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The effect of ESG-linked compensation on firms' ESG performance

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Abstract

This study examines the effect of having an ESG-linked compensation plan on ESG performance. In addition to that, board characteristics effect on linking ESG metrics to CEO compensation plans have been examined. Based on previous research, agency theory and corporate governance characteristics, two hypotheses were developed which posits that having an ESG-linked compensation plan would improve ESG performance and that board characteristics would increase the probability of setting an ESG-linked compensation. Applying a pooled OLS regression model and a logistic model to our sample of 411 firm-year observations of Swedish listed firms from 2019 to 2021 the two hypotheses were confirmed. The results suggest that ESG performance is improved by having an ESG-linked compensation contract. Furthermore, board characteristics influence the setting of ESG-linked compensation where board cultural diversity, board size and two-tier board structure has a positive relationship with the setting of ESG-linked compensation.

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1. Introduction

1.1 Background

Environmental, social, and corporate governance (ESG) is a concept and guideline which was extended from CSR (corporate social responsibility) and can be implemented into an organization's strategy and operation, considering not only shareholders value but also stakeholders' benefits. It became popular in 2004 through a report "Who Cares Wins" and became the fundamental action for large companies in the EU during the last twenty years (UN Environment Programme, 2004). CSR and ESG are similar in many ways but differ in that ESG incorporates governance explicitly whereas CSR includes it implicitly. Both terms are concerned about the impact firms have on the environment and society thus for the remainder of this paper the terms will be used interchangeably (Chang et al., 2022). Based on different stages, the problems of applying ESG are quite different. On December 6th in 2022, PwC published their survey which is subjected to the CEO's dilemma, aligning investors' expectations with ESG strategy (Gassmann & Jackson-Moore, 2022). The survey displayed that more and more companies emphasize the ESG standards. However, 81% of the interviewers who are companies' shareholders stated that they hope they would suffer less than one percent profit loss when there is a contribution for the reduction of pollution and better governance (Gassmann & Jackson-Moore, 2022).

Firms have increasingly started to link its ESG performance with the compensation of the CEO. With more than half of the S&P 500 companies linking its compensation to ESG metrics. In 2020 this number rose from 66% to 73% in 2021, showcasing its popularity and relevance (Spierings, 2022). Furthermore, 45% of the FTSE 100 companies have an ESG metric in their compensation contracts (Gosling & O'Connor, 2021). Meanwhile, according to Jang et al. (2022), PwC's survey in 2021 showed that 68% of interviewers held that CEO's compensation should reflect the KPIs and targets to some extent. However, there are still concerns about whether this linkage is helpful or not both from the perspective of shareholder welfare and stakeholder welfare (Spierings, 2022; Gosling & O'Connor, 2021). Such a fact not only reflects the importance of ESG, but also reflects the dilemma of the CEO who should align the performance with shareholders and stakeholders at the same time.

Executive compensation has traditionally been seen as incentivizing and linking executives' performance with that of shareholders' wishes, deriving from the principal agency theory (Deckop et al., 2006). With new challenges arising in the world, new challenges to firms also come up. Previously financial performance was more important as that is what shareholders wanted, to maximize returns (Park et al., 2019). Society has put more demands on firms to act in the interest of society and not only be self-serving but also address the problems in the world, both social and environmental. This would in turn suggest that executive compensation should be linked to ESG metrics, the same way financial metrics are linked to compensation plans (Gosling & O'Connor, 2021). Since the late 90s there has been a rise in non-financial metrics being used in measuring CEO's performance (Ittner et al., 1997). CEO compensation contracts normally consist of a base salary, a bonus and a long term pay (which can be stock based or option based) (Conyon et al., 2000). The bonus is where performance metrics are normally set which can either be of financial or nonfinancial nature such as operating results or customer satisfaction. Linking ESG performance with the compensation contracts of executives has been seen as either bringing on agency cost or as a way of improving shareholder welfare and stakeholder welfare (Hong et al., 2016; Ikram et al., 2019).

ESG linked compensation contracts have been offered in a way for companies to strengthen their social standing as can be explained by different institutional theories such as legitimacy theory (Ikram et al, 2019). Furthermore, firms with better corporate governance have a higher likelihood of providing ESG linked compensation contracts, indicating corporate governance being a determinant as to why firms offer compensation contracts with ESG targets (Hong et al, 2016). Thus, integrating ESG targets into compensation contracts is a way for firms to improve their governance by complying with shareholders and stakeholders wishes.

1.2 Problem area and motivation for the study

Firms with better governance have shown to have a higher likelihood of granting CSR linked compensation plans to executives which Ikram et al. (2019) suggests is a way for firms to signal their good behavior to stakeholders. The CSR performance of firms that grant these CSR linked compensation plans also increase which Ikram et al. (2019) points out is a way for firms to satisfy their stakeholders as well as to increase the firm's value for shareholders.

In tune with Ikram et al. (2019), Hong et al. (2016) finds no link between agency cost and CSR activities thus showing evidence that linking CSR metrics to compensation is not an act of executives using CSR contracting for their own benefit at the cost of shareholders. Rather CSR based compensation contracts are used to incentivize management to engage in CSR activities since engaging in CSR gives economic returns to shareholders. Hong et al. (2016) find evidence that in firms with better corporate governance, there is a higher likelihood to find compensation contracts linked to CSR. Due to this finding Hong et al. (2016) suggests that firms do gain economic benefits from CSR activities. Thus, shareholder value is improved. Hong et al. (2016) also find that CSR performance is improved for firms with compensation contracts linked to CSR targets.

Flammer et al. (2019) find that firms where executives are compensated based on CSR metrics (CSR contracting firms) show an increase in firm value and long-term thinking of the firm. Better CSR performance is also documented. This supports the argument that by linking compensation contracts with CSR, executives are incentivized to think long-term, enabling reaching CSR targets in the future since reaching such kinds of goals takes time. It also incentivizes executives to focus on stakeholders that are less salient as compared to customers and employees, thus creating long-term value for the firm (Flammer et al., 2019). CSR contracting leads to improved governance by adopting a long-term thinking which in turn benefits shareholders and stakeholders (Flammer et al., 2019). However, Maas (2018) found that including CSR targets in compensation plans does not improve or lead to better CSR performance which in turn does not improve stakeholder welfare. Furthermore, Cavaco et al. (2020) found that CSR contracting improves CSR performance. Khenissi et al. (2022) find similar results in a France setting.

Previous studies show that ESG-linked compensation plans affect the welfare for stakeholders through ESG performance, but the results are mixed. There is conflicting evidence regarding ESG performance which relates to stakeholder welfare. Studies have so far been done primarily in a US context with few done in Europe (Khenissi et al. 2022). Majority of studies were conducted on S&P 500 firms which are all larger companies in the USA, thus there is a gap of knowledge on smaller European enterprises, specifically Swedish ones. Focusing on Swedish listed firms gives a new context of looking at smaller corporations compared to S&P 500 firms, where the corporate governance is expected to be

different, for example, Swedish companies have some of the highest private share ownership in the world whereas American firms have some of the highest institutional investors ownership (Carlsson, 2007; Lessambo, 2014). Furthermore, examining companies' ESG linked compensation plans gives new insights into what incentivizes executives and if this has an effect on stakeholders in terms of ESG performance which is a relatively under researched area. In addition, the ESG's measurability has been applied by most companies, indicating a new perspective can be dug into based on the foundation of ESG linked compensation.

1.3 Purpose of the study

The purpose of this study is to examine if ESG-linked compensation contracts improve firms' ESG performance. Furthermore, we will examine which types of board characteristics are more likely to increase the setting of ESG-linked compensation contracts.

2. Theoretical section

2.1 Corporate governance

Corporate governance maps out how a firm is to be managed, directed and controlled. It is a mechanism for shareholders to control and monitor the actions of managers that have been delegated the authority to make decisions for the shareholders that are in the best interest of the firm. As Zaman et al. (2022, p.692) state, corporate governance is the "rules that provide a formal structure to the relationship among boards of directors, shareholders, and managers with a view to resolve assumed agency conflicts between principals and agents". This notion indicates the better the quality of corporate governance is the better the outcome for shareholders and stakeholders is.

It has previously been shown that firms with better corporate governance have a higher likelihood of providing ESG-linked compensation contracts (Hong et al., 2016; Flammer et al., 2019; Ikram et al., 2019). Indicating corporate governance being a determinant as to whether firms will compensate CEOs on their ESG engagement and whether this will lead to better ESG performance. Previous research has shown that firms with better corporate governance also have better ESG performance (Hong et al., 2016; Flammer et al., 2019; Ikram et al., 2019). By providing ESG-linked compensation contracts, the firm improves their corporate governance by guiding its management to handle stakeholders that aren't prominent but still important for the firm's long term survival (Flammer et al. 2019). ESG-linked compensation is another way for the firm (board of directors) to guide the CEO and management to act in the interest of shareholders and stakeholders, hence improving the value for both.

Shareholder theory of corporate governance and stakeholder theory of corporate governance are theories that can explain the reasons why ESG-linked compensation exists and help predict the outcome (Ikram et al., 2019). From the shareholder theory of corporate governance, ESG linked compensation can induce management to think long term as the compensation contract is not only based on financial metrics which can create a short-term focus as financial performance measures usually have a short time horizon compared to non-financial measures. Similarly, stakeholder theory of corporate governance focuses on long-term thinking, the difference however lies in the end-goal of providing an ESG linked

compensation contract. Shareholder theory states that it is the wealth maximization of shareholders that is the goal of offering an ESG-linked compensation whereas stakeholder theory states that providing value for all stakeholders is the goal (Ikram et al., 2019).

