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The Effect of Board Characteristics on ESG Performance:
Evidence from Scandinavia

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Abstract

Environmental, social, and governance (ESG) performance, as a proxy for non-financial information, has become an essential part of a company's performance. Recent studies have shown that board characteristics have a significant impact on ESG performance, but the results are mixed. This thesis is a quantitative study on the relationship between board characteristics and ESG performance in Scandinavia (four Nordic countries including Norway, Sweden, Denmark, and Finland). The study uses secondary data collected from Refinitiv Eikon Database. The final sample includes 491 listed companies in Scandinavia from 11 different industrial sectors from 2012 to 2021, consisting of 1355 observations. The empirical findings of the research show that board size has a significant and positive relationship with ESG performance. Board gender diversity has a significant and positive relationship with ESG performance. Board meetings have a negative relationship with ESG performance, but the extent is slight. Board tenure has a positive relationship with ESG performance, but the extent is unremarkable. The findings suggest that companies in Scandinavia can improve their ESG performance by expanding board sizes and including female directors on boards.

Keywords: *Environment, Social, and Governance (ESG); Board Characteristics; Corporate Sustainability; ESG Performance.*

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Academic Declaration

I hereby declare that this dissertation is worked in accordance with academic rules and conducted ethically. The resources and materials are collected from reliable and verified sources and are fully cited and referenced.

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List of Abbreviations

AC	Audit Committee
BOD	Board of Directors
CFP	Corporate Financial Performance
CSP	Corporate Social Performance
CSR	Corporate Social Relationship
ESG	Environment, Social, and Governance
EU	European Union
G&A	Governance and Accountabilities
GICS	Global Industry Classification Standard
GSCI	Global Sustainable Competitiveness Index
PDI	Power Distance Index
RBV	Resource Based View
S&P	Standard & Poor
SDG	Sustainable Development Goals
UK	United Kingdom
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environmental Programme
USA	United States of America
VIF	Variance Inflation Factor

1. Introduction

The most important purpose of financial reporting is to “provide information that is useful for potential investors, creditors, and other users” (Beaver et al., 1989). However, financial information alone is insufficient in an era of high economic uncertainty, rapid technological change, and growing global environmental concerns. For example, financial reports are limited by the principle of reliability and do not reveal the actual value of assets, such as intangible assets, and asset synergies. (Ballwieser, 2004). Moreover, financial reports are not sufficient to disclose information other than accounting figures. Financial reports cannot reflect a company's strategy, performance, and risks (Hales, 2018). Environmental incidents, corporate irresponsibility to society, abuse of management power, corporate fraud or governance scandals have led to sharp declines in the companies' market value. Some examples are the infamous Enron scandal in 2001 and Volkswagen's "diesel gate" in 2015. The short-term market reaction reflects investors' long-term expectations for the company's cash flow and associated risks (Hales, 2018). Regarding accounting and financial information, data transparency related to economic, environmental, and social aspects has become a primary concern of corporate stakeholders (Chouaibi et al., 2022). Therefore, more and more companies are providing non-financial information to accounting users. According to the Governance and Accountability (G&A's) sustainability report [1], 96% of S&P 500 companies published sustainability or corporate responsibility reports in 2022, which indicates that providing non-financial information has become one of the most common corporate governance practices.

Over the past few decades, Environmental, Social, and Governance (ESG) performance has been recognized as a proxy for non-financial information, which is complementary to financial information (Birindelli et al., 2018). ESG is a quantifiable measure of a company's sustainability and social impact, using metrics that are important to investors in three aspects: Environmental, Social, and Governance (Halid et al., 2022; Khalid et al., 2022). Each aspect of ESG has a single score to indicate and assess corporate sustainability performance. According to Khalid et al. (2022), investors get signals based on all three aspects of ESG.

[1] G&A’s 2022 Sustainability Reports provided by Governance & Accountability Institute, Inc. (G&A) is an ESG and sustainability consulting firm, founded in 2006 and based in New York, helping clients become leaders in corporate sustainability and corporate responsibility. Reference: http://www.ga-institute.com/

There are several reasons why more and more companies and investors are paying attention to ESG performance. First, many companies realize that their survival depends on achieving one or more sustainable development Goals (SDGs)[2] (Birindelli et al., 2018). They, therefore, provide corporate reporting focused on environmental, social, and governance performance, also known as ESG disclosure (Husted & de Sousa-Filho, 2019). By providing ESG disclosure, companies improve transparency and quality of internal management and reduce the possibility of fraud (Suttipun, 2021). Second, improvements in ESG performance reinforce the company's image as generous corporate citizens (Bamahros et al., 2022), thereby improving relationships with key stakeholders and mitigating potential risks (Hales, 2018). Third, ESG factors have measurable impacts on a company's balance sheet and income statement (Hales, 2018). According to Friede et al. (2015)'s research on over 2000 published empirical studies in fields such as management, economics, finance, and accounting, most studies report positive findings on ESG/CFP (Corporate Financial Performance) relationships. ESG helps companies effectively use scarce resources by finding a balance between their commercial and social objectives (Bamahros et al., 2022), and hence improve long-term financial performance. Finally, by adopting ESG best practices, the company can acquire a long-term competitive advantage (Birindelli et al., 2018). Companies with high ESG performance can increase their brand values (Ellili, 2022), and attract customers who prefer sustainable products (Yahya & Vaihekoski, 2021). Higher ESG performance also attracts more investors. Investors are considering more and more ESG aspects in their organizational planning and decision-making processes (Khalid et al., 2022). This is because through ESG scoring, investors can assess risks and opportunities related to climate change, long-term value creation, and business sustainability (Bamahros et al., 2022; Halid et al., 2022).

In previous literature on corporate governance, there are a growing number of studies that provide evidence of how companies overcome concerns about ESG performance. Among them, the characteristics of the board of directors (BOD) are the most studied area in ESG performance studies (Lei et al., 2022). Board of directors represents the interests of stakeholders and has a responsibility to ensure firm's transparency around sustainability practices (Bamahros et al., 2022). ESG disclosure is a voluntary reporting process in most countries (García Martín & Herrero, 2020; Jizi et al., 2014). Since the board plays a

[2] In 2015, United Nations (UN) General Assembly adopted 17 sustainable development goals (SDGs) to guide action for globle development and shape visions for the future. (Estoque, R. C. , 2020).

fundamental role in formulating and monitoring the corporation's communication and making sustainability strategic decisions on financial reporting (Chouaibi et al., 2022; Gaa, 2009), board composition has an impact on ESG disclosure (Suttipun, 2021). By examining the association between different board characteristics and ESG performance, regulators and companies can improve ESG practices by changing the composition of the boards, the board activity (for example, board meetings), board tenure and other corporate governance practices.

A wide range of empirical evidence from different countries and industries shows how board characteristics are associated with ESG performance. However, given different social and economic contexts, the conclusions of these studies are mixed. For example, while some studies found a positive relationship between board size and ESG performance (Birindelli et al., 2018; Chouaibi et al., 2022; Cremona & Passador, 2019; Gurol & Lagasio, 2022; Husted & de Sousa-Filho, 2019; Khalid et al., 2022; Rella & L'Abate, 2022; Suttipun, 2021), some other studies have found no relationship or negative relationship between board size and ESG performance or ESG disclosure (Balogh et al., 2022; Ellili, 2022; Guest, 2009; Halid et al., 2022).

In addition, although studies on board characteristics and ESG performance have grown in recent years, only a few have analyzed the influence of board meetings and board tenure. Most previous studies on ESG performance have usually focused on the influence of board composition, such as board size, gender diversity, without considering the impact of board meetings or board tenure. Some examples are studies of De Masi et al. (2021), Katmon et al. (2019), Cucari et al. (2018), Khatri (2022), and Ellili (2022). This study contributes to the existing corporate governance literature by providing further evidence of the impact of several characteristics of the board on ESG performance, including both board composition (board size, gender diversity) and other corporate governance characteristics (board meetings and board tenure).

Furthermore, many previous studies have explored the board characteristics' effect on ESG performance in only one sector. For example, Birindelli et al. (2018) and Gurol and Lagasio (2022) studied board of directors' impact on ESG performance in the banking system. Güngör and Şeker (2022) studied the relationship between board characteristics and ESG performance in the oil, gas, and coal sectors. This thesis explores the impact of board characteristics on ESG performance across multiple industries, including communication services, consumer

discretionary, consumer staples, energy, finance, healthcare, industrials, information technology, materials, real estate, and utilities.

Based on previous corporate governance theories and ESG literature, this thesis seeks to expand the corporate governance literature by investigating the relationship between certain board characteristics and ESG performance in Scandinavia, more specifically four Nordic countries including Norway, Sweden, Denmark, and Finland[3]. The four board characteristics considered include the board size, board diversity, board meetings, and board tenure.

Reviewing the existing academic literature on corporate governance, the relationship between board characteristics and ESG performance in Scandinavia is not sufficiently explored. There are a wide range of empirical research conducted in larger countries such as USA, China, Italy, Spain etc. (Lei et al., 2022). However, findings from large capital markets may not be applicable in smaller markets with usually smaller companies (Firk et al., 2016). Hence, the motivation of this study to fill this gap in this field, seeking to provide valuable insights of relationship between board characteristics and ESG performance in Scandinavia. This research benefits Scandinavian companies to improve their board structure and ESG performance.

Research questions

Based on the foregoing discussed research purpose, the following specific research questions are considered.

