CAUSE AND EFFECT OF LINKING ESG-TARGETS TO EXECUTIVE PAY

QUANTITATIVE STUDY ON ESG-LINKED EXECUTIVE PAY IN THE NORDIC COUNTRIES

ERIKA LARSSON
CLARA SIMONSSON

Master Thesis in Accounting, Valuation and Financial Management

Stockholm School of Economics

2022

Cause and effect of linking ESG-metrics to executive pay

In recent years, several companies have implemented ESG-metrics in their executive remuneration contracts. Simultaneously, shareholders and authorities have increased pressure to implement ESG-linked pay policies. The purpose of this paper is to examine how ownership structure affects the implementation of ESG-metrics in executive compensation contracts and whether these ESG-metrics impact financial return. The study limits ownership structure to large institutional owners and insider owners, as these owner types have been shown to affect compensation structure in previous studies. The study uses data from the Nordic public companies from 2005 to 2021 and performs a binary logit and difference-in-difference research model. The logistic regression showed that institutional ownership positively affects the probability of implementing ESG-linkages in executive compensation. However, the findings cannot conclude a strong economic effect of the relationship. Furthermore, our findings cannot conclude a relationship between insider ownership and the implementation of ESG-linked executive pay. Our study further found that ESG-linked executive compensation increased financial return. The study showed that linking executive pay to ESG-metrics is not a cost for shareholders but a financial benefit. Since the Nordic region has a conservative setting for executive compensation structure, our result contributes to generalizability that can be applied to settings that have been excluded in current research. Further research is urged to explore the relationship between ESG-linked pay and ESG-performance and more in depth analysis in ownership structures and a long-term perspective.

Keywords:

Executive pay, ESG, financial return, ownership structure, ESG-linked executive compensation.

Authors:

Erika Larsson (41798)

Clara Simonsson (41791)

Tutors:

Milda Tylaite, Associate Professor, Department of Accounting

Examiner:

Department of Accounting

Master Thesis

Master Program in Accounting, Valuation and Financial Management
Stockholm School of Economics

TABLE OF CONTENTS

1. INTRODUCTION 4

1.1. Increased demand for ESG-linkages 4

1.2. Institutional background 6

2. THEORETICAL FRAMEWORK AND LITERATURE REVIEW 8

2.1. Agency, Stakeholder and Stakeholder-Agency theory 8

2.2. Determinants of ESG-based compensation 9

2.3. Effects of executive incentive-based compensation 11

2.4. Hypothesis formulation 13

3. METHOD 15

3.1. Data collection 15

3.2. Determinants of ESG-based compensation 17

3.2.1. Research design: Binary logistic model 17

3.2.2. Dependent variable 19

3.2.3. Variables of interest 20

3.2.4. Control variables 20

3.3. Impact on financial return 21

3.3.1. Difference-in-difference regression 21

3.3.2. Constructing a matched control group 23

3.3.3. Dependent variable 25

3.3.4. Variable of interests 25

3.3.5. Control Variables 26

3.3.6. Fixed effects 26

4. DESCRIPTIVE STATISTICS 27

4.1. Summary statistics 27

4.2. Correlation statistics 29

5. RESULTS 30

5.1. Determinants of implementing ESG-linkages in executive compensation 30

5.2. Impact on financial return 31

5.3. Additional analysis 32

5.3.1. Marginal effect on ESG-linked pay implementation based on large institutional owners 32

5.3.2. Sensitivity analysis for determinants to implementing ESG-linked executive pay 33

5.3.3. Impact on financial return 35
6. DISCUSSION 39
6.1. Ownership as determinants of ESG-linkages in executive compensation 39
6.2. Impact on financial return 41
6.3. Limitations 43
7. CONCLUDING REMARKS 45
7.1. Conclusion 45
7.2. Contributions 46
7.3. Suggested further research 47
8. REFERENCES 48
9. APPENDICES 53
9.1. Descriptive information of dataset 53
9.2. OLS assumptions test 54
9.2.1. Heteroskedasticity test for DiD regression 54
9.2.2. Robust standard error correction 55
9.2.3. Normality of residuals 56
9.2.4. Hausman test for DiD regression 57
9.3. Reference list for appendices 58

1. Introduction

1.1. Increased demand for ESG-linkages

During the last decades, there has been an increased focus on sustainability, and today companies should focus on other aspects than just to maximise financial profits (Amran & Ooi, 2014). Amran and Ooi (2014) further stated that stakeholders require a change in firm behaviour and want a shift towards an increasing focus on environmental, social and governance (ESG) aspects. In response to the growing demand, shareholders have started to implement ESG-linkages in executive compensation, which means linking executive performance-based compensation to social and environmental performance (Baraibar-Diez et al., 2019; Flammer et al., 2019). There is a consensus among researchers that the board can control the top managers with incentives and monitoring, which should be done within corporations (Baraibar-Diez et al., 2019; Zajac & Westphal, 1994). Wallace (1997) stated that you get what you measure and reward, meaning that incentive plans frame managers' behaviours. The argumentation implies that ESG-linkages in executive compensation will shift managers' focus toward environmental and social issues and function as a mediator to satisfy all stakeholders. However, Wallace's argumentation was built on financial measurements, and the current empirical evidence on ESG-linked executive pay is scarce (Baraibar-Diez et al., 2019; Flammer et al., 2019). This study will contribute to the literature by focusing on ESG-linkages within executive compensation to further explore its effects and determinants.

The pressure on firms to implement ESG-linkages in executive compensation has increased in recent years. For example, in 2021, the largest activist fund in the Nordics, Cevian Capital, released a press release stating that they require ESG-linked executive pay to be implemented in all portfolio companies (Jonsson, 2021). According to Jonsson (2021), Cevian Capital further urged all European public companies to implement ESG pay policies. Furthermore, a study made in 2021 showed that 86% of investors are positive about implementing ESG-linked executive pay (PwC, 2022). The pressure is further evident from authorities, whereas European Banking Authority (EBA) has implemented ESG-linked compensation policies for all employees as a parameter in their guidelines for compensation policies (Sigblad, 2021).

Due to the external pressure, a growing trend among companies has been seen and is expected to increase in the coming years. This trend was confirmed by a study made by Deloitte in 2021, which showed that several companies in Europe have started to include ESG-linked executive pay. The study showed that 42% of the top 100 companies in Europe included ESG-metrics in their compensation structure in 2020 (Deloitte, 2021). A study made by Willis Towers Watson (WTW, 2020) showed that this trend is expected to rise. Willis Towers Watson found that 78% of European and US firms plan to implement or raise the prominence of ESG in their executive compensation during 2021-

2023. This ongoing development has increased international investors' interest in ESG-linkages in executive compensation (Sommarlund, 2021). According to Sommarlund (2021), international investors view ESG-linked executive pay as a confirmation that the entity is working with and prioritising sustainability. Thus, companies that are missing such a compensation structure risk being disqualified from future investments (Sommarlund, 2021).

As discussed, shareholders can influence firms to implement ESG-linked executive compensation by using it as investment criteria. The shareholders can further use their voting rights to decide what the CEO (Chief Executive Officer) should be accountable for (Winschel, 2022). However, according to Winschel (2022), previous studies have shown that different types of ownership tend to affect compensation contracts in diverse ways. Winschel explains that owners with a large amount of the firm's outstanding shares often hold a long-term horizon and may be positive to a larger focus on Corporate Social Responsibility (CSR). Furthermore, the author states that shareholders with a short-term horizon or self-interest are less likely to support such activities. The notion that different shareholders have different CSR-focus is further supported by Hong et al. (2016), who argue that corporate governance is a contributing determinant when deciding whether to implement ESG-linked executive compensation. However, the authors further argue that CSR activities have been seen as an agency cost by previous literature (Borghesi et al., 2014; Brown et al., 2006) and should therefore not be supported by shareholders since they serve as a mechanism to reduce agency cost. Thus, by investigating different ownership structures and the use of ESG-linkages, a greater understanding of whether CSR is an agency cost or not can be gained.

Our study investigates two ownership types as determinants of implementing ESG-linkages in executive compensation, large institutional ownership and insider ownership. Large institutional shareholders are likely to impact the compensation structure due to their size and significant ownership in the firm (Shleifer & Vishny, 1986). Insider owners may contradict institutional shareholders since they may have insider agendas to affect what they are compensated for through their managerial power (Hong et al., 2016). The definition of large institutional ownership follows the definition of Hong et al. (2016) and is defined as block shareholders, and block shareholders are institutions that own more than 5% of a firm's outstanding shares with voting rights. Institutional ownership includes owners such as traditional money managers, pension funds, family offices, banks, insurance companies, and foundations (S&P Global, 2021). It further includes funds in Private Equity (PE), Venture Capital (VC), hedge and sovereign wealth that own less than 5 per cent (S&P Global, 2021). Insider ownership is individuals such as directors, officers, relatives, or anyone else with access to key company information before it is publicly available (S&P Global, 2020).

Furthermore, shareholders are increasing their interests and demands to implement ESG-linkages in executive compensation, but there is no conclusive evidence that this is

beneficial for the shareholders financially (Abdelmotaal & Abder-Kader, 2016; Baraibar-Diez et al., 2019; Hong et al., 2016). Some studies have shown an increase in financial performance by implementing ESG-linkages in compensation contracts (Abdelmotaal & Abder-Kader, 2016; Hong et al., 2016), while other studies have shown that ESG-compensation results in no positive effects on financial performance (Baraibar-Diez et al., 2019). Due to the inconclusive results and lack of research, it is unclear whether ESG-linked executive pay is beneficial for shareholders or if they are creating an agency cost by implementing and requiring ESG-linkages in executive compensation contracts (Abdelmotaal & Abder-Kader, 2016).

In contrast to previous studies which have been conducted on firms in the US (Cordeiro & Sarkis, 2008; Flammer et al., 2019), the UK and other European countries such as Germany, France, and Spain (Abdelmotaal & Abdel-Kader, 2016; Baraibar et al., 2019), this study will focus on the Nordic countries. The Nordic countries have a unique setting compared to the abovementioned countries since the compensation structure is vastly different in these countries compared to, e.g., the US or the rest of Europe (OECD, 2011; Deloitte, 2021; Groysberg et al., 2021). Compared to these countries, little emphasis is on variable compensation, and a greater focus is on the fixed compensation to executives. This setting can function as the foundation for effects and determinants of ESG-linkages. If an effect of ESG-based executive compensation is found in a setting with little emphasis on variable compensation, it logically should be seen in an environment with higher variable compensation.

This study aims to answer the two following research questions:

- Is there a relationship between ownership structure and the implementation of ESG-linked executive compensation?
- Is there a relationship between implementing ESG-linked executive compensation and financial return?

1.2. Institutional background

The Nordic region might be considered a small region in terms of the world economy. Still, when it comes to sustainability, the region's companies can be regarded as world leaders within the field (Brandberg & Dzigue, 2021). However, according to Sommarlund (2021), Sweden, the largest economy in the Nordics, is far behind in linking variable pay to executives to ESG-targets. As previously mentioned, compared to other regions, the degree of variable payments in the Nordics is low. For example, according to OECD (2011), executives in Sweden have low variable income, as it represents 18% of the total compensation, and a higher emphasis instead lies on fixed compensation. A compensation consisting of 18% variable income is relatively low compared to the US and the rest of

Europe, where the variable compensation is 91% and 69% of total income, respectively (Groysberg et al., 2021).

Furthermore, a study made by Cieslak (2018) found that Sweden had an average variable compensation of 16% in 2013. Cieslak further argues that the share of fixed compensation is higher than in other countries. In an empirical study made by Deloitte (2021) based on the top 100 companies in Europe and the leading Nordic companies, it was further shown that the Nordic countries have substantially fewer bonus opportunities. The study further revealed that the maximum bonus in leading Nordic corporations (measured as a percentage of salary) had an inter-quartile range between 60% to 100%, with the median being 100%. This is compared to the top 100 companies in Europe, which had an inter-quartile range of 145% - 210% and a median of 200% (Deloitte, 2021).

Cieslak (2018) further argues that there is no clear evidence that a shareholder compensates for performance in Sweden. Furthermore, in the Nordic countries, it is a greater agency conflict between the controlling shareholders and non-controlling shareholders, named agency type II, than between shareholders and executives, agency type I (Cieslak, 2018). This type of conflict leads to a greater share of fixed pay and a lower percentage of cash-based incentive pay (Cieslak, 2018; Barontini et al., 2017). The Nordics, therefore, function as a suitable setting to investigate the effects of ESG-linkages in executive compensation since it is an environment with a minimum of variable compensation. Since if an effect is seen here, it should hold in settings with more variable compensation as well.

2. Theoretical Framework and Literature review

2.1. Agency, Stakeholder and Stakeholder-Agency theory

The agency theory is vastly studied within the compensation literature. Agency theory sheds light on the relationship, and its conflict, between a principal (shareholder) and an agent (manager). The agency theory aims to explain the conflict of interest between shareholders and managers due to information asymmetry between the two and the self-interest maximisation among managers (Jensen & Meckling, 1976). The agency conflict is further significant in companies with an ownership structure characterised by a dispersed amount of minority investors (Berle & Means, 1932). A noteworthy part of the agency theory is the principle-agent theory which focuses on the compensation contracts' function to align manager interests with shareholder demands efficiently and reduce agency costs (Miles, 2012). One of the most common ways to reduce agency conflicts is incorporating performance-based compensation for CEOs to align the incentives between principal and agent and mitigate the information asymmetry problem (Jensen & Meckling, 1976).

The stakeholder theory argues that the company, and thus the executives, have responsibilities towards other stakeholders than solely the shareholders (Freeman, 1984). Clarkson (1995) stated that there are two different types of stakeholders, primary and secondary. Primary stakeholders are explained as stakeholders that are crucial for the company's survival, and secondary stakeholders as not crucial for survival but are affected by or affect the company in different ways (Clarkson, 1995). According to Flammer et al. (2019), the development in environmental and societal conflicts during recent years has resulted in the secondary stakeholders becoming more powerful and are actively pressuring companies to act. The authors further argue that ESG-linkages in executive pay has been implemented to respond to the increased pressure from secondary stakeholders. According to Donaldson and Preston (1995), managers that do not manage stakeholders' interests efficiently further decrease the welfare of their shareholders more than the ones who incorporate all stakeholders. The theory was further investigated by Preston and O'bannon's (1997) study, which suggested a positive relationship between financial and social performance, providing evidence for the importance of taking all stakeholders' interests into account.

