific impacts of ESG-linked executive compensation on corporate outcomes. Existing research presents mixed results. For instance, Cohen et al. (2023) found that linking CEO bonuses to ESG targets can improve sustainability practices but did not establish a clear connection to financial performance. Similarly, Homroy, Mavruk, and Nguyen (2023) observed improvements in environmental performance with ESG-linked pay but found no direct improvement in financial metrics such as Return on Assets (ROA) or Tobin’s Q. These inconclusive findings highlight the need for a deeper investigation into how these compensation structures affect both ESG and financial performance.

Understanding the influence of ESG-linked executive compensation, also known as ESG pay (Homroy, Mavruk & Nguyen, 2023), is important for several reasons. Firstly, it addresses the increasing stakeholder demand for corporate accountability and sustainable business practices. Stakeholders, including investors, consumers, and regulatory bodies, increasingly prioritize companies that demonstrate genuine commitment to ESG principles (Flammer, Hong & Minor, 2019). Secondly, it provides insights for e.g. corporate boards, informing the design of compensation structures and understanding the motivation of executives to promote sustainability goals (Sarhan & Al-Najjar, 2023). Lastly, it aids investors in making informed decisions, as they incorporate ESG considerations into their investment strategies to mitigate risks and enhance long-term returns (Cohen et al., 2023).

1.3 Purpose and Research Questions

This study analyses the relationship between ESG-linked executive compensation and corporate performance of Nordic companies, to understand the impact of the compensation structure in a well-developed region in regard to ESG practices.

Building on the limitations of previous research, which primarily examined ESG pay as a dummy variable (Cohen et al., 2023; Homroy, Mavruk & Nguyen, 2023; Aliti & Wen, 2023), this paper will conduct a more detailed analysis of compensation practices within a selection of companies. Specifically, it will investigate the size of ESG pay and its relationship to sustainability-linked targets. This additional analysis aims to provide insights into whether the proportion and amount of compensation tied to these targets affect both ESG and financial performance.

The purpose of this study is to examine if ESG pay improves firms' ESG and financial performance. By addressing the research questions below, this study seeks to contribute to the existing literature by providing empirical evidence on the effectiveness of ESG-linked compensation. This research will enhance our understanding of the strategic role of executive incentives in promoting sustainability and financial performance in management accounting. The research questions are:

RQ 1: *"How do ESG pay in Nordic companies influence their ESG performance?*

RQ 2: *"How do ESG pay in Nordic companies influence their financial performance?"*

RQ 3: *"Is the effect of ESG pay on ESG- and financial performance dependent on the size of ESG pay?"*

1.4 Findings

The empirical findings of the thesis indicate that ESG-linked executive compensation significantly improves ESG performance. Specifically, for the same year, ESG Scores increased for firms with ESG-linked compensation, suggesting a strong impact on ESG scores in the same year the ESG-linked pay is utilized. However, the effect on financial performance is more mixed and generally non-significant. The exploratory study, which analysed the impact of the *size* of ESG-linked compensation, found that while the weighting of ESG targets in

variable remuneration is non-significant, the quantified amount of ESG-linked compensation has a positive effect on ESG performance. No significant results were found for financial performance in the explanatory study.

Overall, the results highlight that while ESG-linked executive compensation can enhance ESG performance, its financial benefits are less clear and may depend on specific conditions or longer time frames. Additionally, the findings of this study suggest that the extent of ESG-linked compensation matters, providing valuable guidance for corporate boards, policymakers, and investors in designing effective executive compensation packages and evaluating a company's commitment to sustainability. These findings could set the stage for future research to explore these dynamics in larger and more diverse samples.

1.5 Contribution

This study contributes to the existing literature on ESG-linked executive compensation by offering a detailed analysis of its impact on corporate performance. To the best of our knowledge, there exists no previous studies investigating this relationship by examining the effects of size of ESG pay rather than just its presence, thus filling a gap in the literature.

Utilizing manually collected data, this research investigates how the size of ESG-linked compensation affects both ESG and financial performance. While previous studies, such as those by Cohen et al. (2023) and Homroy, Mavruk, and Nguyen (2023), have explored the presence of ESG pay using a dummy variable, they have not quantified its size. This study addresses this gap by analysing both the weighting and amount of ESG-linked pay.

Building on the dummy variable approach, our study enhances the understanding by incorporating detailed data on the size of ESG-linked pay. This provides a more nuanced view of how different levels of commitment to ESG targets within executive compensation structures impact company performance. The small sample size for the exploratory study, while a limitation, provides an indication of the relationship between ESG pay and corporate performance, encouraging further research in this area.

1.6 Outline

The remainder of the paper is structured as follows. Section 2 provides an overview of the theoretical background, including a comprehensive literature review that contextualizes the study within existing research, which together with the theoretical framework lays the foundation for the hypotheses. The third section explains the methodology of the thesis, detailing the analysis approach. Section 4 describes the data. The fifth section presents the study's findings and results, which are then discussed in the next section. The paper finishes with the conclusion, including implications and suggestions for future research. Tables not presented in the text (Table 15-24) are available in the Appendix.

2. Theoretical Background

In this section, the theoretical basis for the study is presented. First, the concept of agency theory and extrinsic motivation will be covered. Then, it is explained how extrinsic incentives should be supplemented with other motivational factors such as social approval, self-approval, and reciprocity. Finally, how incentives can be used to mitigate asymmetry is discussed.

2.1 ESG

The relevance of sustainability grows, which makes stakeholders increasingly demand businesses to be responsible and report on their sustainability efforts (Spierings, 2022). This shift has highlighted the need for a universal terminology that stakeholders can use to discuss and assess corporate sustainability initiatives, which vary across different sustainability frameworks. Among these frameworks is ESG, developed from the triple bottom line concept of sustainability (Crace & Gehman, 2023). It emphasizes the simultaneous consideration of three sustainability dimensions, which are environmental (planet), social (people), and economic (profit). Despite its popularity and widespread adoption among businesses and stakeholders, there is still no universally accepted definition of ESG.

Refinitiv's ESG Scores use publicly available information to assess a company's ESG performance (Refinitiv, 2023). They evaluate more than 630 ESG variables from sources encompassing the majority of the global market, including media and business publications. By evaluating a company's sustainability initiatives and risks, these scores assist investors in taking ESG considerations into account when making investment decisions. Refinitiv, (2023) rates governance, social, and environmental factors in ten categories so that businesses can be compared and benchmarked, as seen in Figure 1. Based on media reports, the scores also show how businesses address ESG-related controversies (Refinitiv, 2023).

Figure 1: Environmental, Social and Governance; Source: Refinitiv, 2023

2.1.1 Environmental Pillar

The environmental impact of businesses is the main topic of the environmental component of ESG. It covers pollution control, waste management, resource consumption, climate change management, and natural resource conservation (Nordea, 2023). Businesses that take environmental considerations into account work to lessen their own environmental effect and advance sustainable growth (Nordea, 2023).

2.1.2 Social Pillar

Nordea, (2023) describes social responsibility as the involvement of a company's interactions with society, encompassing its employees, customers, suppliers, and the broader community. It addresses areas like working conditions, diversity and inclusion, human rights, customer relationships, community involvement, and product accountability. Companies committed to incorporating social aspects aim to act responsibly toward all stakeholders (Nordea, 2023).

2.1.3 Governance Pillar

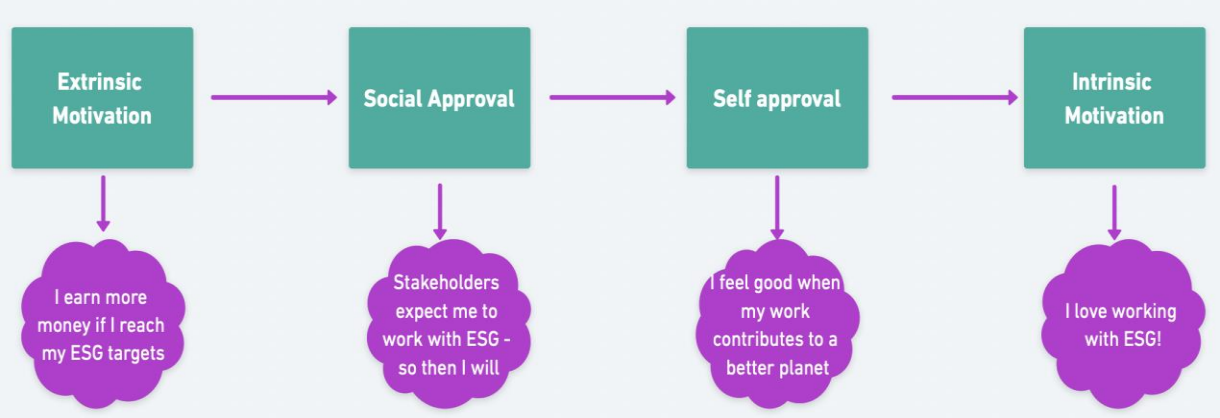
Management, organization, and openness of a company is the centre of corporate governance (Nordea, 2023). Moving on, it involves establishing robust and accountable board frameworks, adhering to clear ethical business practices, managing risks, and maintaining transparency in decision-making processes. Good corporate governance helps companies conduct their business ethically and efficiently. For instance, this includes combating corruption and adhering to tax laws (Nordea, 2023).

2.2 Corporate Governance

Corporate governance refers to the procedures and frameworks that establish the direction and management of businesses (Harvard, 2016). It focuses on finding a balance between the interests of different stakeholders, such as the community, employees, management, and shareholders. It guarantees transparency, equality, and responsibility in a business's interactions with its stakeholders. The board's obligations, which include establishing company strategies, supervising management, controlling risk, and guaranteeing financial integrity, are important components (Harvard, 2016).

It is emphasized how important it is to understand how motivation can influence individual behaviour within corporate governance. Recognizing both intrinsic and extrinsic motivation is essential for creating effective incentive structures within organizations Benabou & Tirole (2003). Intrinsic motivation refers to engaging in activities purely for the joy and satisfaction they bring, driven by internal rewards like personal fulfilment and self-approval. In contrast, extrinsic motivation involves performing tasks to earn external rewards or avoid punishments, such as compensation or social approval (Deci & Ryan, 2000; Benabou & Tirole, 2003). This is illustrated in Figure 2 below.

Figure 2: Motivation Spectrum; Own



2.2.1 Agency Theory

One of the oldest and most common ways to describe social interaction is through agency theory. The interaction between the principal, who assigns work, and the agent, who completes it, is the focus of the agency theory (Eisenhardt, 1989; Jensen & Meckling, 1976). The relationship that exists between a company's owners and the management is a prominent illustration of this type. Eisenhardt (1989) refers asymmetry to factors that have an impact on the principal-agent interaction, and it is linked to the power that the agent obtains. Thus, companies want to reduce asymmetry in order to reduce agency costs. Goal, risk preference, and information asymmetry are the three forms of asymmetry that often define these relationships (Eisenhardt, 1989). In agency theory, it is assumed that both the principal and the agents are value maximizing, which may cause an agent to act in his own self-interest as opposed to the principal's best interest (Jensen & Meckling, 1976). Jensen and Meckling (1976) claim that in order to mitigate asymmetry between the agent and the principal, the principal needs to make an effort to match the agents' interests. An approach to this is through the implementation of extrinsic incentive systems and according to Mitnick (2019), the agency theory's economic component is essentially an incentive problem. He therefore describes the agency problem as the challenge of selecting a compensation system that will produce behaviour by the agent consistent with the principal's preferences. Eisenhardt (1989) also underscores the significance of incentives and self-interest in organizational thought.

2.2.2 Shareholder Theory

Moving on, Friedman's (1962) shareholder theory is another older way to describe the relationship between the firm's owners and management, where both agency theory and Friedman's shareholder theory emphasize the importance of the company’s primary goal which is to maximize shareholder value. Doing so is equivalent to acting responsibly in a market-driven economy. Friedman (1970) challenges the idea that companies would be morally and socially conscious by nature. He argues that when business leaders allocate resources based on their personal interpretations of social responsibility, they may inadvertently use shareholder funds for initiatives that do not align with the values of all shareholders, given the subjective nature of social responsibility. Therefore, a company's focus should be on maximizing profitability, where any actions beyond legal requirements, such as environmental conservation efforts, are considered redundant to a company's primary obligations (Friedman, 1970). Like with agency theory, performance-based pay is something that can be used to reduce the

asymmetry between the management and shareholder, to ensure that profits are maximized (Friedman, 1970; Mitnick, 2019). According to Tse (2011), following the shareholder theory, the management has a clear idea of which specific stakeholder to prioritize in order to maximize shareholder value and create value. This advantage is evident when contrasting it with the stakeholder approach, which necessitates the consideration of more stakeholders and thus more objectives.

While agency theory and shareholder theory have long provided foundational frameworks for understanding corporate behaviour, it could be interpreted that they tend to overly focus on the extrinsic perspective of motivation. Over the years more recent theories have come to light, shifting away from the views of extrinsic motivation as the prime determinant, highlighting additional determinants of motivation.

2.2.3 Social Approval

One of the more contemporary theories of determinants of motivation to explain corporate behaviour is social approval. Individuals aim to excel to elevate their social standing among peers and principals, motivating them to perform well, not just for financial gains, but also to enhance their societal position (Ellingsen & Johannesson, 2005). According to Ellingsen and Johannesson (2005), people are highly motivated by social approval, which they obtain by taking advantage of the appreciation or disapproval of others. They claim that humans naturally want to be liked by others and work hard to avoid being disapproved of by them. This is something that the authors acknowledge, as receiving acceptance evokes pleasant emotions like pride and enjoyment, but receiving disapproval stimulates negative emotions like shame and embarrassment. Additionally, Fehr and Falk (2002) argue that when people know that others can see their actions, their contribution to public goods increases. The authors highlight that social approval and disapproval affect how we behave. Economic benefits and social acceptance frequently reinforce one another (Fehr & Falk, 2002). For instance, they argue that receiving public praise for a bonus at work results in both monetary gain and social recognition. However, the connection between these rewards is not necessarily straightforward.

As companies often link ESG targets to executive compensation as a response to the growing social pressure to prioritize sustainable practices, the theory of social approval is especially relevant. This social pressure could come from various stakeholders, including investors,

customers, employees, and regulatory bodies, who expect companies to contribute positively to society and the environment (Fehr & Falk, 2002; Spierings, 2022). By aligning executive compensation with ESG performance, companies can address these expectations and enhance their social status. When companies publicly commit to and report ESG-linked compensation, they signal their dedication to sustainability. This public commitment can lead to positive media coverage and accolades from industry groups, enhancing the company's and the executive's reputation. Executives who achieve their ESG targets are likely to receive praise not only within their organization but also from external stakeholders. In line with Ellingsen and Johannesson (2005), this recognition acts as a powerful motivator, encouraging executives to continue prioritizing ESG goals.

2.2.4 Self Approval

Ellingsen and Johannesson (2005) also highlight the importance of esteem, or self-approval, as a behaviour motivator, where they explain that people are motivated by their need for acceptance and admiration from others in addition to outside incentives. According to the authors, this desire comes from a need to uphold one's own esteem. People's moral behaviour persists in the absence of outside rewards, which can be explained by their need to uphold their self-esteem. Fehr and Falk (2002) mention that social approval and self-approval are strongly linked since people want to feel good about themselves as well as seek for other people's acceptance. The authors emphasize that the desire for social approval is often intertwined with the desire to earn this approval.

Further, Ellingsen and Johannesson (2005) explain self-approval by examining in additional detail about the expectations of the principal, emphasizing how crucial it is in forming contractual relationships. They argue that when an agent is given a difficult assignment by a principal, it is important for the agent to understand that accomplishments will be greatly appreciated, but failures won't always be looked down upon. Furthermore, this can therefore contribute to increased self-approval. This understanding stems from the principal's initial assessment of the agent's capabilities, which in turn influences the principal's contract options (Ellingsen & Johannesson, 2005). Therefore, they acknowledge that contracts that are trustworthy and offer generous rewards for good performance can lead to better performance through creating a sense of self-worth and esteem among agents. The difference is especially noticeable compared to contracts that have low compensation and strict requirements, where

the same effects are more difficult to achieve (Ellingsen & Johannesson, 2005). Additionally, there is a tangible effect when the contracts are provided by optimistic principals who treat poor performance as an exception and hence treat it with less contempt. As esteem delves deeper into the agent's need for recognition and approval, it essentially works better as a motivator under optimistic leadership (Ellingsen & Johannesson, 2005).