1. What is the relationship between board size and ESG performance among publicly listed companies in Norway, Sweden, Denmark, and Finland?
2. What is the relationship between board gender diversity and ESG performance among publicly listed companies in Norway, Sweden, Denmark, and Finland?

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[3] According to Mähönen, J. (2019), the Nordic area today refers to five independent countries, Norway, Sweden, Denmark, Finland and Iceland, plus the autonomous or semi-autonomous Faroe Islands, Greenland and the Åland Islands. Besides, from the historical perspective, "Nordic countries can be divided into the Atlantic 'West Scandinavian' (Denmark, Faroe Islands, Greenland, Iceland and Norway) and the Baltic 'East Scandinavian' (Finland, Sweden and Åland)" (Mähönen, J., 2019). There is, therefore, no clear definition of "Scandinavia" or "Nordic".

This paper studies the relationship between board characteristics and ESG performance in Norway, Sweden, Denmark, and Finland. Iceland and other Nordic area are not included. This paper, following the method of Mähönen, J., (2019), use "Nordic" and "Scandinavian" as synonyms. Similarly, the term Scandinavia is used interchangeably with "Nordic countries" to refer to Norway, Sweden, Denmark, and Finland.

3. What is the relationship between number of board meetings and ESG performance among publicly listed companies in Norway, Sweden, Denmark, and Finland?
4. What is the relationship between board tenure and ESG performance among publicly listed companies in Norway, Sweden, Denmark, and Finland?

Research objectives

The research questions above are now converted into specific research objectives as follows:

1. To examine the relationship between board size and ESG performance.
2. To examine the relationship between board gender diversity and ESG performance.
3. To examine the relationship between board meetings and ESG performance.
4. To examine the relationship between board tenure and ESG performance.

To achieve the research objectives, the study analyzed a sample of 491 Scandinavian companies in a panel dataset from 2012 to 2021, giving 1355 observations. The results show that board size has a significant and positive relationship with ESG performance in the Scandinavian countries. In addition, board gender diversity has a significant and positive relationship with ESG performance. Furthermore, the results show that the number of board meetings have significant and negative relationship with ESG scores, but the extent is subtle. Finally, board tenure has a significant and positive relationship with ESG scores, but the extent is unremarkable.

This paper extends prior corporate governance literature and contributes in the following ways. First, it explores how several board characteristics, including board size, board gender, board meeting and board tenure, are associated with a company's ESG performance in Scandinavia (four Nordic countries: Norway, Sweden, Denmark, and Finland) through quantitative analysis. Second, this study adopts a new method to measure the board gender diversity by using whether a company has a clear policy on gender diversity, which was rare in previous studies. A clear policy on gender diversity requires the presence of female directors on the boardroom and, in many cases, the proportion of female directors. Third, by examining the impact of these key characteristics of the board on ESG performance of Scandinavian listed companies, this paper expands the corporate governance literature and fills the research gap in this field in Scandinavia. This research contributes to companies and regulators in Norway, Sweden, Denmark, and Finland with better understanding of the relationship between board characteristics and ESG performance, helping them improve board composition, activities, and

governance practices. Finally, several under-researched issues have been identified that require further study.

The remainder of this thesis is structured as follows. Section 2 describes the institutional background of Scandinavian countries, relevant corporate governance theories, literature review, and hypotheses development. Section 3 describes the sample, data, and research methodology. Section 4 presents the empirical results and discussion. Finally, section 5 presents the conclusion and limitations of this study.

2. Institutional Background, Theoretical Foundation, and Literature Review

2.1. Institutional Background

This study explores the relationship between board characteristics and ESG performance in Scandinavia (four Nordic countries including Norway, Sweden, Denmark, and Finland). Country characteristics, economic development, law, and culture appear to be quite important in explaining companies' sustainable development activities (Cai et al., 2016). As stated by Schøning (2017), Nordic countries share the same legal traditions and similar corporate governance practices. Companies with similar institutional environments and similar national backgrounds face similar institutional pressures and tend to have similar strategies and practices (Schout, 1991). These include similar Corporate Social Relationship (CSR) strategies and ESG disclosure (Husted & de Sousa-Filho, 2019). According to the Clearly Cultural website[4], Norway, Sweden, Finland, and Denmark have similar low Hofstede Power Distance Index (PDI score)[5] based on Hofstede (1984), which indicates their similarities in institutional context and power distance. As a result, Scandinavian companies tend to have similar strategies and practices in terms of ESG concerns. Given the similarities of companies in Scandinavia, it makes sense to look at Norway, Sweden, Denmark, and Finland as a whole, to explore the impact of board characteristics on ESG performance.

[4] http://www.clearlycultural.com

[5] http://www.clearlycultural.com/geert-hofstede-cultural-dimensions/power-distance-index/

The four Nordic countries in Scandinavia, including Norway, Sweden, Denmark, and Finland, are advanced and well-developed market economies, which participate actively in international capital markets (Mähönen, 2019). Compared to the United States, continental Europe, or other countries, these Nordic countries stand out for their consistently high sustainability performance (Khatri, 2022). In several decades, the Nordic region has launched and contributed to a wide range of sustainability and environmental conferences, such as the United Nations Environmental Programme (UNEP), United Nations Conference on Environment and Development (UNCED), Nordic strategy on Sustainable Development and Sustainable Development Goals (SDG) (Yahya & Vaihekoski, 2021). According to the Global Sustainable Competitiveness Index (GSCI), the Nordic countries were among the best in previous years' assessments[6], indicating a high level of sustainability and competitiveness of Norway, Sweden, Denmark, and Finland. In addition, the Nordic countries are known for their successful welfare systems and policies. The welfare systems in Scandinavia have an impact on the companies' decision to align with sustainability values such as employee well-being, social inclusion, and gender equality (Yahya & Vaihekoski, 2021).

Consequently, companies in Norway, Sweden, Denmark, and Finland have unique Nordic regional characteristics with common values of sustainability and well-known interest in ESG issues. Despite differences in corporate governance practices, Nordic companies have similarities when it comes to sustainability. For instance, while there is a "societal agenda" in the Norwegian corporate governance code with integrated consideration of stakeholders, Swedish corporate governance emphasizes the board's role in ensuring companies' long-term value creation (Mähönen, 2019). Besides, most listed companies are, from an international perspective, 'small-cap companies' with predominantly domestic shareholders who are considered as much softer and more long-term oriented, and institutional investors such as foundations with charitable characteristics (Mähönen, 2019). From investors' perspective, ESG ratings are important factor in making investment decisions. Dahlberg and Wiklund (2018) argue that the interests of Nordic investors are aligned with the interests of society, and they do value ESG ratings in their investments.

[6] The Global Sustainable Competitiveness Index (GSCI) measures competitiveness of countries based on 189 measurable, quantitative indicators derived from reliable sources. It is the most comprehensive ranking of countries currently available. In 2022, Nordic countries are reported as the top of the ranking of GSCI: Sweden is leading the Sustainable Competitiveness Index, followed by Finland, Switzerland (non-Nordic country), Denmark, and Norway. http://solability.com/the-global-sustainable-competitiveness-index/the-index

Another institutional characteristic of Scandinavia is the high gender diversity of the boards. As the European Union (EU) is making various arrangements for women to take more places on the boards of directors, many countries increase the rate of women on the boards of directors by introducing quotas. In 2003, Norway passed a law that required that 40% of Norwegian firms' directors be women—at the time only 9% of directors were women (Ahern & Dittmar, 2012). Notably, Norway is the only Nordic country with legislation on female boards, while Denmark, Sweden, and Finland have no quotas or government pressure. Nevertheless, McGuinness et al. (2020) find that the Norwegian quota-based approach is neither superior nor inferior to Sweden's proactive but non-quota-based approach to matters of board gender balance. In other words, there is little difference between a quota-based board gender policy and a non-quota-based board gender policy in terms of how they connect with the gender diversity of the board. According to BoardEx Global Gender Balance Report 2021, the average percentage of women on boards is 40% in Norway, 37% in Sweden and Finland, and 36 % in Denmark, respectively. These four Nordic countries have almost the highest female participation rates of board members in the world. Therefore, high gender diversity on boards is prevalent in Scandinavia.

This study is a multi-country study analyzing the relationship between board characteristics and ESG performance in Scandinavia. Hence, the analysis considers the common characteristics in the economic, cultural, and social contexts of Norway, Sweden, Denmark, and Finland.

2.2. Theoretical Foundation

Environmental, social, and governance (ESG) disclosure has a long history within the corporate social responsibility (CSR) literature (Husted & de Sousa-Filho, 2019). Several theories have been proposed for empirical research on the relationship between board characteristics and ESG performance. For instance, stakeholder theory, legitimacy theory, resource dependence theory, and resource-based view (RBV) are mainly applied (Gurol & Lagasio, 2022; Güngör & Şeker, 2022; Katmon et al., 2019; Miller, 2002). Other theories, such as signaling theory, critical mass theory, are also used to explain the empirical results in some research (Balogh et al., 2022; Bamahros et al., 2022). This study is based on agency theory and stakeholder theory.

2.2.1. Agency Theory

According to agency theory, the dispersion of corporate ownership results in the executive (the agencies) possessing considerable freedom and power, and they may pursue their benefits, which contradicts the interest of the shareholders (the principal) (Masson, 1971). Mismatched desires and information asymmetry between executives and shareholders may cause inefficiencies (Eisenhardt, 1985). Board of directors is a mechanism aimed to resolve the agency problem by monitoring and rewarding top executives, which prevents interest conflict between shareholders and managers and ensures the maximization of shareholder's wealth (Miller, 2002).

