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## Sustainable Prosperity: Unravelling the Nordic Nexus of ESG, Financial Performance and Corporate Governance

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## ABSTRACT

**Purpose:** In the swiftly evolving business landscape, environmental, social, and governance (ESG) considerations have gained exceptional prominence, as stakeholders increasingly emphasize accountability and sustainability. This study meticulously probes the intricate interplay between ESG factors, financial performance, and the distinct corporate governance landscape that characterizes the Nordic region's crucible of proactive societal and environmental commitment.

**Design/methodology/approach:** We begin with a dataset of 899 Nordic firms across Sweden, Norway, Denmark, Finland, and Iceland. Using the Thomson Reuters database, we refine this dataset by excluding non-regional headquarters and entities without ESG scores or year-long financial data. This resulted in a focused dataset of 1360 firm-years spanning a decade, forming the foundation for investigating the link between ESG factors and financial performance in Nordic firms.

**Findings:** Drawing upon empirical data, we systematically dissect the correlation between specified financial ratios and ESG scores on the bedrock of sustainability evaluation. Our findings underscore a partially significant, yet robust relationship between ESG endeavours and financial performance metrics. Furthermore, the intricate interplay of corporate governance dimensions reveals intriguing correlations with financial indicators among the surveyed Nordic enterprises. However, our findings also reveal an intricate weave that underscores the ESG and financial performance nexus.

**Research limitations/implications:** This study addresses stakeholders’ theory and unique positions and contributes to the current discussion on sustainability reporting literature by providing empirical evidence of ESG influences on firm profitability through board characteristics in the specific context of the Nordic region. The sample for this study encompasses firms listed in Nordic countries and, thus, the results may not be generalizable to unlisted firms and other countries or regions.

**Practical Implications:** This study suggests that Nordic firms are advanced in reporting ESG in response to diverse stakeholder demands as part of their regular activities. This study provides valuable insights for diverse stakeholders including researchers and regulatory bodies.

**Social implications:** This study provides an understanding of stakeholders about the association of ESG and sustainability practices with firm profitability, which might lead to making the world a better place.

**Originality:** While illuminating the multifaceted ESG-financial performance nexus, our study reveals its intricate nature. This complexity accentuates the compelling need for further exploration to decode the exact outcomes and myriad factors contributing to the array of correlations observed. Through this comprehensive inquiry, our research advances our understanding and underscores the pivotal role of a focused investigation. This study seeks to harmonize ESG practices and financial performance seamlessly within the Nordic business realm.

**Keywords:** Environmental, social, and governance (ESG), ESG scores, Firm performance, Nordic countries

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## 1. INTRODUCTION

The global recognition of Environmental, Social, and Governance (ESG) criteria as pivotal nonfinancial performance indicators that influence investors, customers, and regulators underscores their critical role in portraying firms' investment and business conditions (Howard-Grenville, 2022; Atan et al., 2018; Brooks & Oikonomou, 2018). Acknowledging the urgency of ESG disclosures, corporate leaders, as evidenced by the United Nations Global Compact Survey of 2013, highlighted the essential nature of ESG-related issues for business success, with 93% of responding CEOs expressing their significance (UN, 2019). To address this, the European Commission has established expert groups focused on sustainable finance (European Commission, 2018).

In response to mounting stakeholder demands, government regulations, and public scrutiny, companies are increasingly expected to demonstrate transparency, accountability, and sustainability across environmental, social, and governance dimensions (Kristensen, 2021). These initiatives delineate firms' responsibilities towards the natural environment, climate, and social issues, such as human rights, equity, diversity, corporate independence, and transparency, all crucial elements fostering business growth (Atan et al., 2018; Forcadell & Aracil, 2017).

In the contemporary business landscape, corporate sustainability encompasses ethical, social, environmental, cultural, and economic aspects of operational conduct. The adoption of ESG metrics as a reliable indicator for gauging a company's sustainability underscores the growing awareness of the dimensions that define an enterprise's ethos. Moreover, studies suggest the potential impact of ESG initiatives on a company's financial performance (Abdi et al., 2022).