This notion aligns with the findings of Gneezy and Rustichini (2000), which suggests that larger monetary incentives can significantly improve performance. In their experiments, they found that subjects who were offered substantial rewards performed much better compared to those who received smaller incentives or no compensation. This improvement with higher rewards supports the idea that generous compensation can enhance motivation and effort, thereby leading to better performance outcomes. This further emphasizes the importance of adequate and well-structured incentives in motivating agents and optimizing their performance (Gneezy & Rustichini, 2000).

For many executives, personal values could align closely with ESG principles. By linking compensation to ESG performance, companies can ensure that these values are reflected in their executive incentives. This alignment can lead to greater job satisfaction and a stronger commitment to the company’s sustainability goals. Executives who feel that their personal values are acknowledged and rewarded by their organization could be more likely to be motivated and engaged, thus making self-approval relevant in the context of ESG pay.

2.2.5 Stakeholder Theory

In opposition to Friedman's focus on maximizing shareholder value for corporate responsibility, Freeman et al. (2010) developed the stakeholder theory. He maintained that a company's main goal should include the interests of all stakeholders in addition to increasing shareholder wealth. Hence, stakeholder theory could be compared to social approval, as they both consider the impact of outside pressure from society. According to Tarmuji et al. (2016) a stakeholder is any individual who has the ability to impact or be impacted by the success of the organization. This includes, but is not limited to, shareholders, investors, employees, consumers, and the general public. According to this strategy, businesses must take society interests into account in addition to shareholder interests (Rönnegard & Smith, 2013). They also stress that management must resolve any conflicts of interest between the company's

stakeholders and maximize value creation. It is management's responsibility to develop solutions to increase value in conflict situations while balancing the demands and interests of all parties involved (Freeman et al., 2010)

2.2.6 Reciprocity

Another theory that can be a reason for agents and principals to act in a certain way is through reciprocity. The theory of reciprocity is particularly relevant in the relationship between agent and principal, where both parties can be influenced by each other's behaviour and intentions. According to Fehr and Falk (2002), reciprocity is a contingent social preference that profoundly affects agents' behaviour according to how they interpret the principal's acts. They continue by explaining that an agent may respond favourably to the principal's payoff if they believe the principal has acted kindly. On the other hand, the agent could react poorly if they think the activities are negative. The fairness of the goals and results connected to the principal's actions affects this perception (Fehr & Falk, 2002). Additionally, the authors present evidence that, in cases when agents are treated nicely by the principal, reciprocity can result in voluntary cooperation.

Reciprocity can be connected to ESG pay. For instance, if a board of directors emphasizes the importance of ESG criteria and incorporates them into the executive's incentive contracts, the executive might feel positively about working for a company that values sustainability. This positive sentiment could motivate the executive to reciprocate with increased effort and commitment. Even if the ESG component is a small part of the contract, it can still be perceived as a positive signal that the executive wants to respond to positively. On the other hand, if the board decides against investing in environmental initiatives or including them in incentive contracts, the executive might perceive this as a lack of commitment to sustainability. This negative signal could lead to a form of negative reciprocity, where the executive feels unmotivated.

To understand the relationship between principals and agents in corporate governance, it is important to grasp what motivates agents. Moving on, it is therefore important to mitigate asymmetry to encourage both high performance and commitment to common goals.

2.2.7 Mitigating Asymmetry

Cohen et al. (2023) discusses the mitigation of asymmetry via incentives specifically through the lens of sustainability. They argue that connecting incentive systems to ESG can indirectly signal future financial performance or serve as a primary objective for principals, but it may not hold significant importance for the self-interest of agents. Furthermore, connecting incentive systems to ESG can indirectly signal future financial performance or serve as a primary objective for principals, but it may not hold significant importance for the self-interest of agents. Hence, Cohen et al. (2023) addresses the signalling effect theory of ESG Pay.

Performance is a function of ability and motivation, according to Chung (1969). Abrutyn and Lizardo (2023) also highlight the significance of rewards and incentives in enhancing motivation and performance. According to their perspective, effective incentive and compensation systems positively influence motivation, which subsequently improves performance. This suggests that enhanced incentives are likely to result in superior performance. Additionally, it emphasizes how a company's commitment to ESG objectives can be shown by the choice to tie CEO compensation to ESG performance (Cohen et al., 2023). It specifically addresses worries about "greenwashing" by showing that businesses can demonstrate a sincere commitment to enhancing ESG outcomes, such lowering greenhouse gas emissions, by using ESG-linked compensation. This is thought to be a strategy to strengthen the company's claims of making ESG changes more credible (Cohen et al., 2023).

2.3 Literature Review

2.3.1 ESG Pay & Corporate Governance

It has previously been shown that firms with better corporate governance have a higher likelihood of providing ESG-linked compensation contracts (Hong, Li & Minor, 2016; Flammer, Hong & Minor, 2019; Ikram et al., 2019; Ikram, Li & Minor, 2023). A study by Cohen et al. (2023) investigates how linking executive pay to ESG targets affects a company's sustainability performance, looking at a global sample of over 9,000 companies between 2011 and 2020. They found that when companies tie executive bonuses to ESG targets, it helps align the company's actions with what shareholders want, leading to better sustainability practices. While the authors found that ESG pay improves ESG performance, they also noticed that this does not always mean the company will see financial benefits. Another study by Sarhan and

Al-Najjar (2023) looks at the broader picture of corporate governance and its impact on corporate social responsibility (CSR) in UK firms, specifically of FSTE 350 listed firms between 2002 and 2016. They discovered that strong governance tends to boost CSR activities. Similar results were found by Tsang et al. (2021). This shows that good governance is key to promoting responsible business behaviour (Cohen et al., 2023; Sarhan & Al-Najjar, 2023). While focusing on different aspects of corporate governance, both studies highlight the importance of strong governance in encouraging companies to be more sustainable, which help us understand the various ways governance can influence a company's commitment to sustainable practices.

2.3.2 ESG Pay & ESG Performance

The relationship between executive compensation and ESG metrics is being studied empirically in light of the increasing prevalence of using ESG in compensation structures (Cohen et al., 2023; Flammer, Hong & Minor, 2019; Homroy, Mavruk & Nguyen, 2023; Hong, Li & Minor, 2016; Ikram et al., 2019). Using firm-level data from public Swedish companies between 2006 to 2020, Homroy, Mavruk and Nguyen (2023) investigates how ESG objectives are integrated into executive compensation. They found that ESG targets are present in a relatively small share of firms (25% in 2020) and are exclusively linked to environmental and social outcomes, not governance. ESG targets compose 25% of CEO bonus and 4% of total CEO pay on average. However, the authors found that compensation tied to ESG performance is increasing and that the result of this is improvements in firms' environmental performance. The authors identify a positive relationship between ESG Pay and improvements in ESG performance, suggesting that such compensation strategies are effective in promoting sustainability goals. Going on, they found that ESG-linked pay is 5 percentage points more common in well-governed firms, suggesting ESG targets are not just a reflection of agency problems.

Similar findings were reported in a more comprehensive worldwide study conducted between 2011 and 2020 by Cohen et al. (2023), which looks at the presence and effects of ESG Pay in a global sample. They found that the use of ESG metrics in executive compensation contracts has grown rapidly in recent years, from 3% of firms in 2010 to over 30% in 2021. The study found evidence for a positive relationship between ESG Pay and ESG performance, especially

in reductions in carbon emissions and improvements in ESG ratings, implying that these pay schemes work well to advance sustainability objectives (Cohen et al., 2023).

2.3.3 ESG Pay & Financial Performance

Since increasing shareholder wealth is one of a company's main goals, the economic question is whether incorporating ESG principles improves both ESG and financial results. Regarding the interplay between sustainability practices and financial performance, multiple studies have been conducted (Khan & Gupta, 2023; Saha & Khan, 2024**).** In a meta-analysis study, Khan and Gupta (2023) examined the impact of corporate green accounting practices on firm financial performance using a sample of 68 independent studies published between 1996 and 2020, covering 19,625 subjects across multiple countries. They found that green accounting practices have a significant positive influence on firm financial performance, with the most effective measures being environmental costs, followed by environmental performance indicators, and environmental performance ratings. Khan and Gupta (2023) suggest that in order to justify their contributions to environmental protection, businesses should strategically incorporate environmental costs into their financial accounting frameworks. The results also show that, in order to support sustainable business practices, national corporate green accounting frameworks are required. Similar results were found in a 2024 study by Saha and Khan, investigating the relationship between ESG factors and financial performance in the Nordic region. The authors analysed a sample of 1,360 firm-years from 136 companies across Sweden, Norway, Denmark, Finland, and Iceland over a 10-year period from 2012 to 2021. They found that ESG scores have a partially significant, yet robust, relationship with financial performance. ROA, ROE and net profit margin (NPM) were used as performance indicators. The study revealed varying results across countries and industries in the Nordic region, which is known for its commitment to sustainability (Saha & Khan, 2024).

However, not all studies have found a link between sustainability performance and financial performance. Homroy, Mavruk and Nguyen (2023) did not find a link between ESG performance and improved financial performance or market value, using ROA and Tobin’s Q as proxies. They concluded that while ESG performance does not lead directly to shareholder wealth, there is still an ESG demand from shareholders. Furthermore, Cohen et al. (2023) find no evidence of a meaningful correlation between financial performance and ESG-linked pay. The study finds a decrease in stock returns after the introduction of ESG-linked pay, and it does

not find a positive correlation between the adoption of ESG-linked compensation and financial performance, such as ROA (Cohen et al., 2023).

A different perspective suggests that linking CEO pay to ESG criteria might not benefit stakeholders and could decrease the accountability of CEOs to shareholders, according to Bebchuk and Tallarita (2022). There is also concern about the potential to set ambiguous ESG targets that are difficult for outside parties to verify. On the other hand, Flammer, Hong, and Minor (2019) argue that tying executive compensation to ESG can be in shareholders' interests. These contrasting viewpoints highlight the complex link between ESG-focused pay and financial outcomes, with the precise effect on financial performance still uncertain. This uncertainty illustrates the need for more research to explore how ESG incentives influence corporate strategy and shareholder value, aiming to ensure that future pay structures support both sustainability and financial objectives.

2.4 Hypothesis Development

Corporate governance involves mechanisms that guide and control corporations, balancing all stakeholder interests (Harvard, 2016). Agency theory describes the principal-agent relationship, where the principal delegates tasks to the agent. This relationship often leads to goal and information asymmetry, with agents acting in their self-interest (Eisenhardt, 1989; Jensen & Meckling, 1976). To align interests, incentives are crucial (Mitnick, 2019), involving both intrinsic and extrinsic factors, such as recognition and internal satisfaction (Ellingsen & Johannesson, 2005; Deci & Ryan, 2000). Linking executive compensation to ESG performance aligns with these theories by addressing stakeholder expectations and enhancing reputation, thus motivating executives to prioritize ESG goals (Cohen et al., 2023). This can send a signal about the importance of the targets and thereby enhancing the alignment of interests between principals and agents. Homroy, Mavruk, and Nguyen (2023) also claim that improvements in an organization's environmental performance are positively correlated with executive compensation that is linked to ESG performance. According to these theories, executives would be more inclined to prioritize ESG efforts if their compensation was linked to ESG performance. This would improve the firm's ESG performance, which would ultimately benefit the executive.

Executives are highly motivated to prioritize and meet ESG targets when a larger total compensation is connected to a contract (Ellingsen & Johanneson, 2002; Gneezy & Rustichini, 2000). Higher total compensation increases the stakes for executives, making the achievement of ESG targets more appealing. Furthermore, Fehr and Falk (2002) highlight the theory of reciprocity that supports these hypotheses by suggesting that executives perceive compensation structures as fair and aligned with their efforts. This could particularly be relevant in complex areas like ESG, where they are more likely to reciprocate with higher performance and cooperation towards achieving these goals. This reciprocal relationship enhances the effectiveness of the incentives. This rationale forms the basis of our initial hypotheses:

> **H1a:** *"Linking executive compensation to ESG metrics results in improved ESG performance"*
> **H1b:** *"The size of ESG-linked executive compensation is positively correlated with higher ESG performance."*

According to the agency theory, tying executive compensation to ESG metrics helps reduce principal-agent asymmetry by aligning the interests of management with those of broader stakeholders, including shareholders, employees, and the community. This alignment encourages executives to adopt sustainable practices that can lead to cost savings, efficiency improvements, and enhanced brand reputation, ultimately driving financial performance (Cohen et al., 2023). Executives are more inclined to prioritize and take steps to meet these targets if they are offered financial incentives linked to certain ESG outcomes. Freeman et al., (2010) highlight that this effectively reduces goal asymmetry and encourages actions that are in the best interests of the principal. This aligns with the stakeholder theory, which suggests that considering the interests of all stakeholders, not just shareholders, leads to better overall performance (Freeman et al., 2010).

Moving on, empirical studies provide mixed evidence on the relationship between ESG-linked compensation and financial performance. Khan and Gupta (2023) found that green accounting practices positively influence firm financial performance. Saha and Khan (2024) showed a relationship between ESG scores and financial performance in Nordic countries, although results varied across regions and industries. Conversely, Homroy, Mavruk, and Nguyen (2023) and Cohen et al. (2023) found no direct link between ESG performance and financial performance. This aligns with Cohen et al. (2023), emphasizing that implementing significant

ESG-related incentives may indicate to different stakeholders, such as investors and regulators, that the business is dedicated to ESG goals. This signalling effect can strengthen the company's sustainability commitment's credibility, which could result in improved reputational benefits and alignment with broader dynamics of social approval.

Self-Approval and Social Approval theories further explain the motivational impact of compensation size. Ellingsen and Johannesson (2005) argue that executives who receive significant ESG-linked compensation are not only financially motivated but also gain substantial self-approval and social recognition. This dual reward system can lead to increased commitment and effort towards achieving ESG targets, which are often viewed positively by stakeholders, enhancing the company's overall market performance.

Stakeholders increasingly prioritize ESG considerations, which, in turn, influence shareholders to value these aspects highly (Freeman et al., 2010; Tarmuji et al., 2016). This social pressure creates a dynamic where companies that emphasize ESG practices are valued higher, while those neglecting ESG are valued lower. By linking substantial compensation to ESG performance, companies respond to this social pressure, aligning their financial interests with the broader expectations of both stakeholders and shareholders (Cohen et al., 2023). This alignment can lead to improved financial performance as companies are rewarded with higher valuations and greater investor confidence (Cohen et al., 2023; Saha & Khan, 2024).

In light of this, we develop the following second hypothesis:

> **H2a:** *“Linking executive compensation to ESG metrics results in improved financial performance””*
>
> **H2b:** *"The size of ESG-linked executive compensation is positively correlated with higher financial performance."*

3. Methodology

This section describes the method used to analyse the data. First, the econometric design is introduced, followed by an explanation of the statistical tests in this study. Next, the sample universe is covered, followed by variable definitions, robustness tests, and the limitations of our methodological choices.

3.1 Econometric Design

3.1.1 Univariate analysis

The analysis will start by categorizing the data into two groups: firms that incorporate ESG pay and those that do not. Drawing on existing research and literature, it is hypothesized that firms with ESG pay will exhibit higher ESG performance compared to those without. To test this, simple univariate tests will be applied to assess the differences between the two groups throughout the data period, focusing specifically on the differences in the mean ESG and financial performance. Correlation analysis through Pearson's correlation matrix will also be performed to analyse the relationships between the variables.