However, the stakeholder theory has been criticised for failing to provide concrete methods to solve conflicting stakeholder interests (Zaman et al., 2021). Likewise, many critics have argued that agency theory ignores the broader group of stakeholders who interact with and affect the company (Bosse & Philips, 2016). Therefore, Hill and Jones (1992) suggest combining these studies to a stakeholder-agency theory, which applies the considerations of agency theory to the broader stakeholder group rather than only to shareholders. The stakeholder-agency theory has insights into how firms handle external

and internal pressures, which is suitable for assessing the nexus between sustainability and compensation structure (Gerged, 2021). Although, Abdelmotaal and Abdel-Kader (2016) argue that the arguments in the stakeholder theory are conflicting with the agency theory, which argues that ESG-linkages in executive compensation may result in an intrinsic motivation to overinvest in CSR activities. Since no clear evidence has been found between CSR activities or ESG-linkages in executive compensation and financial performance, there is a question of whether this type of bonus structure is an agency cost or beneficial for shareholders (Abdelmotaal & Abder-Kader, 2016; Hong et al., 2016). If ESG-linkages lead to overinvesting in CSR activities, it can negatively affect shareholders' wealth and limit the maximisation of short-term financial returns (Abdelmotaal & Abder-Kader, 2016). On the other hand, Hong et al. (2016) found a positive relationship between CSR and firm financial performance, arguing that sustainability incentives are not an agency cost.

2.2. Determinants of ESG-based compensation

The CEO is the primary decision maker within the ongoing operations of an organisation (Winschel, 2022). However, the CEO shall act in the interest of the shareholders, and it is the shareholders, in combination with the board, who decide what the CEO should be held accountable for. Thus, Winschel (2022) argues that the owners of the firm play a significant role in determining what the executives shall be compensated for. Shareholders are interested in reducing agency costs and therefore serve as a decision mechanism for the compensation to align the principal and agent interests (Hong et al., 2016). Nonetheless, Winschel (2022) concludes that different ownership structures have different monitoring and control instruments, as well as different shareholder interests. Therefore, the author argues that compensation structure varies depending on the firm's ownership structure. Both institutional and insider owners impact the compensation contracts, but due to their different objectives and personal interests, they differ in diverse ways (Winschel, 2022). According to Arora and Dharwadkar (2011), the positive effects of CSR engagement are of an uncertain and long-term nature, and the relationship between corporate governance and CSR is complex. Due to the long-term nature, mechanisms with a long-term perspective may be positive towards CSR activities, while for short-term owners, the costs will outweigh the benefits (Arora & Dharwadkar, 2011).

According to Schleifer and Vishny (1986), big owners have incentives and the ability to monitor the decisions made by the firm's manager and are thus likely to affect compensation structures. Institutional owners are also more successful in their roles as monitors and lead companies to make beneficial decisions for shareholders (Oh et al., 2016). According to Brickley et al. (1988), large institutional owners have a greater stake and are more affected by decisions than smaller shareholders. Therefore, they are expected to participate in voting procedures more actively (Brickley et al., 1988). Brickley et al. further argue that such shareholders use their voting rights to prevent

managers from engaging in activities which are harmful to shareholders. The agency problem is monitored and mitigated by institutional shareholders since they improve the compensation contracts by connecting measurements to activities which are desired by shareholders (Hartzell & Stark, 2003).

Previous studies have argued that CSR activities increase the firm's long-term value and will, therefore, be supported by concentrated investors (Barnett, 2007; Harjoto & Jo, 2011). However, due to the long-term benefits of CSR activities, evidence has shown mixed results from different types of institutional investors (Aggarwal & Dow, 2012; Winschel, 2022). For example, Jain and Jamali (2016) argued that pension funds typically have a long-term investment horizon and are more likely to support CSR-related strategies and incentive programs. Arora and Dharwadkar (2011) state that firms are facing pressure from stakeholders to implement more CSR strategies in their operations, and they are facing a legitimacy risk if they are exposed to significant environmental or social risks. An increased legitimacy risk is expected to influence long-term value creation negatively, and block-owners tend to support compliance with environmental standards (Arora & Dharwadkar, 2011). Thus, according to Winschel (2022), block owners are expected to be positive towards executive compensation linked to ESG-metrics since these functions as a monitoring instrument to avoid legitimacy risk. However, the literature is not in consensus and Jain and Jamali (2016) argued that, based on the agency theory, block owners with short-term perspectives are not likely to support CSR engagements beyond the minimum required standards. Jain and Jamali further argued that mutual funds and banks work with a short-term investment horizon and are seen to discourage ESG-based compensation. In agreement with Arora and Dharwadkar (2011), the authors claimed that with a short-term horizon, the benefit of CSR is not likely to be gained, and the cost is unjustified. Jain and Jamali (2016) further found some institutional investors neutral towards supporting CSR engagements.

However, Hong et al. (2016) found that large institutional shareholders are positively associated with the presence of CSR compensation contracts. They conclude that one additional large institutional shareholder would result in 8% higher odds of the firm having CSR compensation, equalling an increase in the probability of 7.4%[1]. The authors further argue that CSR is not an agency cost. On the contrary, they argue that it is financially beneficial for firms. Thus, institutional block shareholders are likely to implement it in the compensation strategy to incentives executives to focus on CSR activities (Hong et al., 2016). Institutional owners are thus expected to be positive about increased engagements, which is supported by a study by Graves and Waddock (1994), who found that increased social performance increased the number of institutional owners.

[1] The probability of the odds is calculated by dividing the odds by one plus the odds (8% / (1+8%)).

Hong et al. (2016) further argues that insider ownership, measured as the percentage of shares outstanding owned by individual executives, is likely to affect the compensation structure in companies. They argue that increased managerial ownership results in increased managerial power, allowing managers to influence what they are compensated for. The authors further discussed insider ownership to be an agency cost. Hong et al. argued that if the perception of CSR activities is an agency cost and CSR activities are hard to measure, managers will use their power to implement such metrics in the compensation contracts. However, Hong et al.s' study concluded that CSR activities are not an agency cost and found that insider ownership is negatively associated with CSR-based compensation. The authors state that a one standard deviation increase in insider ownership leads to an 8% decrease in the odds (7.4% probability) of the firm having CSR compensation. Oh et al. (2011) further argue that insider ownership tends to trigger executives' self-interest, often connected to a short-term orientation. This finding was supported by Jain and Jamali (2016), who argued that insiders have an intrinsic motivation to reduce CSR investments. Since CSR activities are viewed as more beneficial in the long-term perspective, insider ownership is likely to undermine the implementation of ESG-linkages in compensation contracts (Oh et al., 2011).

However, studies have found mixed results. Graves and Waddock (1994) argue that lack of insider ownership will result in managers being more favourable toward CSR engagement triggered by the self-interest to increase their reputation combined with the lack of consequences since they have no claim on the firm's income. Wang and Coffey (1992) further argued that, with increased managerial ownership, managers are likely to decrease investments in non-profit investments and act more like shareholders. Although, the authors instead found that insider ownership increased social performance in terms of charitable contributions. Wang and Coffey are, thus, challenging the agency theory arguing that the self-interest is still evident and questioning the principal also has non-profit interests. Furthermore, insider owners who are compensated in stock options are likely to support CSR incentives since they have a long-term perspective (Oh et al., 2011).

2.3. Effects of executive incentive-based compensation

Jensen and Murphy (1990) argued that compensation positively impacts performance. According to Wallace (1997), performance-based compensation changes how managers act. The author concluded that when implementing performance-linked pay, you get what you pay for. This argument made by Wallace could explain the increased use of ESG-metrics as a mechanism to respond to stakeholder pressure by using incentive-based compensation to change the way executives act. However, as previously mentioned, the compensation structure and this type of agency conflict are not as substantial in the Nordics compared to other regions (Cieslak, 2018). Instead, it is the type II conflict between non-controlling shareholders and controlling shareholders, where this type of argument is not as substantial (Barontini et al., 2017).

Nonetheless, the abovementioned studies have been conducted on incentive-based pay linked to financial metrics, and a research gap remains within previous literature on whether linking executive pay to ESG-metrics affects the firm's financial performance or its value to shareholders (Baraibar-Diez et al., 2019; Flammer et al., 2019). Some studies have been made on including non-financial measures in executive pay policies. One study completed by Banker et al. (2000) conducted an empirical study on the use of customer satisfaction in executive compensation. The author argued that non-financial metrics are superior in predicting long-term financial performance to financial metrics and conducted a study investigating this relationship and the inclusion in compensation structures. Banker et al. found that non-financial measures had a positive relationship with both financial and non-financial performance and that non-financial metrics are associated with future financial performance. Similarly, Said et al. (2003) found that sustainability incentives increased the firm's stock market returns and that non-financial metrics are associated with future financial performance. However, the authors did not find a positive relationship between exclusively focusing on non-financial measures for accounting measures and argued that the evidence is mixed. Sliwka (2002) argued that executives will not focus their efforts on non-financial metrics, such as customer satisfaction or environmental activities, without such metrics in executive compensation. Sliwka further argued that a bonus payment solely based on financial performance is insufficient to provide the motivation needed to capture the financial benefit resulting from increased CSR performance or focus. However, these studies have been focusing on different initiatives and not on ESG-linked pay policy initiatives, resulting in the remaining research gap.

More recent studies have developed the research domain by investigating metrics including more than only one non-financial metric or metrics from all pillars within sustainability. Callan and Thomas (2014) discussed the impact of the measurement when linking executive pay to social performance and found that the linkage between performance-based compensation and social and financial performance is positively significant. The study further found that the incentive-based targets lead to that for every 10% increase in social performance, the financial performance increases by 4.65%. Thus, the authors suggest that linking compensation to ESG will increase firm performance. This study was supported by Abdelmotaal and Abdel-Kader (2016), who found a positive relation between shareholder return measured as net income over shareholder funds and sustainability incentives among large firms in the UK. The authors argued that linking incentives to sustainability thus could solve the agency problem, and it is not only beneficial for stakeholders but also for shareholders. Abdelmotaal and Abdel-Kader further argue that ESG-measures should be incorporated into executive compensation to incentivise short-term shareholder satisfaction and long-term financial performance. However, the authors did not find a positive relationship between ESG-linked executive compensation and stock-market returns measured as total shareholder return (TSR). Thus,

their study contradicts Said et al.'s (2003) findings that non-financial measures only increase stock-market returns.

The findings above have further been supported by Flammer et al. (2019), who found that CSR contracting in US firms increased long-term orientation and firm value. The authors argue that in the lack of proper incentives, long-term investments will be undermined by executives' short-term focus, inhibiting long-term value creation. Flammer et al. elaborate that their results confirm that CSR contracting enhances governance and changes the manager's focus to a longer time horizon while maximising long-term shareholder return. CSR incentives further shift managers' attention toward stakeholders that often are less noticeable but contribute toward long-term value creation (Flammer et al., 2019). Previous studies have further argued that firms engaging all stakeholders will outperform firms that are not considering stakeholders, and linking sustainable metrics in compensation contracts can motivate managers towards better performance (Devers et al., 2007; Baraibar-Diez et al., 2019; Cai et al., 2011). However, Baraibar-Diez et al. (2019) findings contradict these studies since they concluded that sustainability-linked compensation does not affect firm value. The study used data from Spanish, French, German, and UK firms from 2005 to 2015, which, based on the period and geographical region, should yield equivalent results to Abdelmotaal and Abdel-Kader (2016). Baraibar-Diez et al. expressed that the lack of relationship makes sense because of the incentive's nature since the incentive in the compensation policy focuses on environmental and social aspects and not financial aspects. However, they still argue that the empirical evidence for the effect on economic performance is scarce and argue for further research.

2.4. Hypothesis formulation

To examine the determinants of implementing ESG-linkages within executive compensation and its impact on financial return, we develop different hypotheses for the two research questions. Furthermore, determinants are divided into two subcategories reflecting the investigated ownership types – *Large institutional ownership* and *Insider ownership.*

Previous literature has argued for various results of the relationship between large institutional ownership in a firm and the firm's probability of implementing ESG-linked executive pay. On the one hand, the literature argues that institutional investors with a long-term investment horizon are likely to support the implementation of CSR strategies and ESG-linked executive pay (Barnett, 2007; Harjoto & Jo, 2011; Hong et al., 2016). On the other hand, the cost might outweigh the benefits for short-term investors, and they are expected to discourage an ESG-linked pay policy to monitor the potential agency cost (Arora & Dharwadkar, 2011; Jain & Jamali, 2016). Due to their short-term interest, short-term investors are unlikely to encourage ESG-engagements above the minimum requirements (Jain & Jamali, 2016). Thus, the following hypothesis is developed:

H1a: *There is a relationship between large institutional ownership and the use of ESG-linked executive compensation.*

Previous literature argues that insider ownership will impact the implementation of ESG-based metrics in executive compensation. Executives with shares in the firm will use their power to implement short-term financial metrics that are easily reachable and subjectively measured due to their self-interests (Oh et al., 2011). Insider owners have a self-interest in short-term orientation, and due to the long-term nature of CSR investments, insider ownership is likely to undermine the implementation of ESG-linkages in compensation contracts (Hong et al., 2016; Oh et al., 2011). Nonetheless, studies have shown that managers are positive toward CSR engagement because it can increase their reputation, and self-interest may trigger such focus (Graves & Waddock, 1994; Wang & Coffey, 1992). Previous literature has further shown that insider ownership increases CSR engagements (Wang & Coffey, 1992). Due to the long-term value creation, insider owners who are compensated with stock options could be positive towards ESG-linked executive pay (Oh et al., 2011). Thus, the following hypothesis is developed:

H1b: *There is a relationship between insider ownership and the use of ESG-linked executive compensation.*

As discussed in section 2.3.2, there is a lack of research regarding ESG-linked executive pay's effect on financial returns. Some studies have found that the implementation of ESG-linked executive pay increased financial performance and firm value (Abdelmotaal & Abdel-Kader, 2016; Flammer et al., 2019). Since stakeholders are pressuring ESG-activities, an increased focus could benefit firm value (Devers et al., 2007; Donaldson & Preston, 1995). However, studies have shown that ESG-linked executive compensation might not influence financial performance (Baraibar-Diez et al., 2019). Thus, the following hypothesis is developed:

H2: *There is a relationship between the implementation of ESG-linked executive compensation and financial return.*

3. Method

3.1. Data collection

The research is based on data from Nordic public firms, including data from the years 2005-2021 in an unbalanced panel dataset. We define *Nordic firms* as firms with headquarters located in the region since it is at the headquarters where HR policies are most impacted (Almond, 2011). The data was obtained using Refinitiv Eikon's screening tool to assess whether the company had implemented ESG-linked compensation policies. The variable was captured under the datapoint "*Policy Executive Compensation ESG Performance*", which is a dummy variable that states "TRUE" or "FALSE" depending on if the company has the said policy. Refinitiv Eikon defines the datapoint "*Policy Executive Compensation ESG Performance*" as having an extra-financial performance-oriented compensation policy for CEO, executive directors, non-board executive, and other management bodies based on ESG or sustainability factors. According to Refinitiv (2020), large companies tend to have access to more resources and tend to have better ESG-disclosure than smaller firms, and the database will have more ESG-data on larger firms. This bias on firm size leads to a skewness towards larger companies in our dataset that can limit the generalizability of our result.