Linking ESG metrics to the compensation of the CEO is a way for the firm to have better ESG performance (Cavaco et al. 2020; Hong et al. 2016; Ikram et al. 2019; Flammer et al. 2019). This satisfies stakeholders which can hold on to important resources for the firm's survival. Firms have increasingly started to link the compensation contract to various ESG metrics in recent years indicating the firm sees that satisfying stakeholders brings value to the firm which in turn satisfies shareholders (Spierings, 2022; Gosling & O'Connor, 2021). Thus, using ESG metrics in the compensation contract is a way to govern the CEO to bring value to both shareholders and stakeholders through improving the ESG performance.

Board characteristics such as board size and diversity of the board have shown to be important factors in the degree of ESG disclosures by S&P 500 firms (Tamimi & Sebastianelli, 2017). It has been reported that larger boards and boards with a higher percentage of women have higher ESG disclosure scores (Tamimi & Sebastianelli, 2017). A higher ESG disclosure score indicates better ESG performance as firms are more willing to be transparent about their ESG performance. Having a more gender diverse board has shown to increase ESG performance for companies in Germany and Austria (Velte, 2016). By having more women on the board the firm has different resources and ideas it can use to improve the decision making (Velte, 2016). However, the improvement in ESG performance can differ depending on if it is social or environmental performance as shown by Alazzani et al. (2017) where they found that gender diversity only had a positive association with social performance whereas no association was found between environmental performance and having women on the board. As with board gender diversity, board cultural diversity has shown to be a positive force on ESG performance (Martínez-Ferrero et al., 2021). By having more board members with a cultural background that differs from that of the corporate headquarters, firms can achieve greater ESG performance as the board will be influenced by different values and viewpoints. Furthermore, having people with different values and viewpoints can be useful in dealing with sustainability issues in different markets (Martínez-Ferrero et al., 2021).

Having a higher degree of board independence, that is having more independent directors on the board has shown to positively affect CSR disclosure. This is due to the belief deriving from agency theory that independent directors are more effective in their monitoring and controlling (Jizi et al., 2014). Furthermore, the opportunism of the CEO will be reduced by having independent board members. Therefore, the coordination of the relationship between stakeholder welfare, shareholder welfare and CEO's private motivation may be strengthened by having an independent board member (Calderón et al., 2020).

CSR disclosures are also positively affected by board size. The bigger the board the better the monitoring as the workload is spread over more people and there is more resources and expertise available (Jizi et al., 2014). These results indicate that the board of directors affect the degree of CSR disclosures made by firms which in turn could mean that their ESG performance or ESG score is better as firms that disclose more CSR related information have better CSR performance overall (Koh et al., 2023).

There are three different types of board structure types according to Refinitv Eikon which are; unitary, two-tier and mixed board. Under the unitary model the board of directors and management sit in the same panel/committee where the responsibilities are shared. Under the two-tier model the board of directors and management are seated separately. There are two boards where each group has their own responsibilities, for example, the board of directors (supervisory board) are responsible for policymaking while management (executive board) is responsible for management duties (Krivogorsky, 2006; Jouber, 2021). With a mixed board there is an executive board and a supervisory board the same as the two-tier model but employee representatives, shareholder representatives and external auditors are included to improve communication. Sweden is characterized by having a board structure of the one-tier model (Velte, 2023). To the best of our knowledge no study has been done on the effect of board structure type on ESG performance however one related study found that the level of integrated reports' alignment is higher for board structure types two-tier and mixed compared to unitary type (Tiron-Tudor et al., 2020). This may be due to the inclusion of stakeholders that is possible under a two-tier and mixed board structure.

2.2 Hypothesis development

Since 2014 the EU mandates big firms to apply ESG standards (Directive 2014/95/EU), and more and more shareholders of big companies begin to demand the implementation of ESG in their daily operation. The mandatory requirement will affect the large companies' legitimization which may link to the companies' survival. Hence, the shareholders of companies would accept such short-term costs in order to survive in the market. However, such transformation may influence shareholders' goal, who may tend to balance the financial and non-financial interest. According to this, the role of CEO may have a conflict with shareholders due to different goals. Based on principal agent theory, the management (agent) has been empowered by shareholders (principal) through compensation contracts, aligning the management devotion with shareholders' value-maximize the firm value (Jensen & Meckling, 1976). Due to this reason, the compensation related to ESG targets could be an effective incentive for the CEO to carry out relative tasks which may align the financial and non-financial interests with shareholders' expectation (Homroy et al., 2022).

Having ESG metrics linked to CEO compensation can constitute optimal contracting as it can create long term value creation by having management focus on measures that are not only financial and short term but also non-financial and long term (Ikram et al., 2019). By introducing ESG metrics in the compensation contract, management can be incentivized to think long term as ESG engagement results are often seen in the future. Furthermore, the CSR ratings of firms increases after providing an ESG-linked CEO compensation, indicating ESG performance will improve with the setting of ESG-linked compensation (Ikram et al., 2019).

Stakeholder theory of corporate governance similarly to shareholder theory of corporate governance focuses on long term value creation but with stakeholder theory, the needs of stakeholders such as employees, customers and suppliers are considered not only shareholders. Thus, this implies that by linking ESG to compensation it would improve ESG performance and CEOs would achieve ESG targets which previous studies have shown (Cavaco et al., 2020; Hong et al., 2016; Ikram et al., 2019; Flammer et al., 2019). Tamimi & Sebastianelli (2017) found that firms that have their executive compensation linked to ESG scores have higher ESG scores. In addition, the CEO's compensation partly originates from the equity price of the firms, indicating that if the market participants recognize the

importance of ESG's production, they will raise the price of stock to reward CEOs who devote themselves to achieving ESG goals (Holmstrom, 1979; Walker, 2022). Based on that, the following hypothesis was developed for empirical test:

Hypothesis 1: Linking ESG metrics to CEO compensation would improve ESG performance.

Besides ESG performance, several previous studies have linked the issuance of ESG-linked compensation with the corporate governance of the firm. A handful of studies show the positive relationship between ESG-linked compensation and ESG performance. However, not all companies will get good results from ESG-linked compensation. According to Homroy et al. (2022), only in well governed companies do CEOs significantly achieve more ESG targets through ESG-linked compensation, compared with poor-governed companies. ESG-linked compensation contracts are also more likely to be provided in firms that have better corporate governance (Hong et al, 2016; Flammer et al., 2019, Ikram et al., 2019). Meanwhile, when ESG and wealth both can maximize shareholders' utility, boards are likely to introduce ESG-linked compensation to CEOs to let them balance the competing objectives (Benabou & Tirole, 2010; Hart & Zingales, 2017). Well-governed companies tend to set CEO compensation to align with shareholder' value (Kaplan, 2013; Bell & Van Reenen, 2016). Thus, the following hypothesis was developed for testing.

Hypothesis 2: Board characteristics are positively associated/related with the providence of ESG- linked compensation.

3. Data & Methodology

3.1 Sample Selection and Data Collection

This study focuses on Swedish listed firms from 2019 to 2021. This time period is selected since previous years either companies do not disclose information about their compensation to CEOs or the compensation plans do not include an ESG metric. The year 2022 is not included since company reports have not yet been published by the time data collection of this study had started. The samples are collected based on firms whose ESG score is available in Refinitiv Eikon during 2019 to 2021 and that have their headquarters located in Sweden. Refinitiv Eikon is a comprehensive database that contains financial and company data for over 180 countries where ESG data is present for over 80% of global market cap (Refinitiv Eikon, n.d.). From Refinitiv Eikon, there are 599 samples who have ESG scores during 2019-2021 which consists of small, mid and large companies.

The main research question focuses on companies who have an ESG-linked CEO compensation plan and whether they have better ESG performance. Hence, the key criteria of ESG-linked CEO compensation were collected from Nordic Compass, which was the main criteria in order to check and validate the number of companies who have an ESG-linked CEO compensation plan downloaded from Refinitiv Eikon (Nordic Compass, 2022). Nordic Compass provides information on ESG data by publicly traded large- and mid-cap Nordic companies, which is collected by the Swedish House of Finance from Stockholm School of Economics. The dataset consists of large-cap and mid-cap companies from NASDAQ-OMX Nordic exchange. In the database there is information on firms that have their environmental and social performance (ES-linked executive compensation) linked to CEOs compensation, which is where the sample is merged with the sample from Refinitiv Eikon which results in 599 data points.

Thereafter the firms are controlled manually by looking at their annual report, sustainability report, remuneration report and website to see if ESG metrics are mentioned in the CEO remuneration report. This is done to ensure that ESG metrics are present in CEOs compensation plan, as some firms do not report the weight of the ESG metric which could mean that the CEOs performance is not valued by their ESG metrics. This results in 188 samples being excluded. We then merge the sample from Refinitiv Eikon with Nordic

Compass so that they match, i.e. make sure that the observations from the Nordic Compass database have ESG scores from Refinitiv Eikon. This resulted in 599 firm-year observations being available. Thereafter 188 samples are excluded due to duplication of observations and due to manually checking the firms' reports. The final number of samples is 411 firm-year observations (173 firms). The selection process can be seen in table 1.