3.1.2 Multivariate analysis: Fixed Effects Panel Regression

The relationship between ESG compensation and ESG/financial performance will then be investigated through multivariate analysis. The dataset is made up of panel data that was gathered throughout time from different firms (Bailey, 2019). According to Bailey (2019), the fixed effects model is a useful method for panel data analysis. Fixed effects models provide an advantage over pooled OLS by accounting for observed characteristics that remain constant or change only slightly over time within each unit (Bailey, 2019). This approach is highly beneficial because it controls for both unit-specific and time-specific effects, which significantly reduces endogeneity. Within the fixed effects model, the error term is divided into a fixed component and a random error term (Bailey, 2019. This approach increases the precision of the analysis, as it allows for correlations between the fixed effects and the independent variables (Bailey, 2019). However, these models may encounter serial correlation

problems, which require clustering standard errors by FirmID to provide reliable statistical results.

Based on the rationale above, fixed effects panel regressions will be employed to test for H1a and H2a. As is typical in empirical research, the problem of heteroskedasticity is addressed by employing clustered robust standard errors, as panel data is expected to exhibit clustering in variable variances (Bailey, 2019). Year effects are used to control the impact of the year on the dependent variable. To test hypothesis H1a, *ESG Performance* is set as the dependent variable, while *ESG Pay* is adopted as the explanatory variable. These variables, alongside the control variables, will be explained in subsequent sections below**.** The following panel regression specification is used to examine the effect of ESG pay on ESG performance in Model 1:

$$\begin{aligned} ESG\ Performance_{i,t} = \beta_0 + \beta_1 ESG\ Pay_{i,t} + \beta_2 Financial\ Performance_{i,t} + \beta_3 Size_{i,t} + \\ \beta_4 Profitability_{i,t} + \beta_5 Leverage_{i,t} + \beta_6 Compensation_{i,t} + \beta_7 Board\ Size_{i,t} + \\ \beta_8 Board\ Gender\ Diversity_{i,t} + \beta_9 Environmental\ Policy_{i,t} + \\ \beta_{10} Sustainability\ Statement_{i,t} + \beta_{11} Environmental\ Performance\ Targets_{i,t} + \\ \beta_{12} Management_{i,t} + \beta_{13} Environmental\ Innovation_{i,t} + \beta_{14} Equality_{i,t} + \beta_{15} Health_{i,t} + \\ \beta_{16} HR_{i,t} + \beta_{17} Ethics_{i,t} + \beta_{18} Local\ Impact_{i,t} + \beta_{19} Environmental\ Impact_{i,t} + \\ \lambda Year\ Controls + \varepsilon_{i,t} \end{aligned} \quad (1)$$

ESG Performance$_{i,t}$ stands for the measure of performance in regard to ESG for firm *i* at time *t*. This also goes for all other variables where applicable.

Recognizing that the impacts of integrating ESG pay may manifest over time, we will delay these effects by 1, 2, and 3 years by lagging the explanatory variable to assess whether the influence on ESG performance strengthens over time in Model 2-4. The same model as above will be used, with the exception of lagging ESG pay as *ESG Pay* $_{i,t-1,}$, where *t-1* represents a one-year lag. Similarly, *t-2* and *t-3* will be used in the models for a 2-year and 3-year lag,

respectively. As an example, Model 2[1], used to examine the delayed 1-year effect of *ESG Pay* on *ESG Performance*, looks the following:

$$\begin{aligned} ESG\ Performance_{i,t} = \beta_0 + \beta_1 ESG\ Pay_{i,t-1} + \beta_2 Financial\ Performance_{i,t} + \beta_3 Size_{i,t} + \\ \beta_4 Profitability_{i,t} + \beta_5 Leverage_{i,t} + \beta_6 Compensation_{i,t} + \beta_7 Board\ Size_{i,t} + \\ \beta_8 Board\ Gender\ Diversity_{i,t} + \beta_9 Environmental\ Policy_{i,t} + \\ \beta_{10} Sustainability\ Statement_{i,t} + \beta_{11} Environmental\ Performance\ Targets_{i,t} + \\ \beta_{12} Management_{i,t} + \beta_{13} Environmental\ Innovation_{i,t} + \beta_{14} Equality_{i,t} + \beta_{15} Health_{i,t} + \\ \beta_{16} HR_{i,t} + \beta_{17} Ethics_{i,t} + \beta_{18} Local\ Impact_{i,t} + \beta_{19} Environmental\ Impact_{i,t} + \\ \lambda Year\ Controls + \varepsilon_{i,t} \end{aligned} \quad (2)$$

While similar to previous models, our second set of models shifts the emphasis from sustainability to financial effects to investigate H2a. Although environmental sustainability is important, a company's fundamental goal should always be to maximize shareholder wealth (Friedman, 1962), which is why it is important to look at financial performance as well. This analysis will again employ fixed effects, where the difference compared to previous models is the new dependent variable *Financial Performance*, with the explanatory variable and control variables being kept constant. Again, to examine delayed effects of ESG pay on financial performance, the explanatory variable will as with Model 2-4[2] be lagged by 1-, 2-, and 3 years. The effect of ESG pay on Financial Performance, through *MTB*, is specified through the following model:

$$\begin{aligned} Financial\ Performance_{i,t} = \beta_0 + \beta_1 ESG\ Pay_{i,t} + \beta_2 Size_{i,t} + \beta_3 Profitability_{i,t} + \\ \beta_4 Leverage_{i,t} + \beta_5 Compensation_{i,t} + \beta_6 Board\ Size_{i,t} + \beta_7 Board\ Gender\ Diversity_{i,t} + \\ \beta_8 Environmental\ Policy_{i,t} + \beta_9 Sustainability\ Statement_{i,t} + \\ \beta_{10} Environmental\ Performance\ Targets_{i,t} + \beta_{11} Management_{i,t} + \\ \beta_{12} Environmental\ Innovation_{i,t} + \beta_{13} Equality_{i,t} + \beta_{14} Health_{i,t} + \beta_{15} HR_{i,t} + \beta_{16} Ethics_{i,t} + \\ \beta_{17} Local\ Impact_{i,t} + \beta_{18} Environmental\ Impact_{i,t} + \lambda Year\ Controls + \varepsilon_{i,t} \end{aligned} \quad (5)$$

[1] Model 2 is specified as an example for lagging *ESG Pay* by one year. Due to their significant similarities with this model, Models 3-4 for will not be explicitly specified in this paper but are available from the authors based on reasonable request.

[2] Due to their significant similarities with Model 5, Models 6-8 for will not be explicitly specified in this paper but are available from the authors based on reasonable request.

For full explanation of variables, see Table 15 (Appendix).

3.1.3 Exploratory study

One shortcoming of the methodology above is that it only looks at ESG pay as a dummy variable (this will be discussed in more detail in subsequent sections). Technically, a company with €1 and €1 million in ESG compensation will be treated the same in the models above. Since data on the exact amounts of ESG compensation or the weight of ESG-linked targets in variable compensation is not available in the datasets, this will be collected from a randomized sub-sample to examine whether the size of ESG pay has an effect on ESG performance or financial performance. This subsample will be used to investigate Hypotheses 1b and 2b. Additional information regarding the data collection of the subsample will be explained in Section 3.4.1.

As the sample is randomized and relatively small, there are no cases of the same firm appearing more than once across different years. Because of this, panel data regression models will not be used. Instead, simple and multiple linear regression through OLS will be used, as this is less complex and more appropriate for a smaller sample size (Hsiao, 2007). While control variables help to isolate the effect of the main explanatory variables on the dependent variables, in very small samples, adding too many control variables can reduce the degrees of freedom and lead to overfitting, where the model captures noise rather than the true underlying relationship (Bailey, 2019). Therefore, both models with and without control variables will be used.

First, the relationship between ESG performance and the weight of ESG-linked targets in variable remuneration will be examined. Next, the amount of variable compensation directly related to ESG targets will be used as the explanatory variable. These relationships will be examined through simple linear regression without control variables. Control variables will then be added for the last regressions. Therefore, Hypotheses 1b and 2b will be examined through the following regressions in Models 9-16:

$$ESG\ Performance_i = \beta_0 + \beta_1 ESG\ Pay\ Size_i + \varepsilon_i \quad (9,10)$$

$$ESG\ Performance_i = \beta_0 + \beta_1 ESG\ Pay\ Size_i + \beta_2 ESG\ Pay\ Weight_i + \beta_3 Variable\ Pay_i + \beta_4 Profitability_i + \beta_5 Financial\ Performance_i + \beta_6 Size_i + \varepsilon_i \quad (11,12)$$

$$Finanical\ Performance_i = \beta_0 + \beta_1 ESG\ Pay\ Size_i + \varepsilon_i \quad (13,14)$$

$$Financial\ Performance_i = \beta_0 + \beta_1 ESG\ Pay\ Size_i + \beta_2 ESG\ Pay\ Weight_i + \beta_3 Variable\ Pay_i + \beta_4 Profitability + \beta_5 Size_i + \varepsilon_i \quad (15,16)$$

3.2 Statistical Tests

The Hausman test will be used to determine which of fixed effects and random effects models to use in the panel data analysis. Its primary purpose is to determine whether the unique errors (random effects) in a model are correlated with the regressors (independent variables). The null hypothesis (H0) assumes that the preferred model is the random effects model, implying no correlation between individual effects and regressors, making the random effects estimator more efficient (Bailey, 2019). The alternative hypothesis (H1) suggests that the fixed effects model is preferable, indicating that individual effects are correlated with the regressors, rendering the random effects estimator inconsistent (Bailey, 2019). If the test statistic is significantly large, H0 is rejected, and the fixed effects model is used. If not, the random effects model is appropriate.

To test for the presence of heteroskedasticity and to ensure the validity of statistical inferences, the White's test is performed. Heteroscedasticity occurs when the variance of the errors in a regression model is not constant across all levels of the independent variables. This violates one of the key assumptions of ordinary least squares (OLS) regression, which assumes homoskedasticity, or constant variance (Bailey, 2019). If heteroskedasticity is present, it can lead to inefficient estimates and biased standard errors, which in turn affects hypothesis testing and the confidence intervals of the coefficients. By identifying and addressing heteroskedasticity, we can improve the accuracy and reliability of our regression analysis, ensuring that our estimates and inferences are valid. Lastly, we also conduct a VIF-test to gain more insights to possible multicollinearity issues.

3.3 The Sample Universe

Two separate procedures were used to gather the data for this paper. The first procedure, used for the data primarily regarding *RQ 1*, *RQ 2* and partly for *RQ 3*, was done in the following way. First, data on executive compensation (including ESG pay and variable CEO

remuneration), industry and various data on e.g. policies and assessments was downloaded from Nordic Compass, part of the Swedish House of Finance's ESG Database. Additionally, data on ESG Score and financial information (e.g. Total Assets, Board Size, Board Gender Diversity, ROA) was extracted from Refinitiv Eikon. The data, for both Nordic Compass and Refinitiv Eikon, regards Nordic publicly listed firms between 2014 and 2022, where each company was observed for at least two years. At the time of the data collection, Nordic Compass only consisted of data up until 2022, which is why this year is the latest in the sample. While Nordic Compass consists of a total of 3.811 firm-years, data on ESG pay was missing for many of these. This resulted in a primary sample of 1.804 firm-year observations. Due to missing values for other key variables, some of these observations had to be dropped, leading to a reduced sample of 1.671 observations. Lastly, financial industry observations were removed during the final stage of data collection as their unique features make them incomparable to other sample companies and, as a result, would not perform well in regression analysis. As a result, 1.272 firm-year observations made up the final sample, as seen in Table 1.

Table 1. Sample collection

	N	%
Primary sample	1 804	100 %
Missing key variables	133	7.4 %
Financial institutions	399	22.1 %
Final sample	**1 272**	**70.5 %**

In models when lagged variables will be used, further observations were removed from the sample, as data is needed for a minimum of four time-periods when lagging for three years. For example, when lagging for one year all observations in the latest year will be omitted, e.g. 2022, and when lagging for two years observations in the two latest years will be omitted, e.g. 2022 and 2021. For most firms the latest observation is 2022, although this is not always the case, which means that some observations in 2021 will be omitted when lagging for only one year. In models with lagged variables, the number of observations is presented in Table 2.

Table 2. Sample Size by lag

	N	%
No lag	1 272	100 %
One-year lag	989	77.8 %
Two-year lag	782	61.5 %
Three-year lag	586	46.0 %

Table 3 illustrates the distribution of our sample in regard to the firm's country of headquarters. Almost half of the sample come from Sweden (595), followed by Finland (255) and Norway (224). Denmark has the smallest number of observations (198). Clearly, Sweden has the largest number of observations, which is unsurprising as it is the country with the largest population and economy. Similarly, the rest of the Nordic countries have similar sizes of population, and it is therefore expected that we see them having similar shares of the observations in the sample.

Table 3. Sample by Country

	N	%
Denmark	198	15.6 %
Finland	255	20.0 %
Norway	224	17.6 %
Sweden	595	46.8 %
Total	**1272**	**100 %**

In Table 4, an industry breakdown is provided. Data for industries was gathered through Nordic Compass. In Table 4 the eight largest industries are presented alongside the rest of the industries which are categorized as "Other". The full list of industries that are categorized as "Other" is presented Table 16 (Appendix)**.** Evidently, the largest industry in terms of number of observations is Industrials. This may suggest that many Industrial firms exist in the Nordic region, or that more data is collected regarding these firms, resulting in less omissions in the sampling process. Apart from Industrials, the differences in observations are minor, and the industries are of different nature.

Table 4. Sample by Industry

	N	%
Basic Materials	111	8.7 %
Consumer Goods	157	12.3 %
Consumer Service	79	6.2 %
Health Care	147	11.6 %
Industrials	438	34.4 %
Oil & Gas	58	4.6 %
Technology	104	8.2 %
Telecommunication	42	3.3 %
Other	136	10.7 %
Total	**1272**	**100 %**

In Table 5, we show the year of which the observation regards. The Swedish House of Finance began collecting data for the Nordic Compass in 2014, making 2014 the first year of data being available. The sample from the first-year covers "publicly-traded large-cap companies with a market value exceeding EUR 1 billion listed on the NASDAQ-OMX Nordic exchange" (Swedish House of Finance, n.d.). Their sample universe was expanded in 2015, when they also began to cover mid-cap companies, while also including firms listed on the Oslo Bors, and in 2019, the project received a grant (Swedish House of Finance, n.d.). 2019 was also the year executive compensation data started to be collected. The expanded sample universe and additional funding through the grant is visible in our sample, as 2014 has the smallest number of observations while there is an uptick from 2019 and onwards.

Table 5. Sample by Year

	N	%
2014	74	5.8 %
2015	90	7.1 %
2016	86	6.8 %
2017	98	5.8 %
2018	158	12.4 %
2019	180	14.2 %
2020	224	17.6 %
2021	205	16.1 %
2022	157	12.3 %
Total	**1272**	**100 %**

3.3.1 Manual Data Collection

An additional procedure was used to gather more specific data regarding ESG-linked executive compensation for *RQ 3* and H1b and H2b. The data on Executive ESG Sustainability compensation in Nordic Compass is only a dummy variable, indicating whether a company has

executive compensation linked to ESG measures, or not. In order to further research the effect on ESG pay on ESG performance, we will extract data from a subsample of 44[3] firms to calculate the extent of their ESG pay. Although a small sample, this may give an idea if larger sized ESG-pay leads to enhanced sustainability and financial performance.

The data mentioned above is not publicly available in a database, and therefore needed to be collected manually. General data regarding executive compensation was available and collected from 2019 and onwards through Nordic Compass. Therefore, the time span for our sample for *RQ 3* was shortened to 2019-2022. Due to losing observations in the years before 2019, the sample consists of 766 observations. Of these observations, 190 consisted of companies having adopted ESG pay. As the nature of this paper does not allow for the collection of data for all observations, a randomized sub-sample, performed via STATA, of 44 observations was used to collect the additional data. Once the sub-sample was set, data was manually collected through publicly available annual- and remuneration reports.

Homroy, Mavruk and Nguyen (2023) conducted a similar data gathering process, where they observed that ESG performance is primarily linked to short-term bonuses, with limited integration into long-term bonuses or equity-based incentives. Similar acknowledgements were made in our process and consequently, we focus on short-term bonuses, or STI's, to determine the weight and size of ESG pay in CEO variable remuneration. CEO remuneration was chosen over executive compensation as all remuneration reports had specified details regarding the weighting of the CEO compensation, but not all had disclosed the same information regarding executives. Thus, CEO data was deemed more consistent and reliable. This data was combined with compensation data from Nordic Compass to calculate the firms' amount of CEO variable remuneration directly linked to the fulfilment of ESG targets. Figure 3 presents an example from a remuneration report of a firm's weighting of ESG targets in variable compensation.