The rest of the data were gathered using Capital IQ. For hypotheses 1a and 1b, companies were included in the dataset if they had data available on ESG-linked executive pay policy for a minimum of two consecutive years. For the second hypothesis, all companies were required to have data on all variables for at least four consecutive years for the testing. For companies where a change in the ESG-linked pay policy was identified, data for at least two years before the change and two years after the change was required. The data had no other criteria for inclusion, and further exclusion of observations has been made due to a lack of data points in other variables.

The study used collected data for all Nordic countries instead of only one, as there is not enough data to limit the data collection to one country. The Nordic countries include Sweden, Finland, Norway, Denmark, and Iceland. Nonetheless, the Nordic countries tend to have similarities in cultures, business models, institutional settings, accounting standards and legal settings (Hooghiemstra et al., 2019; Larimo, 2003). The geographical region can therefore assumed to be studied as one geographical setting without a need to address several differences in cultural and non-quantifiable aspects.

A detailed overview of the sample selection for hypotheses 1a and 1b is illustrated in table 1.

Table 1. Detailed sample selection of hypotheses 1a and 1b

Sample selection (2005 – 2021)	Observations dropped	Number of observations
Sample selection: Ownership as a determinant of ESG-compensation		
Firm-year observations in EIKON meeting the following criteria: (i) Public firm (ii) HQ in a Nordic country	-	29,656
Less Firms with missing data on Policy Executive Compensation ESG Performance	19,958	9,698
Less Firms with missing data on ownership and control variables	51	9,647
Less Years with missing data on Policy Executive Compensation ESG Performance	7,013	2,634
Full sample available for analyses	-	2,634
Less Observations when Policy Executive Compensation ESG Performance is TRUE	647	1,987
Final sample		1,987

For the second hypothesis, the treatment sample is matched to a control group and firms left unmatched were therefore removed. Due to the unbalanced nature of our dataset, the number of observations between the control and treatment groups differs. Table 2 illustrates the sample selection process for hypothesis 2.

Table 2. Detailed sample selection of hypothesis 2

Sample selection (2005 – 2021)	Observations dropped	Number of observations
Sample selection: Impact on financial return		
Firm-year observations in EIKON meeting the following criteria: (i) Public firm (ii) HQ in a Nordic country	-	29 656
Less Firms with missing data on Policy Executive Compensation ESG Performance	19 958	9 698
Less Treatment firms without at least two observations post-ESG compensation	1 598	8 100
Less Control firms without at least four years observations of Policy Executive Compensation ESG Perform	3 366	4 743
Less Firms with missing data on ROE and control variables	136	4 598
Less Year observations with missing data on Policy Executive Compensation ESG Performance	2 286	2 312
Sample available for analyses		2 312
Out of which:		
Treatment firm-year observations		*450*
Control firm-year observations		*1 862*
Less: Firms with no matching control firm without ESG-linkage in executive compensation	872	1 440
Final sample		1 440
Out of which		
Treatment firm-year observations		*774*
Control firm-year observations		*666*

To reduce skewness and kurtosis, all ratios have been transformed via winsorizing at the 1% and 99% level and size (total assets) have been transformed using a natural logarithm. An overview of the final sample data can be found in table A.1 in the appendix.

3.2. Determinants of ESG-based compensation

3.2.1. Research design: Binary logistic model

When investigating if there is any relationship between ownership structure and ESG-linkages in executive compensation, a binary logistic regression model based on panel data was performed, following the research design used by Abdelmotaal and Abdel-Kader

(2016). A dummy variable was created for the year before implementing ESG-linked executive pay policies. This method is in line with Hong et al. (2016) and assumes that the decision of the implementation is made during the previous year. Therefore, it is the ownership structure one year before the implementation that is relevant for the study. Following Hong et al., the two outcomes of the binary regression are (0) for no ESG-linkage or (1) for ESG-linkage. Once a firm has changed to ESG-linked executive pay, the observations are not included in the regression after the change. Thus, the regression uses a hazard model for the dependent variable. Since our study investigates how the ownership structure affects the implementation of ESG-linkages in executive compensation, we use probabilities to see if it is an increased probability of implementing ESG-linked executive pay depending on ownership structure.

The logistic regression assumes an s-shaped regression function, where the largest change in probability can be seen when the probability is around 50% (Dey & Astin, 1993). The logit model is advantageous for our hypothesis testing since we cannot assume a linear relationship. The variables' effect on the probability of implementing an ESG-linked pay policy may diverge depending on whether a critical mass exists or not, which illustrates a nonlinear relationship. The outcome for our dependent variable (y) can only take two values, 1 or 0, which gives $p^y(1-p)^{1-y}$, where p is the probability. The logit model uses a standard logistic distribution of errors, and it can therefore be expressed as the following:

$$\text{Probability (p)} = \Lambda(x'\beta) = \frac{e^{x'\beta}}{1 + (e^{x'\beta})} \tag{1}$$

Where x is a K x 1 regressor vector, β is a vector of unknown parameters and Λ is the logistic distribution of errors. The expression above specifies the binary logit model and enables assessment of observable determinants of the probability of implementing an ESG-linkage compensation.

More specific, the model used for testing H1 can be described by the following:

$$y = \beta_0 + \beta_1 Insiders\ ownership\ + \beta_2 Instiutional\ ownership + \sum_{n=6}^{N} \beta_n Control\ Variables + \varepsilon \tag{2}$$

The dependent variable y is a dummy variable that takes the value 1 if the firm changes to executive compensation linked to ESG-measurements in the year after, and 0 otherwise. The variable institutional ownership is related to hypothesis 1a, and insider ownership is related to hypothesis 1b.

Regarding the study's nonlinear regression nature, we also need to assess the marginal effect to grasp the impact the regressor has on our dependent variable. Additional analysis on marginal effect is therefore conducted. The marginal effect is expressed as following:

$$\text{Marginal effect } (\partial_p/\partial_{xj}) = \Lambda(\text{x}'\beta)\{1 - \Lambda(x'\beta\}\beta_j \quad (3)$$

To further assess our results and their robustness, we test our regression using different measurements on our independent variable. We test other measurements by calculating institutional ownership as a percentage of total shares outstanding owned by institutions for H1a and the number of large insiders as an alternative measurement for insider ownership in H1b. Furthermore, a supportive analysis is conducted in line with Abdelmotaal and Abdel-Kader's (2016) research on the topic. In this analysis, the ownership structure is further elaborated using extra variables that classify the company's ownership status. The added variables are dummy variables on three distinct categories that represent different ownership structures, where a company can only fulfil one of the categories. The firm classification for these variables is elaborated in Table 3.

Table 3. An explanation of additional analysis variables

Directly-majority	Equals to 1 if one shareholder represents more than 50 percent direct ownership in the firm, otherwise 0
Controlled	Equals to 1 if no shareholder recorded more than 50 percent ownership, but one or more shareholders recorded more than 25 percent ownership, otherwise 0
Independent	Equals 1 if no shareholder with more than 25 percent ownership is recorded, otherwise 0

The model for the additional analysis is therefore illustrated as following:

$$\begin{aligned} y = \beta_0 + \beta_1 Insiders\ ownership\ + \beta_2 Insititutional\ ownership \\ +\beta_3 Directly - majority + \\ \beta_4 Controlled + \beta_5 Independent + \\ \sum_{n=6}^{N} \beta_n Control\ Variables\ + \varepsilon \end{aligned} \quad (4)$$

3.2.2. Dependent variable

The dependent variable in the first hypothesis testing is the dummy variable pre-year. This variable takes the value of 1 if the firm implements an ESG-linked executive pay policy in the following year and 0 if it will not.

3.2.3. Variables of interest

The variables of interest to hypotheses 1a and 1b, *insider ownership* and *large institutional ownership*, are measured according to Hong et al. (2016). Insider ownership is measured as a percentage of total outstanding shares owned by insiders. Insiders are defined by S&P Global (2020) as someone who is a firm's officers, directors, relatives, or anyone else with access to key company information before it is made public. In the additional analysis, insider ownership will instead be measured by the number of insiders with a significant holding (5% and above), following Hong et al.'s definition of large ownership.

In further alignment with Hong et al. (2016), our study focuses on the number of large institutional owners to account for institutional ownership. Large institutional ownership is measured by the number of institutional owners who are also block holders, defined as total ownership above 5% (Hong et al., 2016). Institutional owners are defined by S&P Global (2021) as traditional money managers, pension funds, family offices/trusts, banks/investment banks, insurance companies, foundations/endowments, hedge funds owning less than 5%, PE/VC firms owing less than 5% or sovereign wealth funds owing less than 5%. Since this study uses the variable of institutional ownership as large institutional ownership, our definition excludes PE/VC firms and sovereign wealth funds.

3.2.4. Control variables

The control variables used in our model have been chosen based on previous studies within the research field. The study uses the control variables: size, financial performance, leverage, R&D intensity, advertisement (AD) intensity, industry (Abdelmotaal & Abdel-Kader, 2016; Hong et al., 2016; Harjoto & Jo, 2011).

Size is defined as the natural log of total assets (Abdelmotaal & Abdel-Kader, 2016). Size is used as a control variable since it, according to previous literature, is one of the most established determinants of executive compensation (Hong et al., 2016: Berrone & Gomez-Meija, 2009). Large entities are also more likely to implement ESG-linkages in executive compensation contracts than smaller entities (Winschel, 2022).

Financial performance is a control variable since it, together with size, is one of the most established determinants of executive compensation. *Financial performance* is defined as return on assets (ROA) based on previous studies (Hong et al., 2016). Firms with higher profitability are more commonly engaged in CSR activities and may be more likely to implement ESG-based metrics in the compensation structure (Harjoto & Jo, 2011).

Leverage is defined as debt-to-asset (D/A) aligned with Hong et al. (2016). Firms with high leverage are more commonly engaged in CSR activities and are thus expected to be more likely to have ESG-linkages in executive compensation (Harjoto & Jo, 2011).

R&D Intensity is defined as a ratio of a firm's R&D investments to its revenues (Hong et al., 2016). Firms with a low R&D ratio are less involved in CSR activities, and it is expected that this will decrease the probability of having ESG-linked executive pay (Harjoto & Jo, 2011).

AD Intensity is defined as a ratio of a firm's advertising expenses to its revenues (Harjoto & Jo, 2011). A high AD ratio is associated with higher CSR engagement (Harjoto & Jo, 2011), and it is expected to have a higher probability of having implemented ESG-linkages in executive compensation.

Industry is defined by the GICS-classification. Entities in higher carbon-sensitive industries, so-called 'dirty industries', have higher pressure from stakeholders and can be expected to have higher degrees of ESG-linkages in their executive compensation contracts to incentives focused on CSR activities (Maas & Rosendaal, 2016).

3.3. Impact on financial return

3.3.1. Difference-in-difference regression

To investigate the implementation of ESG-linkages in executive compensation's effect on financial return, we need to compare the financial return before and after the implementation. Furthermore, to fully see the effect captured by the change in compensation contracts, it should be compared to a similar firm which does not implement ESG-linked executive pay. When estimating whether the shareholders are affected by implementing ESG-linked executive pay, the study conducts a difference-in-difference (DiD) regression. This design enables a comparison of the impact of ESG-linkages in executive compensation on financial return. It further determines whether a firm with these linkages behaves differently than those firms that do not have specific ESG-targets in compensation determination. According to Schwerdt and Woessmann (2020), a DiD-regression model is well-suited for estimating the effect of sharp changes in policies, which the implementation of ESG-linked pay policy can be classified as.

A DiD-regression captures both the change in the individual company after the implementation and the difference between treated and control firms. Using a DiD regression, we can distinguish if there is any treatment effect from implementing ESG-linked executive pay. The treatment effect is the difference between the treated and control groups that happened after the policy change, as shown in figure 1.

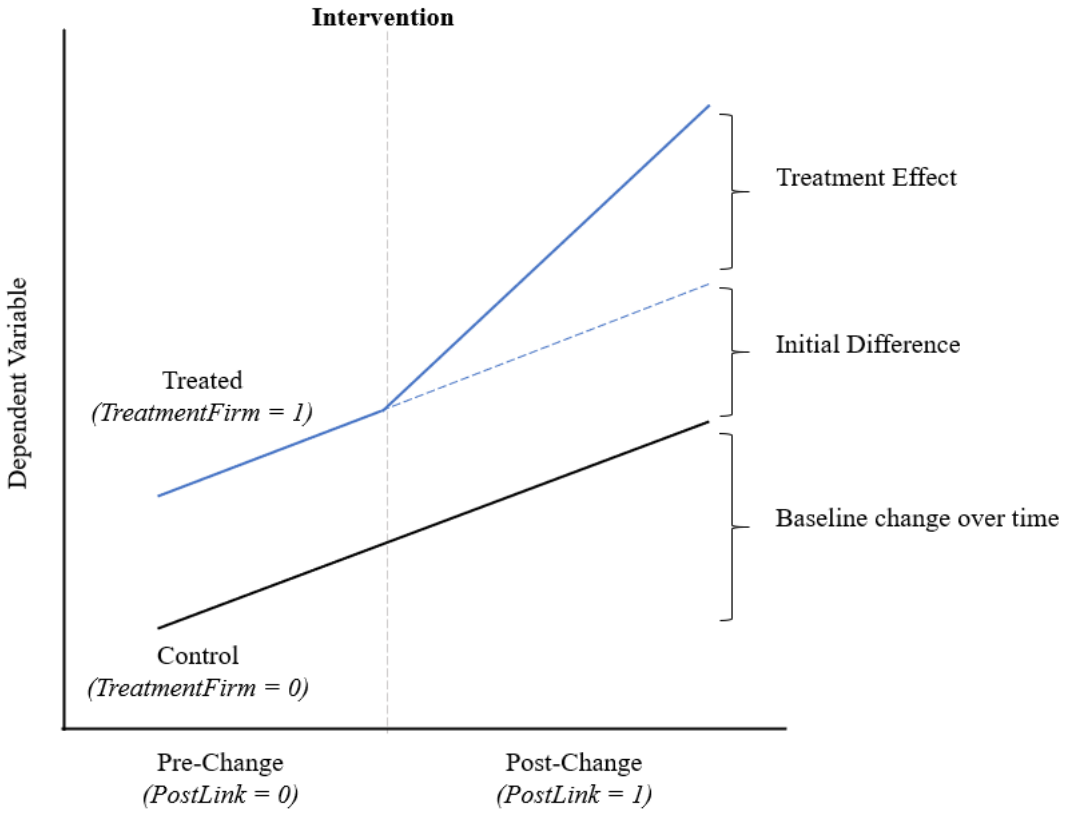

Figure 1. Illustration of research design

To investigate the effect that implementing an ESG-linked pay policy has on financial returns, the study uses a formula written as:

$$y_{i,t} = \beta_0 + \beta_1 TreatmenFirm_{i,t} + \beta_2 PostLink_{i,t} + \beta_3 TreatmenFirm\ x\ PostLink_{i,t} + \sum_{n=4}^{N} \beta_n Controls + \alpha_i + \alpha_t * \alpha_{ind} + \varepsilon_{i,t} \quad (5)$$

The dependent variable, y, is measured as return on equity (ROE) and represents financial return. $\beta_3$represent the impact ESG-linkages in executive compensation have on financial return. TreatmentFirm is an indicator variable that equals one (zero) for treatment (control) firms. PostLink is an indicator variable that equals one in years where there has been an implementation of ESG-linkages or for control firms whose matched treatment firm has ESG-linkages in executive compensation. α_i, α_t, and α_{ind} represent firm, year, and industry fixed effects. We use robust standard errors in the model to adjust for heteroskedasticity, as seen in tables A.2 and A.3 in appendices.