Table 1: Sample Selection

Sample Selection	
Samples have ESG score from Refinitiv EIkon	599
ES-linked executive compensation from Nordic Compass	138
WIthout ES-linked executive compensation from Nordic Compass	484
Merging samples of ES-linked executive compensation with ESG score's	599
ESG-linked CEO compensation samples(manually checking annual report)	134
Without ESG-linked CEO compensation samples(manually checking annual report)	295
Merging	429
Duplication reduction	-18
Final Sample	**411**

ESG scores are collected from Refinitiv Eikon which will be used as a proxy for ESG performance. The ESG scores can range from 0 to 100 which display the firms ESG performance and their transparency in reporting their ESG data (Refinitiv, May 2022). Where a score of 0 indicates poor ESG performance and low level of transparency regarding publishing ESG data whereas a score of 100 indicates outstanding ESG performance and a high level of transparency in publishing ESG data. Refinitiv Eikon names firms with high scores - ESG leaders, while those with low scores - ESG laggards. Refinitiv Eikons ESG scores have previously been used in several ESG related papers see for example, HomRoy et al. (2022), Khenissi et al. (2022), Ben Fatma & Chouaibi (2021), Martínez-Ferrero et al. (2021).

Control variables RoA, foreign sales, firm size and Tobin's Q are collected from S&P Capital IQ. Financial ratio (RoA) is collected through S&P Capital IQ Excel plug-in. Foreign sales, firm size and Tobin's Q are calculated by collecting data of segment revenue, total revenue, total assets, current liabilities, long-term debt and total equity from Capital IQ Excel plug-in.

Furthermore, according to the second hypothesis, to measure the relationship between ESG-linked CEO compensation and corporate governance, several perspectives are collected, such as board gender diversity, board size, board cultural diversity, board member affiliations and

board structure type from Refinitiv Eikon (HomeRoy et al., 2022). This information is collected to measure which kind of characteristics in corporate governance would influence the application of ESG-linked CEO compensation.

As for the industry classification of the sample firms, we follow the global industry classification standard (GICS), using sector as the basic criteria to count. Global industry classification is a common standard in the world, which is a four-tiered, hierarchical industry classification system (GICS®, 2023). It consists of 11 sectors, 24 industry groups, 69 industries and 158 sub-industries (GICS®, 2023). Due to the limited number (411) of samples we collected, it is suitable for this paper to use sector as industry classification. For different sectors, there are specific codes to distinguish. According to the order of the codes, the starting number is 10, which represents the energy sector industry. Then adding each 5 based on the previous number means the new industry. Hence, the industry range from 10 to 60, which consists of energy, materials, industrials, consumer discretionary, consumer staples, healthcare, financials, information technology, communication services, utilities and real estate. After searching sector information by S&P Capital IQ, the 411 samples are categorized into 10 industries except the utilities sector industry.

3.2 Variable Selection

3.2.1 Dependant variables

To answer the first hypothesis "Linking ESG to CEO compensation would improve ESG performance", the dependent variable will be Refinitiv Eikon's ESG score which will be a proxy for ESG performance. Refinitiv Eikons ESG score is an overall company score based on the reported information in the environmental, social and corporate governance pillars (ESG) with an ESG Controversies overlay, where the score can range from 0 to 100. (Refinitiv, May 2022). This score has been previously used in several different ESG related papers for example, HomRoy et al. (2022), Khenissi et al. (2022), Ben Fatma & Chouaibi (2021), Martínez-Ferrero et al. (2021).

To answer the second hypothesis "Board characteristics have a positive relationship with the providence of ESG-linked compensation". the dependent variable will be a dummy variable

for ESG-linked CEO compensation. 1 will be given to firms with ESG linked compensation and a 0 to firms that do not have it.

3.2.2 Independent variables

The independent variable for the first hypothesis will be whether a firm-year observation has an ESG-linked CEO compensation plan in place or not. Therefore, this variable is a dummy variable where 0 represents firms who do not set ESG-linked CEO compensation; 1 represents firms who set ESG-linked CEO compensation. This is to test the relationship between ESG scores and ESG-linked CEO compensation (Al-Shaer et al., 2023).

For the second hypothesis the independent variables will be several board characteristics to test which board characteristics are positively related to the providence of ESG-linked CEO compensation. These are presented below:

Board Gender Diversity is defined as the percentage of women on the board. This board characteristic has shown to be positively related to higher ESG performance in the way of firms with more women on the board having a higher ESG disclosure score (Tamimi & Sebastianelli, 2017), thus it can be expected that firms with more women on the board are more likely to provide an ESG-linked CEO compensation as a way of improving their ESG performance (Velte, 2016).

Board Member Affiliation is defined as the average number of other corporate affiliations for the board member. CSR disclosures and having a higher proportion of the board that are independent directors are positively related (Jizi et al., 2014). Thus, with higher board independence the firms are more likely to provide ESG-linked CEO compensation because agency theory holds that independent directors are more effective at monitoring and controlling which can be strengthened by incorporating ESG metrics in the compensation plan (Jizi et al., 2014).

Board Size is defined as the total number of board members at the end of the fiscal year. Board size has previously been shown to positively affect ESG disclosure score (Tamimi & Sebastianelli, 2017; Jizi et al., 2014). Having higher ESG disclosure indicates better ESG

performance. Lager board size indicates better monitoring of management which can further be improved by including ESG metrics in the compensation plan (Jizi et al., 2014).

Board Cultural Diversity is defined as the percentage of board members that have a cultural background different from the corporate headquarters (Refinitiv Eikon database, 2023). However, due to limited firms having a broad cultural diversity score, we decided to use a dummy variable. If a firm's board cultural diversity score is available on Refinitiv Eikon, it is given 1, otherwise 0. Thus, the dummy variable 1 displays a board that has board members that have a cultural background different from the corporate headquarters which is Sweden and 0 will display boards that only have board members from Sweden. Board cultural diversity has previously been shown to improve ESG performance (Martínez-Ferrero et al., 2021). Having board members with different viewpoints and values can increase the providence of ESG-linked CEO compensation as a result of wanting to improve the governance of the firm (Flammer et al., 2019).

Board Structure Type is classified into three different categories, unitary, two-tier and mixed board according to the Refinitiv Eikon database (2023). Unitary is defined as a board structure where only one board exists i.e., the executive director board. Two-tier is defined as a board structure where two separate boards exist i.e., supervisory board and executive board. Mixed board is defined as a board structure where two separate boards exist but also employee representatives, shareholder representatives and external auditors are induced. All board types above are dummy variables. To the best of our knowledge no previous study has been done on the effect of board structure type on either ESG performance or ESG-linked CEO compensation thus it will be interesting to test this relationship here.

3.2.3 Control variables

In order to control for extraneous influence on the outcome a set of control variables have been selected for both of the hypotheses. For the first hypothesis the control variables are board characteristics which are already defined in the previous chapter and firm characteristics which will be presented below. For the second hypothesis the control variables are firm characteristics which will be presented below:

Return on Assets (RoA) is measured by net income before extraordinary items divided by total assets, which could give an insight of efficiency of assets as a representation of CEO's KPI. This variable has been used in previous similar studies, for example Flammer et al. (2019) and Maas (2018). It can be expected that a profitability measure can have an effect on the ESG performance (Maas, 2018) and the adoption of ESG-linked CEO compensation contracts (Flammer et al., 2019).

Firm Size is measured by the natural logarithm of total assets. Firm size could be one important factor affecting ESG performance since large firms will suffer greater pressure to be more transparent (Tamimi and Sebastanelli, 2017). Furthermore, firm size has been used in previous similar studies for example Maas (2018), Flammer et al. (2019) and Ikram et al. (2019) where the authors expect that firm size will have an effect on ESG performance and the adoption of ESG-linked CEO compensation contracts.

Foreign Sales is measured by the percentage of international sales of total sales. Foreign sales tend to attract different parties to monitor the firm's management, which implies that high percentage of foreign sales tend to give a high quality of disclosure (Hu et al., 2010). Hence, the quality of ESG performance will improve as well.

Tobin's Q is calculated by dividing the sum of firm equity value, the book value of long-term debt and current liabilities by total assets. If the value of Tobin's Q is over 1, it indicates the stock value of the firm is overvalued. If not, it indicates the stock value of the firm is undervalued. Tobin's Q has shown to be an important variable in determining ESG-linked CEO compensation (Ikram et al., 2019).

Table 2: Definition of variables

Variables Definitions

Variables	Symbol	Definitions
Refinitiv ESG score	ESG score	Refinitiv ESG score is an overall company score based on reported information in the environmental, social and corporate governance pillars with an ESG Controversies overlay
ESG-linked CEO compensation	ESG-linked CEO compensation	A dummy variable, 0 represents firm who do not set ESG-linked CEO compensation; 1 represents firms who set ESG-linked CEO compensation
Firm Characterisitics		
Return on Asset	RoA	Measured by net income before extraordinary items divided by total assets
Firm Size	Firm Size	Measured by the natural logarithm of total assets
Foreign Sales	Foreign Sales(%)	Measured by the percentage of international sales of total sales
Tobin's Q	Tobin's Q	Calculated by dividing the sum of firm equity value, the book value of long-term debt and current liabilities by total assets
Board Characteristics		
Board Gender Diversity	Board Gender Diversity(%)	Percentage of women on the board.
Board Member Affiliations	Board Member Affiliations	Average number of other corporate affiliations for the board member
Board Size	Board Size	Total number of board members at the end of the fiscal year
Board Cultural Diversity	Board Cultural Deversity	Percentage of board members that have a cultural background different from the corporate headquarters. 1 represents firm who have a board memeber with different cultural background, otherwise 0
Board Structure Type		
Unitary	unitary	Executive director on board. If firm is categorized into unitary, it is given 1, otherwise 0.
Two-tier	two-tier	Supervisory board and executive board. If a firm is categorized into two-tier board structure type, it is given 1, otherwise 0
Mixed	mixed	Executive, supervisory board, employee representative, shareholder representatives, external auditors. If a firm is categorized into two-tier board structure type, it is given 1, otherwise 0

3.3 Research Design

In this study, the data is collected by year, firm and industry-three dimensions, indicating it is panel data. However, due to all firms not implementing ESG-linked CEO compensation every year, each year may observe a certain number of new firms. The data is unbalanced panel data. Based on this, for hypothesis 1, we decide to consider whether to conduct pooled OLS regression model or fixed effect model, examining the relationship between ESG score and ESG-linked CEO compensation, regarding the year effect and industry effect. According to Scarpioni (2018), when different samples come up with year increasing, it is better to use the pooled OLS regression model (Wooldridge, 2010). However, if among the different years, the same sample is observed continuously, it is better to use the Hausman test to check whether to use fixed effect model or random effect model (Wooldridge, 2010). Hence, we do the pooled OLS regression model at first. Then we built a fixed effect model as a comparison to see the results. After checking the R square for both models, the higher one will indicate which linear regression model is better, which resulted in using the pooled OLS regression.