However, the relationship between ESG and financial performance remains a subject of debate. While some studies suggest that ESG performance enhances firm value by reducing costs and unsystematic risk (Brogi and Lagasio, 2019; McWilliams and Siegel, 2001), others argue against direct financial benefits (Brooks & Oikonomou, 2018; Barnea and Rubin, 2010; Groening and Kanuri, 2013). Consequently, the existing literature presents inconclusive and contradictory findings, necessitating further empirical research employing diverse methodologies and samples (Khan, 2022; Gillan et al., 2021; Miralles Quirós et al., 2019; Lee et al., 2013; Park et al., 2017).

Amid these challenges, this study uniquely positions itself to contribute by investigating this debate within Nordic countries—Sweden, Norway, Denmark, Finland, and Iceland—renowned for their steadfast commitment to ESG considerations. The Nordic region's emphasis on ESG, especially among influential enterprises addressing climate change, provides a compelling backdrop for examining the interrelationship between ESG scores and financial performance metrics. In an earlier study, Tahmid et al. (2022) examined European firms operating in 22 cross-border countries and identified a positive association between ESG initiatives and firm value; however, the identical focus on Nordic countries has yet to be explored.

The choice to focus on Nordic countries stems from their palpable dedication to ESG principles, evident in recent ESC rankings (see Appendix A). With a clear trajectory prioritizing sustainability, particularly among sizable corporations driving climate action, the Nordic region offers an ideal context for exploring how ESG scores align with financial performance indicators (SolAbility, 2022).

This study aimed to probe the correlation between ESG scores and financial metrics such as return on equity (ROE), return on assets (ROA), and net profit margin (NPM). Additionally, it incorporates dimensions of corporate governance, such as board size, female directors, and board meetings, to understand their potential ties with firms’ financial performance (Khan, 2019).

By scrutinizing the correlation between ESG scores and financial performance within Nordic countries, this study seeks to reveal nuanced insights into this relationship, while identifying potential constraints and avenues for future inquiry. Understanding the impact of sustainability on financial performance has significant implications for shaping the discourse on whether ESG implementation merely incurs operational costs or becomes a means to augment profits through enhanced product value (Kristensen, 2021). In doing so, this study contributes substantially to policy considerations in the corporate domain.

This paper is organized into four sections. Section 2 reviews the literature and develops our hypotheses. Section 3 outlines the research methods, including the sample, data, and the model. Section 4 presents the empirical results, and Section 5 concludes the paper.

## 2. LITERATURE REVIEW

The most widely used indices for measuring the accountability of companies to sustainability standards today are environmental, social, and governance scores (Howard-Grenville, 2022). One of the prime goals of a firm is to ensure sustainable performance by attaining stakeholders’ demands for nonfinancial data, where ESG initiatives have a positive influence on firm performance and value arise (Abdi et al., 2022). To interpret empirical studies, several theoretical frameworks explain the different aspects of ESG and the impact of ESG initiatives on a company's value and performance, such as stakeholder theory, resource dependency theory, and signaling theory (Diez-Cañamero et al., 2020; De Grosbois, 2012). Stakeholder theory, one of the key influential approaches that focuses on the relationship of a firm with all entities involved in it, and when a firm integrates the ESG initiative with its positive effect, prevails on the firm’s financial performance (Abdi et al., 2022). Globally, firms encounter pressure from stakeholders to incorporate sustainable business practices into their regular activities in the corporate governance (CG) framework (Alsaifi et al., 2019; Helfaya et al., 2019). Stakeholder theory suggests that ESG initiatives create value for the company in two ways: one is the rise in shareholder value because of higher cash flow levels for the firm and optimizing shareholder utility for holding shares in a sustainable firm (Gillan et al., 2021). In addition, according to resource dependency theory, firms should concentrate on fostering competitive adventage when their ESG scores have the potential to boost business performance and value (Xie et al., 2019).