[3]The randomized sub-sample originally had 60 firms, however not all of these firms' reports disclosed the information needed to gather the necessary data. This rendered the final sample of 44 observations.

Figure 3. Example of ESG pay weighting. Source: Biotage AB (2023)

Description of the criteria related to the remuneration component	Relative weighting of the performance criteria
Operating income	50 %
Gross Margin	25 %
ESG – Reduction of environmental footprint from internal chemistry production	25 %

3.4 Variable Definitions

3.4.1 Dependent variables

To answer H1a and H1b, Refinitiv Eikons *ESG Scores* will be used as the dependent variable and will act as a proxy for ESG performance. Refinitiv calculates the scores by collecting publicly available ESG data across ten ESG themes: Emissions, Resource Use, Innovation, Human Rights, Workforce, Community, Product Responsibility, Management, Shareholders and CSR Strategy (Refinitiv, 2022). Each theme is calculated and based on specific metrics relevant to the industry of the company and their operational context (Refinitiv, 2022). The total ESG score is divided into three pillars of Environment (E), Social (S) and Governance (G), where each pillar has a separate score (Refinitiv, 2022). Together with an overlay for ESG controversies, the scores of the pillars are combined and aggregated in order to provide a comprehensive and rounded evaluation of the company's ESG performance (Refinitiv, 2022). The overall ESG score is presented on a scale from 0 to 100, where a higher score indicates better ESG performance and a stronger commitment to managing ESG-related opportunities and risks (Refinitiv, 2022). This proxy for ESG performance has been commonly used in similar studies, for example by Cohen et al. (2023), Homroy, Mavruk and Nguyen (2023), and Aliti and Wen (2023).

For H2a and H2b, market-to-book ratio, or *MTB*, will be used as a proxy for financial performance. In the existing literature, many different proxies have been used for financial performance, e.g. Tobin's Q, ROA, change in ROA and stock returns (Cohen et al., 2023, Homroy, Mavruk & Nguyen, 2023). Market-to-book ratio exists as an alternative to Tobin's Q and has for the last decades been commonly used to measure firm value, reflecting efficiency

and growth (Sharma et al., 2013). The measure is calculated by dividing a firm's market capitalization by its total book value. Market capitalization and total book value was extracted from Refinitiv Eikon. Sharma et al. (2013) argue that strong operating performance and the success of managers is largely reflected by the MTB ratio. To the best of our knowledge, no previous studies have used MTB as the dependent variable for financial performance in this area of research. Thus, to contribute to the mixed evidence of the existing literature, MTB is used as the dependent variable for the hypotheses regarding financial performance.

3.4.2 Explanatory variables

For H1a and H2a, the main explanatory variable is *Sustainability Compensation,* a dummy variable explaining if the compensation of a senior executive is linked to the company's environmental and social performance. Since it is a dummy variable, this means that if a firm-year observation has senior executive compensation linked to sustainability targets they are represented by 1, while firms who do not set senior executive compensation linked to sustainability targets are represented by 0. This allows us to study the effect of ESG-linked senior executive compensation on ESG scores and financial performance. While the contractual arrangements the variable concerns are commonly referred to as ESG-linked pay, in practice they disregard the Governance (G) outcomes, thus only looking at E and S outcomes (Edmans, 2023). While this technically makes it an ES-metric rather than an ESG-metric, it will be referred to as ESG-linked pay in this paper. These types of explanatory variables have been used in several studies, for example Homroy, Mavruk and Nguyen (2023), Cohen et al. (2023) and Aliti and Wen (2023).

For models 9-16 concerning H1b and H2b, the main explanatory variables are *ESG STI (%)* and *CEO ESG STI*, which are proxies for ESG Size. *ESG STI (%)* represents the weighting of ESG targets in short-term incentives (STIs). For instance, if 10% of the CEO's potential variable remuneration is linked to ESG targets, *ESG STI (%)* is 0.1, regardless of whether the targets were achieved. For the example presented in Figure 3, the *ESG STI (%)* would be 25%, or 0.25. *CEO ESG STI*, on the other hand, measures the actual amount of ESG-related pay. This variable is calculated by multiplying *ESG STI (%)* by the CEO's total variable salary. For example, if *ESG STI (%)* is 10% and the CEO received €100,000 in variable remuneration, *CEO ESG STI* is €10,000. This variable accounts for whether the targets were achieved, meaning it can be zero if targets were not met.

Using these variables, the explanatory variable is no longer a dummy. Instead, it provides a more detailed view of how different weightings and amounts of sustainability compensation affect ESG and financial performance.

In models 9 through 16, we incorporate create an interaction variable to better understand the combined effects of ESG-related factors on financial performance. Specifically, interaction terms between the ESG STI (%) and CEO variable salary are included to capture how the relationship between these variables influences our dependent variables. This approach allows us to examine whether the impact of ESG-related compensation on financial performance is conditional on the level of variable salary. By doing so, we can more accurately assess the nuanced ways in which ESG incentives drive financial outcomes. The interaction terms are created by multiplying the ESG STI (%) with the CEO variable salary, thereby providing a more detailed insight into how these factors interplay.

3.4.3 Control variables

Control variables, or extraneous variables, are included in the analysis to account for factors that could influence the dependent variable but are not the focus of the study (Bailey, 2019). According to Bailey (2019), these variables play a crucial role in controlling for confounding influences, thereby isolating the effect of the primary independent variables. For almost all models, the same control variables have been selected for the hypotheses to control for extraneous influence**.** The control variables can be divided into two categories: firm characteristics and ESG datapoints. The ones regarded as firm characteristics will be presented below:

The first set of control variables focuses on firm characteristics, following the previous literature (Cohen et al., 2023; Homroy et al., 2023). We control for profitability via *ROA*, a financial metric that measures the efficiency of a company in generating profit from its assets by dividing the net income by the total assets. When not used as a dependent variable, *MTB* is used to control for market performance. *Tobin's Q*, is also used as an additional control of financial performance, calculated by dividing the market value with the replacement costs of its assets. The accounting variables extracted from Refinitiv Eikon were used to calculate the control variable *Leverage*, via a debt-to-assets ratio. Another firm characteristic we control for is size, via *Total Assets.* The natural logarithm of this variable is used for it to behave well in a

regression. Lastly, board characteristics are controlled for via *Board Size* and *Board Gender Diversity.* Additionally, *Compensation*, via total CEO compensation, is controlled for.

The second set of control variables control for Environmental, Social and Governance effects, and is collected from Nordic Compass. *Environmental Policy, Sustainability Statement, Environmental Performance Targets, Environmental Innovation Score* and *Reduced Environmental Impact* control for correlation regarding environmental effects. *HR Policy, Health Policy, Equality Policy* and *Assessment of Local Impact* control for social effects. Lastly, *Management, Ethics Policy* and control for effects regarding governance. All of the above are expected to be correlated with both *ESG Score* and *Sustainability Compensation* and are thus controlled for in the models.

For the exploratory study, an additional control variable is used in *CEO Variable Salary*, which describes the total amount of variable compensation the CEO received that financial year. Used along with controls for *ROA, MTB* and *Total Assets,* this is to control for the overall impact of variable pay on the CEO's performance and to isolate the specific effect of ESG-linked incentives.

As previously mentioned, full variable definitions are presented in Table 15 (Appendix)**.**

3.5 Robustness Tests

As a robustness test, the propensity-score matching technique will be employed across Models 1-8. Since the main explanatory variable for Models 1-8 is a dummy variable, the sample is divided into a treatment group (observations linking CEO compensation to ESG performance) and a control group (observations not linking CEO compensation to ESG performance). The groups will be matched based on year, total assets, market-to-book ratio (MTB), and industry. This approach allows us to analyse the effect of sustainability compensation among firms that are otherwise similar, enhancing the robustness of our regression-based analysis (Roberts & Whited, 2013).

The strength of matched sampling lies in isolating the effect of the treatment variable, as matched samples are similar in key aspects and would be expected to have similar ESG scores if not for the difference in treatment. Matching will be done with replacement, allowing one

observation in the control group to be matched with multiple observations from the treatment group, leading to better matches and reduced bias (Roberts & Whited, 2013). Propensity-score matching is particularly suitable for our analysis as it helps mitigate selection bias, ensuring that the treatment and control groups are comparable. While propensity-score matching enhances the robustness of our results, it is important to acknowledge its limitations. For instance, it relies on the assumption that all relevant confounding variables are observed and included in the matching process. Unobserved confounders could still bias the results.

Given that nearly half the sample (47%) consists of Swedish companies, the results may be influenced by this sub-sample. To test this, we performed the regression analysis excluding the Swedish observations for Models 1-8. This additional step ensures that our findings are not disproportionately driven by the Swedish sub-sample, thus providing a more balanced view of the effects across the Nordic region.

3.6 Model Limitations

Several limitations of the methodology must be acknowledged, which could impact the robustness and generalizability of the findings. First of all, the sample is restricted to publicly listed companies in the Nordic region. While these countries have a lot in common compared to other regions (Potter, 2024), they may differ in important aspects such as institutional background, regulation and corporate culture. Therefore, generalizing results for the entire region must be done with causation. Additionally, the economic and regulatory environment in the Nordic countries may not translate well elsewhere, potentially reducing the applicability of the results on a larger scale. Secondly, the reliance on ESG Scores from Refinitiv, which is based on self-reported data and could be subject to biases, inaccuracies or inconsistencies. Companies might overreport their ESG performance to improve their public image, leading to an upward bias in ESG scores and thereby affecting the reliability of the results.

Additionally, there is a potential issue of endogeneity. Firms with inherently better ESG performance might be more likely to adopt ESG-linked compensation schemes, rather than the compensation directly causing better ESG performance. This reverse causality could affect the validity of the conclusions. Alternative methodological approaches, such as instrumental variable (IV) regression, could potentially better address endogeneity concerns and provide more robust estimates (Bailey, 2019). There is also a risk of overfitting with the number of control variables in Models 1-8. Overfitting can lead to models that perform well on the sample

data but do not generalize well to other data sets, limiting the external validity of the results (Bailey, 2019). Lastly, the manual collection of data for the randomized sub-sample introduces the potential for human error and inconsistency. Manual data collection processes are prone to mistakes and variations, which can affect the overall reliability of the findings.

4. Data and Descriptive Statistics

This section first presents the descriptive statistics of the data, including the manually collected data for the subsample, followed by a correlation and univariate analysis.

4.1 Descriptive Statistics

As shown in the summary statistics presented in Table 6, all variables used in the regression models have the same number of observations (1272). The first variable is the first dependent variable, *ESG Score*. The range of the score is from 0 to 100, the minimum being 11,034 and a maximum of 93.972, while the standard deviation is 17.219. This indicates that the variation in the reported *ESG Scores*, and subsequently ESG performance, is moderately low. As the mean and median are similar for the sample, the distribution seems to be well-distributed. With a median of 59.693 and a mean of 58.140, the firms in the sample seem to have, on average, relatively good ESG scores. The main explanatory variable is *Sustainability Compensation*, the dummy variable indicating whether a company has ESG-linked executive compensation. The mean is 0.189, showcasing that 18.9% of the firms in our sample report ESG pay, which is in line with previous research (Cohen et al., 2023; Homroy, Mavruk & Nguyen, 2023; Ilita & Wen, 2023).

Table 6. Summary Statistics for the Main Sample

	Mean	Median	SD	Min	Max	N
ESG Score	58.140	59.693	17.219	11.034	92.972	1272
Sustainability Compensation[1]	.193	0	0.395	0	1	1272
MTB[2]	3.947	2.125	6.015	.05	39.821	1272
Total Assets (million Euro)[2]	5839.440	2093.284	12758.813	63.45	149661	1272
Leverage[2]	.234	.219	0.145	0	.773	1272
ROA[2]	.051	.056	0.098	-.404	.329	1272
CEO Compensation (million Euro)[2]	13.591	1.32	98.068	.136	858.45	1272
Board Size	8.683	8	2.350	4	17	1272
Board Gender Diversity	34.373	33.333	11.556	0	75	1272
Tobin's Q[2]	1.733	0.83	2.879	0.0144	19.952	1272
Environment Policy[1]	.958	1	0.202	0	1	1272
Sustainability Statement[1]	.714	1	0.452	0	1	1272
Environmental Performance Targets[1]	.830	1	0.376	0	1	1272
Management Score	56.846	58.989	27.513	.746	99.852	1272
Environmental Innovation Score	36.777	36.701	31.924	0	99.65	1272
Equality Policy[1]	.947	1	0.223	0	1	1272
Health Policy[1]	.933	1	0.250	0	1	1272
HR-Policy[1]	.965	1	0.183	0	1	1272
Ethics Policy[1]	.985	1	0.121	0	1	1272
Assessment of Local Impact[1]	.333	0	0.471	0	1	1272
Reduced Environmental Impact[1]	.928	1	0.258	0	1	1272

[1] *Dummy variable*

[2] *Winsorized on the 1st and 99th percentile*

Our second dependent variable is *MTB*, which is the study's choice of variable to measure a firm's performance. The standard deviation for *MTB* is high, at 6.015, with the mean being higher than the median. Given that a few firms have a market valuation that is significantly higher than their book value, the distribution shows that it is common for the firms to have values close to 2, with a few having values that are significantly larger. This is expected as it is uncommon for a company to have a significantly higher market valuation than book value. Looking at *Total Assets* and *CEO Compensation*, there is a notable difference between the mean and median for both variables, while simultaneously having large standard deviations. This suggests that they are not normally distributed and have for that reason been converted to their natural logarithms in the regression analysis.

The rest of the control variables appear to be well-distributed, apart from *Management Score.* While the median and mean are similar in values as *ESG Score,* the standard deviation for *Management Score* is significantly larger, indicating a larger variation. A minimum value of 0.746 and a maximum of 99.852 further strengthens this notion. Similar conclusions can be drawn regarding *Environmental Innovation Score,* suggesting that firms prioritize sustainability-related innovation differently. There also appears to be a large variation in *ROA,* with the mean being 5.1% and the standard deviation 9.81%. With the firm in our sample having the minimum value of ROA with -40.4% and the maximum with 32.9% there is a seemingly large discrepancy in financial profitability and effectiveness.

Table 7. ESG Pay by Country and Year

	Denmark			Finland			Norway			Sweden			
	Yes	No	%	Yes	No	%	Yes	No	%	Yes	No	%	Mean
2014	3	10	23,1%	2	18	10%	5	8	38,5%	2	26	7,1%	**16,2%**
2015	2	12	14,3%	2	19	9,5%	1	14	6,7%	6	34	15%	**12,2%**
2016	2	11	15,4%	2	19	9,5%	2	12	14,3%	4	34	10,5%	**11,6%**
2017	2	14	12,5%	3	20	13%	2	14	12,5%	1	42	2,3%	**8,2%**
2018	2	21	8,7%	5	22	18,5%	4	27	12,9%	3	74	3,9%	**8,9%**
2019	1	25	3,8%	5	24	17,2%	5	28	15,1%	12	80	13%	**12,8%**
2020	5	26	16,1%	9	34	20,9%	11	28	28,2%	36	75	32,4%	**27,3%**
2021	5	28	15,2%	7	21	25%	7	28	20%	23	75	23,5%	**20,5%**
2022	14	15	48,3%	12	20	37,5%	11	17	39,3%	27	41	39,7%	**40,8%**
Mean	**18,2%**			**18,4%**			**21,4%**			**19,2%**			**19,3%**

Table 7 presents the use of ESG pay for each country in every time-period. There are few changes in how many observations incorporate ESG pay up until 2020, where ESG pay more than doubles compared to the year before. With a slight dip in 2021 there is once again a significant increase, almost double, of the use of ESG pay in 2022 to 40.8%. Compared to 16.2% in 2014, this indicates that ESG pay has grown considerably more popular for boards as a mechanism for contracting and incentives, especially in the last few years. However, there are some examples where the trend goes in the opposite direction. For example, the mean for 2014 across all countries is larger than every year up until 2020. The mean in 2014 is driven by extraordinary use of ESG pay in Denmark and Norway, who have 23.1% and 38.5% respectively. However, these levels quickly return to the norm the following year. The mean ESG pay usage in 2017 and 2018 is due to abnormally low levels in Sweden, the country with

the most observations. Even though the averages in the other countries are normal, the average for the entire sample has decreased for those years. 2020 shows a large increase in ESG pay for Swedish firms, increasing to 32.4% compared to 13% in 2019. There are no major differences country-wise, with Norway being the biggest difference from the entire sample at 21.4%. For a single firm-year percentage, Denmark has the highest in 2022, where 48.3% of observations had ESG pay. Conversely, Sweden has the lowest percentage in 2017 with 2.3%. This year, only one out of 43 firms had ESG-linked compensation.