According to Al-Shaer's study (2023), the authors used several different kinds of variables, aiming to examine the relationship between ESG-linked compensation of CEOs with ESG performance, for example, ESG-linked CEO compensation, firm size, financial ratios, foreign

sales and so forth. Furthermore, based on HomRoy et al. (2022), when the authors strived to examine the effect of ESG-linked CEO compensation on ESG performance, the independent variables were ESG-linked CEO compensation, board characteristics and CEO skill ability. The control variables were firm size, market-to-book ratio, leverage and R&D expenses and so forth. The design of the relationship between variables of previous studies inspires us to design our study to some extent.

In order to examine the relationship between ESG score and ESG-linked CEO compensation the dependent variable is Refinitiv Eikons ESG score which can range from 0 to 100. The independent variable is ESG-linked CEO compensation - a dummy variable. The control variables in hypothesis 1 will be examined by two approaches. First, RoA, firm size, foreign sales and Tobin's Q which belong to the firm characteristics are examined by pooled OLS regression model. In addition, the board characteristics will be the supplementary control variables, which build the second pooled OLS regression model with firm characteristics together. The board characteristics are used as control variables for one model and then removed from another to make comparisons and see if they have any effect on ESG performance (ESG score). Finally in the third pooled OLS regression model, propensity score matching is used. The equation for the model is presented below.

The equation:

$ESG\ Scores_{i,t} = \alpha + \beta_1 * ESG\text{-}linked\ CEO\ Compensation_{i,t} + \beta_2 * RoA_{i,t} + \beta_3 * Firm\ Size_{i,t} + \beta_4 * Foreign\ Sales_{i,t} + \beta_5 * Tobin's\ q_{i,t} + \beta_6 * Board\ Gender\ Diversity_{i,t} + \beta_7 * Board\ Member\ Affiliations_{i,t} + \beta_8 * Board\ Size_{i,t} + \beta_9 * Board\ Structure\ Type_{i,t} + \beta_{10} * Board\ Cultural\ Diversity_{i,t} + u_{i,t}$

where i = firm, t = year. *(1)*

As for hypothesis 2, the dependent variable ESG-linked CEO compensation is a dummy variable, which could be affected by the board characteristics and firm characteristics. Meanwhile, owing to predicting the odds of successfully setting ESG-linked CEO compensation, the logistic model and probit model could be good choices for us to build the model. Regarding the choice between logistic model or probit model, it is not so clear to make a selection. According to Mavruk (2020), generally the predicted categorical variable is determined by a latent discrete or continuous variable. Moreover, Rönkkö (2019) claims that

probit will be more accurate if the latent variable is normally distributed, as this is one of the assumptions behind the probit model. Therefore, this point could be a criteria to distinguish which model fits our research better. However, due to the latent variable being a dummy variable ESG-linked CEO compensation, the choice should better be a logistic model. Both models performed similarly hence the logistic model will be displayed in the results section and the probit model will be displayed in the appendix (5).

According to HomRoy et al. (2022), in order to test whether ESG-linked compensation is more significant in well-governed companies, several independent variables, such as board independence, employee representative, average director tenure, standard deviation of directors tenure, gender ratio and nationality mix were utilised. Hence, the independent variable for this study is board gender diversity(%), board member affiliations, board size, board cultural diversity(% score) and board structure. Meanwhile, the previous studies did not examine the board structure type effect on ESG-linked CEO compensation, most studies only used governance scores and the variables which have been chosen in Homroy et al. (2022) study to measure the relationship with ESG-linked CEO compensation. Therefore, it is a good opportunity for this paper to examine the effect of board structure type on firms to apply ESG-linked CEO compensation. Furthermore, in order to enhance the validity of the independent variables and dependent variables, the firm characteristics will be included as the control variables. Firm characteristics are RoA, firm size, Tobin's Q, foreign sales（Ikram et al., 2019). The equation for the logit model is presented below.

The equation:

$ESG\text{-}linked\ CEO\ Compensation_{i,t} = \alpha + \beta_1 * Board\ Gender\ Diversity_{i,t} + \beta_2 *$
$Board\ Member\ Affiliations_{i,t} + \beta_3 * Board\ Size_{i,t} + \beta_4 * Board\ Structure\ Type_{i,t} + \beta_5 *$
$Board\ Cultural\ Diversity_{i,t} + \beta_6 * RoA_{i,t} + \beta_7 * Firm\ Size_{i,t} + \beta_8 * Foreign\ Sales_{i,t} + \beta_9 *$
$Tobin's\ q_{i,t} + u_{i,t}$
where i = firm, t = year. *(2)*

Regarding the robustness test for hypothesis 1, we decided to use propensity score matching method. Generally, propensity score matching is a technique to let researchers observe the similar characteristics between treatment group and control group (Austin, 2010). The probability of propensity score can stimulate the random grouping which may alleviate the

problems of endogeneity brought up from bias of selection and variables omission (Zhang et al., 2022). According to the study of Ikram et al. (2019), the propensity score matching method is used to match the treatment firms (with CSR contracting) and control firms (without CSR contracting) who have similar CSR performance. Therefore, in this study, we decided to use ESG-linked CEO compensation as the treatment criteria to divide samples into the treatment samples and control samples. If the sample applies ESG-linked CEO compensation, the firm belongs to the treatment samples. If not, the firm belongs to the control ones. The match method we use nearest neighbour matching, which means we choose the closest ESG scores of each sample in the control samples in order to match the ESG scores of each treatment sample. Then observing whether the key criteria of ESG-linked CEO compensation and other control variables have a significant effect on ESG score. Considering the robustness test of the logistic regression model we first made a model without the firm characteristics as control variables which produced similar results as the final model with the control variables.

4. Results

4.1 Descriptive Statistics

Table 1 presents the industry distribution for the sample and whether the firm year observations had an ESG-linked CEO compensation or not. For example, in 2019 there were three firm year observations in the communication services industry that did not have an ESG-linked CEO compensation contract. Whereas in 2020 the industry had two firms that did not have ESG-linked CEO compensation contracts and two firms that did have it. The communication services industry thereby has 50% of its firm year observations with ESG-linked CEO compensation contracts in 2020. What can be observed is that firms with ESG-linked CEO compensation contracts increase each year indicating a trend in offering ESG-linked CEO compensation. The proportion of firms having ESG-linked CEO compensation contracts increases each year from 20.37 % of the firms in 2019 having in place such a plan to 36.15% in 2020 and lastly 36.99% in 2021, showcasing its rise in popularity.

Table 3: Industry and year distribution

This table presents the number of samples with or without ESG-linked CEO compensation based on the GICS sector industry classification and years. Total 10 industry sectors without utilities sector. The proportion column shows the percentage of samples who apply ESG-linked CEO compensation every year in total and in sectors.

Industry	2019			2020			2021		
	No	Yes	Proportion	No	Yes	Proportion	No	Yes	Proportion
Communication Services	3	0	0.00%	2	2	50.00%	4	2	33.33%
Consumer Discretionary	12	3	20.00%	12	5	29.41%	16	5	23.81%
Consumer Staples	2	3	60.00%	2	3	60.00%	2	4	66.67%
Financials	8	5	38.46%	9	4	30.77%	10	6	37.50%
Health Care	13	2	13.33%	14	4	22.22%	19	7	26.92%
Industrials	33	4	10.81%	25	19	43.18%	31	24	43.64%
Information Technology	4	2	33.33%	7	2	22.22%	13	5	27.78%
Materials	4	2	33.33%	2	4	66.67%	3	3	50.00%
Real Estate	7	1	12.50%	10	4	28.57%	10	8	44.44%
Energy	0	0	0.00%	0	0	0.00%	1	0	0.00%
Total	86	22	20.37%	83	47	36.15%	109	64	36.99%

Appendix 1 presents the industry distribution for the three years studied from 2019 to 2021. The industry with the most observations is industrial with a total of 136 firm year observations with health care and consumer discretionary at second and third place with 61 and 53 observations each. The industry with the highest proportion of using ESG-linked CEO compensation is consumer staples followed by materials and financials. This could be due to the scrutiny these industries face, for example the financial sector is constantly scrutinized because it is an important part of the economy and must thus act in ways that are beneficial to society.

Appendix 2 presents the distribution of ESG-linked CEO compensation by year where we can see that there is an increase in firms using ESG-linked CEO compensation between the years 2019 and 2021. The biggest increase can be seen between 2020 and 2021. The proportion of using ESG-linked CEO compensation has its biggest increase between 2019 and 2020 whereas in 2021 it minimally increases which can be due to the sample size increasing.