Nordic countries are celebrated as global sustainability leaders (see Appendix A), consistently achieving high rankings in sustainability indexes (Abdi et al., 2022; Bjørnåli & Sannes, 2020). Rooted in shared history, culture, and commitment to environmental, social, and governance (ESG) principles, these countries have thrived in this domain (Kolk, 2016). While much of the ESG regulatory framework in Nordic countries aligns with the European Union (EU), it is often regarded as a voluntary commitment by companies to incorporate ESG concerns into their operations and stakeholder communication (European Commission, 2018). Nonetheless, a pivotal turning point came in 2008 when the EU's Competitiveness Report underscored the significance of ESG for enterprises, leading to a notable integration of ESG into business strategies and models (European Commission, 2021). Moreover, global standards and guidelines, including the Global Reporting Initiative (GRI), the United Nations Global Compact (UNGC), the United Nations Principles of Responsible Investment (UNPRI), OECF Requirements for Multinational Companies, and the International Labour Organization (ILO), have further shaped the robust ESG culture of Nordic countries (Bjørnåli & Sannes, 2020; Kolk, 2016). This tradition, underpinned by an open society, competitive economy, and accessible media resources, has positioned businesses as the primary drivers of ESG initiatives in the Nordic region (Bjørnåli & Sannes, 2020; Kolk, 2016).

Sustainable businesses harmonize the interests of all stakeholders, transforming ESG metrics into indicators of performance and positions on matters pivotal to a wider range of stakeholders, especially investors (Crifo et al., 2015; Freeman, 1984). Crucial markers of a company's ESG consciousness encompass carbon emission reduction, environmental impact mitigation, and the well-being of employees, encompassing both physical and mental dimensions (Wang & Sarkis, 2017). ESG factors also encompass employment stability, safety, and gender equality, profoundly shaping company performance (Wang & Sarkis, 2017). ESG scores, transparently provided by accredited agencies globally, equip companies to gauge performance, discern market trends, and optimize operational strategies (Khan et al., 2013). Thus, this approach is evolving into a strategic paradigm for a company's vision, akin to how financial metrics evaluate shareholder performance (Kay et al., 2020).

The intricate relationship between ESG factors and financial performance has been the subject of debate and exploration among organizational researchers (Lu et al., 2014). This topic has prompted numerous studies to delve into the connection between ESG scores and corporate performance, spanning a spectrum from comprehensive analyses involving thousands of empirical studies to targeted investigations focused on specific markets or countries. Research on the relationship between ESG and financial performance has yielded varied outcomes (Oikonomou et al., 2014). While some studies have revealed a positive correlation, others suggest a negative or insignificant connection (Oikonomou et al., 2014). Notably, companies prioritizing sustainability often secure higher ESG scores, despite potential implementation costs (Refinitiv, 2020). However, the intricate interplay between ESG and financial performance requires further exploration (Lu et al., 2014; Javed et al., 2016).

One of the most substantial contributions to this discourse comes from Friede's comprehensive study (2015), which aggregates evidence from 2,200 empirical studies to unveil a compelling trend; nearly 90% of these studies highlight a positive association between ESG factors and financial performance. Notably, an intriguing insight emerges when considering the geographical context: within Europe, approximately 26.1% of studies affirm a positive relationship, while a mere 8% suggest a negative one. However, it is important to note that Nordic countries have not been singled out as a distinct region in these studies; they have been grouped under the broader European category.

Velte (2017) refines the investigation by focusing on 80 German companies. This study examines financial performance using metrics such as return on assets (ROA) and Tobin’s Q. The findings reveal a substantial positive connection between ESG scores and ROA. However, the linkage to Tobin’s Q, a marker of market-based financial performance, is relatively minor. Despite its contributions, the scope of Velte's study is limited to approximately 15% of Germany's largest listed companies during 2010-2014.

Moving to the Italian market, Landi (2019) scrutinized data from 40 major Italian firms from 2008 to 2015 to assess the impact of ESG ratings on financial performance. Surprisingly, the findings diverge from expectations, as no statistically significant evidence emerges that connects ESG ratings to Italian companies’ returns. Interestingly, the study highlights that investors often prioritize traditional factors, such as EBITDA and financial leverage, over other variables, implying a nuanced investor perspective.

Investigating 72 banks from a diverse range of European countries during 2009-2015, Gangi (2018) reveals the repercussions of the mortgage crisis and heightened emphasis on sustainable banking models. Notably, this study suggests that ESG initiatives could present banks with opportunities to enhance their brand perception, boost profit margins, and elevate the quality of their loans.

Shifting to the Australian context, Siew’s (2013) analysis zeroes on the financial performance of 44 listed Australian construction companies from to 2008-2010. Interestingly, the findings reveal a disagreement between ESG factors and financial outcomes. Companies often exhibit inadequate reporting practices, which results in unmet investor expectations. Consequently, ESG factors seem to have limited influence on financial performance in this context.