The anomalies, such as the drastic percentual changes in Sweden across 2015 and 2019, could indicate that there might be a difference between the actual usage of ESG pay and the documentation of the incentive structures in company reports. Companies might have had these types of systems in place across all firm-years, but for unknown reasons chosen not to disclose their remuneration structures.

Table 8. ESG Pay and ESG Scores by Country and Year

	Denmark		Finland		Norway		Sweden		Mean	
	ESG Pay	ESG Score	ESG Pay	ESG Score	ESG Pay	ESG Score	ESG Pay	ESG Score		
2014	23.1%	57.19	10%	60.51	38.5%	57.47	26.2%	61.33	**16.2%**	**59.70**
2015	14.3%	57.53	9.5%	62.36	6.7%	56.61	15%	58.31	**12.2%**	**58.85**
2016	15.4%	58.72	9.5%	63.43	14.3%	61.28	10.5%	60.74	**11.6%**	**61.18**
2017	12.5%	57.52	13%	65.39	12.5%	58.50	2.3%	61.42	**8.2%**	**61.24**
2018	8.7%	56.27	18.5%	65.07	12.9%	54.64	3.9%	52.69	**8.9%**	**55.71**
2019	3.8%	58.77	17.2%	65.68	15.1%	54.26	13%	54.69	**12.8%**	**56.97**
2020	16.1%	57.95	20.9%	60.21	28.2%	54.88	32.4%	54.95	**27.3%**	**56.37**
2021	15.2%	57.93	17.9%	61.38	20%	58.79	23.5%	57.32	**20.5%**	**58.44**
2022	48.3%	59.41	37.5%	64.15	39.3%	58.83	39.7%	57.23	**40.8%**	**59.33**
Mean	**18.2%**	**58.01**	**18.4%**	**62.95**	**21.4%**	**56.79**	**19.2%**	**56.63**	**19.3%**	**58.14**

Adding to Table 7, Table 8 compares the use of ESG pay with the average ESG Score for each country and firm-year. The ESG scores are relatively high until 2018, where the lowest mean score across all countries is recorded. After that, they increase almost every year until 2022, alongside the increases of ESG pay. Interestingly, both ESG pay and ESG Scores were relatively high in 2014, then fell to lows in 2017 and 2018 before successively returning to, or surpassing, the starting levels in 2022. 2017 is the year with the highest average ESG Score with 61.24, whilst 2018 has the lowest average score with 55.71. Looking at countries, Finland has the highest average ESG scores (62.95), followed by Denmark (58.01) and Norway (56.79).

Sweden has the lowest average ESG scores with 56.69. The single highest average ESG score in a year is 65.68 and was registered in 2019 in Finland. Conversely, the lowest average score was 52.69, which was registered in Sweden in 2018, when only 3.9% of firms used ESG pay.

4.1.1 Descriptive Statistics for Exploratory Study

The summary statistics for the manually gathered data is presented in Table 9. To deal with outliers, most variables have been winsorized on the 10th and 90th percentile. we chose to winsorize the data at the 10th and 90th percentiles instead of the 1st and 99th percentiles due to the smaller sample size. Winsorizing at the 10th and 90th percentiles help to mitigate the influence of outliers more effectively, as using the 1st and 99th percentiles might not sufficiently reduce the impact of moderately extreme values. This approach ensures that a broader range of potential outliers is adjusted, providing a more robust and reliable statistical analysis while preserving the integrity of the dataset.

The mean ESG score in the exploratory sample is 67.29, with a median of 69.29, which is higher than the main sample. Since this sub-sample only consists of firms using ESG pay, this gives us an indication that these firms tend to have higher ESG scores. The standard deviation of 10.67 suggests moderate variation in ESG scores, with a range from 49.32 to 82.55.

Compared to the data for the main original sample, three new variables are used for the exploratory study. These are *ESG STI (%), CEO Variable Salary (100t's), and CEO ESG STI (100t's)*. The ESG STI percentage, representing the proportion of short-term incentives linked to ESG performance, has a mean of 0.19 and a median of 0.17. This indicates that the average proportion is 19%, and the median value of 17% suggests that the distribution of ESG STI percentages is more centred around this lower value. The low standard deviation of 0.11 shows that most companies have a similar proportion of STI tied to ESG targets, with relatively little variation. The minimum and maximum values of 0.05 and 0.50, respectively, reflect different levels of commitment to ESG-linked compensation.

For CEO variable salary, the mean is 347,000 euros, with a median of 256,000 euros. This indicates that there are differences among CEOs' variable compensation. The high standard deviation of 2.87 (287,000 euros) highlights this variability. The range from 0 to 850,000 euros shows that some CEOs did not receive any variable salary due to failure to reach targets, while

others received considerable amounts. The mean amount of ESG-linked STI is 74,000 euros with a median of 42,000 euros. This suggests that while some CEOs receive substantial ESG-linked incentives, the median remains moderate. The standard deviation of 0.85 indicates significant variability in ESG-linked STI among CEOs, with values ranging from 0 to 272,000 euros. Again, this spread shows that some CEOs do not receive ESG-linked incentives, while others received large amounts. *ROA, MTB,* and *Total Assets* in the exploratory study behave similarly to those in the main sample, with consistent means and ranges.

Table 9. Summary Statistics for the Subsample

	Mean	Median	SD	Min	Max	N
ESG Score[1]	67.29	69.29	10.67	49.32	82.55	44
ESG STI (%)	.19	.17	0.11	.05	.5	44
CEO Variable Salary[1] (100t's)	3.47	2.56	2.87	0	.85	44
CEO ESG STI[1] (100t's)	.74	.42	0.85	0	2.72	44
ROA[1]	.06	.07	0.04	.00	.12	44
MTB[1]	1.49	1.28	0.81	.55	3.21	44
Total Assets (1000t's)[1]	6720.79	3965.86	6925.46	415.91	19735.98	44

[1] *Winsorized on the 10th and 90th percentile*

4.2 Correlation Analysis

Table 10 presents pairwise correlations between all variables. Overall, the correlation between the variables is quite low. *ESG Score* is positively statistically significantly correlated with all variables, except for *MTB, Leverage,* and *Tobin's Q* which are negatively correlated. For example, a larger firm size should lead to higher *ESG Scores*, as shown by the positive coefficient of 0.381. Our dependent variable *ESG Score* is significantly correlated with the explanatory variable *Sustainability Compensation,* having a positive coefficient of 0.210. This is providing indirect support for H1a. However, *MTB* is negatively correlated with *Sustainability Compensation*, which contradicts H2a. Regarding the correlation between *Sustainability Compensation* and the other variables, most signs are positive, and the correlation is slightly weak. This indicates that these variables can to some extent explain the application of ESG-linked executive pay in firms. The only variables that are highly correlated are *MTB* and *Tobin's Q*, with a coefficient of 0.932, due to their similarities as financial metrics. To address this, we conducted a sensitivity analysis by using *Tobin's Q* as the dependant

variable without no significant differences. Tobin's Q has therefore been chosen not to be omitted from the analysis.

Overall, from an economic perspective the majority of our correlation coefficients can be interpreted as low or moderate. Additionally, variables with high collinearity will be dropped through STATA, the statistical program used, which deals with multicollinearity issues.

Table 10. Pearson's Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
(1) ESGSC	1.000																			
(2) ESCMP	0.210***	1.000																		
(3) MTB	-0.094***	-0.041	1.000																	
(4) SIZE	0.381***	0.175***	-0.092***	1.000																
(5) LEV	-0.071**	-0.041	-0.053*	-0.014	1.000															
(6) ROA	0.088***	0.020	0.102***	0.042	-0.119***	1.000														
(7) CEOCMP	0.332***	0.077***	-0.075***	0.239***	-0.014	0.070**	1.000													
(8) BRDSZ	0.402***	0.062**	-0.032	0.312***	-0.104***	0.050*	0.276***	1.000												
(9) BRDGD	0.110***	0.101***	-0.141***	0.029	0.124***	-0.022	-0.065**	-0.146***	1.000											
(10) TOBQ	-0.127***	-0.046*	0.932***	-0.106***	-0.211***	0.100***	-0.084***	-0.043	-0.155***	1.000										
(11) ENVPOL	0.223***	0.083***	-0.039	0.072**	0.043	0.145***	0.107***	0.131***	0.013	-0.038	1.000									
(12) SSTATE	0.216***	-0.061**	0.015	0.104***	0.012	0.134***	0.085***	0.192***	0.002	-0.012	0.177***	1.000								
(13) ENVPFT	0.326***	0.152***	-0.119***	0.126***	-0.005	0.158***	0.138***	0.203***	0.010	-0.152***	0.258***	0.191***	1.000							
(14) MGMTSC	0.578***	0.184***	-0.123***	0.286***	0.035	-0.067**	0.136***	0.147***	0.170***	-0.113***	0.051*	0.022	0.044	1.000						
(15) ENVISC	0.535***	0.095***	-0.093***	0.322***	-0.107***	0.103***	0.186***	0.201***	0.013	-0.113***	0.151***	0.162***	0.307***	0.160***	1.000					
(16) EQUALP	0.166***	0.017	0.011	0.035	0.001	0.023	0.089***	0.073***	0.027	0.004	0.160***	0.092***	0.146***	0.091***	0.068**	1.000				
(17) HLTHP	0.223***	0.067**	-0.087***	0.066**	0.036	0.116***	0.111***	0.137***	-0.023	-0.107***	0.334***	0.130***	0.223***	0.050*	0.147***	0.120***	1.000			
(18) HRPOL	0.214***	0.049*	-0.113***	0.058**	0.028	0.083***	0.121***	0.139***	-0.041	-0.115***	0.259***	0.166***	0.270***	0.055*	0.142***	0.206***	0.294***	1.000		
(19) ETHPOL	0.072**	0.060**	-0.086***	0.025	0.024	0.127***	0.049*	0.039	0.014	-0.082***	0.199***	0.065**	0.117***	0.019	0.038	0.058**	0.149***	0.367***	1.000	
(20) ASSLCL	0.247***	0.121***	0.041	0.207***	-0.082***	0.081***	0.099***	0.179***	0.005	0.033	0.074***	0.096***	0.173***	0.030	0.183***	0.017	0.062**	0.051*	0.046*	1.000

Note: For variable explanation, see Appendix A

**** p<0.01, ** p<0.05, * p<0.1*

4.3 Univariate Analysis

We begin our empirical analysis by conducting simple univariate tests for H1a and H2a, dividing our sample into two groups based on whether the firms use ESG pay. The differences in means between the two groups over the full sample period are compared using a t-test. Table 20 (Appendix) displays the test results, revealing a significant difference between the subgroups**.** Firms that offer ESG-linked compensation have an average ESG Score of 65.532, while those without such compensation average 56.377. These findings suggest that companies with higher ESG Scores are more likely to use ESG-linked pay, indicating support for H1a.

However, the same test for MTB does not yield similar results. Companies with ESG pay have an average MTB of 3.67, whereas those without it average 4.50, which does not support H2a. Despite these initial observations, no definitive conclusions can be drawn from these results alone. They do, however, justify further investigation through multivariate analysis.

5. Results

In this section, the main results of the regressions are presented, investigating the effect of ESG pay on ESG performance and financial performance. This is followed by robustness checks through PSM and the exclusion of Swedish firms.

5.1 ESG Performance

Models 1-4 are observed in Table 11. In this study, the Hausman test was performed for Models 1 through 8, where the null hypothesis is clearly rejected for all. Detailed results for the Hausman test are presented in Table 17 (Appendix). As the null hypothesis was rejected, fixed effects will be used across all models to ensure comparable results and robustness of the analysis. For each lagged year, the total amount of observations decreases, which is something to have in mind when observing the results. For Model 1, the main explanatory variable *Sustainability Compensation's* coefficient is 0.911 and statistically significant at the five-percent level. This means that ESG-linked compensation for the executive is associated with an increase in the *ESG Score* for the same year. To be more exact, it means that if a firm applies ESG pay in this year, *ESG Scores* tends to rise around 1 unit. For Model 2, with a 1-year lag, the coefficient for Sustainability Compensation is lower (0.659) and not statistically significant. Although, with a 2-year lag in Model 3 the coefficient for the main explanatory variable is once again higher (1.096) and statistically significant at the five-percent level. Lastly, in Model 4 the sign turned negative, with coefficient of -0.637. However, as with Model 2, the results are not statistically significant.

Among the control variables, *MTB* shows no statistical significance for any model. *ROA* shows a negative correlation across Model 1-4, which means that companies with higher profitability tend to have lower *ESG Scores*. The size of the coefficient varies across the years and is only statistically significant at the five-percent level for Model 1, indicating a reduced effect over time. Furthermore, the results of Model 1 illustrate that larger firms, measured in *Total Assets*, have slightly higher *ESG Scores*, as indicated by the positive and significant coefficient of 2.022. Although, this correlation is only at the ten-percent level, and the significance vanishes for *Total Assets* in Model 2-4. The coefficient for *Sustainability Statement* is positive and

statistically significant in Model 1-3, but not in Model 4. For Model 1-2 the significance is at the one-percent level, with 1.766 and 1.378, respectively. In Model 3 the significance is weaker at the five-percent level with a coefficient of 1.626. The results for *HR Policy* are similar in Model 1 and 2, where the coefficients are 3.491 and 2.729, respectively, and statistically significant. This suggests that companies that have these policies tend to have higher *ESG Scores*. Interestingly, *HR Policy* changed signs in Model 3, although not significant.

Furthermore, the coefficients for *Management Score* and *Environmental Innovation Score* are positive and significant at the one-percent level across Models 1-4, suggesting that increases in these types of scores tend to somewhat increase ESG performance. The rest of the control variables show no statistical significance. The R^2 amounts to 0.656 in Model 1, 0.608 in Model 2, 0.591 in Model 3 and 0.585 in Model 4.

White's test for heteroskedasticity is presented in Table 18 (Appendix). With a p-value below 0.05 for all models, there is a significant presence of heteroskedasticity. Therefore, the null hypothesis of constant variance is rejected. The risk of serial correlation is an issue with fixed effects, so clustered standard errors have been utilized for statistical inference. Additionally, multicollinearity is addressed through a VIF-test in Table 19 (Appendix). The explanatory variable and all control variables are included. The results show no evidence of problematic multicollinearity that would violate the assumptions of multiple linear regression. Although relying solely on VIF scores can be problematic (Bailey, 2019). However, the low VIF scores, combined with low pairwise correlations, help to mitigate concerns about multicollinearity.