Table 4: Descriptive statistics of variables

This table presents the descriptive statistics of all variables. Variables consist of ESG score, foreign sales, RoA, firm size, Tobin's q, board gender diversity, board member affiliations and board size have been winsorized at 1 percent and 99 percent.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	N	Min	p1	Mean	p50	p99	Max	SD
ESG Score	411	12.64	12.64	52.42	51.58	88.24	88.24	18.40
ESG-linked CEO compensation	411	0.00	0.00	0.32	0.00	1.00	1.00	0.47
Foreign Sales(%)	410	0.00	0.00	0.64	0.78	1.00	1.00	0.38
RoA(%)	411	-32.62	-32.62	3.34	3.85	18.12	18.12	7.58
Firm Size	411	6.01	6.01	9.82	9.87	14.93	14.93	1.75
Tobin's Q	411	0.29	0.29	1.09	1.06	2.32	2.32	0.30
Board Characteristics								
Board Gender Diversity(%)	411	3.44	3.44	54.88	54.18	99.18	99.18	27.56
Board Member Affiliations	411	0.00	0.00	1.06	1.00	2.88	2.88	0.61
Board Size	411	5.00	5.00	8.61	8.00	15.00	15.00	2.49
Board Cultural Deversity	411	0.00	0.00	0.37	0.00	1.00	1.00	0.48
Unitary	411	0.00	0.00	0.69	1.00	1.00	1.00	0.46
Two-tier	411	0.00	0.00	0.11	0.00	1.00	1.00	0.32
Mixed	411	0.00	0.00	0.20	0.00	1.00	1.00	0.40

Table 4 presents the descriptive statistics of the variables used in this study. In total there are 411 firm year observations. ESG scores range between 12.64 and 88.24 with a standard deviation of 18.40 indicating a slightly low variation between the firms reported ESG scores. This indicates there is low variation between the ESG performances of the firms studied. The mean of ESG score is 52.42 showcasing the firms in the sample are having on average a relatively good ESG performance. The mean for ESG-linked CEO compensation is 0.32 meaning that 32% of the observations in the sample have ESG-linked CEO compensation. Foreign sales have a mean of 0.64, meaning that 64% of the firm year observations sales come from abroad on average. Standard deviation of 0.38 for foreign sales indicates there is high variation between the observations foreign sales which is further strengthened by the min and max of 0 and 1.00 which means that some observations have zero foreign sales, and some have all of its sales from abroad. The mean of ROA is 3.34% with a standard deviation of 7.58% indicating there is relatively high variation between the observations. There is also one observation with a ROA of -32.62% which indicates that observation has financial difficulties. Firm size which is measured as the natural logarithm of total assets has a mean of 9.82 and a standard deviation of 1.77 indicating there is low variation between the

observations. The mean for Tobin's Q is 1.09 indicating the observations stocks on average are overvalued. The observations have low variation between them with a standard deviation of 0.30. The lowest Tobin's Q recorded at 0.29 indicates that one or some observations have their stocks undervalued.

Board gender diversity has a mean of 54.88 meaning that on average 54.88% of the people on the board are women for our sample. The standard deviation of 27.56 indicates there is relatively low variation between the observations. The min of 3.44 indicates that no firm during the years studied have had a board with no women in them. Board member affiliation has a mean of 1.06 meaning on average board members have 1 more affiliation with other firms. There is low variation between the observations studied as shown by the standard deviation of 0.61. The min and max of 0 and 2.88 tells us that some observations have no affiliation with other firms while some have almost three other affiliations with other firms. Board size has a mean of 8.61 meaning that on average the observations have a board with around 8 to 9 board members. The standard deviation of 2.49 tells us that there is low variation between the observations. Min and max inform us that there is a minimum of 5 board members in the boards and highest of 15 board members. Board cultural diversity has a mean of 0.37 meaning that 37% of the observations have a board cultural diversity score. This indicates that the majority of the firm year observations do not have high diversity in their boards such as different ethnicities, religion or sexual orientation. 69% of the firm year observations have a board structure type unitary as shown by the mean of 0.69 for unitary. 11% have two-tier structure and 20% have mixed board structure type.

Table 5: Correlation matrix

This table presents a Pearson correlation matrix for all variables.

Correlation Matrix	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
ESG Score	1												
ESG-linked CEO compensation	0.2766	1											
Foreign Sales	0.1208	0.0429	1										
RoA	0.2084	0.0171	0.183	1									
Firm Size	0.5139	0.1673	-0.1774	0.1365	1								
Tobin's Q	0.0098	-0.0182	0.1612	0.3316	0.0027	1							
Board Gender Diversity(%)	0.1632	0.0889	-0.0928	-0.0891	0.1208	-0.1624	1						
Board Member Affiliations	0.1019	0.0263	0.1357	-0.0417	0.2658	0.1227	0.0061	1					
Board Size	0.4707	0.1876	0.1304	0.1696	0.4447	-0.048	-0.1109	0.1461	1				
Board Cultural Deversity	0.3915	0.1882	0.0692	-0.1084	0.3448	-0.1049	0.081	0.1948	0.3692	1			
Unitary	-0.1576	-0.0065	-0.0416	0.0118	-0.1515	-0.015	0.0839	0.0031	-0.1918	-0.1234	1		
Two-tier	-0.1805	0.0293	0.0567	-0.0007	-0.147	-0.01	-0.134	-0.1022	-0.1066	-0.1027	-0.5343	1	
Mixed	0.3279	-0.0158	0.0031	-0.0132	0.294	0.0255	0.0095	0.0782	0.3085	0.2258	-0.7367	-0.178	1

The correlation between all the variables is presented in table 5 which shows that all variables have fairly low correlation between them except for the variable "mixed" which has a high correlation with "unitary" of -0.7367. Due to the high collinearity between these two variables, "mixed" will be omitted from the analysis. Furthermore, Stata, the statistical program used in computing the results automatically omitted the mixed variable due to collinearity, thus mixed will not be displayed in the regression models. The correlation between ESG scores and all the variables except the board structure type are positive, indicating that having a higher ESG score (ESG performance) result in positive outcome for the variables, for example, having a bigger firm size results in having a higher ESG score as shown by the coefficient of 0.5139. Meanwhile, regarding ESG-linked CEO pay, among board characteristics, board size and board cultural diversity have a positive relationship with ESG-linked CEO compensation, which implies those two variables may affect the application of ESG-linked CEO pay in firms to some extent.

4.2 Pooled OLS Regression Analysis

In this section we build pooled OLS regression models for panel data in different ways which strive to examine the relationship between setting ESG-linked CEO compensation and ESG scores. Firstly, the pooled OLS regressions have been built without sample reselect After matching propensity scores of control variables, the 266 subsamples matched by the neighbour method have been regressed by pooled OLS regression model, displaying a robustness test result. The fixed effect model has been tested, however, the R square is 0.13 which is quite smaller than the pooled OLS one's (appendix 3). The regression results do not perform so well which may be due to the unbalanced data (Wooldridge, 2010). Hence, we only use pooled OLS regression models here.

As shown in table 6 column 1, the independent variable ESG-linked CEO compensation is statistically significant at one percent level, which supports our hypothesis 1 (ESG-linked CEO compensation improves ESG scores). The coefficient is over 6 (6.2888) which implies there is a strong positive effect of ESG-linked CEO compensation on ESG score. To be more specific, if one more firm in this year is categorized into applying ESG-linked CEO compensation, the ESG scores tend to rise around 6 percent. Besides the control variables, firm size is also strongly significant at one percent level with the coefficient of 7.2991, which indicates that when firm size increases one unit, the ESG scores could grow 7.2991. Considering industry effects (appendix 4), except financials and energy industries, the other industries are statistically significant at one percent and five percent levels. In addition, most of the coefficients of the significant industries are around twenty which implies that there is a strong influence clustered in industry. The sample belonging to the energy industry does not have foreign sales. Hence it was omitted when doing the regression model. As for the year effect, only the year of 2021 is statistically significant at one percent level (appendix 4), which indicates that more firms in 2021 tend to have higher ESG scores, compared with the year of 2019, aligning with the year distribution trend. The constant is equal to -37.7472 and significant at one percent level, which indicates that with all the other variables equaling zero, ESG scores would be -37.7472.

As shown in table 6 column 2, when adding board characteristics as control variables in the regression, the independent variable ESG-linked CEO compensation is still statistically significant at one percent level, although the coefficient of 5.3223 is a little bit lower than that

in column 1. The significance of ESG-linked CEO pay aligns with the previous regression results and supports hypothesis 1 again. In addition to the control variables, the firm characteristics have one more significant variable at five percent level, which is the RoA. The coefficient indicates that there is a positive relationship between RoA and ESG score, which means if RoA increases one unit, the ESG score will rise 0.2288. Similarly, firm size is still significant at one percent level, although the coefficient decreases a little bit.

It is worth noting that several board characteristics which are the control variables are statistically significant at one percent and five percent levels individually. Board gender diversity and board cultural diversity is significant at five percent level. The coefficient implies that when one unit of board gender diversity grows or one more firm is classified into having a board cultural diversity score, the ESG scores will grow 0.0747 or 4.9218 respectively. However, the other two dummy variables of board structure type, unitary and two-tier have negative coefficients which indicates that if one more firm is categorized into unitary or two-tier board structure type, the ESG scores will decrease 7.9257 or 10.1713 individually. Regarding the industry effect, the results are similar to the previous regression. Although some industries seem not to perform significantly (appendix 4), still a great number of industries perform significantly, indicating there is a strong industry effect. Notably, when adding board characteristics as control variables, the year of 2020 and 2021 both are significant at ten percent and one percent level respectively, which means, in comparison to 2019, ESG scores increase 1.7556 and 5.6314 respectively. The constant is significant at one percent level which has the similar meaning of previous regression model results, but the value is -23.2937.