As an additional analysis, we conducted a regression analysis using a different dependent variable, total shareholder return (TSR), as described in section 3.3.4. This analysis was done to assess the robustness of our results, as financial return affects shareholders' return. We used the same sample selection as the primary analysis to test if there is a relationship between shareholders' return and ESG-linked pay. Furthermore, if the regression yields a significant relationship between ROE and ESG-linked pay policy, we will conduct additional analyses to assess the underlying cause of ROE change. The analysis will be based on the ROE drivers used in the DuPont formula, according to Soliman (2008), and will use the same research method and sample data as in our main regression.

3.3.2. Constructing a matched control group

To capture the treatment effect, the model must consist of both treatment firms with data at least two years before and after the change as well as the same time periods for the control firms. The control sample is created using a nearest neighbour propensity score 1:1 matching within caliper, which is set at 0.1 times the variable's standard deviation. Treatment firms are matched to control firms based on the leverage (measured as debt-to-equity) within the industry and the year before the pay policy change. When deciding the matching metrics, there is a trade-off between having a more accurate matching based on including more control variables and the need to get control firms for as many treatment firms as possible (Boucly et al., 2011). We match on financial leverage due to its close relationship with our dependent variable, according to Soliman (2008). A more conservative matching would include more matching variables but would also provide fewer and less suitable matches. When matching on industry and leverage, we were able to match 66 of 76 firms, generating a total sample of 132 firms. For example, when including size as an additional matching criterion, we dropped from having 66 matched treatment firms to 51. As a robustness test, we present an alternative matching procedure by incorporating the control variables in the matching procedure. The robustness test is done by performing three different regressions where we have added one of the control variables as a matching variable in each respective regression. The test provides an alternative approach with a more conservative matching method by using an additional variable but including fewer treatment firms.

Table 4. Result of matching procedure

Matching variables	Treatment sample	Control sample	Δ	t-Statistic	N	Years prior change
Control Variables						
Debt/Equity	80.407	89.773	-9.315	0.312	72	3
Asset Turnover	0.804	0.949	-0.145	1.985	72	3
Asset growth	14.851	7.989	6.862	-1.061	72	3
Size	8.526	8.027	0.499	-1.362	72	3
Debt/Equity	79.668	79.829	-0.161	0.061	104	2
Asset Turnover	0.769	0.860	-0.090	0.810	104	2
Asset growth	10.041	17.370	-7.330	1.057	104	2
Size	8.122	7.997	0.126	-0.3865	104	2
Debt/Equity	76.562	65.487	11.075	-0.529	130	1
Asset Turnover	0.773	0.856	-0.083	0.834	130	1
Asset growth	10.710	10.352	0.358	-0.100	130	1
Size	8.200	7.001	1.189	-3.634***	130	1

Note: Mean differences across the two groups (treated & non-treated). Significance-level is illustrated at *** p<0.01

One of the main requirements for causal inference in a DiD regression is parallel trends assumption. Therefore, the data has been checked for similarities in trends before the interference date, which is evident in Table 5. As seen in Table 5, no significant differences were shown in the trends of the dependent variable. Therefore, our matched sample meets the requirements for the parallel trends assumption. However, as seen in table 4, there was a difference between the treatment and control groups in firm size, resulting from a small data set that could not match based on all variables. The initial difference in firm size does not reject the parallel trends assumption since size is not a dependent variable. Overall, the data matching is considered successful since there was only one significant difference between the groups before interference.

Table 5. Result of parallel assumption testing

Matching variables	Treatment sample	Control sample	Difference	t-Statistic	N	Years prior change
Trend in dependent variable						
ΔROE	-1.129	3.450	-4.579	0.956	104	2
ΔROE	-0.460	-2.540	2.080	-0.628	129	1

Note: Mean differences across the trends in the two groups (treated & non-treated).

3.3.3. Dependent variable

The second research question investigates whether the implementation of ESG-linkages in executive compensation affects financial return. Abdelmotaal and Abdel-Kader (2016) used the accounting-based measure of return on shareholders' funds (RSHF). The authors' calculation of RSHF resembled the calculation of return on equity, and we, therefore, use ROE to measure and assess financial returns as the dependent variable. Furthermore, accounting measurements of financial performance have historically been more successful at explaining the relationship between ESG-activities and financial performance (Huang, 2021). Huang (2021) states that there is a more direct link between ESG-performance and accounting measures than market measures. Furthermore, Huang explains that one of the typically used accounting measurements to calculate financial performance within ESG-related studies is ROE. We calculate ROE as:

$$ROE_{i,t} = \frac{Net\ Income_{i,t}}{Total\ Average\ Equity_{i,t}} \quad (6)$$

3.3.4. Variable of interests

The independent variables of interest in the analysis are TreatmentFirm which takes the value of 1 if the firm has adopted ESG-linkages in their executive compensation, and 0 for control firms. PostLink represents the years after implementing ESG-linkages and, as mentioned above, takes the value of 1 if the firm has adopted ESG-linkages in their executive compensation and 0 for control firms. The dependent variable will be TSR for the robust tests in the additional analysis. Furthermore, debt to equity, profit margin and asset turnover are dependent variables when analysing the underlying reason for the potential relationship between ROE and ESG-linked pay policy.

TSR is used to measure shareholders' returns, following Abdelmootal and Abdel-Kader (2016). TSR is measured as the following:

$$TSR = \frac{P_1 - P_0}{P_0} + \frac{Net\ Dividends}{P_0} \quad (7)$$

Where:

P_1 = share price at end of year

P_0 = share price at beginning of year

Net Dividends = total dividends paid during year

3.3.5. Control Variables

In line with Abdelmotaal and Abdel-Kader (2016), we control for firm size, which has the same definition as discussed in section 3.2.3. The firm's size affects the firm's returns, and small firms tend to have higher returns than large firms (Sahut & Pasquini-Descomps, 2015). Therefore, size is expected to impact the dependent variable ROE.

Furthermore, we follow Baraibar-Diez et al. (2019) and Alareeni and Hamdan (2020) and control for leverage. Disparate from the first hypotheses, *leverage* is defined as debt to equity (D/E), following Baraibar-Diez et al. Following a study by Alareeni and Hamdan, we further control for *Asset turnover* and A*sset growth*. *Asset turnover* is defined as net sales to total assets, and *Asset growth* is the annual growth of total assets. These control variables have, in previous studies, been found essential when investigating ESG impact on financial performance, measured in ROE (Alareeni & Hamdan, 2020).

3.3.6. Fixed effects

To conduct a successful DiD-regression, we need to assume that the post-treatment trends would continue to be parallel between the groups if ESG-linked executive pay was not implemented. We have included specific fixed effects in the regression to mitigate this concern. The model is best suited for fixed effects since the data have endogeneity concerns. Fixed effect is suitable for our model, as seen in Table A.4. We include industry-year fixed effect to difference away from unobserved time-varying post-treatment trends at the industry level in ROE. Furthermore, we include firm-fixed effects in the regression to differentiate away unobserved firm-specific ROE trends.

4. Descriptive statistics

4.1. Summary statistics

Tables 6 and 7 present summary statistics of our variable of interest. Table 6 reports the statistics for all samples used in hypotheses 1a and 1b. In table 7, Panel A (B) reports the statistics for the treatment (control) sample in pre-intervention and Panel C (D) in post-intervention.

Table 6. Descriptive summary over variables related to hypotheses 1a and 1b.

Variables	**Mean**	**SD**	**P25**	**P50**	**P75**	**Min**	**Max**	**N**
Determinant regression								
ESG-link next year	0.056	0.231	0	0	0	0	1	1,987
Institutional owners	2.391	1.664	1	2	3	0	20	1,987
Insider owned (%)	3.237	9.287	0	0	0.723	0	51.202	1,987
Debt to Asset	0.247	0.164	0.120	0.237	0.344	0	0.707	1,975
Advertising intensity	0.006	0.021	0	0	0	0	0.116	1,966
R&D intensity	0.029	0.112	0	0	0.003	0	0.877	1,966
Return on Asset (%)	4.486	7.736	1.694	4.332	7.686	-33.891	27.712	1,987
Total Asset (ln)	7.524	1.922	6.513	7.729	8.684	1.031	13.272	1,987

Note: Institutional owners is stated in absolute terms of number of institutional owners. Insider owned, Debt to asset, Advertising intensity, R&D intensity and Return on Asset have been winsorized at 1% and 99% levels. Total assets have been transformed using natural logarithm.

Table 7. Descriptive data of variables related to hypothesis 2.

Variables	Mean	SD	P25	P50	P75	Min	Max	N
Panel A	**Effect regression – Treatment group – Pre treatment**							
Return on Equity (%)	13.673	17.554	5.551	14.436	22.381	-76.142	68.911	402
Debt to Equity (%)	69.2302	86.948	25.049	55.759	82.798	0.269	830.1	402
Asset turnover	0.866	0.490	0.579	0.857	1.122	0	2.594	402
Asset growth (%)	10.536	26.288	-1.528	5.978	14.090	-36.959	165.661	402
Total Asset (ln)	8.281	1.613	7.226	8.224	8.981	3.580	13.272	402
Panel B	**Effect regression – Control group – Pre treatment**							
Return on Equity (%)	14.850	16.24	7.659	14.869	21.085	-76.142	68.911	254
Debt to Equity	71.713	113.893	20.439	38.563	75.999	0.269	830.1	254
Asset turnover	0.856	0.640	0.250	0.818	1.152	0	2.492	254
Asset growth (%)	10.921	22.941	0	6.439	17.279	-36.959	165.661	254
Total Asset (ln)	7.855	1.549	7.134	7.855	8.454	1.319	12.045	254
Panel C	**Effect regression – Treatment group – Post Treatment**							
Return on Equity (%)	13.838	18.845	7.164	13.022	22.218	-76.142	68.911	372
Debt to Equity (%)	93.917	160.737	22.274	47.671	89.050	0.505	830.1	372
Asset turnover	0.702	0.434	0.380	0.743	0.962	0	1.946	372
Asset growth (%)	8.239	20.555	-0.981	5.182	11.797	-36.959	165.66	372
Total Asset (ln)	8.872	1.746	7.751	8.715	9.573	3.755	13.482	372
Panel D	**Effect regression – Control group – Post treatment**							
Return on Equity (%)	10.073	17.374	6.468	12.256	17.924	-76.142	68.991	412
Debt to Equity	81.802	122.005	23.562	47.835	93.677	0.269	817.394	412
Asset turnover	0.784	0.575	0.345	0.764	1.120	0	2.532	412
Asset growth (%)	11.028	26.811	-0.303	5.970	13.263	-36.959	165.66	412
Total Asset (ln)	7.861	1.816	6.950	8.029	8.685	0.612	12.497	412

Note: Debt to Equity, Asset growth and asset turnover have been winsorized at 1% and 99%. Total asset has been transformed using a natural logarithm.

4.2. Correlation statistics

To evaluate our tests for potential multicollinearity, correlation tests were conducted. In table 8, the correlation test for all dependent and independent variables for hypothesis 1 is shown. The correlation tests show no sign of multicollinearity since the correlations between independent variables are well below 0.7.

Table 8. Correlation matrix for data set for hypotheses 1a and 1b (Determinants of implementing ESG-pay policy).

Variables	1	2	3	4	5	6	7	8
1 ESG next year	1.000							
2 Insider owned	-0.042*	1.000						
3 Institutional owned	0.0274	-0.027	1.000					
4 Total Assets (ln)	0.050*	-0.103***	-0.2344***	1.000				
5 Debt to asset (w1)	0.0125	-0.020	-0.016	0.2363***	1.000			
6 Advertising Intensity (w1)	-0.0181	-0.020	0.016	0.0422*	0.0522**	1.000		
7 R&D Intensity (w1)	0.030	0.013	0.028	-0.241***	-0.212***	-0.038*	1.000	
8 Return on Asset (w1)	-0.000	-0.011	-0.046**	0.1494***	-0.069**	0.076***	-0.342***	1.000

Note: Significant- levels are illustrated at *** p<0.01, ** p <0.05, * p <0.1. (ln) states that the data have been transformed using natural logarithm, (w1) states transformation at 1% and 99% winsorization.

A correlation test was also conducted for the data set used in testing hypothesis 2. As seen in table 9, no independent variables correlated above a degree of 0.7, and we can conclude no multicollinearity. The test indicates results of a positive but not significant relationship between implementing ESG-linked executive pay and ROE.

Table 9. Correlation matrix for data set for hypothesis 2 (Impact on financial return).

Variables	1	2	3	4	5	6
1 ROE	1.000					
2 ESG-linked pay	0.0315	1.000				
3 Total Assets (ln)	0.1757***	0.216***	1.000			
4 Debt to Equity % (w1)	-0.020	-0.068**	0.420***	1.000		
5 Asset turnover (w1)	0.259***	-0.106***	-0.337***	-0.251***	1.000	
6 Asset growth (w1)	0.120***	-0.046*	-0.087***	-0.017	-0.040	1.000

Note: Significant levels are illustrated at *** p<0.01, ** p<0.05, * p<0.1. (ln) states that the data have been transformed using natural logarithm, (w1) states transformation at 1% and 99% winsorization.

5. Results

5.1. Determinants of implementing ESG-linkages in executive compensation

Table 10 presents our main results regarding hypotheses 1a and 1b. The regression has a pseudo R-squared of 14.30%, indicating several other factors in implementing an ESG-linked pay policy. Our results show that both size and institutional ownership have a significant effect on our dependent variable, implementing an ESG-linked pay policy the following year. Institutional ownership has a statistical significance at the 10% level and size at the 1% level. The result shows that the probability of switching to ESG-linked compensation the following year increases with more institutional owners and the bigger the firm is.

Table 10. Logistic regression for testing hypotheses 1a and 1b.