On a different note, Makni et al.'s (2008) investigation centers on the Canadian market and arrives at a distinct conclusion. This study finds no statistically significant relationship between ESG measures and various financial performance ratios such as return on equity (ROE), return on assets (ROA), and stock market returns. However, recent research trends tend to indicate positive yet insubstantial correlations between ESG factors and financial performance, often characterized by mixed outcomes (McWilliams, 2001).

In summary, while the indicators of a positive ESG-financial performance relationship abound, a comprehensive understanding necessitates further inquiry. This review underscores the intricate nature of this issue and underscores the need for a comprehensive investigation. Against this backdrop, the present study aims to unravel the complex relationship between corporate sustainability and financial performance in Nordic countries.

### 2.1 Hypotheses Development

Firms incorporate ESG disclosures to respond to the demands of diverse stakeholders, develop credibility, and react to crises and competition in their respective industries (Olsen et al., 2021). Stakeholder theory emphasizes that firms should align with various related parties to serve their interests along with shareholders’ gains (Olsen et al., 2021). According to this theory, different stakeholders (including customers, employees, communities, the environment, and suppliers) belong to diverse resources that help firms to accelerate their financial performance (Kay et al., 2020). For instance, when a firm acts responsibly toward customers and employees formerly and informally, it also engages positively, which leads to greater profitability and productivity (Okafor et al., 2021; Yoon et al., 2018).

Thus, an integral facet of a company's ESG sensitivity pertains to its capacity to reduce its carbon footprint and mitigate environmental impacts encompassing employment stability, safety, and gender equality, which demand due attention from companies (Wang & Sarkis, 2017). Achieving this involves monitoring resource consumption, carbon emissions, and employee well-being, encompassing both the mental and physical aspects (Wang & Sarkis, 2017). Certified agencies offer ESG scores globally, with transparent data sources enabling rigorous analysis (Khan et al., 2013). These scores serve as yardsticks for evaluating a company's performance relative to the industry, scrutinizing market dynamics, and identifying opportunities for operational, strategic, and business model enhancement (Khan et al., 2013).

Previous studies have indicated a positive association between ESG and financial performance (Aydoğmuş et al., 2022). Focusing on the connection between certain ESG activities and the financial performance of a sizable global sample of organizations, Xie et al. (2019) discovered that the majority of ESG have a favorable link with financial performance. Using firm value (Tobin's Q), ROE, and ROA, Bhaskaran et al. (2020) examine the impact of ESG on the financial performance of 4887 organizations from 2014 to 2018 and discover that firms with strong performance in the environment, governance, and social pillars typically create greater value in the market. Similar findings are made by De Lucia et al. (2020), who examine a sample of 1038 public firms from 22 European nations between 2018 and 2019 and discover a favorable correlation between ESG factors and financial performance (ROE and ROA).

Some researchers have investigated FTSE-listed companies and found a significant correlation between business worth and the amount of ESG reporting, proving that stakeholder trust and accountability positively affect firm value (Li et al., 2018). Moreover, Ahmad et al. (2021) investigated the impact of ESG on 351 FTSE350 firms' financial performance for the years 2002–2018 and discovered that total ESG scores considerably and favorably  influence companies' financial performance. By contrast, some scholars argue that ESG investment has a negative impact on profitability or firm value. According to Landi and Sciarelli (2019), there is a poor correlation between financial performance and ESG in 54 listed Italian companies from 2007 to 2015. Similarly, Garcia and Orsato (2020) find a negative correlation between ESG scores and financial performance when comparing emerging and industrialized nations using 2165 enterprises from 2007 to 2014. However, several studies find no significant relationship between profitability and ESG scores (Han et al., 2016).

Building upon this insight, our investigation focuses on the impact of ESG factors on firms’ financial performance, encompassing metrics such as return on equity (ROE), return on assets (ROA), net profit margin (NPM), and Tobin’s Q. With these theoretical foundations in mind, we propose the following:

Hypothesis 1 (H1): A positive relationship exists between firm profitability and the ESG score.