After doing the pooled OLS regression models for different control variables, we decided to use nearest neighbour match method of propensity score matching to select subsamples, building the pooled OLS regression model. After propensity score matching, there are 266 samples we select as subsamples, as shown in table 6 column 3. The OLS regression model is built with the similar firm characteristics, board characteristics, industry and year effects.

According to table 6 column 3, ESG-linked CEO compensation is statistically significant at a one percent level, indicating the same meanings as previous two regression models. As for firm characteristics control variables, the firm size still has a positive influence on the ESG scores, which implies if firm size grows one unit ESG scores will increase 5.2669. As for

board characteristics, compared with column 2, the board gender diversity and board cultural diversity are statistically significant at a five percent level with similar coefficients to column 2's results. However, regarding the board structure type, only a two-tier dummy variable is significant at a ten percent level, which has a negative relationship with ESG scores. The coefficient is -6.5279. Contrary to the previous two regression results, industry effects perform less here with negative coefficients (appendix 4), which is quite different from previous results, but it still has a significant industry effect here. Meanwhile, it is worth noting that no year affects ESG scores.

Overall, setting ESG-linked CEO compensation in a firm has a positive influence on ESG scores. Meanwhile, the firm size is another important factor which could affect the ESG scores rating. As for the board characteristics, board gender diversity and board cultural diversity have a positive effect on ESG scores. The two-tier board structure type affects ESG scores negatively. The industry effect on the ESG score is strong, while the year effect is weaker. The R-square of three regression models are increasing one by one, which indicates the percentage of the regression model explaining the dependent variables' variation. Based on the value of R-squared, the third OLS regression model seems to perform better than the previous two regression models.

Table 6: Pooled OLS regression model before and after matching propensity score

The dependent variable is ESG Scores. The independent variable is ESG-linked CEO compensation. The first column is the result of pooled OLS regression model. The control variables are firm characteristics without board characteristics. In addition, the second column is the pooled OLS regression model with board characteristics. Meanwhile, the third column is the pooled OLS regression model of subsamples after matching propensity score by nearest neighbour match. We control for both industry and year fixed effects in all models. All regression models are estimated with robust clustered standard errors and t-values are presented within the parenthesis. The stats*,**,*** indicate significance at the 10%, 5% and 1% levels respectively.

VARIABLES	(1) ESG Scores	(2) ESG Scores	(3) ESG Scores
ESG-linked CEO compensation	6.2888***	5.3223***	6.2977***
	(3.195)	(2.973)	(3.143)
RoA	0.1369	0.2288**	0.1403
	(1.344)	(2.141)	(0.989)
Foreign sales	3.5640	4.5029	5.0806
	(1.273)	(1.567)	(1.389)
Firm Size	7.2991***	5.1197***	5.2669***
	(10.649)	(5.542)	(5.263)
Tobin's Q	-2.4484	-1.0581	-0.9597
	(-0.773)	(-0.371)	(-0.250)
Board Gender Diversity(%)		0.0747**	0.1047**
		(2.341)	(2.482)
Board Member Affiliations		-0.5614	-2.8122
		(-0.324)	(-1.497)
Board Size		0.8523	0.9562
		(1.542)	(1.573)
Board Cultural Diversity		4.9218**	6.0954**
		(2.019)	(2.254)
Unitary		-7.9257***	-3.7755
		(-3.520)	(-1.461)
Two-tier		-10.1713***	-6.5279*
		(-3.275)	(-1.820)
Constant	-37.7472***	-23.2937***	-6.4475
	(-5.202)	(-3.069)	(-0.580)
Observations	410	410	266
R-squared	0.505	0.565	0.640
Industry effect	YES	YES	YES
Year effect	YES	YES	NO

Robust t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4.3 Logistic model

In this section, we build logistic regression model and probit regression model separately with marginal effects in two ways, which display the probability of firm setting ESG-linked CEO compensation affected by which variables. All models in Table 7 are logistic models with marginal effects and with or without year and industry effect and with and without control of firm characteristics. All models calculated robust clustered standard errors at the firm level. The probit model results are displayed in appendix 5.

As shown in table 7, the p-value of the all logit regression models are statistically significant at one percent level. Meanwhile, only three board structure independent variables are statistically significant related to the ESG-linked CEO compensation. The variables are board size, board cultural diversity and two-tier board structure type. All control variables, the firm characteristics, are not statistically significant in both the logistic models and probit model (appendix 5).

As shown in table 7 column 1, in logistic regression, there are two variables - board size and board cultural diversity that are statistically significant at five percent and ten percent levels separately. Considering the industry effect, there is no significant industry effect here affecting ESG-linked CEO compensation setting. As for the year factor, compared with 2019, the year of 2020 and 2021 both are significant at one percent level, resulting in a significant year effect. Meanwhile, the marginal effect of board size implies that if one unit of board size increases, the probability of setting ESG-linked CEO compensation will increase 3.5 percent. Similarly, if one more firm is classified with board cultural diversity, the probability of ESG-linked CEO compensation will grow 12.93 percent.

According to table 7 column 3 and 4, the logistic regression model displays the significant variables unitary and two-tier board structure type which affect the ESG-linked CEO compensation to some extent. The marginal effect in column 4 has implied that, if additional firms are classified with unitary or two-tier board structure type, the probability of setting ESG-linked CEO compensation tends to rise 12.59 percent and 21.65 percent respectively for each firm. There are no firm characteristics that affect ESG-linked CEO compensation in this model. However, the industry and year effects have not been examined in this regression model, the last regression model will give an overview under the effects of year and industry.

The last logit model's results, which considers industry and year effect, are displayed in column 5 and 6. The significant variables are not completely the same as the previous ones. The board size, board cultural diversity and two-tier board structure type are significant at a five percent level and a ten percent level respectively. Meanwhile, the marginal effects of the board size implies that if one more firm has more board members, the probability of setting ESG-linked CEO compensation will rise 3.51 percent. If one more firm is categorized with owning board cultural diversity, the probability of setting ESG-linked CEO compensation will increase 12.62 percent. Lastly, if one more firm is categorized into two-tier board structure type, the likelihood of setting ESG-linked CEO compensation will increase 17.41 percent. In this model as previously shown in the first model, there is no industry effect while there still exists a year effect.

Contrasting the three logistic regression models with industry and year effect or not, with control variables or not, the two-tier board structure type is statistically significant for both. Meanwhile, the board size has significant marginal effects in all three models. Specifically, board cultural diversity only performs significantly within industry and year effect. The p-value for the logistic regression model considering year and industry effects is less than the logistic model without year and industry effects. The specific significant variables are affected by the year effect but not industry effect. According to the probit model's results in appendix 5, the p-value is more significant than the logistic one's. Nevertheless, board size, board cultural diversity and two-tier board structure type are significant as well.

Overall, the board size, board cultural diversity and two-tier board structure type variables have a positive effect on the success odds ratio of setting ESG-linked CEO compensation. No control variables have an effect on ESG-linked CEO compensation implementation. Meanwhile, the year effects play a significant role in affecting the ESG-linked CEO compensation both in the logistic model (table 7) and probit model (appendix 5).

Table 7: Logistic models within and without industry and year effects

The dependent variable is ESG-linked CEO compensation which is a dummy variable. The first column is the logistic model with industry and year effects without control variables-firm characteristics. The third column is the logistic model without industry and year effects while the second, fourth and sixth column are the marginal effect of the previous logistic models. Meanwhile, the fifth column is the logistic model with industry and year effects. Both the logistic regression models are estimated with robust clustered standard errors and z-values are presented within the parenthesis. The stats*,**,*** indicate significance at the 10%, 5% and 1% levels respectively.

VARIABLES	(1) ESG-linked CEO compensation	(2) ME	(3) ESG-linked CEO compensation	(4) ME	(5) ESG linked CEO compensation	(6) ME
Board Gender Diversity(%)	0.0073	0.0014	0.0084	0.0017	0.0075	0.0014
	(1.176)	(1.192)	(1.436)	(1.459)	(1.175)	(1.191)
Board Member Affiliations	-0.0385	-0.0073	-0.1835	-0.0369	-0.1188	-0.0226
	(-0.143)	(-0.143)	(-0.709)	(-0.708)	(-0.425)	(-0.423)
Board Size	0.1835**	0.0350**	0.1337	0.0269*	0.1850**	0.0351**
	(2.155)	(2.263)	(1.631)	(1.674)	(1.964)	(2.054)
Board Cultural Diversity	0.6775*	0.1293*	0.5425	0.1091	0.6640*	0.1262*
	(1.787)	(1.818)	(1.586)	(1.592)	(1.715)	(1.749)
Unitary	0.2096	0.04	0.6259*	0.1259*	0.217	0.0412
	-0.54	-0.539	(-1.785)	(-1.802)	(-0.535)	(-0.534)
Two-tier	0.8866	0.1692*	1.0765**	0.2165**	0.9162*	0.1741*
	(1.631)	(1.652)	(2.154)	(2.179)	(1.67)	(1.689)
RoA(%)			-0.0065	-0.0013	-0.0014	-0.0003
			(-0.247)	(-0.247)	(-0.045)	(-0.045)
Foreign Sales(%)			-0.2998	-0.0603	-0.5766	-0.1096
			(0.78)	(0.777)	(1.112)	(1.12)
Firm Size			0.1448	0.0291	0.0275	0.0052
			(1.356)	(1.364)	(0.199)	(0.199)
Tobin's Q			0.1935	0.0389	0.1566	0.0298
			(0.411)	(0.412)	(0.307)	(0.308)
Constant	-3.4592***		-4.7778***		-3.9828**	
	(-3.309)		(-3.587)		(-2.299)	
Observations	411	411	410	410	409	409
Wald chi2	26.87		32.8		22.31	
Prob>chi2	0.0162		0.0355		0.0136	
Industry effect	NO		-		NO	
Year effect	YES		-		YES	