Agency theory is the dominant theory in board research (Dalton et al., 2007). Based on agency theory, studies emphasize the oversight and control functions of the board of directors (Gurol & Lagasio, 2022; Rella & L'Abate, 2022). Besides, agency theory is applied in analyzing the effect of ESG disclosure in corporate governance. According to agency theory, ESG disclosure increases transparency and accountability and is used as a tool to reduce information asymmetries and conflicts of interest between the principles (shareholders) and their agents (top management)(Chouaibi et al., 2022; Suttipun, 2021). Therefore, agency theory is useful and fundamental when analyzing the link between board characteristics and ESG performance.

2.2.2. Stakeholder theory

Stakeholder theory predicts organizational behaviour as a result of pressures from different stakeholders (Freeman & Reed, 1983), and a company or an organization should create value for all their stakeholders (Dahlberg & Wiklund, 2018; Hung, 1998). Specifically, stakeholders refer to individuals or groups who have a vested interest in a firm and can either directly affect or be affected by the business, including shareholders, bondholders, banks, suppliers, employees, customers, governmental bodies, political groups, etc., and even competitors (Dmytriyev et al., 2021).

According to stakeholder theory, the board of directors has a responsibility to coordinate the interests of stakeholders and control managers (Freeman & Reed, 1983). Senior management fixates on shareholders who have economic power and focus on short-term performance (Freeman & Reed, 1983). On the contrary, boards of directors tend to focus on the long-term

relationship between companies and all stakeholders (Frynas & Stephens, 2015). Therefore, the board plays an important role in monitoring and controlling management to think more strategically, competitively, and globally, and conduct sustainability activities.

Stakeholder theory is a dominant paradigm in ESG research. The board plays a critical role in formulating sustainability strategy and monitoring the corporation's communication with stakeholders (Chouaibi et al., 2022; Gaa, 2009). As an indispensable means of communication between a company and its stakeholders, ESG disclosure is meant to support the needs and expectations of all stakeholders (Suttipun, 2021). ESG reporting diminishes information asymmetry between company insiders and stakeholders (Bamahros et al., 2022). The evaluation of ESG performance is based on the company's ESG disclosure or ESG report. Therefore, stakeholder theory is essential in analyzing the relationship between board characteristics and ESG performance.

2.3. Empirical Studies and Hypotheses Development

This thesis focuses on four key characteristics of a board that influence a company's ESG performance. These are board size, board gender, board meetings, and board tenure. Previous literature on the relationship between board characteristics and ESG performance has been little explored, but related subjects in corporate governance have been extensively studied. Therefore, this thesis will also review the corporate governance literature on the impact of board characteristics on ESG disclosure, sustainability reporting, corporate social responsibility (CSR) reporting, and integrated reporting. Based on the literature review, several hypotheses will be presented to explore the association between board characteristics and ESG performance. Each of the four board characteristics, including board size, board gender diversity, board meetings, and board tenure, will be presented seperately, followed by relative hypotheses.

2.3.1. Board Size

Board size refers to the number of directors on the board (Husted & de Sousa-Filho, 2019). The board of directors functions by monitoring and controlling activity, and the size of the board has an important effect on firms' ESG performance (De Andres et al., 2005). Many studies use agency theory to explain the impact of board size on a board's effectiveness in

monitoring and controlling executives' performance in social relationships and sustainability activities (Birindelli et al., 2018; Chouaibi et al., 2022; Rella & L'Abate, 2022).

Some studies found a positive relationship between board size and ESG performance. For example, by examining sustainability performance in a large sample of 108 European and U.S. listed banks for the period 2011–2016, Birindelli et al. (2018) have found that board size is very important to enhance a bank's ESG performance. Similarly, Gurol and Lagasio (2022) studied 35 banks from 12 different European countries. The results indicate that board size is positively and significantly related to ESG, especially Environment (E) and Social (S) disclosure scores (Gurol & Lagasio, 2022). Suttipun (2021) examined data from Thai-listed companies during 2015 and 2019 and have found that there is a significantly positive influence of board size on ESG. Cremona and Passador (2019) conducted a study of 1194 listed companies in Europe, looking at non-financial disclosure reports in 2017. They concluded that board size has a considerable positive impact on social and environmental performance. Rella and L'Abate (2022) investigated a sample of 335 US firms and revealed the positive impact of board size on ESG performance. Furthermore, some studies have found a positive relationship between board size and ESG disclosure. For instance, in the study of companies with board sizes ranging from 5 to 20 directors, Husted and de Sousa-Filho (2019) found that larger boards increase the likelihood of ESG disclosure. Chouaibi et al. (2022) explored data from 253 European-listed companies selected from the environmental, social, and governance (ESG) index between 2010 and 2019. They have found that the total number of directors on the board has a significantly positive effect on the integrated reporting quality(Chouaibi et al., 2022). By studying a sample of 564 firms from fifteen developed economies, Khalid et al. (2022) have found that board size is directly and significantly linked with environmental and governance disclosures.

The positive impact of board size on ESG disclosure and ESG performance can be explained as follows. A larger board size with more board members indicates that the board has more expertise, more connections, and more diversity, which provide different viewpoints to management (Gurol & Lagasio, 2022; Rella & L'Abate, 2022). Klein (2002) argued that monitoring increases when large boards can allocate their workload to more observers, thereby improving the quality of implementation of board committee mandates. Balogh et al. (2022) also conclude in their study that larger boards, which are much larger than the market average, perform comparatively better in ESG disclosures. They argued that large boards might have

distinct directors responsible for compliance and reporting, which would lead to better disclosures (Balogh et al., 2022).

However, some studies have found negative correlation or no correlation between board size and ESG performance or ESG disclosure (Balogh et al., 2022; Ellili, 2022; Halid et al., 2022). For example, Balogh et al. (2022) have found that there is no relationship between board size and ESG disclosure when board size is at the market average, suggesting that a larger board size is not necessarily associated with improved ESG disclosure. Halid et al. (2022) studied board characteristics' influence on ESG, using a sample of 165 Malaysian-listed firms in the period from 2017 to 2019. They have not found any relationship between board size and board ESG score (Halid et al., 2022). In addition, Guest (2009) argue that large boards in United Kingdom (UK) are featured with poor communication and decision-making, which undermine the effectiveness of large boards in United Kingdom. He argues that the inefficiency of large UK boards is mainly due to the advisory role, in which they play a weak monitoring role (Guest, 2009). Moreover, Ellili (2022) have found that although board size has a positive and significant impact on the social disclosure of financial companies, it has negative and significant impacts on ESG disclosure in non-financial companies. Ellili (2022) argues that in non-financial companies, nominations for large boards are not based on environmental, social, and governance criteria. At the same time, large boards are inefficient in the decision-making process (Ellili, 2022).

While the results are mixed, a large proportion of the evidence suggests that board size is positively related to ESG performance. Therefore, the following hypothesis is formulated:

H1: Board size is positively related to ESG performance.

2.3.2. Board Gender

Board gender refers to the presence of female directors on boards. Many studies show that greater gender diversity on board has an overall positive influence on ESG performance (Birindelli et al., 2018; Cremona & Passador, 2019; Nielsen & Huse, 2010; Romano et al., 2020; Shakil et al., 2019; Suttipun, 2021). For example, Nielsen and Huse (2010) studied 201 Norwegian firms and found that the ratio of women directors is positively associated with board strategic control. Thereafter, Jizi (2017) concluded that women's participation has positive

influence on the board's CSR engagements. Diamantopoulos et al. (2003) showed that women played a positive role in environmental and sustainability actions. Moreover, according to Harjoto and Wang (2020), the increase in the proportion of female directors has a positive impact on ESG performance. Dyck et al. (2023) studied firms across 41 countries and found that the presence of women on boards improved environmental performance. Gurol and Lagasio (2022) have found that the women's ratio on board is positively and significantly related to Environment (E) and Social (S) disclosure scores in environmental social governance (ESG). Moreover, Chouaibi et al. (2022) argue that gender diversity has a significantly positive effect on integrated reporting quality. Rella and L'Abate (2022) also argue that gender diversity has a positive effect on ESG information. Suttipun (2021) reported a positive influence of female board committees on ESG. Furthermore, Ellili (2022) found that the impacts of board gender diversity are positive and significant for both financial and non-financial companies.

The researchers explained the positive impact of board gender diversity on ESG performance from different perspectives. First, women have a better ability to take multitasks, enforce risk management and communicate (Suttipun, 2021), which reduces the level of conflicts (Nielsen & Huse, 2010), and strengthens external relationships (Harjoto & Wang, 2020). Second, female directors are more focused on the interests of stakeholders and are more active in implementing transparency strategies(Chouaibi et al., 2022), and improving the quality of ESG disclosures (Ellili, 2022). Third, female directors are more aware and sensitive to environmental issues (Diamantopoulos et al., 2003) and sustainable development (Dyck et al., 2023) and they are more likely to direct part of the firm's scarce resources toward value-maximizing social projects (Jizi, 2017).