Furthermore, our exploration extends to the interplay between corporate governance matrices and firm profitability. Corporate governance intricacies encompassing factors such as board size, gender diversity, and board meetings significantly influence firm performance (Khan et al., 2013). Our examination focuses on the impact of these board matrices on firm profitability. However, in earlier studies, scholars have found mixed results, where many researchers suggest that the size of the board assumes a pivotal role within the corporate governance framework, influencing board efficiency and effectiveness (Wang et al., 2022). Moreover, studies from developed economies suggest a positive and substantially positive relationship between a larger board and ESG considerations (Ntim et al., 2013). Gender diversity, which reflects a blend of male and female board members contributing diverse skills, experiences, and perspectives, has also garnered attention (Wang et al., 2022). Haque (2017) posits that female board members enhance decision-making, while Lu and Herremans (2019) identify nuanced effects on firm performance. Additionally, the frequency of board meetings emerges as a determining factor (Al Amosh & Khatib, 2021), while others endorse more frequent meetings for heightened board efficiency (Al Amosh & Khatib, 2021), while others caution against an overly invasive and unproductive approach that could impede firm performance (Frias-Aceituno et al., 2013). Based on these theoretical underpinnings, we propose the following hypothesis:

Hypothesis 2a (H2a): There is a positive relationship between firm profitability and board size.

Hypothesis 2b (H2b): A positive relationship exists between firm profitability and number of board meetings.

Hypothesis 2c (H2c): There is a positive relationship between firm profitability and gender diversity.

## 3. RESEARCH METHODS

### **3.1 Data and Sample**

Gathering comprehensive data to assess the correlation between ESG factors and corporate governance has presented challenges in prior research (Khan, 2019; Javed et al., 2016). To address this, we compiled a sample of Nordic companies using accessible data from 2012 to 2021. Our longitudinal dataset was derived from the Thomson Reuters EIKON database, which covers 308 firms with ESG Scores over the past decade. Our focus is narrowed to companies headquartered in the Nordic region and listed on the Nordic Stock Exchange markets, yielding a final sample of 289 companies.

Within this cohort, a subset of 136 firms with complete data was identified, encompassing 1360 firm-years. Panel A of Table 1 outlines our selection process, accounting for firms in Sweden, Finland, Norway, Denmark, and Iceland. The sectors represent span 11 industries, classified by the Industry Classification Benchmark, as detailed in Panel C of Table 1. Our data collection aligns with our research objective, seeking to elucidate the connection between ESG factors and financial performance in the Nordic context, which is known for its sustainability prominence (See Appendix A).

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| **Table 1.** Sample selection |
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| *Panel A Sample selection process* |
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|  |  |  |
| --- | --- | --- |
| **Number of firms in Nordic countries listed in one of the Nordic Stock Exchange** | Firms | % † |
| Listed in Denmark on the NASDAQ OMX Copenhagen Stock Exchange | 134 | 15 |
| Listed in Iceland on NASDAQ OMX Iceland Stock Exchange | 19 | 2 |
| Listed in Finland on the NASDAQ OMX Helsinki Stock Exchange | 141 | 16 |
| Listed in Norway on the Oslo Børs Stock Exchange | 227 | 25 |
| Listed in Sweden on the NASDAQ OMX Stockholm Stock Exchange | 378 | 42 |
| **Total listed firms in Nordic countries** | **899** | **100** |
| Less: Firms having head office outside Nordic countries | 19 | 2 |
| **Nordic listed firms with head office in the Nordic region** | **880** | **98** |
| Firms with no ESG data | 591 | 66 |
| **Nordic Firms listed in one of the Nordic Stock Exchange, have head offices in the Nordic region and ESG Score at least in one year during the last 10 years from 2012-2021 in Thomson Reuters EIKON database** | **289** | **32** |
| Less: Firms without the necessary financial data | 153 | 17 |
| **Total firms in the final sample** | **136** | **15** |