Robust z-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

5. Discussion

5.1 Improved ESG performance with ESG-linked CEO compensation

Previous research has shown mixed results regarding ESG-linked CEO compensations effect on ESG performance with some finding no relation (Maas, 2018), to a majority of studies finding a positive relation (Cavaco et al., 2020; Hong et al., 2016; Ikram et al., 2019; Flammer et al., 2019; Tamimi & Sebastianelli, 2017). This is in tune with the results from this study which found a positive relation between ESG-linked compensation and ESG score. This indicates ESG-linked compensation being a useful and successful tool to use for the board in directing and steering the CEO to achieve greater ESG performance. These results are consistent with agency theory that expresses that compensation contracts are a way for the principal (shareholders and/or board of directors) to incentivize the agent (CEO) to maximize firm value. By having better ESG performance and satisfying stakeholders that can hold on to important resources for the firm, the CEO maximizes the firm value by securing future resources and ensuring that the firm is in business in the long-term. Furthermore, as firms' have increasingly started to link CEO compensation to ESG metrics in recent years, indicating that firms see that satisfying stakeholders adds value to the firm which in turn adds value to shareholders (Spierings, 2022; Gosling & O'Connor, 2021). Obtaining positive significant results may also be due to it constituting optimal contracting by having the CEO focus on ESG metrics that are of non-financial nature and that have a long-term horizon, thus creating long-term value for stakeholders in terms of ESG performance (Ikram et al., 2019).

An important component to this is firm size which is statistically significant for all three models. This is in line with Tamimi & Sebastianelli (2017) study which found that the Bloomberg ESG disclosure scores are higher for large-cap companies. Hence firm size is an important component in determining if ESG performance would improve. Pressure to perform well increases as the size and the impact a firm can make increases. Resources are made more available which can be used to improve their ESG engagement (Tamimi & Sebastianelli, 2017).

Furthermore, board characteristics, board gender diversity and board cultural diversity have a positive significant relationship with ESG score indicating cultural aspects being important in achieving greater ESG performance. These results are also in line with previous research that

has shown having more women on the board being important in achieving better ESG performance (Tamimi & Sebastianelli, 2017; Velte, 2016) and more specifically social performance (Alazzani et al., 2017). Our results show a significant positive relationship between ESG performance and board cultural diversity which is consistent with previous research. Having board members with different cultural backgrounds than the firm's headquarters has shown to have a positive effect on ESG performance (Martínez-Ferrero et al., 2021). By having board gender diversity and board cultural diversity the board can attain different ideas, values and viewpoints which can be used to improve decision making. When dealing with different stakeholders such as environmentalists or union workers it is crucial to have different viewpoints in the board so that the right decision can be made to please their demands.

Board size and board member affiliations showed insignificant results which is not consistent with previous research that has shown board size and having independent board members to positively affect ESG performance (Tamimi & Sebastianelli, 2017; Jizi et al., 2014). This could be due to the sample size being too small or that the random variation is too large. Two-tier structure type is negatively significant at 1% and 10% level for model 2 and 3 in table 6 and unitary structure type is negatively significant at 1% level for model 2. This indicates that ESG performance has a negative relationship with board structure type.

5.2 Corporate governances relation to ESG-linked CEO compensation

Previous research has shown that CEO's ability, firm characteristics and board characteristics will affect the probability of setting ESG-linked compensation to CEO (Flamer et al., 2019; Hong et al., 2016). Meanwhile, a majority of studies indicate that well-governed corporations tend to set ESG-linked CEO compensation or CSR contractings (Homroy et al., 2022; Ikram et al., 2019; Hong et al., 2016; Flammer et al., 2019). After building the logistic regression model and probit regression model to examine the relationship between ESG-linked CEO compensation and board characteristics, the results align with the previous studies, showing that board characteristics surely influence firms setting ESG-linked CEO compensation. These findings could broaden the view of emphasizing the importance of corporate governance and board characteristics. However, it is worth noting that firm characteristics as control variables in the regression of hypothesis 2 do not play an influential role to affect the

ESG-linked CEO compensation implementation, which is quite different from previous studies (Flamer et al., 2019; Homroy et al., 2022).

Specifically, after overviewing the result of hypothesis 2, board size and board cultural diversity play a significant role to improve the probability of setting an ESG-linked compensation plan, which further corroborated the significance of corporate governance and board characteristics. Increasing board size can be a good way to solicit different views and discussions, which represents more board members thinking, discussing and deciding, making the decision objective and stakeholder friendly. Meanwhile, the significance of board cultural diversity is also a symbol to focus on the multicultural background's benefits, which indicates various creative ideas and suggestions rooted on different cultural backgrounds, which could shape a stakeholder friendly atmosphere, assisting ESG-linked CEO compensation to be applied. As for two-tier board structure type, it has a different effect on ESG-linked CEO compensation, in comparison with the effect on ESG scores. As the result shows, two-tier board structure type could improve the probability of setting ESG-linked compensation. Part of the reason is that supervisors and executive directors can coordinate and supervise each other when making long-term decisions and planning, which indicates that the long-term interests and stakeholder welfare can be accounted for when implementing and monitoring. Hence, firms with two-tier board structure types may tend to set ESG-linked CEO compensation which is consistent with the board member's functions and interests.

However, the insignificance of board member affiliations and board gender diversity does not align with the previous studies (Ikram et al. 2019), which could be due to the limited sample size and large random variation. Most studies state that independence of board members would help the firm to reduce the opportunism of CEO which may coordinate the relationship between stakeholder welfare, shareholder welfare and CEO's private motivation (Calderón et al., 2020; Jizi et al., 2014). Nevertheless, the independent board members may suffer the professional problems and close relationships after a long period when working for certain companies. Because of this, the background information of the board members is quite important, which is not classified and collected in this study. Hence, the effect of board member affiliation is not significant in this study.

Meanwhile, the board diversity can be related to gender, nationality, cultural backgrounds and educational backgrounds. Based on previous studies (Tamimi and Sebastanelli, 2017),

firms with greater board gender diversity tend to have less aggressive attitudes, when facing the new management approach. To be more specific, if there are more women on the board, implementing ESG-linked compensation may not be a proactive approach. Therefore, board gender diversity may not be the main reason to apply the ESG-linked CEO compensation. In addition, the industry effect is not significant among the results, but the year effect is statistically significant both in the probit and logit model for 2020 and 2021, which implies that there is a trend of setting ESG-linked compensation.

6. Conclusion

6.1 Conclusion of the study

In this paper the effect of having an ESG-linked compensation plan on ESG performance has been examined. Furthermore, board characteristics effect on linking ESG metrics to CEO pay has been examined. Based on previous research, corporate governance characteristics and agency theory two hypotheses were developed which posits that having an ESG-linked compensation plan would improve ESG performance and that firms with better corporate governance tend to have ESG-linked compensation. After applying a pooled OLS regression model, logistic and probit model to our sample of 411 firm year observations of Swedish listed firms from 2019 to 2021 the two hypotheses can be accepted. The results suggest that ESG performance is improved by having an ESG-linked compensation plan in place. This is consistent with agency theory, by incentivizing the CEO to work towards meeting ESG metrics/measurements and satisfying stakeholder demands which in turn satisfies shareholders and thus maximizes firm value. Moreover, firm size, board characteristics such as board gender diversity and board cultural diversity, all of the industries except financials, and the year effects show a positive effect on ESG performance. Furthermore, the results suggest that certain board characteristics are positively related with setting ESG-linked CEO compensation plans. More specifically board size, board cultural diversity and two-tier board structure increases the probability of ESG-linked CEO compensation being set. Having different views and participation by more and different kinds of people could shape a stakeholder friendly atmosphere which could facilitate the establishment of an ESG-linked compensation plan.

6.2 Contribution to research and practical implications

This study contributes to the growing literature about ESG-linked CEO compensation, specifically in regards to ESG performance and corporate governance. A deeper understanding has been obtained about the relationship between corporate governance, ESG performance and ESG-linked compensation. Moreover, this study contributes by providing information on Swedish firms that are smaller and have a different corporate governance structure than that of S&P 500 firms which give new insight for researchers as previous

research has primarily been done on S&P 500 firms. Furthermore, previous studies have shown mixed results regarding the relationship between ESG performance and ESG-linked compensation, this study therefore gives clarity and a better understanding of that relationship. The practical implications for firms and especially boards and executives is the importance of having a well functioning board and the positives of having a ESG-linked CEO compensation plan in place. As the evidence points to ESG performance improving with a ESG-linked CEO compensation plan in place and ESG-linked CEO compensation plan being issued more in firms with better corporate governance.

6.3 Suggestions for future research

Initially, the limited sample size may affect the generalizability of the results of the regression results. Based on that, it is worth broadening the quantity of samples. To be more specific, this study only focuses on firms in Sweden. Under the same legal context and similar cultural backgrounds, the firms' headquarters in Nordic countries could be a good source of sample selection. Meanwhile, the ESG report started reporting in 2017 and continued to support new data, which implies the year of data collection can be prolonged. In addition, the industry classification could use environmental unfriendly enterprises or not as a dummy variable, to give a focus on specific industry categorisation.

As for variables, we only use ESG-linked CEO compensation, limited firm characteristics and board characteristics. Based on previous studies, the CEO skills and power or board member educational backgrounds could also generate an interactive effect here to influence ESG scores and ESG-linked CEO compensation setting. Hence, such kinds of variables could also apply in future research based on the industry and year effects.