On the contrary, some studies have found a negative or insignificant effect of women director members on ESG performance (Khatri, 2022; Oino & Liu, 2022) For example, Halid et al. (2022) have found that board gender diversity is not associated with ESG score. While De Masi et al. (2021) have revealed a positive influence of female directors on CSR indicators (social) and corporate governance, the influence of female directors on the environmental indicators is insignificant. Besides, based on empirical analysis of 379 firms that made up the Standard & Poor's (S&P's) 500 Index over the period 2010-2015, Manita et al. (2018) did not find significant relationship between board gender diversity and ESG disclosure. Furthermore, Balogh et al. (2022) documented that in the Czech Republic, female directors on boards do not have a significant impact on ESG disclosure levels. Moreover, Cucari et al. (2018) revealed in

their study of 54 Italian companies for the period 2011–2014 that the proportion of women on boards of directors have a significant negative impact on ESG disclosure metrics.

The researchers explain the negative or negligible impact of gender diversity on ESG on boards from different perspectives. For example, many studies found that in countries characterized by cultural patterns such as "male-dominated collectivism, hierarchy, and individualism", board diversity tends to have a negative or negligible impact on ESG disclosure (Husted & de Sousa-Filho, 2019; Majeed et al., 2015). Besides, the number and proportion of female directors are important factors in examining board gender diversity's influence on ESG performance, especially in companies with a predominance of male board members (Oino & Liu, 2022). Manita et al. (2018) argue that the relationship between board gender diversity and ESG disclosure is not statistically significant when there are fewer than three female board members on the board. Similarly, Khatri (2022) found a positive and significant association between board gender diversity and sustainability performance and emphasized that it requires at least 30 percent of women on the board to achieve the effect. In addition, Balogh et al. (2022) argue that the institutional environment and the low representation of women on Czech boards result in female directors having little impact on the level of ESG disclosure. Cucari et al. (2018) note that directors' expertise is more important to ESG than demographic characteristics when explaining the negative impact of board gender diversity on ESG.

Based on these earlier empirical research and institutional background in Nordic countries, the following hypothesis is formulated:

H2: Board gender diversity is positively related to ESG performance.

2.3.3. Board Meetings

In recent years, more and more studies have proved that board activities have implications for board efficiency. In the corporate governance literature, board activities been measured either by board meeting attendance or board meeting frequency. Board meeting attendance is an indicator of how each member fulfils his or her supervisory duties. It provides insight into directors' unobservable behaviour, such as prudence and scrutiny (Lin et al., 2014). Hence, board attendance is an important factor in board efficiency and performance. By using board

meeting attendance as a diligent representation of the board, Shrivastava and Addas (2014) found that a more rigorous board provide better sustainability performance.

Board meeting frequency, the number of board meetings per year, is another measurement researchers used in studying board activities. Several empirical studies found that board meeting frequency has positive effect on ESG performance (Jizi et al., 2014; Rella & L'Abate, 2022). Lipton and Lorsch (1992) argue that boards need to meet actively and consistently to develop short- and long-term strategies for the company's financial and organizational goals. Therefore, the frequency of board meetings has a significant impact on the functioning of the board (Vafeas, 1999). Yet, Vafeas (1999) notes that the association between board meeting frequency and corporate performance may have a dynamic feature: higher meeting frequency usually appears after the share price declining, and years with high meeting frequency will lead to performance improvements, which indicates that the increase in board activity may be a remedy to the poor performance of the company or limited director interaction time (Vafeas, 1999).

However, some studies found that board meetings do not have a significant impact on ESG performance, and some other studies have even found negative relationship with ESG performance. For example, although Birindelli et al. (2018) have found a positive relationship between the number of board meetings and the extent of sustainability performance, it is never significant. Suttipun (2021) have not found any impact of board meetings on ESG in research on Thai listed companies. The reason, he notes, maybe that the average board meeting time during the study period was rather low, about 2.5 times per year. Similarly, Cremona and Passador (2019) have found that the number of annual board meetings does not generate any improvement in ESG performance. Moreover, Bamahros et al. (2022) have found a negative and significant association between board meeting frequency and ESG disclosure, implying that more frequent board meetings lead to lower ESG disclosure. According to Bamahros et al. (2022), the frequency of board meetings can lead to better performance and higher reporting quality for a company, but meetings can be less beneficial if the focuses of the meetings are not related to the company's performance and reporting.

As the impact of board meeting frequency on ESG is controversial, this study will explore board diligence from this perspective. Therefore, the following hypothesis is formulated:

H3: Board meeting frequency is positively associated with ESG performance.

2.3.4. Board Tenure

Board tenure refers to the length of time (usually in years) that a director serves on the board of the organization (Sun & Bhuiyan, 2020). Previous literature has presented different views on board tenure, which can be divided into three groups.

The first group of studies showed that long director tenure is a positive factor in governance efficiency and company performance (Clements et al., 2018; Paolone et al., 2023; Patro et al., 2018). According to Beasley (1996), as the tenure of outside directors increases, the likelihood of financial statement fraud decreases, suggesting long board tenure improves outside directors' ability to monitor management. Patro et al. (2018) have found that while internal director tenure is not related to CSR performance, increasing the tenure of outside directors is beneficial to enhancing a company's social mission. Clements et al. (2018) assert that as directors' tenures increase, they gain valuable expertise/experience, which improves governance efficiency.

On the contrary, some studies show that board tenure has negative or little effects on ESG. For example, Pozzoli et al. (2022) argued that a long board tenure undermines the effectiveness of control activities and attention to ESG activities. Halid et al. (2022) assert that board tenure is not associated with ESG scores. Cremona and Passador (2019) find that although board tenure is positively correlated with sustainability performance, the extent to which seems less clear. According to agency theory, there is also an agency issue between shareholders and the board. Sharma and Iselin (2012) argued that directors with longer tenure may not exercise independent judgment, as too close social ties can be an obstacle to the independence of the board and weaken the board's function as a monitoring mechanism. Furthermore, directors with longer service periods tend to stay in their comfort zone (Katmon et al., 2019), or they may become complacent (Beasley, 1996), leading to a decline in their ability to cope with economic and environmental changes.

The third group of studies, considered the advantages of long-term and short-term directorships, and provides empirical evidence that moderate levels of board tenure and board tenure diversity are positive factors in corporate governance (Sun & Bhuiyan, 2020). Using 200 listed firms in Bursa Malaysia for the years 2009–2013, Katmon et al. (2019) demonstrate that an increase in

board diversity of tenure is associated with an increase in the quality of CSR disclosure. Sharma and Iselin (2012) suggest the optimum director tenure may be somewhere between four and eight years, avoiding insufficient understanding of the company caused by short tenure, or the social relationship issue caused by long tenure. Li and Wahid (2018) argued that tenure diversity increases board's independence and improve effectiveness of monitoring. In addition, a diverse board tenure can benefit the company's performance by combining new ideas from short-term directors with the expertise of long-term directors to develop board potential and competitive advantage (Phuong et al., 2022).

While more diverse board tenures have been shown to benefit ESG performance in previous research, this study assumes that longer board tenures generally have a positive impact on the board's ability to execute sustainability strategies and improve ESG performance. On this basis, the following hypothesis is proposed:

H4: Board tenure is positively associated with ESG performance.

3. Research Methodology

3.1. Sample Selection and Data Sources

As discussed above, this study examines the association between board characteristics and ESG performance in Scandinavia. The sample of this study comprised 491 listed companies from Norway, Sweden, Denmark, and Finland, and the collected data is from Refinitiv Eikon Datastream. Refinitiv Eikon Datastream, formerly known as Thomson Reuters Eikon, is the most reliable and comprehensive international financial and accounting database, providing ESG rating data to more than 5,000 listed companies since 2002 (Refinitiv Eikon Datastream, 2021). Previous studies on the impact of board characteristics on ESG performance extensively used the Refinitiv Eikon database as the database provides transparent and high-quality data (Güngör & Şeker, 2022; Halid et al., 2022; Shakil et al., 2019). Therefore, this study collects data from Refinitiv Eikon Datastream to test the hypotheses.

At present, there are a total of 892 Nordic-listed firms under Refinitiv Eikon Datastream's coverage. Since the study will explore the impact of board characteristics on ESG performance, the sampling procedure begins with the availability of ESG scores in this database. The

financial and corporate governance information also comes from the Refinitiv Eikon database. Excluding the missing values, a final sample consists of 491 listed Nordic firms from Norway, Sweden, Denmark, and Finland, for which data on ESG score was available for the analysis. The data collected includes 1355 companies-year observations over ten years from 2012 to 2021. Detailed sample selection and distribution are shown in Table 1. Sampling observations and industry distribution are shown in Table 2.

Table 1: Sample selection and country distribution

Country	Listed company	Sample	Percentage
Denmark	131	62	12,6%
Finland	143	71	14,5%
Sweden	408	287	58,4%
Norway	210	71	14,5%
Total	**892**	**491**	**100%**

Source of data: *Definitive Eikon database, Years (2012 – 2021)*

Table 2: Sampling observations and industry distribution

GICS[7] industry sector	Observations	%
Communication Services	91	6,72
Consumer Discretionary	110	8,12
Consumer Staples	78	5,76
Energy	77	5,68
Financials	177	13,06
Health Care	157	11,59
Industrials	333	24,58
Information Technology	108	7,97
Materials	148	10,92
Real Estate	62	4,58
Utilities	14	1,03
Total	**1355**	**100**

Source of data: *Definitive Eikon database, Years (2012 – 2021)*

[7] Global Industry Classification Standard (GICS) is a common global classification standard used by thousands of market participants across all major groups involved in the investment process. Referance: http://www.msci.com/our-solutions/indexes/gics

3.2. Variable Measurement

3.2.1. Dependent Variable

To explore the board characteristics' impact on ESG performance, ESG performance is the dependent variable, and it is measured using ESG rating scores (ESGSCORE). ESG scores provided by Refinitiv Eikon Datastream is extensively used by several researchers in their studies (Birindelli et al., 2018; Güngör & Şeker, 2022; Shakil et al., 2019). Therefore, this study collected data on ESGSCORE sourced from Refinitiv Eikon Datastream[8].