Dependent variable: Indicator variable of implementing ESG-linked pay the following year			
	Coefficient	Marginal Effect	z-Statistic
Insider Ownership (w1)	-0.252 (0.017)	-0.001	-1.52
Institutional Ownership	0.136* (0.082)	0.007	1.65
Total Assets (ln)	0.341*** (0.083)	0.018	4.11
ROA (w1)	-0.001 (0.019)	0.000	-0.08
R&D intensity (w1)	1.285 (1.067)	0.067	1.20
AD intensity (w1)	-4.342 (6.172)	-0.225	-0.84
Debt to Equity (w1)	-0.020 (0.758)	-0.001	-0.70
Constant	-6.228*** (1.011)	n/a	-6.16
Year-fixed effect		Included	
Industry-fixed effect		Included	
Pseudo R-squared		14.30%	
Number of observations		1,826	
of which adoptions		112	

Note: Standard error in parentheses. All specifications include firm and industry-year fixed effect. Significant levels are illustrated as *** p<0.01, * p<0.1. (ln) states that the data have been transformed using natural logarithm, (w1) states transformation at 1% and 99% winsorization.

As our result yield a statistically significant relationship between ESG-linked executive compensation implementation and large institutional ownership, we cannot reject H1a, that there is a relationship between the two. However, the regression does not show a statistically significant relationship between insider ownership and implementation of ESG-linked executive pay, and the hypothesis 1b is not supported.

An important insight from the regression seen in table 10 is the marginal effect. The marginal effect is low for all variables. For example, increasing one unit (measured in natural logarithm) in size gives 1.8% more probability. Furthermore, as stated in table 10, increasing the number of large institutional owners by one owner would yield an average increase in the probability of implementing the ESG-pay policy by 0.7%. Since the marginal effect seen in table 10 is the average marginal effect, we concluded an additional analysis on the marginal effect to investigate if there is any change depending on how many current owners the firm has, which can be a crucial factor for critical mass assumptions.

5.2. Impact on financial return

The result concerning our second hypothesis, how the financial return will be impacted by ESG-linked compensation implementation, is presented in table 11. The two differences captured by a difference-in-difference regression are shown in this regression, and an average treatment effect over the post-period is estimated.

Table 11. DiD regression for testing hypothesis 2.

Dependent variable: ROE % (w1)			
	Coefficient	Robust standard error	t-Statistic
Post Link	-2.626	-1.546	-1.55
Post Link x Treatment Firm	3.192**	1.979	1.98
Total Assets (ln)	-1.195	-0.457	-0.46
Debt to Equity (w1)	-0.008	-0.507	-0.51
Asset Turnover % (w1)	26.422***	4.697	4.70
Asset Growth (w1)	0.103***	4.424	4.42
Constant	2.018	0.082	0.08
Firm-fixed effect		Included	
Industry-Year fixed effect		Included	
Heteroskedasticity-Robust standard error		Included	
R-squared		72.66%	
Adjusted R-squared		65.46%	
Number of observations		1,431	

Note: Standard error in parentheses. All specifications include firm and industry-year fixed effect. Significant levels are illustrated as *** p<0.01, ** p<0.05. (ln) states that the data have been transformed using natural logarithm, (w1) states transformation at 1% and 99% winsorization.

The result shown in table 11 confirms a significant difference in ROE after implementing ESG-linked executive compensation. The result is statistically significant at a 5% level and shows that the treatment group yield an average of 3.2% higher ROE. The result leads to not rejecting H2 since the result shows that there is a relationship between implementing ESG-linked pay policies and financial returns.

5.3. Additional analysis

5.3.1. Marginal effect on ESG-linked pay implementation based on large institutional owners

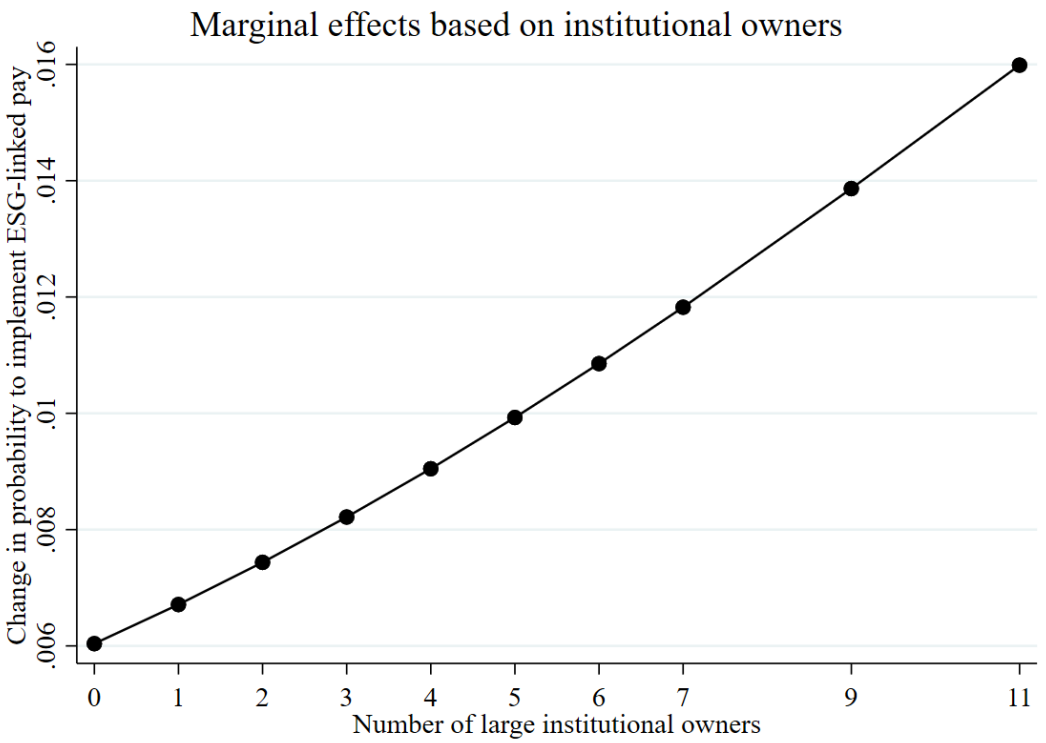

Figure 2. Graph on the marginal effect curve of likelihood to implement ESG-linked executive pay based on number of large institutional owners

In the additional analysis illustrated in figure 2, we assess the marginal effect on institutional ownership to investigate if there is an economic significance in our result after reaching a certain point in the number of large institutional owners. From the graph, we can distinguish a pattern of a higher marginal effect based on the more owners the company have. Since the definition of a large institutional owner is an institutional owner who holds above 5% of the firm's total outstanding shares, the maximum of large institutional owners a company can have is 19. However, in our sample, the largest number was 11, and we can then see a marginal effect of 1.6%. This finding indicates that increasing the number of large institutional owners to 12 would increase the likelihood of implementing an ESG-linked pay policy by 1.6%. Since we do not have any observations with a greater number of large institutional owners, we cannot assess if the marginal effect will grow exponentially with more than 11 owners.

Table 12. Average marginal effects depending on different number of large institutional ownership.

Dependent variable: Likelihood of changing to ESG-linked executive pay in the following year			
Number of large institutional shareholders	Marginal effect	P>|z|	N
0	0.006**	0.050	522
1	0.007*	0.082	613
2	0.007	0.116	467
3	0.008	0.150	219
4	0.009	0.182	93
5	0.010	0.211	49
6	0.011	0.236	19
7	0.012	0.258	3
9	0.014	0.292	1
11	0.016	0.313	1

Note: Standard error in parentheses. Significant levels are illustrated as ** p<0.05, * p<0.1

However, as seen in table 12, the result is only statistically significant for the marginal effect when having none or one large institutional owner. The lack of significant results could be due to the small number of observations for firms with a high number of institutional owners. However, due to the lack of statistically significant results, we cannot give a clear answer on if the marginal effect is higher when reaching a certain number of owners. Neither can we assess if there is any critical mass to be reached when the number of institutional owners starts to have an economically significant influence.

5.3.2. Sensitivity analysis for determinants to implementing ESG-linked executive pay

To fully assess our result and the fitness of our regression model, three sensitivity tests were conducted. The first sensitivity test, Test 1, uses a different measurement on our independent variable institutional ownership and is measured using the total percentage that institutional owners own out of total shares. The second test, test 2, uses a different measurement of the independent variable insider ownership and is measured by the number of large insider ownership, measured in the same way institutional ownership was measured in the original model. The third test uses the same independent variables that Abdelmotaal and Abdel-Kader (2016) used in their primary regression to see if our observations yield a similar pattern.

Table 13. Summary of sensitivity test used for hypotheses 1a and 1b.

Dependent variable: Indicator variable of implementing ESG-linked pay the following year	Test 1	Test 2
	Coefficient (dy/dx)	Coefficient (dy/dx)
Insider Ownership (w1)	-0.024 (-0.001)	0.116 (0.006)
Institutional Ownership	-0.005 (-0.000)	0.147* (0.008)
Total Asstes (ln)	0.321***(0.167)	0.361*** (0.019)
ROA (w1)	-0.001 (-0.000)	-0.003 (-0.000)
R&D intensity (w1)	1.288 (0.067)	1.372 (0.071)
AD intensity (w1)	-3.541 (-0.184)	-4.535 (-0.236)
Debt to Equity (w1)	0.086 (0.004)	0.065 (0.004)
Constant	-5.995*** (-)	-6.445*** (-)
Controlled for industry & year	YES	YES
Pseudo R-squared	14.12%	13.99%
Number of observations	1,826	1,826

Note: Marginal effect in parentheses. Significant levels are illustrated as *** p<0.01, * p<0.1. (ln) states that the data have been transformed using natural logarithm, (w1) states transformation at 1% and 99% winsorization.

The results shown in table 13 demonstrate that our main model is better suited than test 1 and test 2's models. This argument is evident as the pseudo R-squared is lower in all the three sensitivity test models, and the models can therefore not explain the probability of changing to ESG-linked pay policy as well as the main model. Test 1 also shows that the positive and statistically significant relationship between institutional ownership and the dependent variable is absent when measuring institutional ownership as the total percentage owned by institutions. Furthermore, test 2 shows that the relationship between institutional owners and our dependent variable is still absent when measuring it equivalently as institutional ownership is measured.

The table below (table 14) tests the data using a similar method as Abdelmotaal and Abdel-Kader (2016). The result below indicates that a significant association is absent for all three different ownership classifications.

Table 14. Logit regression for testing three different ownership structures impact on ESG-pay policy implementation.

Dependent variable: Indicator variable of implementing ESG-linked pay the following year	Coefficient	Marginal Effects
Independently Owned	-0.757 (-1.006)	-0.054
Controlled	-0.906 (-1.190)	-0.062
Direct Majority Owned	-1.090 (-1.336)	-0.070
Size (ln)	0.336*** (4.087)	0.018
ROA (w1)	-0.002 (-0.119)	-0.000
R&D intensity (w1)	1.175 (1.100)	0.06
AD intensity (w1)	-4.456 (-0.720)	-0.232
Debt to Equity (w1)	0.086 (0.010)	0.000
Constant	-5.233*** (-4.116)	-
Controlled for industry & year	YES	
Pseudo R-squared	13.86%	
Number of observations	1,826	

Note: Standard errors in parentheses. Significant level is illustrated as *** p<0.01. (ln) states that the data have been transformed using natural logarithm, (w1) states transformation at 1% and 99% winsorization.

Since the pseudo R-squared is lower in table 14 than in our main regression, we can conclude that our main regression is better suited to explain the likelihood of implementing the ESG-pay policy.

5.3.3. Impact on financial return

The additional analysis of the impact ESG-linking has on financial return will be made in two different steps. Since our result showed a positive relationship between ROE and post-treatment firms, we are to analyse further what has yielded the increase in ROE by investigating the drivers of ROE. As mentioned in section 3.3.1, the drivers analysed are the drivers according to the DuPont formula. Furthermore, we test our dependent variable as a measurement for shareholder return, following Abdelmotaal and Abdel-Kader (2016).

As illustrated in table 15, the regression shows no significant relationship between leverage and ESG-linked executive pay policy implementation. Furthermore, a regression with asset turnover as the dependent variable showed no significant difference between the treatment and the control group after implementing ESG-linkages in executive compensation. However, the profit margin had a positive relationship with the implementation of ESG-based linkages on a 5% significance level. The correlation indicates an increase in an average profit margin of 7.45% when implementing ESG-pay

policies. The result seen in table 15 shows that a reason for an increase in ROE after implementation of ESG-linked executive compensation can be driven by an increase in profit margin.

Table 15. Multiple DiD regressions for testing different ROE drivers impact from ESG-pay policy.

ROE driver analysis			
Dependent variable:	D/E % (w1)	PM % (w1)	AT % (w1)
	Coefficient	Coefficient	Coefficient
Post Link	-10.026	-7.689**	0.046
Post Link x Treatment Firm	11.820	7.452**	0.006
Size (ln)	-9.197	5.758**	-0.093
D/E % (w1)	-	-0.033	-0.000
Asset Turnover % (w1)	-12.447	5.701	-
Asset Growth (w1)	0.185***	0.139**	0.001*
Constant	165.757**	-34.042	1.531**
Controlled for Firm & industry-year effects	YES	YES	YES
Adjusted R-squared	85.22%	64.42%	89.86%
Number of observations	1,431	1,431	1,431

Note: Standard errors in parentheses. All specifications include firm and industry-year fixed effect. Significant levels are illustrated as *** p<0.01, ** p<0.05, * p<0.1. Pm = profit margin, AT = asset turnover. (ln) states that the data have been transformed using natural logarithm, (w1) states transformation at 1% and 99% winsorization.

Furthermore, we tested our result using the measurement of shareholders' return, TSR. The regression showed that our model is better at explaining shifts in ROE than TSR, which can be seen on the low adjusted R-squared seen in table 16. Since TSR is based on trading numbers instead of accounting numbers, several other factors might affect movements in the share price. The low R-squared is expected as we have not controlled for any sort of market noise. Even though the regression seen in table 16 shows a positive correlation between TSR and ESG-implementation, the results are not statistically significant, and we cannot be sure of how ESG-implementation affect total shareholders' return.

Table 16. DiD regression on TSR as the dependent variables.

Dependent variable: TSR (w1)			
	Coefficient	Robust standard error	t-Statistic
Post Link	-0.022	-0.552	-0.55
Post Link x Treatment Firm	0.051	1.186	1.19
Size (ln)	-0.142***	-4.883	-4.88
D/E % (w1)	0.000	-1.062	-1.06
Asset Turnover % (w1)	0.207***	3.756	3.76
Asset Growth (w1)	0.003***	3.502	3.50
Constant	1.164***	4.832	4.83
Firm-fixed effect		Included	
Industry-Year-fixed effect		Included	
Heteroskedasticity-robust standard errors		Included	
Adjusted R-squared		33.22%	
Number of observations		1,408	

Note: Standard errors in parentheses. All specifications include firm and industry-year fixed effect. Significant levels are illustrated as *** p<0.01, (ln) states that the data have been transformed using natural logarithm, (w1) states transformation at 1% and 99% winsorization.