Table 11. Regression Results for Model 1 to 4

Model	(1)	(2)	(3)	(4)
Variable	ESG Score	ESG Score	ESG Score	ESG Score
	No lag	1-year lag	2-year lag	3-year lag
Sustainability Compensation[1]	0.911**	0.659	1.096**	-0.637
	(0.387)	(0.463)	(0.477)	(0.631)
MTB[2]	0.146	0.074	0.115	0.181
	(0.134)	(0.144)	(0.153)	(0.136)
Total Assets (1000t's)[2,3]	2.022*	1.311	1.389	1.771
	(1.114)	(1.366)	(1.484)	(1.634)
Leverage[2]	-8.822**	-4.865	-3.796	-6.701*
	(3.472)	(3.521)	(3.986)	(3.430)
ROA[2]	-5.845**	-3.507	-2.450	-3.597
	(2.585)	(2.909)	(3.279)	(2.555)
Executive Compensation[2,3]	0.039	0.169	-0.048	0.011
	(0.170)	(0.130)	(0.150)	(0.175)
Board Size	0.210	0.040	0.052	0.088
	(0.177)	(0.183)	(0.187)	(0.247)
Board Gender Diversity	0.014	-0.002	0.001	0.002
	(0.029)	(0.030)	(0.031)	(0.037)
Tobin's Q[2]	-0.317	-0.303	-0.376	-0.603
	(0.333)	(0.373)	(0.394)	(0.442)
Environmental Policy[1]	0.304	0.820	0.950	1.179
	(0.763)	(0.969)	(1.120)	(1.446)
Sustainability Statement[1]	1.766***	1.378***	1.626**	1.008
	(0.468)	(0.514)	(0.631)	(0.634)
Environmental Performance Targets[1]	0.448	0.704	1.019	1.772*
	(0.486)	(0.510)	(0.636)	(0.907)
Management Score	0.207***	0.189***	0.190***	0.203***
	(0.017)	(0.019)	(0.018)	(0.019)
Environmental Innovation Score	0.146***	0.153***	0.152***	0.152***
	(0.018)	(0.021)	(0.024)	(0.031)
Equal Policy[1]	0.866	0.606	0.422	-0.147
	(0.760)	(0.767)	(0.799)	(0.679)
Health Policy[1]	1.354	1.122	1.057	1.241
	(0.873)	(0.813)	(1.011)	(1.358)
HR Policy[1]	3.491***	2.729**	-0.216	1.818
	(1.187)	(1.368)	(1.198)	(1.796)
Ethics Policy[1]	-1.965	-0.665	-0.086	-1.026
	(1.478)	(1.306)	(1.661)	(1.582)
Assessment of Local Impact[1]	0.027	0.582	0.456	0.483
	(0.421)	(0.415)	(0.445)	(0.455)
Reduced Environmental Impact[1]	1.010	0.388	0.430	0.788
	(0.734)	(0.942)	(1.206)	(1.350)
_cons	22.421***	30.538***	32.082**	27.941*
	(8.615)	(10.704)	(12.391)	(14.279)
Observations	1272	989	782	586
R-squared	0.656	0.608	0.591	0.585
Standard errors	Clustered	Clustered	Clustered	Clustered
Method	FE	FE	FE	FE
Year effects	Yes	Yes	Yes	Yes

Standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

[1] *Dummy variable*
[2] *Winsorized on the 1st and 99th percentile*
[3] *Natural logarithm*

5.2 Financial Performance

The regression results for Models 5-8 are presented in Table 12**.** As with Table 11, each column presents the number of years the explanatory variable *Sustainability Compensation* has been lagged. With no lag, the coefficient for *Sustainability Compensation* is positive, although not statistically significant. However, in Model 6 with a one-year lag, the effect becomes stronger and statistically significant. Column 2 illustrates this, showing a coefficient of 1.156, which is significant at the one-percent level. This indicates that firms that implemented ESG-linked executive compensation had, on average, an *MTB* ratio 1.156 points higher the following year compared to firms that did not. However, this effect does not persist with longer lags. In Model 7, with a 2-year lag, the coefficient decreases to 0.458 and is not statistically significant. Lastly, in Model 8, with a 3-year lag, the coefficient is 0.599 and remains not statistically significant.

Looking at the control variables, *Total Assets* shows a consistent negative and significant relationship with *MTB* across all models. In Model 5, the coefficient is -7.145 and statistically significant at the one-percent level, indicating that larger companies tend to have lower *MTB* ratios, possibly indicating that larger firms have less growth potential relative to their book value. This negative relationship persists in Models 6-8, with coefficients of -6.956, -6.048, and -3.578, respectively, all significant at the one-percent level. Meanwhile, *Leverage* shows a positive relationship with *MTB*, with the coefficient being statistically significant at the ten-percent level in Model 5 (4.854) and Model 6 (4.810). In Model 7, the coefficient increases to 7.477 and is significant at the five-percent level, while in Model 8, the coefficient is 6.415 but not statistically significant. *ROA* has a negative relationship with *MTB* in Models 5 and 6, with coefficients of -3.792 and -3.146, respectively, both significant at the five-percent level. This indicates that more profitable companies tend to have lower *MTB* ratios. However, in Models 7 and 8, the coefficients are not statistically significant.

The coefficients for other control variables, such as *Executive Compensation*, *Board Size*, and *Board Gender Diversity*, show no statistical significance across all models. Notably, the coefficient for *Environmental Policy* is negative and significant in Models 6 and 8, suggesting that companies with such policies tend to have lower *MTB* ratios. In Model 6, the coefficient is -2.266, significant at the five-percent level, and in Model 8, the coefficient is -5.948, also significant at the five-percent level. The coefficients for *Sustainability Statement*, *Environmental Performance Targets*, and *Environmental Innovation Score* are not statistically

significant in any model. However, the coefficient for *Equality Policy* is positive and significant in Model 8, with a coefficient of 1.481, indicating that companies with equality policies tend to have higher MTB ratios. The R^2 values are 0.306 in Model 5, 0.353 in Model 6, 0.275 in Model 7, and 0.298 in Model 8.

Again, White's test for heteroskedasticity presented in Table 18 (Appendix) indicated a significant presence of heteroskedasticity across Model 5-8, with p-values below 0.05, thus clustered standard errors were used. As similar variables were used in Model 5-8 as Model 1-4, the results from the VIF-test in remained consistent, and multicollinearity is not deemed problematic.

Table 12. Regression Results for Models 5 to 8

Model	(5)	(6)	(7)	(8)
Variable	MTB[2]	MTB[2]	MTB[2]	MTB[2]
	No lag	1-year lag	2-year lag	3-year lag
Sustainability Compensation[1]	0.306	1.156***	0.458	0.599
	(0.294)	(0.425)	(0.395)	(0.435)
Total Assets (1000t's)[2,3]	-7.145***	-6.956***	-6.048***	-3.578***
	(1.146)	(1.272)	(1.359)	(1.224)
Leverage[2]	4.854*	4.810*	7.477**	6.415
	(2.528)	(2.867)	(3.786)	(4.028)
ROA[2]	-3.792**	-3.146**	-1.627	-0.697
	(1.820)	(1.473)	(1.927)	(2.391)
Executive Compensation[2,3]	0.109	0.112	0.028	0.063
	(0.075)	(0.070)	(0.082)	(0.085)
Board Size	-0.034	-0.041	0.010	0.010
	(0.110)	(0.113)	(0.137)	(0.117)
Board Gender Diversity	-0.011	-0.028	-0.019	0.013
	(0.029)	(0.028)	(0.024)	(0.026)
Environmental Policy[1]	-0.594	-2.266**	-2.975*	-5.948**
	(1.013)	(1.095)	(1.698)	(2.922)
Sustainability Statement[1]	-0.477	-0.583	-1.098	-0.875
	(0.474)	(0.627)	(0.945)	(1.008)
Environmental Performance Targets[1]	-0.294	-0.090	-0.335	-0.148
	(0.421)	(0.500)	(0.569)	(0.802)
Management Score	0.013	0.009	0.016	0.021**
	(0.010)	(0.010)	(0.011)	(0.010)
Environmental Innovation Score	-0.008	0.001	-0.002	-0.015
	(0.014)	(0.013)	(0.011)	(0.012)
Equality Policy[1]	-0.097	0.420	0.419	1.481**
	(0.597)	(0.420)	(0.466)	(0.709)
Health Policy[1]	-0.069	0.461	-0.278	-0.342
	(0.623)	(0.522)	(0.709)	(0.953)
HR Policy[1]	-0.800	-2.475*	0.423	-3.263
	(1.164)	(1.406)	(1.333)	(3.616)
Ethics Policy[1]	-4.094**	-2.327	-2.148	-3.092
	(1.663)	(1.636)	(1.629)	(2.751)
Assessment of Local Impact[1]	0.411	0.324	0.338	0.215
	(0.330)	(0.296)	(0.267)	(0.240)
Reduced Environmental Impact[1]	-0.240	-0.951	-1.715	-2.815*
	(0.650)	(0.845)	(1.400)	(1.689)
_cons	62.802***	63.829***	55.008***	42.698***
	(9.470)	(10.434)	(11.056)	(10.595)
Observations	1272	989	782	586
R-squared	0.306	0.353	0.275	0.298
Standard errors	Clustered	Clustered	Clustered	Clustered
Method	FE	FE	FE	FE
Year effects	Yes	Yes	Yes	Yes

Standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

[1] Dummy variable
[2] Winsorized on the 1st and 99th percentile
[3] Natural logarithm

5.3 Exploratory Results

The regression results presented in Table 13 and 14 use the manually collected data and present the results from the exploratory study. Model 9 investigates the relationship between the *ESG Scores* and the percentage weighting of ESG in STI-structures. The *ESG STI (%)* coefficient is -4.711, but not statistically significant, indicating that the relative weight of ESG targets in STI's does not have a significant impact on ESG performance. In Model 10 the explanatory variable is *CEO ESG STI*, looking at the total amount of ESG pay. In this model, the coefficient is 3.866 and statistically significant at the 5% level. The results mean that an increase in STI tied to ESG targets by 100 000 euros is associated with a 3.866-point increase in the ESG score. However, the R^2 is low (0.095), indicating that this model explains only a small portion of the variance in ESG scores. In Model 11, the coefficient increases to 6.150 and is significant at the ten-percent level, suggesting a stronger positive relationship between ESG-linked STI and ESG performance when control variables are included in the model. The R^2 value is 0.601[4], indicating that the model explains 60.1% of the variance in *ESG Scores*, a substantial improvement. Model 12 replicates Model 11 with robust standard errors to account for potential heteroscedasticity, and the results remain consistent, confirming the robustness of the findings.

The coefficients of the control variables in Model 11 show no strong statistical significance, except for *Total Assets* and *ESG STI (%)*, with a coefficient of 5.545 and statistical significance at the one-percent level. This indicates that in the subsample, larger firms tend to have higher *ESG Scores*, consistent with Model 1. Interestingly, the negative coefficient for *ESG STI (%)* has decreased to -23.432 and is statistically significant at the ten-percent level.

The regression results in Table 14 examine the relationship between the same variables as above but with *MTB* as the dependent variable. In all four models (13-16), none of the coefficients are statistically significant, indicating that the results should be interpreted with caution due to a lack of robust evidence.

[4] The authors are aware that this is a surprisingly high value for R^2, especially compared to the R^2 of Model 10. The regression was run multiple times in STATA to control for human error, and the R^2 remained consistent at 0.601.

In Model 13, *ESG STI (%)* has a coefficient of -1.255, which is not statistically significant. This indicates that there is no clear relationship between the proportion of short-term incentives and MTB ratio. Model 14 introduces *CEO ESG STI* as the explanatory variable. The coefficient for the variable is -0.154, not being statistically significant. This implies that neither the proportion of ESG-linked STI nor the absolute amount of ESG STI significantly impacts MTB.

In Model 15, control variables are added to the analysis. The coefficients for *ESG STI (%)* and *CEO ESG STI* remain insignificant at -0.136 and -0.369, respectively. *CEO Variable Salary* has a positive coefficient of 0.708, but it is not statistically significant, indicating no significant effect on *MTB* from these compensation measures. Model 16 is similar to Model 15 but employs robust standard errors to address potential heteroskedasticity. The coefficients and their lack of significance remain unchanged. The control variables included in Models 15 and 16, such as *ROA* and *Total Assets*, also do not show statistical significance. *ROA* has a positive coefficient of 4.425, and *Total Assets* has a slight negative coefficient of -0.049, neither of which are statistically significant. The R^2 values for these models are relatively low, ranging from 0.026 to 0.097.

Overall, these results indicate that there is no significant relationship between the ESG-related compensation variables and the MTB ratio in the sample.

Table 13. Regression Results for Model 9 to 12

Model	(9)	(10)	(11)	(12)
Variable	ESG Score[1]	ESG Score[1]	ESG Score[1]	ESG Score[1]
CEO ESG STI[1] (100t's)		3.866**	6.150*	6.150**
		(1.841)	(3.589)	(2.446)
ESG STI (%)	-4.711		-23.342*	-23.342*
	(14.356)		(13.471)	(12.673)
CEO Variable Salary[1] (100t's)			-1.206	-1.206*
			(.979)	(.607)
ROA[1]			-42.410	-42.410
			(32.884)	(30.139)
MTB[1]			0.468	0.468
			(1.439)	(1.368)
Total Assets (1000t's)[12]			5.545***	5.545***
			(0.869)	(0.862)
_cons	68.221***	64.422***	28.800***	28.800***
	(3.254)	(2.067)	(8.134)	(8.477)
Observations	44	44	44	44
R-squared	0.003	0.095	0.601	0.601
Standard errors	Standard	Standard	Standard	Robust
Method	OLS	OLS	OLS	OLS
Sample	Manually Collected	Manually Collected	Manually Collected	Manually Collected

Standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

[1] Winsorized on the 10th and 90th percentile
[2] Natural logarithm

Table 14. Regression Results for Model 13 to 16

Model	(13)	(14)	(15)	(16)
Variable	MTB[1]	MTB[1]	MTB[1]	MTB[1]
ESG STI (%)	-1.255		-0.136	-0.136
	(1.074)		(1.519)	(1.125)
CEO ESG STI[1] (100t's)		-0.154	-0.369	-0.369
		(0.145)	(0.400)	(0.283)
CEO Variable Salary[1] (100t's)			0.708	0.708
			(1.098)	(0.909)
ROA			4.425	4.425
			(3.638)	(3.760)
Total Assets (1000t's) [12]			-0.049	-0.049
			(0.098)	(0.106)
_cons	1.740***	1.608***	1.649*	1.649*
	(0.244)	(0.163)	(0.877)	(0.905)
Observations	44	44	44	44
R-squared	0.031	0.026	0.097	0.097
Standard errors	Standard	Standard	Standard	Robust
Method	OLS	OLS	OLS	OLS
Sample	Manually Collected	Manually Collected	Manually Collected	Manually Collected

Standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

[1] Winsorized on the 10th and 90th percentile
[2] Natural logarithm

5.4 Robustness Tests

To ensure the robustness of our findings, we conducted a series of robustness tests on the regression models examining the impact of ESG-linked CEO compensation on firms' *ESG Scores* and market-to-book (*MTB*) ratios. These tests include the propensity-score matching (PSM) technique and the exclusion of Swedish companies from the sample. Here, we discuss the results from these robustness tests and assess the stability and reliability of our results in greater detail.

The robustness tests through PSM are presented in Table 21 (Appendix). The treatment variable, representing ESG-linked pay, had a coefficient of 1.532 in Model 1a, which was statistically significant at the five-percent level. The effect's coefficient has increased to 1.532 compared to the main model, enhancing its economic significance. This analysis demonstrates the robustness of our initial results for Model 1, as the findings persist even when moving away from the ceteris paribus assumption by matching similar observations. In Models 2a through 4a, the coefficients of 0.906, 0.280, and -0.853, respectively, were kept of similar value and with the same signs, although they were not statistically significant. This especially reduces the robustness of Model 3, as this was statistically significant in the main model. This indicates that the initial significance might be driven by specific subsamples or model specifications.

When we excluded Swedish companies from the sample in the ESG Score Model 1b-4b, presented in Table 22 (Appendix), the coefficient for ESG-linked pay was 1.080 and statistically significant at the five-percent level in Model 1b. However, it became insignificant in the other models, with coefficients of 0.630, 1.019, and 0.531, suggesting that the positive effect of ESG-linked pay on *ESG Scores* is not uniformly robust across all regions.

As presented in Table 23 (Appendix), the treatment variable had a coefficient of 1.012 in Model 5a, and 1.492 in Model 6a, with Model 6a being highly significant. However, the effect was not significant in Models 7a and 8a, with coefficients of 0.783 and 0.452. When excluding Swedish companies in the MTB Models (5b-8b) in Table 24 (Appendix), the coefficient for *Sustainability Compensation* was 0.688 and significant at the five-percent level in Model 6b, but not significant in the other models, with coefficients of 0.583, 0.572, and 0.651. This indicates regional variations in the effectiveness of ESG-linked pay on market valuation.