Notably, this study only examines the relationship between stakeholder welfare and ESG-linked CEO compensation, which lacks the other side - the relationship between ESG-linked CEO compensation and shareholder welfare. Based on that, future research could utilize event study which checks the fluctuations of the stock market (CAR) before and after the annual general meeting (the event day which is the symbol of new contracts of ESG-linked CEO compensation).

Lastly, this paper only uses propensity scores matching method to alleviate the endogeneity of omitted variables and selection bias for hypothesis 1, however, as for the dynamic endogeneity issues in longitudinal analysis, it is better to do more tests, for example GMM method (Zhang et al., 2022; Ikram et al., 2019). Meanwhile, the fixed effect model has been tested, which is not fully suitable for this sample, owing to the small sample size of the specific industry categorization. The robustness test of the logistic model will be implemented based on advanced statistical methods.

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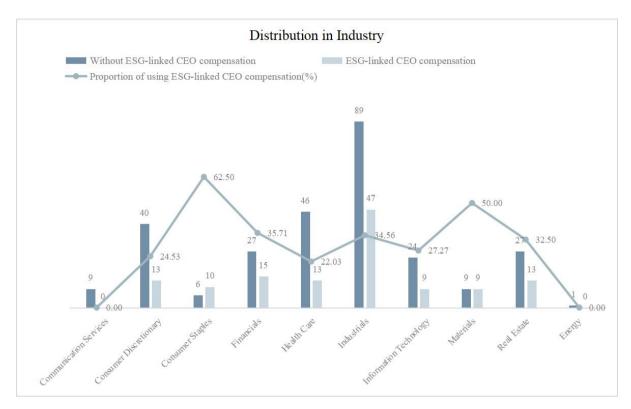
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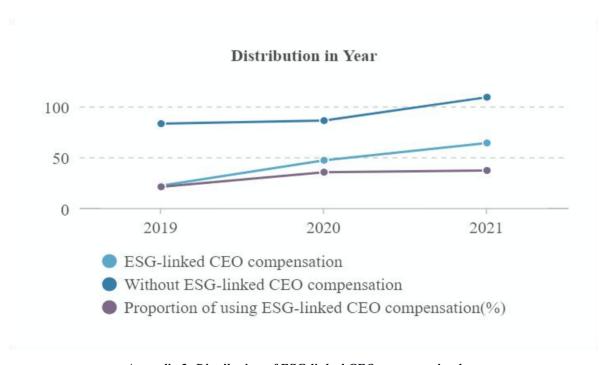
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Appendix

Appendix 1: Distribution of ESG-linked CEO compensation by industry

Appendix 2: Distribution of ESG-linked CEO compensation by year

Appendix 3: Fixed effect model for hypothesis 1

The dependent variable is ESG Score. The first column is the fixed effect model with control of industry and year effects. The fixed effect model is estimated with robust clustered standard errors and z-values are presented within the parenthesis. The stats*,**,*** indicate significance at the 10%, 5% and 1% levels respectively.

VARIABLES	(1) ESG Score
ESG-linked CEO compensation^	0.2533
	(0.265)
RoA	0.1568
	(1.303)
Foreign Sales(%)	3.0956**
	(2.410)
Firm Size	-7.0001*
	(-1.937)
Tobin's Q	-8.0484***
	(-2.650)
Board Gender Diversity(%)	0.0143
	(0.469)
Board Member Affiliations	0.7684
	(0.498)
Board Size	0.1931
	(0.468)
Board Cultural Diversity^	3.5835*
	(1.692)
Unitary^	-1.8137
	(-1.535)
Two-tier^	-1.1529
	(-0.805)
Constant	119.0963***
	(3.269)
Observations	410
Number of firmid	173
R-squared	0.1342
Industry FE	NO
Year FE	YES

Robust t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix 4: Pooled OLS regression model before and after matching propensity score

The dependent variable is ESG Scores. The independent variable is ESG-linked CEO compensation. The first column is the result of pooled OLS regression model. The control variables are firm characteristics without board characteristics. In addition, the second column is the pooled OLS regression model within board characteristics. Meanwhile, the third column is the pooled OLS regression model of subsamples after matching propensity score by nearest neighbour match. We control for both industry and year fixed effects in all models. This model contains the details of different industry sectors' effect on ESG score. All regression models are estimated with robust clustered standard errors and t-values are presented within the parenthesis. The stats*,**,*** indicate significance at the 10%, 5% and 1% levels respectively.

VARIABLES	(1) ESG Scores	(2) ESG Scores	(3) ESG Scores
ESG-linked CEO compensation	6.2888***	5.3223***	6.2977***
	(3.195)	(2.973)	(3.143)
RoA	0.1369	0.2288**	0.1403
	(1.344)	(2.141)	(0.989)
Foreign sales	3.5640	4.5029	5.0806
	(1.273)	(1.567)	(1.389)
Firm Size	7.2991***	5.1197***	5.2669***
	(10.649)	(5.542)	(5.263)
Tobin's Q	-2.4484	-1.0581	-0.9597
	(-0.773)	(-0.371)	(-0.250)
Board Gender Diversity(%)		0.0747**	0.1047**
		(2.341)	(2.482)
Board Member Affiliations		-0.5614	-2.8122
		(-0.324)	(-1.497)
Board Size		0.8523	0.9562
		(1.542)	(1.573)
Board Cultural Diversity		4.9218**	6.0954**
		(2.019)	(2.254)
Unitary		-7.9257***	-3.7755
		(-3.520)	(-1.461)
Two-tier		-10.1713***	-6.5279*
		(-3.275)	(-1.820)
Materials	25.1078***	19.1672***	
	(4.890)	(3.919)	
Industrials	14.8139***	12.1310***	-9.9595***
	(5.052)	(3.488)	(-3.493)
Consumer Discretionary	19.9842***	15.7209***	-6.6721**
	(5.805)	(4.143)	(-2.126)
Consumer Staples	18.9987***	12.1972*	-13.8718***
	(3.353)	(1.760)	(-3.062)
Health Care	20.7908***	15.6579***	-7.5981**
	(6.454)	(3.966)	(-1.986)
Financials	-6.5035	-5.0607	-27.2714***
	(-1.417)	(-0.943)	(-5.558)
Information Technology	20.6271***	18.0464***	-3.0066
	(4.396)	(3.563)	(-0.542)
Communication Services	21.6609***	14.2412***	-5.8405
	(3.918)	(2.844)	(-1.352)
Real Estate	9.2885**	12.6018**	-4.4827
	(2.171)	(2.490)	(-0.712)
Year 2020	0.2165	1.7556*	-0.5160
	(0.223)	(1.761)	(-0.265)
Year 2021	3.3073***	5.6314***	3.2327
	(2.801)	(3.873)	(1.418)
Constant	-37.7472***	-23.2937***	-6.4475
	(-5.202)	(-3.069)	(-0.580)
Observations	410	410	266
R-squared	0.505	0.565	0.640

Robust t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix 5: Probit model without and with industry and year effects
The dependent variable is ESG-linked CEO compensation which is a dummy variable. The first and second columns are the probit models, with industry and year effect without firm characteristics as control variables, and marginal effects result respectively. The third column is the probit model without industry and year effect while the fourth column is the marginal effect of the probit model. Meanwhile, the fifth column is the probit model with year and industry effects and the sixth column is the marginal effect of the probit model. Both the

probit models are estimated with robust clustered standard errors and z-values are presented within the parenthesis. The stats*,**,*** indicate significance at the 10%, 5% and 1% levels respectively.

VARIABLES	(1) ESG-linked CEO compensation	(2) ME	(3) ESG-linked CEO compensation	(4) ME	(5) ESG linked CEO compensation	(6) ME
Board Gender Diversity(%)	0.0042	0.0013	0.0049	0.0016	0.0043	0.0014
	(1.182)	(1.196)	(1.465)	(1.483)	(1.189)	(1.202)
Board Member Affiliations	-0.0424	-0.0136	-0.1201	-0.0401	-0.0914	-0.0292
	(-0.269)	(-0.268)	(-0.764)	(-0.763)	(-0.558)	(-0.556)
Board Size	0.1079**	0.0346**	0.0797*	0.0266*	0.1064**	0.0340**
	(2.228)	(2.324)	(1.673)	(1.707)	(1.96)	(2.029)
Board Cultural Diversity	0.4137*	0.1326*	0.3436*	0.1148*	0.4014*	0.1282*
	(1.858)	(1.885)	(1.661)	(1.67)	(1.764)	(1.792)
Unitary	0.1375	0.044	0.3888*	0.1298*	0.1479	0.0473
	(0.596)	(0.595)	(1.882)	(1.897)	(0.619)	(0.618)
Two-tier	0.5364*	0.1719*	0.6569**	0.2194**	0.5554*	0.1774*
	(1.67)	(1.686)	(2.183)	(2.203)	(1.708)	(1.722)
RoA			-0.0032	-0.0011	-0.0014	-0.0004
			(-0.215)	(-0.215)	(-0.082)	(-0.081)
Foreign Sales(%)			0.1768	0.0591	0.3226	0.1031
			(0.774)	(0.772)	(1.108)	(1.11)
Firm Size			0.0896	0.0299	0.0234	0.0075
			(1.384)	(1.393)	(0.283)	(0.282)
Tobin's Q			0.1053	0.0352	0.0968	0.0309
			(0.37)	(0.37)	(0.32)	(0.32)
Constant	-2.0455***		-2.8868***		-2.4160**	
	(-3.470)		(-3.674)		(-2.393)	
Observations	411	411	410	410	409	409
Wald chi2	28.41		23.46		35.86	
Prob>chi2	0.008		0.0092		0.016	
Industry effect	NO		-		NO	
Year effect	YES		-		YES	

Robust z-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1