Finally, we further explore the robustness of our matching procedure. As discussed in section 3.3.2, we undertake the matching on leverage and additionally perform three separate regressions with alternative matching procedures. In table 17, we have matched treatment and control firms based on (1) leverage and size, (2) leverage and asset turnover, and (3) leverage and asset growth. Across all three approaches, we find that the main results remain similar and relatively unchanged. However, we do not find a statistically significant result at the 10% level when in model 1, but as p=0.107 and the regression have the smallest dataset, we can suggest a similar trend as the main result. We, therefore, argue that the alternative matching procedure supports our findings.

Table 17. Robustness using three alternative matching procedures.

Matching variables:	(1) Size & Leverage	(2) Asset Turnover & Leverage	(3) Asset Growth & Leverage
	Coefficient	Coefficient	Coeffecient
Post Link	-3.533** (-2.345)	-1.269 (-0.645)	-5.533*** (-3.399)
Post Link x Treatment Firm	2.319 (1.612)	3.181* (1.714)	4.409*** (2.975)
Size (ln)	3.301** (2.091)	0.265 (0.102)	0.121 (0.046)
D/E % (w1)	-0.017 (-0.888)	-0.026** (-1.978)	-0.021 (-1.132)
Asset Turnover % (w1)	35.058*** (11.889)	23.206*** (6.206)	26.525*** (7.707)
Asset Growth (w1)	0.095*** (5.600)	0.085*** (3.730)	0.119*** (4.721)
Constant	-39.812*** (-3.009)	-7.148 (-0.321)	-6.151 (-0.269)
Controlled for Firm & industry-year effects	YES	YES	YES
R-squared	72.97%	75.50%	73.84%
Adjusted R-squared	65.18%	68.35%	66.71%
Number of observations	1,091	1,028	1,247

Note: This table reports the estimates of a difference-in-differences fixed effects model on the financial return variable using an alternative matching procedure. All specifications include firm and industry-year fixed effect. Standard errors in parentheses. Significant levels are illustrated as *** p<0.01, ** p<0.05, * p<0.1. (ln) states that the data have been transformed using natural logarithm, (w1) states transformation at 1% and 99% winsorization. p=0.107 for (1) PostLinkxTreatmentFirm

6. Discussion

6.1. Ownership as determinants of ESG-linkages in executive compensation

Our findings on hypothesis 1a are in line with previous literature (Hong et al., 2016). Furthermore, Aggarwal and Dow (2012) argued that block owners and institutional owners are likely to support the implementation of ESG-linkages in executive compensation to avoid legitimacy risk. By combining institutional owners and block holders measures, our study supports this argument by showing that the more institutional block holders the firm has, the higher the probability of implementing ESG-linkages. In alignment with previous literature, our result supports the idea that the pressure from stakeholders has resulted in a legitimacy risk which negatively affects long-term value creation, and a focus on CSR activities will create long-term value creation (Aggarwal & Dow, 2012; Arora & Dharawadkar, 2011; Barnett, 2007; Harjoto & Jo, 2011).

However, previous literature has argued that initiatives in environmental and social aspects could harm shareholders, and the consideration of stakeholders conflicts with shareholder welfare by creating an agency cost (Abdelmotaal & Abder-kader, 2016). As argued by the principal-agency theory, shareholders implement performance-based compensation to reduce agency conflict to align shareholders' and managers' interests (Miles, 2012). This argument indicates that if the ESG-linked pay policy were an agency cost, institutional shareholders should be resistant to implementing the ESG-linkage pay policy since this would incentivise harmful behaviour from the managers (Oh et al., 2016). In line with Hong et al. (2016), our finding contradicts the notion of ESG-linked pay policy being an agency cost since our results show that institutional block holders are likely to implement ESG-linkages in executive compensation. As previously mentioned, Hong et al.'s study take place in the US, where agency type I is present, and our study is performed in a setting where agency type II is more prevalent. Our findings can conclude that the agency cost is non-existence no matter the agency conflict.

The result further shows an average marginal effect of 0.7% when increasing the number of large institutional shareholders, which we argue to be a non-economically significant result. Increasing the number of large institutional owners to a point where the effect is economically significant can be seen as a severe change in the ownership structure. Therefore, it is unlikely that number of institutional owners will have a notable effect on implementing ESG-linked pay policies. However, as shown in figure 2, the marginal effect in probability seem to increase in line with the number of large institutional investors. The increase suggests an exponential relationship, but we cannot accept or reject this trend because of the small number of firms with several large institutional owners. If there is a critical mass that our result does not capture, it could be a higher

economic significance that is not shown in our result. To address the magnitude of the marginal effect, we urge further research in the field.

Furthermore, Hong et al. (2016) found that one additional large institutional owner increased the probability of ESG-linkages by 7.4%, which differs from our results of 0.7%. However, Hong et al.'s study uses a sample of large US-listed firms (S&P 500). In the US, the compensation structure is different than in the Nordics and type I agency conflict is more present, meaning that there are higher incentives for owners to control executives. Since the Nordics are more concerned with type II agency issues, there might not be enough motivation for large shareholders to implement control over executives, as they are focusing on solving conflicts with non-controlling shareholders. Large owners have the incentives and power to improve the compensation structure (Schleifer & Vishny, 1986; Brickley et al., 1988; Hartzell & Starks, 2003), but since the variable compensation holds a less significant role in the Nordic countries, it could be a further explanation to the difference from Hong et al.'s study. However, our result concludes that the relationship between large institutional ownership and implementing an ESG-linked pay policy seems to exist even in regions with less performance-based compensation and higher type II agency conflict.

We further performed an additional analysis measuring institutional ownership as the total percentage of outstanding shares owned by institutions. Our result was inconclusive, and we cannot conclude whether such a relationship exists. There is a possibility that fewer but larger institutional shareholders are not likely to implement ESG-linkages in executive compensation and that it is the number of institutional shareholders that is a determining factor. As mentioned, large owners have the incentives and ability to improve compensation practices (Schleifer & Vishny, 1986; Brickley et al., 1988; Hartzell & Starks, 2003). Our result confirms previous research that large owners affect compensation practices but argues that the number of large owners and not how much they own is the determining factor. This finding further support Berle and Means' (1932) finding that agency conflicts are more significant in companies with many minority owners. Our finding shows that when there are more large owners, the owners are more incentivised to implement monitoring mechanisms to reduce agency costs.

Following the study by Abdelmotaal & Abdel-Kader (2016), we further investigated whether the institutional owners' percentage of ownership affects the usage of ESG-linkages in executive compensation. This was done by testing the three categories independently owned, controlled and direct majority. The results did not indicate that large owners, defined as controlled or direct majority owned, influenced the probability of ESG-pay policy implementation. This could be because institutions with a higher percentage have less interest in ESG-compensation and smaller block holders are more affected by stakeholder pressure, and a different setting could yield a different result. The insignificant result could further be because of the small data sample used in the study, which future research needs to develop.

Previous literature argued that insider ownership is likely to affect compensation contracts because of increased managerial power and that insider ownership decreases the probability of implementing ESG based metrics in executive compensation (Hong et al., 2016). We cannot support or reject these arguments since our results were insignificant for hypothesis 1b. The insignificant result could be because of an insufficient amount of data, but it could also be that there is no relationship between insider ownership and ESG-linkages. If the insignificant result is due to no existence of a clear relationship, our result contradicts previous literature by Hong et al. (2016) on US firms. As mentioned by Oh et al. (2011), one of the reasons for insider ownership to be adverse toward ESG-based compensation is the executive's self-interest in short-term orientation measurements. However, in a setting with less variable pay and a more significant focus on fixed pay (OECD, 2011), self-interest may not be triggered, and insider owners are therefore not as motivated to use their managerial power to affect the compensation contracts.

Another plausible reason our result contradicts previous research is that our study uses a different definition of insider ownership. In Hong et al.'s (2016) study, they focus on only executives as insider ownership. Our study uses a broader definition and includes directors, officers, relatives, or anyone else with access to key company information before it is made publicly available. A key difference in our sample is that it includes individuals who would not be directly affected by changes in executive compensation contracts. Thus, the extrinsic self-interest may not be as evident in our study, affecting the result. Insider owners such as relatives, or other non-executive owners, are unlikely to use their voting power to impact the compensation structure, and the intrinsic self-interest towards a short-term orientation argued by Oh et al. (2011) is not as significant in our sample. We further investigated if the result would change if we used the number of large insider owners instead of the percentage of outstanding shares owned by insider owners. However, the results still showed insignificant results. Our results are unable to tell whether a relationship between insider ownership and ESG-based compensation, and we see the need for further research within the field.

6.2. Impact on financial return

The results shown in section 5.1 are in line with previous research, showing a positive effect of ESG-linkages on financial performance (Callan & Thomas, 2014; Flammer et al., 2019), with a similar magnitude to Abdelmotaal and Abdel-Kader (2016). Contrary to Banket et al. (2000) and Said et al. (2003), we contribute to the literature by explicitly focusing on ESG-based compensation policy rather than non-financial measures in general terms. Furthermore, as previous studies (Callan & Thomas, 2014; Flammer et al., 2019; Abdelmotaal & Abdel-Kader, 2016) have been conducted in settings with higher variable compensation, our study shows that the positive relationship holds even in

regions when the variable compensation is low. If an effect is seen in this setting, it arguably should be seen in countries with higher variable compensation as well, and we can conclude that ESG-linkages in executive compensation are positive for financial return.

Nevertheless, our study is aligned with Callan and Thomas' (2014) study that focuses on ESG-pay policies' effect on operating margin. In our additional analysis, building on the DuPont formula, we could distinguish profit margin as the driver of the increase in ROE after implementing ESG-linkages in executive compensation. The increase of 7.45% in profit margin is in line with Callan and Thomas' study of CSR activities on financial performance measured in return on sales. Callan and Thomas argued for implementing ESG-linkages since they believed it would increase firm performance. Our findings support their argument by showing that ESG-linkages increases the profit margin.

Our findings contradict the absence of a relationship between CSR-linked compensation and economic performance found by Baraibar-Diez et al. (2019). The authors argue that the absence of a relationship makes sense since the linkage is not directly linked to financial metrics. Following Wallace (1997), linking ESG-targets to executive pay should not directly impact the financial return since this is not what is measured and rewarded. However, our results show that increased financial return is an outcome of increased ESG-prioritization. This argument is supported by stakeholder theory as an increased prioritise of ESG incentives incorporates secondary stakeholders and, thus, should increase the welfare for the shareholders. It is further evident in our additional analysis that ESG-linked pay implementation results in a more cost-effective company, which leads to an increase in financial return.

Abdelmotaal and Abder-Kader (2016) discussed that ESG-linkages in executive compensation might result in managers overinvesting in CSR activities to gain extrinsic rewards, arguing that it may be an agency cost for shareholders. However, since our results show that ESG-linked pay policy positively affects financial return while also being driven by large shareholders, we conclude that ESG-compensation is not viewed as an agency cost. On the contrary, ESG-linkages are seen as a resolution to the agency conflicts since our study indicates that it is beneficial for shareholders. The increased focus on environmental and societal issues indicates increased welfare for shareholders and thus should be used by shareholders to enhance the manager's interest to prioritise such issues. This finding aligns with previous literature, whereas Hong et al. (2016) and Abdelmotaal and Abdel-Kader found ESG-linkages not to be an agency cost.

To further see the impact the implementation of ESG-linkages has on shareholders, we tested for total shareholder return, which is market-based rather than accounting-based, according to Abdelmotaal and Abdel-Kader (2016). Our result indicates that ESG-linkages impact shareholders positively based on market data as well. However, the result is not statistically significant, so we cannot determine whether ESG-linkages in executive

compensation affect TSR, which is aligned with Abdelmotaal and Abdel-Kader's study. Since TSR is market-based rather than accounting-based, it is affected by other factors which we did not control for. Accounting based measures are further closer related to what managers have the power to control over and can affect with their decisions. When using ESG-based compensation contracts, the purpose is to change the manager's behaviour to be aligned with the shareholder's interest, reducing the agency conflict. Therefore, to capture the impact of the shift in compensation structure, it is preferable to investigate a measure which is closely related to the actions of the executives and not as inflected by the external environment and noise on the stock market as TSR is. Therefore, ROE is viewed to better capture the impact of ESG-linkages on financial returns than total shareholder returns based on stock prices.

6.3. Limitations

One of the main limitations when constructing this research was the lack of a large data sample. The Nordic region can be considered a smaller economic region, and databases are not as updated on Nordic companies as they are with, for example, US or UK companies. The limitation of our data has resulted in a risk of a suboptimal matching procedure, where we could not match the treatment sample on more than three variables (industry, year of change and leverage). This means that the control group firms might not be similar in all aspects, and a larger sample of firms would give us more confidence in our results. However, our robustness test with an alternative matching procedure function as a method to control for the limitations during the matching procedure. Furthermore, due to the small sample of companies in the Nordics who have implemented ESG-linkages in executive compensation and that most firms have implemented ESG-linkages recently, we chose to include a minimum of two years after the implementation. Because of this, our study includes a short time horizon of financial return. According to previous literature, long-term value is one result of CSR contracting; however, we cannot see the effect on long-term value.

In the Nordics, there is no public data available on executives' compensation contracts in companies. Therefore, the study has not considered the actual compensation structure and the portion of variable compensation in the companies included in the study. This limitation may substantially impact our conclusions since we have built our argumentation on the assumption that the variable compensation is low from previous literature. Furthermore, in our data set, we have not been able to make distinctions between different institutional shareholders. Previous literature has argued for different results for diverse institutional investors, and owners with a short-term horizon might not act in the same way as owners with a long-term horizon (Winschel, 2022; Jain & Jamali, 2016). Thus, we cannot investigate these effects, and we have investigated institutional owners from a broader perspective. For a clearer understanding of variations among

institutional block holders, we argue for a need for further research within this field of research. Nor have we been able to narrow down the definition of insider owners, which has implications for the certainty of our result.

Finally, the data set incorporates all firms with relevant data and only excludes firms that are missing data points. Refinitiv (2020) stated that smaller firms tend to have less information on ESG, and small firms would therefore be excluded from our dataset. This skew towards bigger firms with access to resources and complete ESG disclosure. The skewness in our dataset leads to our study having limited generalizability toward smaller companies. However, even if there is no data on whether the smaller firms have ESG-linked compensation, it is likely, that these companies do not have ESG-linked compensation (Winschel, 2022). Smaller firms have fewer stakeholders and might therefore receive less pressure from stakeholders and fewer resources to track ESG developments and thus be able to implement such a policy.

7. Concluding remarks

7.1. Conclusion

ESG-linked executive pay is undeniably a growing trend within the business world, but the academic evidence has been lagging. Even though previous studies have touched on the subject before, much evidence regarding ESG-linked executive pay policies is missing (Abdelmotaal & Abder-Kader, 2016; Baraibar-Diez et al., 2019; Flammer et al., 2019). Recent pressure from institutions and authorities has stressed the need for further research, and our study has attempted to fill some of the research gaps. The purpose of this paper was to investigate if ownership structure impacts the implementation of ESG-linked executive pay and if ESG-linked executive pay affects financial returns. We studied these topics using a data set of Nordic companies due to the unique institutional setting. Using the Nordics as the base of our research, we could increase the generalizability while also testing if previous research is applicable to regions with different ownership and compensation structures.