ESG scores from Refinitiv Eikon Datastream are expressed as 0 to 100 percent, with higher scores indicating a higher level of sustainability for the company. There are three dimensions of ESG scores: environmental, social, and corporate governance. E is an abbreviation for environmental performance, which measures how a company reduces environmental emissions, uses natural resources efficiently in its production processes, and researches and develops eco-efficient products or services. S is an abbreviation for social performance and includes various aspects of a company's ability to be a good citizen, such as building trust and loyalty among its employees, respecting, and protecting fundamental human rights, good business practices, and creating value in accordance with social norms and ethics. G is an acronym for governance performance and measures how a company structures and implements corporate governance systems and processes to ensure and maximize shareholder benefits.

In terms of dependent variable, this study will follow the method from previous study of Birindelli et al. (2018), using the overall ESG score calculated by the arithmetic mean of the three scores in environmental, social and governance aspects.

3.2.2. Independent Variables

In this study, four independent variables are included in the regression models: board size, board gender diversity, board meetings and board tenure. Board size (BOD_SIZE) is measured by the number of members of the board of directors. This measure has been used in several studies such as: Guest (2009), Cucari et al. (2018), De Masi et al. (2021), and Ellili (2022).

[8] Refinitiv Eikon Datastream. 2021. Available at http://www.refinitive.com/en/products/datastream-macroeconomics-analysis

Board diversity (BOD_DIV) is an indicator variable coded as one if the company has a clear policy on board gender diversity. A clear boardroom gender diversity policy means a company has requirement on the existence of female directors, and some companies even have policies that require the percentage of women on their boards. This method to measure board gender diversity is quite unique, because most studies define variable of board gender diversity as the proportion of female directors (Birindelli et al., 2018; Chouaibi et al., 2022; Ellili, 2022; Rella & L'Abate, 2022). One reason that this new method is applied is that Scandinavian companies have relatively high female presentation on boardroom in statistic from BoardEx[9]. This approach is beneficial because it clearly demonstrates the pervasiveness of the gender diversity policy in companies in Scandinavia. Board meeting (BOD_MEET) is measured as the number of meeting times of the board during the year. Previous studies that adopted this method to measure board activity include Jizi et al. (2014), Birindelli et al. (2018), Rella and L'Abate (2022). Board tenure (BOD_TEN) is measured by the average number of years of members on the board of directors. This approach was used in previous studies by Halid et al. (2022), Ciavarella (2017), and Paolone et al. (2023).

3.2.3. Control Variables

Aside from the four board characteristics, previous studies show that other factors also have an influence on a company's ESG performance. Some of these are included in this study as control variables to account for their effect on ESG performance. The first set of control variables in this study are characteristics of the audit committee (AC), including the independence of the audit committee, the expertise of the audit committee, and the tenure of the audit committee. The audit committee is an fundamental governance mechanism, which assures fundamental internal controls and ESG activities (Pozzoli et al., 2022). First, audit committee independence (AC_IND) is measured as the proportion of independent members to the total number of members on the audit committee. Previous studies, for example Pozzoli et al. (2022) and Arif et al. (2021), have found that there is a positive effect of audit committee independence on ESG performance. Second, audit committee expertise (AC_EXP) is a dummy variable stated as one if the audit committee member has finance or accounting or general business experience in the industry. Pozzoli et al. (2022) and Arif et al. (2021) have found that audit committee expertise

[9] According to BoardEx, a provider of global leadership intelligence, released a study: *Global Gender Balance Report 2021,* the average percentage of women on boards is 40% in Norway, 37% in Sweden and Finland, and 36 % in Denmark, respectively. http://www.boardex.com

has a positive effect on ESG performance. Third, audit committee tenure (AC_TEN) is defined as the number of years the company has been audited by the same auditor. Pozzoli et al. (2022) have found a significant and negative relationship between audit committee tenure and the ESG performance. Finally, in addition to the characteristics of the audit committee, the fees of the external auditor are introduced as a control variable. Audit fees to external auditors (AFEE) are measured by the natural logarithm of total audit fees received. Non-audit fee ratio (NAF) is also used, measuring the non-audit services fees to external auditors. Audit fees represent audit quality and are positively and significantly correlated with ESG transparency (Hammami & Hendijani Zadeh, 2020). As stated by Del Giudice and Rigamonti (2020), the audit process improves the quality of ESG assessments, because the presence of external auditors can increase the credibility of voluntary disclosures and reduce information asymmetry between companies and market participants.

Furthermore, in line with previous research literature, company size, industry, and country are included as control variables. These control variables are important to mitigate the effect of individual company's characteristics on ESG performance. Company size is measured by several indicators. Total asset (SIZE) represents the natural logarithm of total assets. Total liability (LEV) represents the natural logarithm of total liability of a company. Larger companies are more likely to improve the quality of their ESG disclosures (Arif et al., 2021; Pozzoli et al., 2022). In addition, the regression models added industry (INDUST) as a control variable, indicating the industrial sector of the company. Country (COUNTRY) represents the which nation the company belongs: Denmark, Finland, Sweden, and Norway. According to Cai et al. (2016)'s study on 2,600 firms from 36 countries, firm characteristics explain little for variations in corporate social performance (CSP)[10], but country factors such as stage of economic development, culture, and institutions account for a significant proportion of variations in CSP ratings across countries. Therefore, country (COUNTRY) is added as a control variable in this study. All the variables are defined in Table 3.

[10] In this study, corporate social performance (CSP) is regarded as an interchangeable concept to Environment, Social, and Governance (ESG) performance. According to Dorfleitner, G., Halbritter, G., & Nguyen, M. (2015). Measuring the level and risk of corporate responsibility–An empirical comparison of different ESG rating approaches. *Journal of Asset Management*, *16*, 450-466. corporate social performance (CSP) refers to the assessment of corporate social responsibility (CSR) decisions, requiring extensive research, specialized rating institutions offer so-called ESG ratings, which evaluate a company's efforts to implement environmental, social and governance issues.

Table 3: Variable definition

Variable	Type	Definition
ESGSCORE	Dependent	The arithmetic means of the three scores: social, environmental, and corporate governance. A percentage ranging from 0 to 100 percent is used to express the overall ESG score.
BOD_SIZE	Independent	The number of members of the board of directors
BOD_DIV	Independent	An indicator variable coded as one if the company has a clear policy on board gender diversity
BOD_MEET	Independent	The number of meeting times of the board during the year
BOD_TEN	Independent	The average number of years of members on the board of directors
AC_IND	Control	The proportion of independent members to the total number of members on the audit committee
AC_EXP	Control	A dummy variable stated as one if the audit committee member has finance or accounting or general business experience in the industry
AFEE	Control	The natural logarithm of total audit fees received
NAF	Control	Non-audit fee ratio
AUD_TEN	Control	The number of years the company has been audited by the same auditor
SIZE	Control	The natural logarithm of total assets
LEV	Control	The natural logarithm of total liabilities
INDUST	Control	The industrial sector of the company
COUNTRY	Control	The county of the company: Denmark, Finland, Sweden, and Norway

3.3. Regression Models

To explore the relationship between board characteristics and ESG performance, panel regression models are used. The panel regression model is applied where ESG scores are the dependent variable and board size, board gender diversity, board meetings, and board tenure are the four independent variables. Several characteristics of the audit committee, such as independence of audit committee, experience of audit committee, tenure of auditor is introduced as control variables. In addition, fees to external auditors can influence ESG scores, and are introduced as control variables. Besides, industry and country have fixed effects which cannot be changed. They are introduced as control variables to mitigate their impact on ESG performance. All variable definitions are shown in Table 3. The regression models used are expressed as follows:

$$\text{ESGSCORE}= \beta_0+\beta_1 BOD_SIZE_{it} + \beta_2\, AC_IND_{it} +\beta_3\, AC_EXP_{it} +\beta_4\, AUD_TEN_{it} +\beta_5\, AFEE_{it} +\beta_6\, SIZE_{it} + \beta_7 LEV_{it} + \beta_8\, INDUST+ \beta_9 COUNTRY +\varepsilon \quad \textbf{(1)}$$

$$\text{ESGSCORE}= \beta_0+\beta_1 BOD_DIV_{it} + \beta_2\, AC_IND_{it} +\beta_3\, AC_EXP_{it} +\beta_4\, AUD_TEN_{it} +\beta_5\, AFEE_{it} +\beta_6\, SIZE_{it} + \beta_7 LEV_{it} + \beta_8\, INDUST+ \beta_9 COUNTRY +\varepsilon \quad \textbf{(2)}$$

$$\text{ESGSCORE}= \beta_0+\beta_1 BOD_MEET_{it} + \beta_2\, AC_IND_{it} +\beta_3\, AC_EXP_{it}+\beta_4\, AUD_TEN_{it} +\beta_5\, AFEE_{it} +\beta_6\, SIZE_{it} + \beta_7 LEV_{it} + \beta_8\, INDUST+ \beta_9 COUNTRY +\varepsilon \quad \textbf{(3)}$$

$$\text{ESGSCORE}= \beta_0+\beta_1 BOD_TEN_{it} + \beta_2\, AC_IND_{it} +\beta_3\, AC_EXP_{it} +\beta_4\, AUD_TEN_{it} +\beta_5\, AFEE_{it} +\beta_6\, SIZE_{it} + \beta_7 LEV_{it} + \beta_8\, INDUST+ \beta_9 COUNTRY +\varepsilon \quad \textbf{(4)}$$

Equation (1) is the regression model designed to verify hypothesis 1 (H1) to investigate whether board size has a positive relationship with ESG performance. Equation (2) is used to test hypothesis 2 (H2) which assumes that gender diversity is positively related to ESG performance. Equation (3) is the regression model for hypothesis 3 (H3), investigating the relationship between board meetings and ESG performance. Finally, equation (4) is applied to

test hypothesis 4 (H4), exploring the relationship between board tenure and ESG performance. Each of these models investigates only one board characteristic, but they have identical control variables.