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|  |
| *Panel B Country representation in the sample* |
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|  |  |  |
| --- | --- | --- |
| **Sample Nordic countries** | Firms | % † |
| Denmark | 27 | 20 |
| Finland | 24 | 18 |
| Norway | 19 | 14 |
| Sweden | 66 | 45 |
| **Total firms in the final sample** | **136** | **100** |

 |
| *Panel C Industry representation in sample* |
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|  |  |  |
| --- | --- | --- |
| **Industries** | Firm year | % † |
| Industrials | 380 | 28 |
| Consumer Staples | 70 | 5 |
| Real Estate | 80 | 6 |
| Basic Materials | 140 | 10 |
| Consumer Discretionary | 140 | 10 |
| Health Care | 140 | 10 |
| Telecommunications | 70 | 5 |
| Technology | 45 | 3 |
| Financials | 175 | 13 |
| Energy | 100 | 8 |
| Utilities | 20 | 2 |
| Total | 1360 | 100 |

 |
| Source: Thomson Reuters EIKON database during the period 2012-2021 |
| † % is rounded up |

**3.2 Variable definition**

Table 2 presents the variables central to our research hypotheses. To ensure accuracy and consistency, an independent coding expert conducted a comprehensive crosscheck of all items, meticulously identifying and rectifying any inconsistencies. Subsequently, the second coder meticulously examined the variables, confirming the absence of discrepancies and affirming the validity and reliability of the coding process.

|  |
| --- |
| **Table 2.** Measurement of dependent, independent, and control variables |
| Name of Variable | Mnemonics | Variable types | Definition and measurement |
| Return on equity | ROE | Dependent | Net income /shareholder’s equity. |
| Return on assets | ROA | Dependent | Earnings before interest and taxes/total assets. |
| Net profit margin | NPM | Dependent | Net profit divide by total revenue and then multiply by 100. |
| ESG score | ESG | Independent | Thomson Reuters ESG Scores measures a company's exposure to environmental, social and governance risks on 10 categories. |
| Board Size | BSIZE | Independent | Number of directors on board. |
| Board Meeting | BOMEET | Independent | Number of board meetings held in a year. |
| Women on Board | GENDER | Independent | Number of female directors/number of directors sitting on the board. |
| Industry | INDUS | Control | Industry belongingness. Dummy variable. |
| Year | YEAR | Control | Sample year. Dummy variable. |

**3.3 Model specification**

These models were constructed with the primary objective of examining the relationship between firm profitability and ESG. In addition, we analyze the impact of the corporate governance nexus on profitability. We began by proposing our initial model (Model 1) and subsequently applied it to test our hypotheses.

$ROE$*i,t* $= β\_{0} + β\_{1}ESG $*i,t* $+β\_{2} BSIZE $*i,t* $ +β\_{3} BOMEET $*i,t* $+β\_{4} GENDER $*i,t* $ $$ +∑Year+$*∑Industry* $ +ε\_{i,t}$ *… (1)*

$ROA$*i,t* $= β\_{0} + β\_{1}ESG $*i,t* $+β\_{2} BSIZE $*i,t* $ +β\_{3} BOMEET $*i,t* $+β\_{4} GENDER $*i,t* $ $$ +∑Year+$*∑Industry* $ +ε\_{i,t}$ *… (2)*

$NPM$*i,t* $= β\_{0} + β\_{1}ESG $*i,t* $+β\_{2} BSIZE $*i,t* $ +β\_{3} BOMEET $*i,t* $+β\_{4} GENDER $*i,t* $ $$ +∑Year+$*∑Industry* $ +ε\_{i,t}$ *… (3)*

where i and t stand for the firm and the time period, respectively; $β\_{0}$ *=* intercept; $β\_{1} and β\_{7}$ *= Coefficient of slope parameters, and* $ε$ = error term. Table 1 summarizes the definitions of the remaining independent and control variables.

## 4. RESULTS AND FINDINGS

## 4.1 Descriptive statistics

Table 3 provides detailed descriptive statistics for the sample firms' profitability, ESG, and the board matrix. The average ESG Score is 59, ranging from 5.57 to 91.4, indicating a 59% ESG disclosure rate among Nordic firms. Regarding profitability, the average ROE is -0.35, ranging from -163.21 to a maximum of 11.22. ROA varies from -11.48 to 3654.79, with an average of 12.39. Furthermore, the average NPM was 0.15, with a range of -7.23 to 9. Exploring the board matrix, the average board size was nine, ranging from 1 to 17, while the average percentage of female directors was 36%. Additionally, the average number of board meetings was 13 during this period, ranging from one to 35.