To identify the impact of ownership structure on the implementation of ESG-linked executive compensation, we used a logit regression based on the likelihood of switching to an ESG-linked pay policy the following year. We find evidence that institutional ownership positively affects the probability of implementing an ESG-linked pay policy, but we do not conclude an economic significance. The absence of economic significance is suggested to be a result of the different agency types and compensation structures between previous studies' regions and the Nordic region, but more research is needed before concluding this. Nonetheless, our study confirms that large institutional owners have a positive impact on ESG-linked pay policy implementation, thus, concluding that ESG-linked executive compensation is not deemed an agency cost. However, we could not conclude a relationship between insider ownership and the probability of implementing ESG-linked executive pay policies. The non-existing relationship is believed to result from either a too broad definition of insider ownership or the more conservative structure of variable compensation that takes place in the Nordics. We suggest further research by using a narrower definition of insider ownership to develop further insights. With the unique setting of the Nordics, we aimed to test if ownership structure had an impact on ESG-pay implementation in other regions than the US, as seen by Hong et al. (2016). However, our findings indicate that ownership's impact on ESG-pay implementation depends on different institutional settings.

We used a difference-in-difference design to investigate the effect on the financial return of ESG-linked executive compensation implementation. The result was in line with the existing research and concluded that the relationship between ESG-linked executive pay policy and financial performance is significant and positive even in regions with low variable compensation. This finding has generalizability for different compensation

structures and shows that if the relationship exists in the Nordic, it arguably should exist everywhere. Furthermore, the additional analysis showed that the positive relationship between financial performance and ESG-linked pay policy is driven by an increase in profit margin, which is, to our knowledge, a new finding within the field.

Consequently, this study showed that even in an agency type II region, large institutional owners act in the best interests for all shareholders. It further argues that ESG-linked executive pay is not a cost for shareholders but a financial benefit. We hope these findings will contribute to the current discussions and help increase the ESG-focus in corporate governance practices.

7.2. Contributions

As the research field within ESG-linked executive compensation is still largely unexplored, our study contributes by analysing new aspects of the ESG-linked pay policy research.

Firstly, we contribute to the research field by developing previous research arguing that ownership affects the implementation of ESG-linked executive pay even in a setting with a different agency conflict. Contrary to Hong et al. (2016), we investigated a setting where there is a larger agency conflict between controlling and non-controlling interests and found that ESG-linked pay is not an agency cost in an agency type II setting. We further contribute to the literature by showing that even in a setting where the variable compensation is low, large institutional owners still use their power to implement ESG-linked executive compensation as a mechanism to control the managers and reduce agency costs.

Secondly, to our knowledge, previous research within the area has not tested the relationship between ESG-pay policy and financial return using a DiD-regression method, which arguably can provide a more in-depth analysis and more reliable results. The study has further been able to incorporate data up until 2021, which is the most recent dataset within the field. In a fast-developing trend, such as an ESG-linked pay policy, a few years older dataset can have a different outcome. Furthermore, we elaborate on the relationship between ESG-pay policy and financial return by investigating the drivers of the financial return and contribute by finding that it increases profitability in the firm. This finding further contributes to the discussion in practice, confirming that the pressure from shareholders to implement ESG-linked executive pay is justified and will be beneficial for the shareholders rather than an agency cost.

Finally, regarding the unique institutional setting our study takes place, our result functions as a credibility test, meaning that if we can find a significant relationship here, we can find it anywhere. The setting gives our study's result generalizability that can be applied to settings that have not yet been included within the research field. It further

contributes as a robustness test to previous studies with similar results. These contributions can have a large impact on the current research field and business world. By accepting that the relationship between financial return and ESG-linked pay policy exists, we can focus on exploring the drivers behind it while also providing a practical argument for corporate governance practices.

7.3. Suggested further research

The study is not without its limitations, mainly due to insufficient data size or lack of available data. Our study could not find any data on a narrower definition of Insider Ownership, which makes the lack of relationship in our findings debatable. The result might be diffused when including investors that are not incentivised by executive compensation targets. For future studies, we suggest a more thorough analysis of insider ownership by manually collecting data from other databases. We are also suggesting further research on if there is a relationship between institutional ownership and implementation of ESG-linked pay policy by segmenting institutional ownership into long-term and short-term investment focus. As previous research has seen that there might be differences between different types of ownership, and our research did not take these differences into account, there might be additional findings in the area.

ESG activities have, in previous literature, been argued to have long term value as the most prevalent benefit (Arora & Dharwadkar, 2011). However, our study required companies to have a minimum of two years after the implementation when investigate the effects on financial returns. Therefore, we cannot conclude the effects on long-term value. As the policy is still at an early stage, current data could not provide a long-term perspective. However, future research is encouraged to look at the long-term value in time.

Nevertheless, our research showed that it is financially beneficial to implement ESG-linked executive pay, which has practical implications for shareholders. However, as ESG-linked pay policy most likely results from stakeholder pressure, it would be interesting for further research to look at the effect the implementation has on other stakeholders in terms of effects on ESG-performance. Some of the previous research used in this study (Baraibar-Diez et al., 2019; Flammer et al., 2019) also looked at how ESG-linked executive pay affected ESG-performance but came out with inconclusive results. As the unique institutional setting in the Nordics can work as a generalizability test, while Nordics are generally at the forefront of ESG-performance (Brandberg & Dzigue, 2021), we suggest conducting a similar test as this study but using ESG-score as the dependent variable.

8. References

Abdelmotaal, H., & Abdel-Kader, M. (2016). The use of sustainability incentives in executive remuneration contracts: Firm characteristics and impact on the shareholders' returns. *Journal of Applied Accounting Research, 17*(3), 311-330, DOI: 10.1108/JAAR-12-2013-0123

Aggarwal, R., & Dow, S. (2012). Corporate governance and business strategies for climate change and environmental mitigation. *The European Journal of Finance, 18*(3-4), 311–331., DOI: 10.1080/1351847X.2011.579745

Almond, P. (2011). Re-visiting 'country of origin'effects on HRM in multinational corporations. *Human Resource Management Journal, 21*(3), pp.258-271, DOI: 10.1111/j.1748-8583.2010.00153.x

Amran, A., & Ooi, S. K. (2014). Sustainability reporting: meeting stakeholder demands. *Strategic Direction, 30*(7), DOI: 10.1108/SD-03-2014-0035.

Arora, P., & Dharwadkar, R. (2011). Corporate governance and corporate social responsibility (CSR): The moderating roles of attainment discrepancy and organization slack. *Corporate governance: an international review*, 19(2), 136-152. DOI: 10.1111/j.1467-8683.2010.00843.x

Alareeni, B. A., & Hamdan, A. (2020). ESG impact on performance of US S&P 500-listed firms. *Corporate Governance: The International Journal of Business in Society, 20*(7), DOI: 10.1108/CG-06-2020-0258

Banker, Potter, G., & Srinivasan, D. (2000). An Empirical Investigation of an Incentive Plan That Includes Nonfinancial Performance Measures. The Accounting Review, 75(1), 65–92, DOI: 10.2308/accr.2000.75.1.65

Baraibar-Diez, E., Odriozola, M. D., & Fernandez Sanchez, J. L. (2019). Sustainable compensation policies and its effect on environmental, social, and governance scores. *Corporate Social Responsibility and Environmental Management*, 26(6), 1457-1472. DOI: 10.1002/csr.1760

Barnett, M. L. (2007). Stakeholder influence capacity and the variability of financial returns to corporate social responsibility. *Academy of management review*, 32(3), 794-816, DOI: 10.5465/AMR.2007.25275520

Barontini, R., Bozzi, S., & Ferrarini, G. (2017). Executive remuneration standards and the "conformity gap" at controlled corporations. *Journal of Management & Governance*, 21(3), 573-597. DOI: 10.1007/s10997-016-9366-0

Berle, A. & Means, G. (1932) *The Modern Corporation and Private Property* (2nd ed.). Routhledge.

Berrone, & Gomez-Mejia, L. R. (2009). Environmental Performance and Executive Compensation: An Integrated Agency-Institutional Perspective. *Academy of Management Journal, 52*(1), 103–126. DOI: 10.5465/AMJ.2009.36461950

Borghesi, R., Houston, J. F., & Naranjo, A. (2014). Corporate socially responsible investments: CEO altruism, reputation, and shareholder interests. *Journal of Corporate Finance*, 26, 164-181. DOI: 10.1016/j.jcorpfin.2014.03.008.

Bosse, D. A., & Phillips, R. A. (2016). Agency theory and bounded self-interest. *Academy of Management Review*, 41(2), 276– 297. DOI: 10.5465/amr.2013.0420

Boucly, Q., Sraer, D. and Thesmar, D., 2011. Growth lbos. *Journal of Financial Economics*, 102(2), pp.432-453. DOI: 10.1016/j.jfineco.2011.05.014

Brandberg, P. & Dziuige, M. (2021, November 11). Sustainability The Nordic Way. *Euromonitor international.* https://www.euromonitor.com/article/sustainability-the-nordic-way

Brickley, J. A., Lease, R. C., & Smith Jr, C. W. (1988). Ownership structure and voting on antitakeover amendments. *Journal of financial economics*, 20, 267-291. DOI: 10.1016/0304-405X(88)90047-5

Brown, W. O., Helland, E., & Smith, J. K. (2006). Corporate philanthropic practices. *Journal of corporate finance*, 12(5), 855-877. DOI: 10.1016/j.jcorpfin.2006.02.001

Cai, Y., Jo, H., & Pan, C. (2011). Vice or virtue? The impact of corporate social responsibility on executive compensation. *Journal of Business Ethics*, 104(2), 159-173. DOI: 10.1007/s10551-011-0909-7

Callan, S. J., & Thomas, J. M. (2014). Relating CEO compensation to social performance and financial performance: Does the measure of compensation matter?. *Corporate Social Responsibility and Environmental Management*, 21(4), 202-227. DOI: 10.1002/csr.1307

Cieslak, K. (2018). Agency conflicts, executive compensation regulations and CEO pay-performance sensitivity: evidence from Sweden. *Journal of Management and Governance*, 22(3), 535-563. DOI: 10.1007/s10997-018-9410-3.

Clarkson, M. E. (1995). A stakeholder framework for analyzing and evaluating corporate social performance. *Academy of management review*, 20(1), 92-117. DOI: 10.2307/258888

Cordeiro, J. J., & Sarkis, J. (2008). Does explicit contracting effectively link CEO compensation to environmental performance?. *Business Strategy and the Environment*, 17(5), 304-317. DOI: 10.1002/bse.621

Deloitte. (2021). *Insights into executive remuneration in the Nordic region and at Europe's largest companies*. https://www2.deloitte.com/content/dam/Deloitte/fi/Documents/tax/Insights%20into%20Executive%20Remuneration%20in%20the%20Nordic%20region%20and%20at%20Europes%20largest%20companies.pdf

Devers, C. E., Cannella, A. A. Jr., Reilly, G. P., & Yoder, M. E. (2007). Executive compensation: A multidisciplinary review of recent developments. Journal of Management, 33(6), 1016–1072, DOI: 10.1177/0149206307308588

Dey, & Astin, A. W. (1993). Statistical Alternatives for Studying College Student Retention: A Comparative Analysis of Logit, Probit, and Linear Regression. *Research in Higher Education*, 34(5), 569–581. DOI: 10.1007/BF00991920

Donaldson, & Preston, L. E. (1995). The stakeholder theory of the corporation: concepts, evidence, and implications. *The Academy of Management Review*, 20(1), 65–91, DOI: 10.5465/AMR.1995.9503271992

Flammer, C., Hong, B., & Minor, D. (2019). Corporate governance and the rise of integrating corporate social responsibility criteria in executive compensation: Effectiveness and implications for firm outcomes. *Strategic Management Journal*, 40(7), 1097-1122. DOI: 10.1002/smj.3018

Freeman, R. E. (1984). Strategic Management: A Stakeholder Approach. Cambridge University Press.

Gerged, A. M. (2021). Factors affecting corporate environmental disclosure in emerging markets: The role of corporate governance structures. *Business Strategy and the Environment*, *30*(1), 609-629. DOI: 10.1002/bse.2642

Graves, S. B., & Waddock, S. A. (1994). Institutional owners and corporate social performance. *Academy of Management journal*, *37*(4), 1034-1046. DOI: 10.5465/256611

Groysberg, B., Abbott, S., Marino, M.R. & Aksoy,M. (2021) Compensation Packages That Actually Drive Performance. *Harvard Business Review. https://hbr.org/2021/01/compensation-packages-that-actually-drive-performance*

Harjoto, M. A., & Jo, H. (2011). Corporate governance and CSR nexus. Journal of business ethics, 100(1), 45-67. DOI: 10.1007/s10551-011-0772-6.

Hartzell, J. C., & Starks, L. T. (2003). Institutional investors and executive compensation. *The journal of finance*, 58(6), 2351-2374. DOI: 10.1046/j.1540-6261.2003.00608.x

Hill, C. W., & Jones, T. M. (1992). Stakeholder-agency theory. Journal of management studies, 29(2), 131-154. DOI: 10.1111/j.1467-6486.1992.tb00657.x

Hong, B., Li, Z., & Minor, D. (2016). Corporate governance and executive compensation for corporate social responsibility. *Journal of Business Ethics*, 136(1), 199-213. DOI: 10.1007/s10551-015-2962-0.