4. Results and Discussions

The data was first analyzed using descriptive analysis to survey the level and pattern of ESG scores and independent variables including board size, board gender, board meetings, and board tenure. Then, correlation matrix is analyzed to test multicollinearity problem between all variables utilized in this study. Finally, panel regression models were applied to test the relationship between board characteristics and ESG performance. Based on the above results, a further discussion is conducted considering the agency theory, stakeholder theory, institutional context, and previous empirical literature.

4.1. Descriptive statistics

Table 4 displays the descriptive statistics. The table contains a maximum of 1355 firm-year observations across 10 years (from 2012 to 2021). As seen in Table 4, on average, the ESG score (ESGSCORE) is 63.4, and the standard deviation is 19.9, which indicates that the variation of ESG score is high. The ESG scores range from a minimum of 4.1 to a maximum of 92.8. This ESG score is consistent with the study of Nordic countries conducted by Khatri (2022), with an average ESG score of approximately 50 and a standard deviation of around 20. The discrepancy in ESG score levels between this study and the Khatri (2022)'s study was caused by differences in sample periods. Khatri (2022)'s sample contains data dating back to 2002. The statistics in this study are also consistent with the findings of Pozzoli et al. (2022), who assert that the ESG score is 60, based on a sample of 13 member states of the European Union, covering the period from 2018 to 2020.

Table 4 also shows that the average board size (BOD_SIZE) is 8.785 with a standard deviation at 2.53, which means that companies in Scandinavia have an average of about 9 directors. The minimum board size is 3, and the maximum board size is 28. This is consistent with the findings of previous studies conducted by Khatri (2022). Some studies show that the average board size for United States (US) is 11 (Rella & L'Abate, 2022), European Union (EU) is 10 (Pozzoli et

al., 2022), which means boards in Nordic companies have almost similar size as companies in US and EU. Guest (2009) asserts that the optimal board size is between four and nine, and larger boards (more than nine board members) in the UK has negative relations with all performance of a company.

Table 4: Descriptive statistics

Variable	Observation	Mean	Standard Deviation	Minimum	Maximum
ESGSCORE	1355	0.634	0.199	0.041	0.928
BOD_SIZE	1355	8.785	2.53	3	28
BOD_DIV	1355	0.845	0.362	0	1
BOD_MEET	1355	12.401	7.048	0	56
BOD_TEN	1355	6.357	2.652	0	17.667
AC_IND	1355	72.436	30.678	0	100
AC_EXP	1355	0.688	0.464	0	1
AUD_TEN	1355	5.607	3.505	0	15
AFEE	1355	12.819	4.225	0	19.701
NAF	1355	41.564	32.893	0	96.429
SIZE	1355	22.046	2.235	0	27.198
LEV	1355	21.388	2.416	12.057	27.137
COUNTRY	1355	3.505	1.648	1	5
INDUST	1355	5.89	2.527	1	11

Furthermore, Table 4 reveals that the average figure of board gender diversity (BOD_DIV) is 0.845, with a standard deviation at 0.362. This figure means that about 84.5% of companies have a clear policy on gender diversity. Because previous studies used different measures for this independent variable, it is difficult to compare these figures with other studies. However, this high percentage of companies with gender diversity policy is in line with BoardEx's 2021 Global Gender Balance Report[11], which indicates that Norway, Sweden, Denmark, and Finland have the highest average percentage of women on boards, ranging from 36% to 40%. This is also consistent with the findings of Khatri (2022), which shows that Nordic boards have an

[11] http://www.boardex.com

average of about 30% board gender diversity over the period 2002–2020. In contrast, Rella and L'Abate (2022) studied 335 U.S. companies, particularly those in the Standard and Poor (S&P) 500, showing that an average of 25% of board directors are women. According to study conducted by Ellili (2022), average gender diversity on board in United Arab Emirates is merely around 2%.

Moreover, board meetings (BOD_MEET) in Table 4 displays that the number of board meetings during a year is on average 12.401, with minimum meetings at 0 and maximum at 56. The standard deviation is 7.048, which is quite high. This suggests that the number of board meetings during a year varies from company to company, with some companies having intensive meetings and others perhaps having few meetings or even no meetings at all. The average number of board meetings held in a year in this study is akin to those in other empirical studies. In Rella and L'Abate (2022)'s study on 335 US companies (specifically belonging to S&P 500 Index), the board has on average 9 annual board meetings. Similarly, in Jizi et al. (2014)' study of US commercial banks, the average is 11 annual board meetings. In contrast, Bamahros et al. (2022) found that the average number of board meetings in Saudi Arabia is 6 per year.

Finally, Table 4 reveals the descriptive statistics of board tenure (BOD_TEN). The average number of tenures of the board is 6.357, with a standard deviation of 2.652. This means that board tenure in companies in Scandinavia averages around 6 years. The minimum value of board tenure in the statistics is 0 and the maximum value of board tenure is 17.667. The tenure of the board of directors in Scandinavia in this study is similar to that of companies in EU countries, which is about 6 years on average (Ciavarella, 2017; Paolone et al., 2023).

4.2. Correlation Analysis

Table 5 shows the Pairwise Correlation among the variables and their significance levels. The data presented in the table shows that ESG score (ESGSCORE) is statistically significant and positively correlated with board size (BOD_SIZE), board gender diversity (BOD_DIV), and board meetings (BOD_MEET) at $P<0.05$ (significant at the 5% level). Among them, the correlation between board size (BOD_SIZE) and ESG score (ESGSCORE) is 0.509, and the correlation between board gender diversity (BOD_DIV) and ESG score (ESGSCORE) is 0.406. The correlation between board meeting (BOD_MEET) and ESG score (ESGSCORE) is

0.095, which is much weaker than the correlation between ESG performance and board size and board gender diversity. The correlations are consistent with previous studies (Chouaibi et al., 2022; Khalid et al., 2022; Rella & L'Abate, 2022), suggesting that board size, female board members and number of board meetings have positive relationship with ESG performance.

Noticeably, board size (BOD_SIZE) is significantly and positively correlated to total assets (SIZE) and total liability (LEV) at 0.554 and 0.553 respectively, indicating that board size is positively correlated with company size. This means that large companies are more likely to have large boards. Similarly, board gender diversity (BOD_DIV) is also significantly and positively correlated with total assets (SIZE) and total liability (LEV), at 0.392 and 0.378, respectively, indicating that large companies are more likely to appoint female directors to boards. In addition, the positive correlation of board meetings (BOD_MEET) to total assets (SIZE) and total liabilities (LEV) are 0.203 and 0.235, respectively, indicating that large companies tend to hold more board meetings than smaller companies. As expected, the highest positive correlations for ESG scores are related to total assets and total liabilities. ESG scores (ESGSCORE) significantly and positively correlated with total assets (SIZE) and total liabilities (LEV) at 0.635 and 0.640, respectively, suggesting that larger companies with larger boards, more female directors on their boards, and more board meetings per year tend to have higher ESG scores. This is in line with the conclusion from previous study conducted by Drempetic et al. (2020).

On the other hand, there is a positive but insignificant correlation between board tenure (BOD_TEN) and ESG score (ESGSCORE). This is consistent with previous empirical studies conducted by Halid et al. (2022). As can be seen from Table 5, board tenure (BOD_TEN) is negatively correlated with control variables such as the independence of audit committee (AC_IND) and the expertise of the audit committee (AC_EXP). This negative correlation suggests that longer board tenures tend to have a negative impact on the independence of the Audit Committee and the expertise of the Audit Committee. According to Pozzoli et al. (2022), audit committee independence and audit committee expertise have positive relation to ESG performance, which is also shown in the correlation matrix in this study, 0.432 and 0.343 respectively. In addition, the pairwise correlations presented in Table 5 generally suggest that board tenure (BOD_TEN) is also negatively correlated with board meeting numbers (BOD_MEET), which means boards with long tenure are less likely to hold more meetings than other cases. Katmon et al. (2019) argue that board directors with longer tenure are likely