6. Discussion

This section discusses the results situated to the previous research and theories presented in connection with our research area. The effect of ESG-linked compensation on ESG performance and subsequently financial performance is examined followed by a discussion of limitations, and suggestions for further research.

6.1 The effect of ESG pay on ESG Performance

The regression results in Table 11 provide partial support for H1a. Specifically, in Model 1, the coefficient for Sustainability Compensation is positive at 0.911 and statistically significant. This suggests that in the same year ESG-linked compensation is implemented, there is a significant positive impact on the ESG Score. This immediate effect supports H1a, indicating that tying executive compensation to ESG metrics can incentivize executives to improve their firm's ESG performance. However, the results for the lagged models present a mixed picture. With a one-year and three-year lag there is no statistical significance, suggesting that the immediate boost in ESG performance might not be sustainable. Model 3 provides further support for the hypothesis with a two-year lag, indicating a delayed positive impact on ESG performance. While there is some evidence supporting the hypothesis, the lack of consistent sustainable significance suggests that the impact of ESG-linked compensation on ESG performance might diminish over time. Therefore, we only find partial support for H1a.

Hypothesis H1b suggests that the size of ESG-linked executive compensation is positively related to ESG performance. The results from the exploratory study, Model 9-12, were not conclusive. Looking at the size of ESG pay as the weighting of ESG Targets in STI's, the results were not statistically significant. This suggests that simply increasing the percentage of STI tied to ESG targets may not be sufficient to enhance ESG scores. However, when looking at CEO ESG STI, the effect is positive and statistically significant. This indicates that the actual amount of compensation tied to ESG performance has a positive relationship with ESG scores. The results of Model 11 and 12 increased the robustness of these results, as the same relationship was found when adding control variables. Overall, this indicates that when the total variable remuneration attributable to achieving ESG targets increases, there is an

improvement in ESG performance. This supports the notion of Ellingsen and Johannesson (2004) that an increase of compensation should lead to enhanced performance.

Whether these results are economically significant is an important consideration. Although our findings provide statistical evidence that ESG-linked executive compensation can influence ESG performance, the extent of the effect must be carefully evaluated in practical terms. For example, Model 1 suggests that introducing ESG-linked pay is associated with an increase of approximately 0.91 points in the ESG score for that year. Given that ESG scores typically range from 0 to 100, an increase of less than one point might appear marginal. From an economic point of view, such a small change might not be substantial enough to make a significant difference in the overall ESG performance of a company.

This raises questions about the practical impact of implementing ESG-linked compensation policies. On the one hand, if the goal is to achieve substantial improvements in ESG performance, then the observed changes may not be sufficient to justify the costs and efforts associated with restructuring executive compensation packages. Companies and stakeholders might expect more pronounced improvements to consider these compensation strategies economically worthwhile. On the other hand, with some companies already performing at a high level, the variation in ESG scores might mean that a small numerical improvement could still be meaningful in highly competitive or highly regulated industries. However, for companies with significant room for improvement, a change of less than one point might not meet the strategic objectives for ESG performance enhancement.

Our results are mostly consistent with previous research, which shows that the relationship between ESG and CEO compensation has the potential to improve companies' ESG performance (Cohen et al, 2023, Flammer, Hong & Minor, 2019; Homroy, Mavruk and Nguyen, 2023; Sarhan & Al-Najjar, 2023). The results show that when companies' executive compensation is linked to ESG goals, their ESG performance improves, indicating that such compensation strategies are effective in promoting sustainability goals.

Additionally, our results are consistent with agency theory, as linking executive compensation to ESG goals, our findings support the idea that such incentives can align management's actions with shareholders' broader sustainability goals. This strengthens ESG performance, which is in line with agency theory's assumption that incentives can reduce goal conflicts between agents

and principals. Moving on, the stakeholder theory emphasizes the importance of considering the interests of all stakeholders, not just those of shareholders (Freeman et al, 2010). Our results support this theory by showing that ESG-linked compensation can improve a company's ESG performance, benefiting a wider group of stakeholders, including employees, customers, and society at large.

Furthermore, our findings align with the stakeholder theory, which expresses that organizations perform better when they consider the interests of all stakeholders, not just shareholders (Freeman et al., 2010). Companies effectively encourage managers to prioritize sustainable practices that benefit a broad range of stakeholders by tying executive compensation to ESG metrics. This approach can lead to improved ESG performance, as executives are motivated to address environmental, social, and governance issues more comprehensively. In addition, self-approval can be linked to stakeholder theory, as executives who value ESG issues highly feel a personal satisfaction from working for a company that emphasizes sustainability, which in turn improves ESG performance and serves stakeholders' interests. Furthermore, our findings add to the conversation on reciprocity and social approval (Ellingsen & Johannesson, 2005; Fehr & Falk, 2002), illustrating how executives might be motivated not just by financial rewards, but also by the social approval that comes with leading sustainable organizations. This theoretical framework helps explain why ESG pay might result in better ESG performance, as both boards and executives seek the social validation associated with working with ESG. Furthermore, executives that regard ESG issues highly may want to reciprocate to a board integrating ESG pay, thus improving ESG practices and performance.

Gneezy and Rustichini (2000) demonstrated that subjects who were offered substantial rewards performed markedly better compared to those who received smaller incentives or no compensation. They argued that higher rewards enhance motivation and effort, thereby leading to better performance outcomes. Our findings align with this theory in the context of ESG performance. The significant positive coefficient for *CEO ESG STI* in our models indicates that generous compensation linked to ESG targets effectively could motivate executives to prioritize and achieve higher ESG scores.

6.2 The effect of ESG pay on Financial Performance

Our results only provide partial support for H2a. Model 5 show no indication of ESG pay's immediate effects on *MTB*. In Model 6, where a 1-year lag is introduced, the coefficient for *Sustainability Compensation* is positive and statistically significant, suggesting a positive relationship between ESG pay and financial performance after a one-year period. This finding implies that financial markets may take time to reflect the impact of ESG-linked compensation. It could be argued that investors appear to value the alignment of executive incentives with ESG targets, perceiving it as a signal of the firm's commitment to sustainable practices. However, something that contradicts this argument is the lack of significant results in the 2-year and 3-year lagged models (Models 7 and 8) and indicates that this effect may not persist over time. This could suggest that while ESG-linked compensation schemes can possibly generate investor enthusiasm, maintaining this momentum requires continuous and perhaps more comprehensive integration of ESG principles into the firm's strategy and operations.

The exploratory analysis of H2b, using Models 13-16, does not provide significant evidence to support the hypothesis. In Model 13, the coefficient for *ESG STI (%)* is -1.255 and not statistically significant, indicating no clear relationship between the proportion of short-term incentives linked to ESG performance and the *MTB* ratio. Similarly, in Model 14, the coefficient for *CEO ESG STI* is -0.154, which is also not statistically significant. These results remain when adding control variables. This suggests that neither the weight of ESG-linked STI nor the absolute amount of ESG-linked STI significantly impacts *MTB*.

The observed statistical insignificance raises questions about the economic significance of ESG-linked compensation on financial performance. While some models suggest potential benefits of ESG-linked compensation, the lack of consistent statistical significance across the board indicates that these benefits are not robust or reliable. For companies considering the implementation of ESG-linked executive compensation, these findings suggest that the financial benefits might not be immediate or guaranteed. Firms may need to consider additional factors or longer-term perspectives to realize any potential financial gains from such compensation schemes.

The findings align with some existing literature, suggesting that the relationship between ESG-linked compensation and financial performance is not straightforward. For example, previous

studies by Khan and Gupta (2023) and Saha and Khan (2024) found positive impacts of sustainability practices on financial performance, but these effects were not universally consistent across all measures and time periods. The lack of significant sustained impact also aligns with Bebchuk and Tallarita's (2022) scepticism about the enduring financial benefits of ESG-linked pay. Furthermore, Cohen et al. (2023) highlighted the signalling effect of ESG incentives but did not find a direct link to financial performance, which is consistent with the lack of significant findings in this study.

Agency theory posits that aligning executive interests with shareholders can mitigate conflicts and improve performance. The positive but inconsistent impact of ESG-linked compensation on financial performance suggests that while such alignment may support broader sustainability goals, it does not consistently enhance financial outcomes. This indicates that extrinsic incentives may drive behaviours, but their financial impacts require nuanced consideration and may not be immediate. Furthermore, our results challenge shareholder theory, especially the notion that strictly aligning executive incentives with shareholder value maximization leads to better financial performance. The inconsistent findings indicate that ESG pay does not clearly translate to financial gains. This challenges the notion of shareholder theory that strictly aligning executive incentives with shareholder value maximization leads to better financial performance, particularly when broader ESG goals are considered.

Companies might need to consider the broader implications of ESG performance, even if it does not immediately translate into financial performance. Achieving high ESG scores could be crucial for maintaining social approval. Companies that are not socially approved may face higher risks and be classified in a different risk category, potentially deterring investors. From a pragmatic standpoint, maintaining strong ESG performance is essential for companies to stay competitive and attractive to investors, as failing to do so could result in increased investment risks and lower investor confidence (Aldieri, Amendola & Candila, 2023). Thus, while ESG-linked compensation might not have a direct financial benefit, it plays a crucial role in ensuring companies remain socially approved and perceived as lower-risk investments, which is vital for long-term sustainability and financial health.

6.3 Limitations and Suggestions for Further Research

The robustness of our results is a concern given the mixed and mostly non-significant findings across different models. The inclusion of numerous control variables might have led to overfitting, causing the models to perform well on the sample data but potentially not generalize well to other datasets. This limitation suggests that the observed effects might not be consistent in different contexts or with different samples, thereby limiting the external validity of our conclusions. Additionally, future studies could consider using a broader set of financial metrics, such as ROA, ROE, and stock returns. This would continue to provide to the understanding of how ESG-linked compensation affects different aspects of financial performance.

There is a potential issue of endogeneity in our study. Several unobserved factors could influence both the adoption of ESG-linked compensation and the performance outcomes. For instance, firms with a proactive stance on sustainability might naturally perform better in ESG metrics and be more inclined to adopt ESG-linked pay schemes. This reverse causality could affect the validity of our conclusions, making it difficult to determine whether ESG-linked compensation directly causes improvements in ESG and financial performance or if it is simply correlated with other proactive corporate behaviours. Employing methodologies that address endogeneity, such as instrumental variable (IV) regression, could provide more robust estimates of the causal impact of ESG-linked compensation on corporate performance. Identifying appropriate instruments that are correlated with the adoption of ESG-linked pay but not directly with the performance outcomes could help in isolating the true effect.

The validity of the observed changes in ESG performance is another limitation. Our study might not be capturing an actual improvement in ESG practices but rather an improvement in the reporting and documentation of these practices. Companies may have started to report their ESG initiatives more detailed due to external pressures to be socially approved. This could explain why we see an increase of ESG pay in our sample from the year 2019 and onward. It is possible that firms incorporated ESG pay before this year, but simply did not report it. This could create a bias in ESG scores, reflecting better reporting rather than actual changes in ESG compensation structures. Therefore, the observed relationship between ESG-linked pay and ESG scores might be influenced by changes in reporting practices rather than real improvements in sustainability.

Lastly, the exploratory study, which analysed the impact of the size of ESG-linked compensation, used a relatively small subsample. This limited sample size reduces the statistical power of the analysis, making it harder to detect significant effects. The small sample increases the margin of error and might not adequately represent the broader population of firms using ESG-linked compensation. Consequently, the findings from this part of the study should be interpreted with caution and validated through larger, more comprehensive samples in future research. Power calculations in future studies would help determine the necessary sample sizes to achieve adequate statistical power, ensuring more reliable and valid results.

7. Conclusion

The purpose of this thesis was to analyse the link between Nordic publicly listed companies' financial and ESG performance and executive compensations tied to these factors. We aimed at closing the gap in the literature on the scope of ESG pay and its impact on corporate outcomes, through an analysis using manually collected data. The results show that it seems as ESG pay has a potential of increasing the sustainability practices, the extent of financial improvements of this type of incentives may not be clear, since in general the statistical significance of the effect of these incentives on more general financial measures are lacking. Additionally, the results show that a larger amount of ESG pay has a positive effect on ESG performance, but not financial. Due to the limitations of our study, we believe that future research should look to employ a larger sample to increase generalizability. This could also inform about the long-term effects of ESG-linked pay on the performance of corporations. In the future, the research could also be carried out to examine how the different types of ESG metrics impact the remuneration of the executives to determine which of them will incentivize the corporations to behave better. In conclusion, this thesis demonstrates that executive remuneration could drive the development of sustainable business practices, this relationship is complicated, and might not always foster financial performance

Appendix

Table 15. Variable Definitions

Variable Name	Symbol	Description	Data Source
ESG Score	*ESGSC*	Refinitiv's ESG Score of the firm, based on environmental, social, and corporate governance information.	(a)
Sustainability Compensation[1]	*ESCMP*	1 if the senior executive's compensation is tied to CSR, health and safety, or sustainability goals, 0 otherwise.	(b)
MTB	*MTB*	Market value of assets / Book value of equity **(Källa)**	(a)
Total Assets	*SIZE*	Total Assets in million EUR	(b)
Leverage	*LEV*	Total Assets / Total Debt	(b)
ROA	*ROA*	Return on Assets. Net profit / Total Assets	(b)
CEO Compensation	*CEOCMP*	Reported amount of total compensation paid to the CEO (in millions of Euros) during the last fiscal year, excl. severance payments and pension payouts that are one-time charges	(b)
Board Size	*BRDSZ*	Number of directors on the board	(b)
Board Gender Diversity (%)	*BRDGND*	Percentage of female board directors	(b)
Tobin's Q	*TOBQ*	Market value of Assets /Replacement Costs of Assets	(b)
Environment Policy[1]	*ENVP*	1 if the firm has an	(a)
Sustainability Statement[1]	*SSTAT*	1 if the company has an environmental policy and performs an environmental assessment, 0 otherwise.	(a)
Environmental Performance Targets[1]	*ENVPFT*	1 if the company discloses targets or ambitions associated with environmental performance, 0 otherwise	(a)
Management Score	*MGMTSC*	The management score evaluates a company's efficiency in adhering to best practice corporate governance principles	(b)
Environmental Innovation Score	*ENVIS*	A company's ability to minimize environmental costs and burdens for its customers through innovative environmental technologies and processes	(b)
Equality Policy[1]	*EQUALP*	1, If the company has an equal opportunity policy or a specific statement in their reports, code of conduct, or other material regarding equal opportunity, 0 otherwise.	(a)
Health Policy[1]	*HLTHP*	1 if the company has a health and safety policy, 0 otherwise	(a)
HR Policy[1]	*HRP*	1 if the company has a human rights policy or specific statement, 0 otherwise	(a)
Ethics Policy[1]	*ETHP*	1 if the company has a code of conduct or ethics policy, 0 otherwise	(a)
Assessment of Local Impact[1]	*ASSLCL*	1 if the company assesses its social impact on local communities, 0 otherwise	(a)
Reduced Environmental Impact[1]	*ENVIMP*	1 if the company reports that it has taken steps to reduce its negative environmental impact, 0 otherwise	(a)

Data source: (a) Refinitv Eikon; (b) Nordic Compass; (c) Manually collected.

[1] *Dummy variable*

Table 15. Variable Definition Table (cont.)

Variable Name	Symbol	Description	Data Source
ESG STI (%)	*ESGSTI%*	The relative weight of ESG targets for CEO variable compensation in STI-programs	(c)
CEO Variable Salary	*CEOVAR*	The variable compensation paid to the CEO (in 100 000 Euros) during the last fiscal year (exclude severance payments and pension payouts that are one-time charges)	(b)
CEO ESG STI	*ESGSTI*	The variable compensation tied to ESG targets paid to the CEO (in 100 000 Euros) during the last fiscal year. Calculated by ESG STI (%) * CEO Variable Salary	(b)(c)

Data source: (a) Refinitv Eikon; (b) Nordic Compass; (c) Manually collected.