Hooghiemstra, R., Hermes, N., Oxelheim, L., and Randøy, T. (2019). Strangers on the board: The impact of board internationalization on earnings management of Nordic firms. *International Business Review*, *28*(1), pp. 119–134. DOI: 10.1016/j.ibusrev.2018.08.007

Huang. (2021). Environmental, social and governance (ESG) activity and firm performance: a review and consolidation. *Accounting and Finance* (Parkville), 61(1), 335–360, DOI: 10.1111/acfi.12569

Jain, T., & Jamali, D. (2016). Looking inside the black box: The effect of corporate governance on corporate social responsibility. *Corporate governance: an international review*, 24(3), 253-273. DOI: 10.1111/corg.12154

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of financial economics*, 3(4), 305-360, DOI: 10.1016/0304-405X(76)90026-X

Jensen, & Murphy, K. J. (1990). Performance Pay and Top-Management Incentives. *The Journal of Political Economy*, 98(2), 225–264. DOI: 10.1086/261677

Jonsson, C. (2021, March 3). Gardell kräver ESG-mål i ledningars incitamentsprogram. *Realtid Finans*. https://www.realtid.se/gardell-kraver-esg-mal-i-ledningars-incitamentsprogram/

Larimo, J. (2003). Form of investment by Nordic firms in world markets. *Journal of Business Research*, *56*(10), pp. 791–803. DOI:10.1016/S0148-2963(02)00467-8

Maas, K., & Rosendaal, S. (2016). Sustainability targets in executive remuneration: Targets, time frame, country and sector specification. *Business Strategy and the Environment*, *25*(6), 390-401. DOI: 10.1002/bse.1880

Miles, S. (2012). Stakeholder: essentially contested or just confused?. *Journal of business ethics*, 108(3), 285-298, DOI: 10.1007/s10551-011-1090-8

OECD (2011). *Board Practices: Incentives and Governing Risks.* (1. Aufl). Paris: OECD Paris. DOI: 10.1787/20776535

Oh, W. Y., Chang, Y. K., & Cheng, Z. (2016). When CEO career horizon problems matter for corporate social responsibility: The moderating roles of industry-level discretion and block holder ownership. *Journal of Business Ethics*, 133(2), 279–291. DOI: 10.1007/s10551-014-2397-z

Oh, W. Y., Chang, Y. K., & Martynov, A. (2011). The effect of ownership structure on corporate social responsibility: Empirical evidence from Korea. *Journal of business ethics*, 104(2), 283-297. DOI: 10.1007/s10551-011-0912-z

Preston, L. E., & O'bannon, D. P. (1997). The corporate social-financial performance relationship: A typology and analysis. *Business & Society*, 36(4), 419-429. DOI: 10.1177%2F000765039703600406

PwC. (2022). *Purpose driven leadership: the evolving role of ESG metrics in executive compensation plans*. (Governance Insights Center ESG Series). https://www.pwc.com/us/en/governance-insights-center/publications/assets/pwc-esg-metrics-in-executive-compensation-plans.pdf

Refinitiv. (2020, May 19). *Refinitiv Perspectives LIVE - ESG Investment, a cure all for Asset Management?* [Video]. YouTube. https://youtu.be/B6J_rT4UYCo

S&P Global. (2021, August 7). Definitions for owner types in ownership data https://spglobal.force.com/s/article/10005332

S&P Global. (2020, October 30). Definition for strategic ownertypes https://spglobal.force.com/s/article/10005334

Sahut, J. M., & Pasquini-Descomps, H. (2015). ESG impact on market performance of firms: International Evidence. *Management International/International Management/Gestiòn Internacional*, *19*(2), 40-63. DOI: 10.7202/1030386ar

Said, A. A., HassabElnaby, H. R., & Wier, B. (2003). An empirical investigation of the performance consequences of nonfinancial measures. *Journal of management accounting research*, 15(1), 193-223, DOI: 10.2308/jmar.2003.15.1.193

Schwerdt, G., & Woessmann, L. (2020). Empirical methods in the economics of education. *The Economics of Education*, 3-20, DOI: 10.1016/B978-0-12-815391-8.00001-X

Shleifer, A., & Vishny, R. W. (1986). Large shareholders and corporate control. *Journal of political economy*, 94(3, Part 1), 461-488. DOI: 10.1086/261385

Sigblad, A. (2021, October 29). Ersättningar kan kopplas till hållbarhet. *Finansliv*. https://www.finansliv.se/artikel/ersattningar-kan-kopplas-till-hallbarhet/

Sliwka, D. (2002). On the use of nonfinancial performance measures in management compensation. *Journal of Economics & Management Strategy*, 11(3), 487-511. DOI: 10.1111/j.1430-9134.2002.00487.x

Soliman. (2008). The Use of DuPont Analysis by Market Participants. *The Accounting Review*, 83(3), 823–853, DOI: 10.2308/accr.2008.83.3.823

Sommarlund, J. (2021, December 20). Svenska bolag riskerar väljas bort av internationella investerare. *Realtid finans*. https://www.realtid.se/debatt/svenska-bolag-riskerar-valjas-bort-av-internationella-investerare/.

Wallace, J. S. (1997). Adopting residual income-based compensation plans: Do you get what you pay for?. *Journal of Accounting and Economics*, 24(3), 275-300, DOI: 10.1016/S0165-4101(98)00009-3

Wang, J., & Coffey, B. S. (1992). Board composition and corporate philanthropy. *Journal of business Ethics*, *11*(10), 771-778, DOI: 10.1007/BF00872309

Wills Towers Watson [WTW]. (2020, December 9). *4 in 5 companies planning to change ESG measures in executive pay plans over next 3 years*, Willis Towers Watson survey finds. https://www.wtwco.com/en-GB/News/2020/12/4-in-5-companies-planning-to-change-esg-measures-in-executive-pay-plans-over-next-3-years-wtw-survey

Winschel, J. (2022). Mapping the determinants of carbon-related CEO compensation: a multilevel approach. *Society and Business Review*, 17(2), 160–195, DOI: 10.1108/SBR-06-2021-0085

Zajac, E. J., & Westphal, J. D. (1994). The costs and benefits of managerial incentives and monitoring in large US corporations: When is more not better?. *Strategic management journal*, 15(S1), 121-142, DOI: 10.1002/smj.4250150909

Zaman, R., Farooq, M. B., Khalid, F., & Mahmood, Z. (2021). Examining the extent of and determinants for sustainability assurance quality: The role of audit committees. *Business Strategy and the Environment*, *30*(7), 2887-2906, DOI: 10.1002/bse.2777

9. Appendices

9.1. Descriptive information of dataset

Table A.1. Descriptive data of sample set

	Determinants	**Impact on Stakeholder return**
Variables	**Share of sample**	**Share of sample**
Industry		
Consumer Services	6.23%	8.54%
Consumer Discretionary	8.39%	5.49%
Consumer Staples	5.66%	3.61%
Energy	5.66%	1.74%
Financials	12.95%	13.89%
Health Care	11.24%	13.06%
Industrials	27.68%	28.96%
Information Technology	7.29%	5.90%
Materials	9.72%	13.75%
Real Estate	4.14%	5.07%
Utilities	1.06%	-
Share of sample that had ESG-linkage by year		
2005	2.15%	-
2006	4.17%	-
2007	11.11%	6.15%
2008	14.0%	10.45%
2009	17.65%	14.71%
2010	20.56%	18.57%
2011	26.17%	22.86%
2012	28.70%	26.39%

2013	29.09%	27.40%
2014	26.09%	23.68%
2015	27.56%	28.40%
2016	26.52%	26.51%
2017	23.97%	21.36%
2018	17.74%	19.05%
2019	29.66%	47.62%
2020	32.53%	47.62%
2021	43.42%	48.21%
Country of HQ		
Denmark	17.51%	22.43%
Finland	18.77%	22.43%
Iceland	0.35%	-
Norway	17.78%	11.25%
Sweden	50.58%	43.89%

9.2. OLS assumptions test

9.2.1. Heteroskedasticity test for DiD regression

One of the assumptions in an OLS regression, such as DiD regression, is that the dataset is homoscedastic. We tested for this assumption using a Breuch-Pagan test, which is seen in table A.2. For the Breuch-Pagan test, we used the I.i.d. option to obtain a version of the test that does not assume normally distributed errors. The test showed a statistically significance at the 0.0001 level, meaning that our data contains heteroskedastic standard errors.

Table A.2. Breuch-Pagan test for heteroskedasticity.

Variable: Fitted values of ROE (w1)	
Chi2(1)	45.76
Prob > chi2	0.0000
Assumption:	i.i.d error terms

We further conducted a graph to see how the residuals behaved after being treated using robust standard errors. As seen in figure A.1, using robust standard error adjustment.

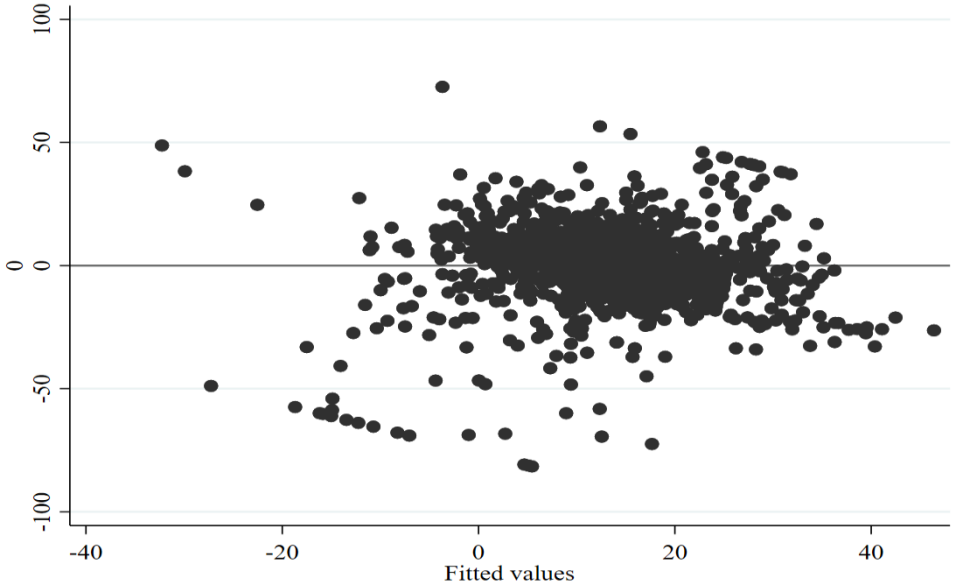

Figure A.1. Scatter chart plot of the residuals against the fitted values from our main DiD regression

9.2.2. Robust standard error correction

Due to the heteroskedasticity in our dataset, we need to use robust standard error. There are multiple ways to assess robust standard errors, in which heteroskedasticity-robust standard errors and firm cluster-robust standard errors are common ways (Cameron & Trivedi, 2010). In the DiD regressions, we have used the heteroskedasticity-robust standard errors as it is better at explaining the model. As seen in table A.3, R-squared is

higher when using the heteroskedasticity-robust standard error instead of the cluster-robust standard error.

Table A.3. Main DiD-regression model comparison of two different standard error methods

Robust standard error method comparison		
	Heteroskedasticity-robust	Firm cluster-robust
	Coefficient	Coefficient
Post Link	-2.626** (-2.046)	-1.624 (-1.141)
Post Link x Treatment Firm	3.192** (2.461)	3.621**
Size (ln)	-1.195 (-0.644)	-0.839 (-0.372)
D/E % (w1)	-0.008 (-0.689)	-0.013 (-1.019)
Asset Turnover % (w1)	26.422*** (7.907)	24.571*** (5.199)
Asset Growth (w1)	0.103*** (5.108)	0.107*** (4.810)
Constant	2.018 (0.121)	0.114 (0.005)
Controlled for Firm & industry-year effects	YES	YES
R-squared	72.66%	68.52%
Adjusted R-squared	65.76%	64.75%
Number of observations	1,431	1,440

Note: Significance-levels are illustrated as *** p<0.01, ** p<0.05

The table also show robustness to our result, as it yields similar results using both methods of controlling for heteroskedasticity.

9.2.3. Normality of residuals

To make sure that our model was valid, we also tested for the normality of residuals. As seen in figure A.2, the residuals used in the DiD regressions are normally distributed and the assumption of normality is confirmed.

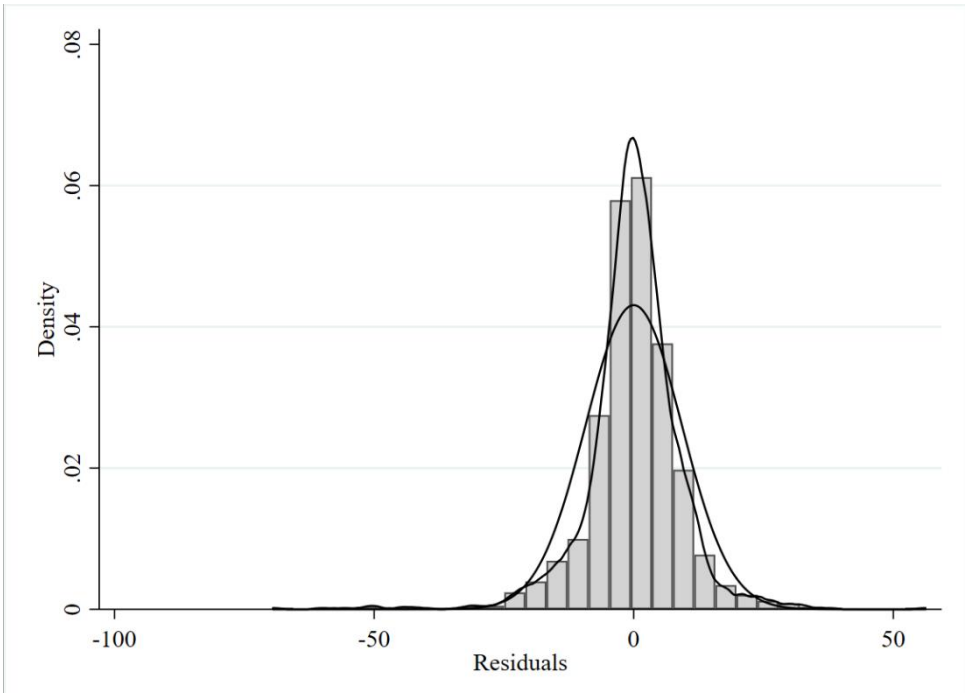

Figure A.2. Histogram of residuals using the Heteroskedasticity-robust standard error method.

9.2.4. Hausman test for DiD regression

The DiD-regressions used in this study uses fixed effect estimates to control for firm and industry-year effects. The decision was made by testing the model via a Hausman-test, which concluded the use of fixed effects in the model.

Table A.4. Durbin-Wu-Hausman test for fixed effect.

	Coefficients			
	(b) fe	**(B) re**	**(b-B) Difference**	**sqrt(diag(V_b-V_B)) Std. err.**
PostLink	-2.626**	-2.749***	0.123	0.871
PostLink x Treatment Firm	3.192**	3.971***	--0.779	0.203
Size (ln)	-1.195	3.143***	-4.339	0.847
D/E % (w1)	-0.008	-0.012*	0.004	0.003
Asset turnover % (w1)	26.422***	21.658***	4.764	1.234
Asset Growth (w1)	0.103***	0.102***	0.001	0.006

b = Consistent under H0 and Ha; obtained from xtreg

B = Inconsistent under Ha, efficient under H0; obtained from xtreg

Test of H0: Difference in coefficients not systematic

Chi2(6) = (b-B) ' [(V_b-V_B)^(-1)] (b-B)

= **76.61**

Prob > chi2= **0.0000**

Note: Significance-levels are illustrated aa *** p<0.01, ** p<0.05, * p<0.1

As seen in table A.4, our main results are still present, even when controlling for random effects, which confirm the robustness of our results.

9.3. Reference list for appendices

Cameron, A.C., & Trivedi, P. K. (2010). *Microeconometrics using Stata* (Rev. ed.). Stata Press.