Table 5: Pairwise correlations

Variables	VIF	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) ESGSCORE		1.000													
(2) BOD_SIZE	1.66	0.509*	1.000												
(3) BOD_DIV	1.27	0.406*	0.262*	1.000											
(4) BOD_MEET	1.18	0.095*	-0.035	0.113*	1.000										
(5) BOD_TEN	1.17	0.012	0.088*	0.059*	-0.120*	1.000									
(6) AC_IND	1.20	0.432*	0.211*	0.187*	0.097*	-0.236*	1.000								
(7) AC_EXP	1.19	0.343*	0.277*	0.130*	-0.055*	-0.073*	0.174*	1.000							
(8) SIZE	9.89	0.635*	0.554*	0.392*	0.203*	0.106*	0.171*	0.244*	1.000						
(9) LEV	9.90	0.640*	0.553*	0.378*	0.235*	0.082*	0.160*	0.250*	0.945*	1.000					
(10) AFEE	1.05	0.200*	0.140*	0.061*	0.022	0.028	0.066*	0.035	0.204*	0.189*	1.000				
(11) NAF	1.09	0.162*	0.031	0.057*	-0.059*	-0.068*	0.136*	0.115*	0.126*	0.109*	0.057*	1.000			
(12) AUD_TEN	1.11	-0.145*	-0.195*	-0.057*	0.092*	-0.045	-0.136*	-0.008	-0.090*	-0.062*	-0.052	0.056*	1.000		
(13) COUNTRY	1.12	-0.123*	-0.078*	-0.245*	0.011	0.095*	-0.067*	-0.127*	-0.146*	-0.161*	0.004	0.079*	0.056*	1.000	
(14) INDUST	1.11	-0.029	-0.053	-0.003	0.009	0.153*	-0.012	-0.185*	0.007	-0.023	-0.040	0.067*	-0.153*	0.034	1.000

** shows significance at* $p<.05$

to remain in their comfort zone. Similarly, Beasley (1996) asserts that directors with longer tenure tend to be complacent. The correlation between board tenure and board meetings confirms their claims to some extent.

Moreover, most of the independent variables are significantly correlated with each other. It is, therefore, possible that there is a multicollinearity problem. Before performing panel regression analysis, the data should be tested for multicollinearity problem. To check multicollinearity, the variable inflation factor (VIF) analysis is performed. First, it can be observed that all correlations between the independent variables in Table 5 are low. Besides, as shown in the second column (VIF) in Table 5, the variance inflation factor (VIF) scores are lower than the suggested cutoff of 10 (Tabachnick et al., 2007). According to Tabachnick et al. (2007), when VIF is lower than 10, there is no multicollinearity.

4.3. Regression Analysis

This part introduces the empirical results of board characteristics' impact on ESG performance in Norway, Sweden, Denmark, and Finland. Table 6 illustrates the results of a regression analysis of four models that address the hypotheses about the impact of board characteristics on ESG performance in these Scandinavia countries.

The first column in Table 6 shows results for hypothesis 1, which addresses the relationship between board size and ESG performance. Board size (BOD_SIZE) has a positive and significant association with ESG scores (ESGSCORE) at p-value < 0.01, and the coefficient of 0.0101. This result suggests that when board size (BOD_SIZE) increases by one unit, the ESG score (ESGSCORE) increases by 1.01%. This finding supports hypothesis 1 (H1), which assumes that board size has a positive impact on ESG performance. This result aligns with the findings of previous studies (Birindelli et al., 2018; Rella & L'Abate, 2022).

The second column in Table 6 shows the results for testing hypothesis 2, which addresses the relationship between gender diversity of the board and ESG performance. The results show that board gender diversity (BOD_DIV) has a positive and significant association with ESG scores (ESGSCORE) at p-value < 0.01, and the coefficient of 0.0783. The findings therefore suggest that when board gender diversity (BOD_DIV) increases by one unit, the ESG score (ESGSCORE) increases by 7.83%. This finding support hypothesis 2 (H2), which assumes that

Table 6: Regression results

VARIABLES	(1) ESGSCORE	(2) ESGSCORE	(3) ESGSCORE	(4) ESGSCORE
BOD_SIZE	***0.0101****			
	(0.0018)			
BOD_DIV		***0.0783****		
		(0.0110)		
BOD_MEET			***-0.0013***	
			(0.0005)	
BOD_TEN				***0.0037***
				(0.0015)
AC_IND	0.0019***	0.0018***	0.0020***	0.0020***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
AC_EXP	0.0563***	0.0638***	0.0615***	0.0643***
	(0.0084)	(0.0082)	(0.0084)	(0.0083)
SIZE	0.0131***	0.0118**	0.0153***	0.0146***
	(0.0050)	(0.0050)	(0.0050)	(0.0050)
LEV	0.0273***	0.0299***	0.0318***	0.0307***
	(0.0046)	(0.0045)	(0.0047)	(0.0046)
AFEE	0.0029***	0.0031***	0.0030***	0.0030***
	(0.0009)	(0.0009)	(0.0009)	(0.0009)
NAF	0.0003***	0.0002**	0.0002**	0.0003**
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
AUD_TEN	-0.0025**	-0.0036***	-0.0033***	-0.0035***
	(0.0011)	(0.0010)	(0.0011)	(0.0011)
COUNTRY	-0.0004	0.0034	0.0004	-0.0004
	(0.0022)	(0.0023)	(0.0023)	(0.0023)
INDUST	0.0003	-0.0001	-0.0000	-0.0006
	(0.0015)	(0.0015)	(0.0015)	(0.0015)
Constant	-0.5370***	-0.5496***	-0.5821***	-0.5837***
	(0.0410)	(0.0404)	(0.0410)	(0.0410)
F	175.58***	179.78***	169.61***	169.79***
Observations	1,355	1,355	1,355	1,355
R-squared	0.566	0.572	0.558	0.558

*This table examines the association between the board characteristics (board size, board gender diversity, board meetings, and board tenure) and ESG performance in listed companies in Scandinavia (including four Nordic countries: Norway, Sweden, Denmark, and Finland). *** p<0.01 (significance at 1%), ** p<0.05 (significance at 5%), * p<0.1 (Significance at 10%). All the variables are defined in Table 3.*

board gender diversity has a positive impact on ESG performance (Gurol & Lagasio, 2022; Rella & L'Abate, 2022).

The third column in Table 6 shows the results for hypothesis 3, which addresses the relationship between board meetings frequency and ESG performance. Number of board meetings (BOD_MEET) has a negative and significant association with ESG scores (ESGSCORE) at p-value < 0.05, and the coefficient of -0.0013. When numbers of board meeting (BOD_MEET) increase by one unit, the ESG score (ESGSCORE) decreases by 0.13%. This finding contradicts hypothesis 3 (H3), which assumes that board meetings have a positive impact on ESG performance. This finding is inconsistent with research conducted by Rella and L'Abate (2022) and Jizi (2017), who find that board meetings are significantly and positively correlated with ESG performance. However, the finding is consistent with previous studies of Bamahros et al. (2022), who find a negative and significant association between board meeting frequency and ESG disclosure.

The fourth column in Table 6 shows results for hypothesis 4, which addresses the relationship between board tenure and ESG performance. Board tenure (BOD_TEN) has a positive and significant association with ESG scores (ESGSCORE) at p-value < 0.05, and the coefficient of 0.0037. When board tenure (BOD_TEN) increases by one unit, the ESG score (ESGSCORE) increases by 0.37%. This finding supports hypothesis 4 (H4), which assumes that board tenure has a positive impact on ESG performance, but not to a remarkable extent. Previous study conducted by Cremona and Passador (2019) supports this finding.

Regarding the control variables in all the regression models, there is a positive and significant association between audit committee independence (AC_IND) and ESG score (ESGSCORE) (coefficient = 0.002; p-value = 0.0001), implying that more audit committee independence leads to better ESG performance. This finding is consistent with the studies conducted by (Pozzoli et al., 2022) and (Arif et al., 2021), which confirm a positive effect of audit committee independence on ESG performance. Moreover, there is a positive and significant association between audit committee expertise (AC_EXP) and ESG score (ESGSCORE) (coefficient=0.06; p-value=0.008), indicating that higher audit committee expertise in finance or accounting or general business experience in the industry leads to higher ESG performance. This result is in line with the findings of Pozzoli et al. (2022) and Arif et al. (2021), which indicate that audit committee expertise has a positive effect on ESG performance. Furthermore,

there is a positive and significant relationship between audit fees (AFEE) and ESG score (ESGSCORE) (coefficient=0.003; p-value=0.0009), suggesting that more audit fees to external auditors improve the ESG scores. This finding is in line with the study conducted by Hammami and Hendijani Zadeh (2020), who found a positive association between audit fees and ESG transparency. There is a negative and significant association between audit committee tenure (AUD_TEN) and ESG score (ESGSCORE) (coefficient=-0.03; p-value=0.001), indicating longer audit tenure reduces ESG performance. This finding supports the study of Pozzoli et al. (2022).

In addition, total assets (SIZE) and total liabilities (LEV) are proxy to firm size and are significantly and positively correlated with ESG scores (ESGSCORE), which implies that large companies with more assets and liabilities tend to have higher ESG performance. This is supported by previous literature of Pozzoli et al. (2022) and Arif et al. (2021). Country (COUNTRY) and industry (INDUST) control variables with fixed effects and have insignificant impact on ESG score (ESGSCORE) in the regression models in this study.

Overall, hypothesis 1, and hypothesis 2 are confirmed by the empirical results of the regression model, showing that larger board size, and board gender diversity, have a significant and positive relationship with ESG performance. Board meetings have a significant and negative impact on ESG performance, but the extent is slight. Board tenure has a positive relationship with ESG performance. Yet, the correlation between board tenure and ESG performance is slight and unremarkable.

4.4. Discussion of the results

Based on the results of the regression model and previous academic literature, this section will discuss the link between board characteristics and ESG performance in the Scandinavia (Norway, Sweden, Denmark, and Finland) from 2012 to 2021. The board characteristics investigated are board size, board gender diversity, board meetings, and board tenure.