Table 16. Industries Categorized as Other

	N
Aerospace and Defence	1
Apparel Manufacturing	1
Apparel Retail	1
Auto & Truck Dealerships	1
Basic Resources	9
Biotechnology	3
Chemicals	2
Communication Services	1
Construction and Materials	4
Consumer Defensive	2
Consumer Discretionary	28
Consumer Products	3
Consumer Staples	9
Consumer Service	1
Energy	8
Gambling	2
Grocery Stores	1
Healthcare	20
Industrial Goods and Services	5
Information Technology Services	2
Media	4
Medical Care Facilities	1
Personal Care, Drug and Grocery Stores	2
Pharmaceutical Retailers	1
Retail	2
Specialty Retail	1
Travel and Leisure	3
Utilities	18
Total	**136**

Table 17. Hausman Test Results

	Chi-Sq Statistic	p-value	Type of regression model
Model 1	75.64	0.0000	Fixed Effects
Model 2	58.52	0.0003	Fixed Effects
Model 3	55.58	0.0004	Fixed Effects
Model 4	47.81	0.0027	Fixed Effects
Model 5	72.05	0.0000	Fixed Effects
Model 6	43.76	0.0160	Fixed Effects
Model 7	35.97	0.0720	Fixed Effects
Model 8	41.97	0.0130	Fixed Effects

Table 18. White's Test Results

	Test Statistic	P-value	Decision	Heteroskedasticity?
Stata Test (Chi-squared) - Model 1 Homoscedasticity	631.13	0.0000	Reject	Yes
Stata Test (Chi-squared) - Model 2 Homoscedasticity	557.32	0.0000	Reject	Yes
Stata Test (Chi-squared) - Model 3 Homoscedasticity	447.07	0.0000	Reject	Yes
Stata Test (Chi-squared) - Model 4 Homoscedasticity	320.50	0.0011	Reject	Yes
Stata Test (Chi-squared) - Model 5 Homoscedasticity	1227.19	0.0000	Reject	Yes
Stata Test (Chi-squared) - Model 6 Homoscedasticity	962.15	0.0000	Reject	Yes
Stata Test (Chi-squared) - Model 7 Homoscedasticity	764.27	0.0000	Reject	Yes
Stata Test (Chi-squared) - Model 8 Homoscedasticity	569.54	0.0000	Reject	Yes

Table 19. VIF Test Results

Variable	VIF	1/VIF
Total Assets (log)	2.062	.485
Sustainability Statement	1.929	.518
Reduced Environmental Impact	1.551	.645
Environmental Performance Targets	1.548	.646
Board Size	1.431	.699
Environment pol	1.409	.71
Management Scor	1.405	.712
HR Policy	1.387	.721
Ethics Policy	1.356	.738
ROA	1.289	.776
MTB	1.286	.778
Environmental Innovation Score	1.281	.78
Assessment of Local Impact	1.266	.79
CEO Compensation	1.25	.8
Health Policy	1.229	.814
Board Gender Diversity	1.222	.819
Leverage	1.22	.819
Sustainability Compensation	1.172	.853
Equality Policy	1.13	.885
Year controls	Yes	Yes
Mean VIFs	**1.764**	

Table 20. Mean-comparison test for *ESG Score* and *MTB* categorized by ESG Pay

	ESG Pay=0	ESG Pay=1	Mean0	Mean1	dif	St Err	t value	p value
ESG Score	1027	245	56.377	65.532		1.198	-7.65	0.0000
MTB	1027	245	4.497	3.671	.826	.786	1.05	.293

Table 21. Robustness Test Results using Matched Sampling – Model 1a to 4a

Model	(1a)	(2a)	(3a)	(4a)
Variable	ESG Score	ESG Score	ESG Score	ESG Score
Robustness test	MS	MS	MS	MS
Treatment	1.532**	0.906	0.280	-0.853
	(0.693)	(0.728)	(0.787)	(0.794)
MTB[1]	0.174***	0.676***	0.831***	1.030***
	(0.058)	(0.202)	(0.176)	(0.177)
Total Assets[1,2]	3.388***	3.407***	3.228***	2.857***
	(0.287)	(0.310)	(0.333)	(0.375)
Leverage[1]	-10.289***	-11.478***	-12.266***	-15.915***
	(2.452)	(3.093)	(3.267)	(3.248)
ROA[1]	-2.624	0.173	0.274	1.127
	(3.548)	(3.719)	(4.857)	(5.185)
Executive Compensation[1,2]	0.836***	0.003	0.003	0.003
	(0.303)	(0.003)	(0.004)	(0.004)
Board Size	0.560***	0.494***	0.589***	0.453***
	(0.128)	(0.140)	(0.148)	(0.165)
Board Gender Diversity	0.069***	0.047	0.059*	0.031
	(0.025)	(0.029)	(0.032)	(0.036)
Tobin's Q[1]	-0.317	-0.303	-0.376	-0.603
	(0.333)	(0.373)	(0.394)	(0.442)
Environmental Policy[1]	1.308	1.938	3.961*	7.481**
	(1.681)	(1.978)	(2.301)	(2.909)
Sustainability Statement	2.595***	1.515	1.484	1.858
	(0.864)	(1.039)	(1.130)	(1.384)
Environmental Performance Targets[1]	2.238**	2.819***	2.725**	3.266**
	(0.890)	(1.015)	(1.229)	(1.428)
Management Score	0.259***	0.260***	0.257***	0.268***
	(0.011)	(0.013)	(0.014)	(0.016)
Environmental Innovation Score	0.134***	0.124***	0.122***	0.113***
	(0.010)	(0.010)	(0.011)	(0.012)
Equality Policy[1]	3.484**	3.736**	3.336	0.383
	(1.526)	(1.847)	(2.186)	(1.826)
Health Policy[1]	2.446*	0.431	-0.807	-1.726
	(1.384)	(1.497)	(1.547)	(1.812)
HR Policy[1]	4.230**	3.803	2.086	7.798
	(1.818)	(2.718)	(4.758)	(6.658)
Ethics Policy[1]	-1.759	0.604	-1.159	-1.577
	(3.253)	(3.796)	(4.249)	(3.104)
Assessment of Local Impact[1]	1.396**	1.401**	1.386*	1.612**
	(0.608)	(0.667)	(0.736)	(0.754)
Reduced Environmental Impact[1]	2.693**	3.914**	2.124	3.953*
	(1.288)	(1.726)	(2.172)	(2.385)
_cons	-6.673	-6.927	-1.263	-0.819
	(4.128)	(5.145)	(6.975)	(7.540)
Observations	1272	989	758	554
R-squared	0.704	0.681	0.676	0.693
Standard errors	Robust	Robust	Robust	Robust
Method	MS	MS	MS	MS
Year effects	Yes	Yes	Yes	Yes

Standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

[1] *Dummy variable*
[2] *Winsorized on the 1st and 99th percentile*
[3] *Natural logarithm*

Table 22. Robustness Test Results excluding Sweden – Model 1b to 4b

Model	(1b)	(2b)	(3b)	(4b)
Variable	ESG Score	ESG Score	ESG Score	ESG Score
Robustness test	Excl. Sweden	Excl. Sweden	Excl. Sweden	Excl. Sweden
Sustainability Compensation	1.080**	0.630	1.019	0.531
	(0.529)	(0.577)	(0.792)	(0.933)
MTB[1]	0.045	0.029	0.115	0.192
	(0.078)	(0.159)	(0.175)	(0.134)
Total Assets[1,2]	1.760	1.483	0.952	0.805
	(1.349)	(1.709)	(1.698)	(1.883)
Leverage[1]	-12.107***	-10.042**	-11.490**	-10.209**
	(3.872)	(4.402)	(5.186)	(5.036)
ROA[1]	-10.707***	-9.008***	-9.004***	-7.491***
	(2.892)	(3.199)	(2.398)	(2.576)
Executive Compensation[1,2]	0.019	0.145	0.084	0.269
	(0.198)	(0.141)	(0.161)	(0.170)
Board Size	-0.218	-0.536***	-0.503***	-0.397
	(0.194)	(0.199)	(0.179)	(0.287)
Board Gender Diversity	0.035	0.013	0.016	0.038
	(0.040)	(0.043)	(0.041)	(0.050)
Tobin's Q[1]	-0.317	-0.303	-0.376	-0.603
	(0.333)	(0.373)	(0.394)	(0.442)
Environmental Policy[1]	-0.998	-0.712	1.927	4.733***
	(1.209)	(1.760)	(1.500)	(1.485)
Sustainability Statement	1.447**	1.877**	1.676**	1.288
	(0.669)	(0.750)	(0.777)	(0.823)
Environmental Performance Targets[1]	0.212	0.536	2.148**	2.723**
	(0.730)	(0.880)	(0.931)	(1.321)
Management Score	0.192***	0.179***	0.189***	0.187***
	(0.024)	(0.029)	(0.027)	(0.029)
Environmental Innovation Score	0.140***	0.156***	0.169***	0.146***
	(0.025)	(0.031)	(0.033)	(0.049)
Equality Policy[1]	1.181	1.363	1.074	0.326
	(1.006)	(1.231)	(1.080)	(0.830)
Health Policy[1]	2.809**	2.550**	1.756	3.892
	(1.318)	(1.196)	(1.436)	(2.380)
HR Policy[1]	4.124**	3.049	-1.200	1.605
	(1.795)	(1.893)	(1.705)	(2.193)
Ethics Policy[1]	-3.931**	-0.606	0.723	-2.816*
	(1.508)	(1.606)	(2.348)	(1.684)
Assessment of Local Impact[1]	0.274	0.905	1.112*	0.641
	(0.563)	(0.571)	(0.584)	(0.702)
Reduced Environmental Impact[1]	0.257	-0.529	-2.181	-1.451
	(1.407)	(1.648)	(1.728)	(1.534)
_cons	32.271***	36.769**	41.763***	39.018**
	(11.165)	(14.046)	(14.119)	(15.782)
Observations	677	530	420	318
R-squared	0.630	0.624	0.627	0.601
Standard errors	Clustered	Clustered	Clustered	Clustered
Method	FE	FE	FE	FE
Year effects	Yes	Yes	Yes	Yes

Standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

[1] Dummy variable
[2] Winsorized on the 1st and 99th percentile
[3] Natural logarithm

Table 23. Robustness Test Results using Matched Sampling – Model 5a to 8a

Model	(5a)	(6a)	(7a)	(8a)
Variable	MTB	MTB	MTB	MTB
Robustness test	MS	MS	MS	MS
Treatment	1.012*	1.492***	0.783	0.452
	(0.588)	(0.566)	(0.494)	(0.663)
Total Assets[2,3]	-1.498***	-1.001***	-0.931***	-0.966***
	(0.442)	(0.193)	(0.214)	(0.256)
Leverage[2]	1.050	2.325	1.880	1.732
	(1.752)	(1.669)	(1.875)	(2.078)
ROA[2]	8.375***	9.103***	6.498**	5.489
	(2.592)	(1.929)	(2.783)	(4.247)
Executive Compensation[2,3]	-0.002**	-0.002**	-0.002**	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)
Board Size	0.228*	0.088	0.047	0.044
	(0.134)	(0.084)	(0.094)	(0.103)
Board Gender Diversity	-0.081***	-0.057***	-0.056***	-0.055**
	(0.025)	(0.019)	(0.021)	(0.024)
Environmental Policy[1]	1.453	-0.580	0.541	-1.884
	(1.860)	(1.627)	(1.462)	(2.218)
Sustainability Statement[1]	0.258	0.329	0.598	0.800
	(1.356)	(0.560)	(0.643)	(0.577)
Environmental Performance Targets[1]	-2.283	-0.383	0.145	-0.237
	(1.515)	(0.646)	(0.630)	(0.777)
Management Score	-0.007	-0.003	-0.005	-0.003
	(0.009)	(0.006)	(0.007)	(0.006)
Environmental Innovation Score	-0.004	-0.006	-0.007	-0.009
	(0.006)	(0.005)	(0.005)	(0.006)
Equality Policy[1]	3.420**	1.847**	0.770	1.103
	(1.576)	(0.732)	(1.127)	(0.806)
Health Policy[1]	0.055	-0.701	-1.701	-2.040
	(2.072)	(1.198)	(1.283)	(1.794)
HR Policy[1]	-8.182	-1.740	-2.157	-1.987
	(8.036)	(1.638)	(1.952)	(2.268)
Ethics Policy[1]	0.054	-1.053	1.319	1.312
	(4.549)	(2.237)	(1.491)	(2.036)
Assessment of Local Impact[1]	1.796*	0.761*	0.626	1.082**
	(0.938)	(0.461)	(0.472)	(0.499)
Reduced Environmental Impact[1]	0.112	-1.020	0.001	0.497
	(1.567)	(1.091)	(0.814)	(0.940)
_cons	18.488***	17.629***	14.321***	15.177***
	(4.917)	(3.109)	(2.907)	(3.373)
Observations	1272	989	782	586
R-squared	0.109	0.167	0.143	0.144
Standard errors	Robust	Robust	Robust	Robust
Method	MS	MS	MS	MS
Year effects	Yes	Yes	Yes	Yes

Standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

[1] *Dummy variable*
[2] *Winsorized on the 1st and 99th percentile*
[3] *Natural logarithm*

Table 24. Robustness Test Results excluding Sweden – Model 1b to 4b

Model	(5b)	(6b)	(7b)	(8b)
Variable	MTB	MTB	MTB	MTB
Robustness test	Excl. Sweden	Excl. Sweden	Excl. Sweden	Excl. Sweden
Sustainability Compensation[1]	0.583	0.688**	0.572	0.651
	(0.432)	(0.314)	(0.410)	(0.396)
Total Assets[2,3]	-7.730***	-6.982***	-5.026***	-2.681**
	(1.672)	(1.555)	(1.389)	(1.186)
Leverage[2]	-0.114	-0.612	2.162	-0.884
	(3.184)	(3.628)	(3.408)	(4.422)
ROA[2]	-3.494	-2.986	-3.261	-3.175
	(2.602)	(2.189)	(2.499)	(2.715)
Executive Compensation[2,3]	0.212**	0.210**	0.085	0.127
	(0.097)	(0.106)	(0.113)	(0.093)
Board Size	-0.297	-0.098	-0.067	0.027
	(0.242)	(0.227)	(0.267)	(0.171)
Board Gender Diversity	-0.087	-0.092*	-0.076*	0.001
	(0.054)	(0.052)	(0.041)	(0.032)
Environmental Policy[1]	-1.854	-2.290	-2.398	-6.596
	(1.487)	(1.743)	(1.910)	(4.960)
Sustainability Statement[1]	-0.195	0.551	0.299	0.992
	(0.513)	(0.589)	(0.766)	(0.722)
Environmental Performance Targets[1]	-0.608	-0.405	-1.620**	-1.618
	(0.549)	(0.804)	(0.718)	(1.088)
Management Score	0.019	0.006	0.003	-0.011
	(0.018)	(0.017)	(0.014)	(0.010)
Environmental Innovation Score	0.002	0.005	0.008	-0.008
	(0.022)	(0.022)	(0.018)	(0.015)
Equality Policy[1]	1.125	0.749	1.485**	2.792*
	(0.682)	(0.702)	(0.718)	(1.463)
Health Policy[1]	0.607	0.906	0.941	2.844*
	(0.886)	(0.988)	(1.053)	(1.672)
HR Policy[1]	-1.910	-3.711	-0.998	-7.899
	(1.760)	(2.504)	(2.189)	(6.784)
Ethics Policy[1]	-3.466	-2.134	-3.641	-8.045*
	(2.597)	(2.825)	(2.814)	(4.709)
Assessment of Local Impact[1]	0.243	0.037	0.036	0.241
	(0.519)	(0.485)	(0.441)	(0.421)
Reduced Environmental Impact[1]	-0.231	-1.062	-0.032	-0.523
	(1.407)	(1.648)	(1.728)	(1.534)
_cons	75.010***	70.836***	52.450***	44.806***
	(15.682)	(15.074)	(13.731)	(14.401)
Observations	677	530	420	318
R-squared	0.370	0.372	0.285	0.423
Standard errors	Clustered	Clustered	Clustered	Clustered
Method	FE	FE	FE	FE
Year effects	Yes	Yes	Yes	Yes

Standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

[1] Dummy variable
[2] Winsorized on the 1st and 99th percentile
[3] Natural logarithm

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