Previous researchers mainly use agency theory and stakeholder theory to explain the relationship between board characteristics and ESG performance (Gurol & Lagasio, 2022; Halid et al., 2022). Agency theory highlights the board's monitoring function, which prevents interest conflicts between shareholders and managers (Miller, 2002). ESG disclosure is used as

a tool for board of directors to increase transparency and accountability of non-financial information to reduce information asymmetries between the principals (shareholders) and their agents (top management) (Chouaibi et al., 2022; Suttipun, 2021). Therefore, the specific characteristics of a board are critical to the board's ability to perform effective monitoring functions and ensure high-quality ESG disclosures. Stakeholder theory is another dominant paradigm in ESG research. ESG disclosures aim to support needs and expectations of all stakeholders (Suttipun, 2021) and it reduce information asymmetry between company insiders and stakeholders (Bamahros et al., 2022). To some extend agency theory and stakeholder theory are similar, but they emphasize the monitoring function of the board from different perspectives.

The first board characteristics tested is board size, which has a significant and positive relationship with ESG performance. The positive impact of board size on ESG performance has been explained by previous studies. According to agency theory, larger board size with more board members indicates that the board has more diversity in experience, expertise, and connections, which improves monitoring efficiency (Gurol & Lagasio, 2022; Rella & L'Abate, 2022). Monitoring also increases as board's capacity enlarged by allocating their workload to more observers (Klein, 2002). To some extent, board size is determined by the composition and structure of the board of directors. Larger boards may have different functional committees to ensure the monitoring function of the board in different aspects, including audit committees, corporate social responsibility committees, and nominated directors responsible for compliance and reporting (Balogh et al., 2022). These functional committees require adequate board members with qualified professional knowledge and skills to implement specific assignments, assuring the board to function effectively. Therefore, this study assumes that board size has a positive impact on ESG performance. The result of regression analysis verified hypothesis 1 (H1), suggesting that board size has a positive relationship with ESG performance. This result is consistent with other previous literature of relationship between board size and ESG performance (Birindelli et al., 2018; Gurol & Lagasio, 2022; Rella & L'Abate, 2022).

The second board characteristic tested is gender diversity. The results of the regression analysis show that there is a significant positive correlation between board gender diversity and ESG performance. According to stakeholder theory, one responsibility of the board is to coordinate the interests of stakeholders and control managers (Freeman & Reed, 1983). The board of directors plays an important role in monitoring and controlling management to carry out

sustainability activities to improve the long-term relationship between the company and all stakeholders (Frynas & Stephens, 2015). Female directors on general are more focused on the interests of stakeholders and are more active in implementing transparency strategies (Chouaibi et al., 2022). Moreover, women's communication skills also help companies reduce levels of conflict (Nielsen & Huse, 2010) and improve external relationships with stakeholders (Harjoto & Wang, 2020). In addition, women are more sensitive to environmental issues (Diamantopoulos et al., 2003) and sustainable development (Dyck et al., 2023), because they are more stakeholder-focused, which leads them to tend to direct part of the company's scarce resources to value-maximizing social projects (Jizi, 2017). Therefore, in line with stakeholder theory, it is assumed that board gender diversity has a positive impact on ESG performance. The result of regression analysis verified hypothesis 3 that board gender diversity is positively related to ESG performance. This is supported by other previous literature of relationship between board gender diversity and ESG performance (Chouaibi et al., 2022; Harjoto & Wang, 2020; Rella & L'Abate, 2022).

Board meeting frequency is the third board characteristics that was tested. The results of the regression analysis show that there is a negative correlation between board meeting frequency and ESG performance. The results contradict hypothesis 3 (H3) that board meetings have positive impact on ESG performance. According to agency theory, board needs to meet actively to develop short-term and long-term strategies (Lipton & Lorsch, 1992). However, the results in this study indicate that the board meeting frequency has a significant negative relationship with ESG performance. Vafeas (1999) noted that a higher frequency of meetings is a remedy for poor financial performance, usually after a fall in stock prices. Friede et al. (2015) reviewed more than 2000 empirical studies on relationship between ESG and financial performance. They found that most studies confirm that there is a positive relationship between ESG performance and corporate financial performance (Friede et al., 2015). Hence, the poor financial performance reflects the lack of ESG performance. ESG helps companies effectively use scarce resources by finding a balance between their commercial and social objectives and improve long-term financial performance (Bamahros et al., 2022). Based on agency theory and stakeholder theory, the board of directors may increase board meetings to improve ESG underperformance to improve long-term financial performance. Therefore, the negative relationship between board meetings and ESG performance can be interpreted as a response action taken by the board to address the company's ESG issues.

The last hypothesis tested is the relationship between board tenure and ESG performance. The result of the panel regression model indicates that board tenure is beneficial, but much less remarkable. This result is in line with the study conducted by Cremona and Passador (2019), which confirms that board tenure has slightly positive association with the environmental and social value. On the one hand, board tenure helps board members to get more valuable expertise and connections in the industry, which is beneficial for companies' ESG performance (Clements et al., 2018). On the other hand, directors with long-term service period may have weak monitoring due to too close social ties with management (Sharma & Iselin, 2012), and they are more likely to stay in their comfort zone (Katmon et al., 2019) or they may become complacent (Beasley, 1996). According to agency theory, the benefits of a long-term board would be offset by a weakened monitoring function. In addition, the board tenure is negatively correlated with board meeting frequency, audit committee independence, and audit committee expertise, which are confirmed to be positive in monitoring management's social, environment and governance activities in previous studies (Arif et al., 2021; Pozzoli et al., 2022). In addition, in the regression results, board tenure was positively correlated with audit tenure, which has been shown to negatively impact ESG performance (Paolone et al., 2023). According to the results of study of (Paolone et al., 2023), when both boards tenure and audit committee tenure have a low rotation, companies may achieve lower environmental performance.

5. Conclusion

The main objective of this study is to examine the relationship between board characteristics and environment, social, and governance (ESG) performance in Scandinavia. The study was conducted with respect to 491 listed companies in Norway, Sweden, Denmark, and Finland from 2012 to 2021. Data from Refinitive Eikon Datastream is used to investigate the proposed impacts and relationships. The panel regression models are applied on 1355 observations across 11 different industrial sectors.

The findings provide evidence that board size has a significant and positive relationship with ESG performance. Gender diversity of the board has a significant and positive relationship with ESG performance. Board meetings have a slightly negative relationship with ESG performance. Board tenure has a positive relationship with ESG performance, but the extent to which is unremarkable.

This study has policy implications, providing regulators and companies in Scandinavia (Norway, Sweden, Denmark, and Finland) empirical evidence of the relationship between certain board characteristics and ESG performance. First, the significant and positive correlation between board size and ESG performance suggests that regulators and companies in Scandinavia should appoint larger boards to improve the monitoring function of boards and ensure the quality of non-financial disclosures. Second, the significant positive correlation between boards gender diversity and ESG performance suggests that regulators and companies in these four Nordic countries should encourage female directors to serve on boards, considering the extraordinary attributes of women contributing to better environmental, social and governance performance. Third, the negative (albeit slightly negative) relationship between board meetings and ESG performance implies that companies tend to hold more board meetings when ESG performance is unsatisfactory. Companies should not only focus on increasing the frequency of board meetings, but also on the contents and quality of board meetings to improve the quality of monitoring. Companies should also further observe the impact of changes in the frequency of board meetings on future ESG performance. Fourth, the positive but unremarkable correlation between board tenure and ESG performance indicates that long board tenure improves board members' expertise and connection in industry, which is positive for ESG performance. Meanwhile, when directors' tenures increase to a certain extent, the board's monitoring role may diminish, offsetting the positive impact of board tenure on ESG performance. Regulators should improve the regulation on board tenure by encouraging long tenure. However, setting limits on extremely long tenure is indispensable to ensure boards' governance effectiveness and monitoring function.

This study contributes to and expands the existing corporate governance literature in several ways. First, it provides new evidence on how board characteristics link with ESG performance in the Scandinavian region, which has not been fully explored. Second, this study expands on the corporate governance literature concerning the application of agency theory and stakeholder theory to similar research topics. Third, compared to previous research, this study applies an innovative method to measure gender diversity in the boardroom, revealing the prevalence of gender diversity policies in companies. This approach explores gender diversity on boards from a new perspective that can be applied to future research on similar topics.

While the study expands the corporate governance literature on the relationship between board characteristics and ESG performance in Scandinavia, there are some limitations of this study.

First, this study investigates the relationship between four board characteristics (including board size, board gender diversity, board meetings, and board tenure) and ESG performance in four Nordic countries: Norway, Sweden, Denmark, and Finland. There are still other board characteristics that are not included, such as board independence, board remuneration, and board expertise. Further study could explore how other board characteristics are associated with the ESG performance. Second, due to time and resource constraints, the sample selection of data is limited to listed companies in the Nordic countries, rather than all types of companies. The period of the sample is from 2012 to 2021, of which the Covid 19 pandemic may be a factor affecting a company's ESG performance. To improve robustness and reliability, further research could expand the sample to include companies outside the stock market and adjust for noise caused by the Covid 19 pandemic. Finally, the study explores the impact of board characteristics on ESG performance in Scandinavia, taking Norway, Sweden, Denmark, and Finland as a whole, regardless of the differences between the four Nordic countries. More research could be done to investigate and compare the dissimilarities between the four Nordic countries.

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