**Table 3.** Descriptive Statistics

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Variables** | **ROE** | **ROA** | **NPM** | **ESG**  | **BSIZE** | **BMEET** | **GENDER** |
| Mean | -0.35 | 12.39 | 0.15 | 59.00 | 9.00 | 13.00 | 36.00 |
| Standard Deviation | 8.81 | 171.62 | 0.68 | 17.13 | 3.50 | 6.8 | 11.50 |
| Minimum | -163.21 | -11.48 | -7.23 | 5.57 | 1.00 | 1.00 | 0.00 |
| Maximum | 11.44 | 3654.79 | 9.00 | 91.40 | 17.00 | 35.00 | 57.1 |

Note: See Table 1 for variable definitions.

## 4.2 Correlation Matrix

Table 4 shows the Pearson correlation and variance inflation factors (VIF). As the table shows, there is no correlation between the ESG score, ROE, ROA, and NPM, whereas the VIF results are below 10, implying no severe multicollinearity issues (Saha, 2019). The results confirmed that the variables were suitable for the regression analysis.

**Table 4.** Correlations and variance inflation factor (VIF)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Independent variables | VIF | ESG | BSIZE | GENDER | BOMEET | ROE | ROA | NPM |
| ESG | 1.28 | 1.00 |  |  |  |  |  |  |
| BSIZE | 1.16 | 0.25\*\*\* | 1.00 |  |  |  |  |  |
| GENDER | 1.12 | 0.07\*\* | -0.08\*\* | 1.00 |  |  |  |  |
| BOMEET | 1.22 | -0.005 | -0.04 | 0.06\*\* | 1.00 |  |  |  |
| ROE | 1.06 | 0.02 | 0.08\*\* | -0.04 | 0.01 | 1.00 |  |  |
| ROA | 1.08 | 0.01 | 0.05\*\* | 0.08\*\* | 0.01 | 0.004 | 1.00 |  |
| NPM | 1.28 | -0.02 | -0.04 | 0.04 | 0.01 | 0.12\*\*\* | 0.01 | 1.00 |

Notes: (1) \*, \*\*, \*\*\* indicate significance at the 10%, 5%, and 1% levels of confidence, respectively. (2) See Table 1 for the variable definitions.

Figures 1, 2, and 3 show the data distributions of the variables. ROE, ROA, and NPM data are not normally distributed.

|  |  |
| --- | --- |
| Figure 1 Scatterplot showing ROE and ESG Score values | Figure 2 Scatterplot showing ROA and ESG Score values |
| Figure 3 Scatterplot showing NPM and ESG Score values |  |

### **4.3** Multivariate Regression Analyses

Table 5 shows the effects of ESG and board characteristics on profitability. Specifically, OLS applied in Models 1 to 3 reports the impact of ESG and individual board attributes on firm profitability, whereas Tobit is applied in Models 4 to 6.

First, Models 1 to 3 in Table 5 find that all profitability matrices are statistically significant to ESG, implying that H1 is accepted. Among the three profitability indicators – ROE, ROA, and NPM–ESG score has a highly significant impact on ROA and NPM, with coefficient of 0.65 and 1.1, respectively, while ROE is less significant. However, in Models 4 to 6, only ROE is significant for ESG, with a coefficient of 0.03, while ROA and NPM have no significant relationship with the ESG score. From a theoretical point of view, these results support stakeholder theory because firms endeavour to improve their financial performance to satisfy investors and concerned parties.

Second, we find that board size is one of the key influential characteristics that have a positive and highly significant relationship with ROE, ROA, and NPM with coefficients of 0.16, 2.94, 1.51, and 0.16, respectively, indicating that firms with more board members drive more profitability. This finding is also aligned with the theoretical perspective, as a board of larger size shares their expertise which creates positive synergy effects.

Third, based on the results, we determine that female directors (GENDER) are the only significant positive factor for ROA ESG with a coefficient of 0.97, while all other profitability factors have no significant relationship with female directors. This could be the reason for incorporating closely related female directors who are not participating in their role in the firm.

Fourth, we find that board meetings (BOMEET) are negatively significant for ROA and NPM, whereas ROE is not associated with the number of board meetings. This could be a consequence of ineffective board meetings that do not create value for firms.

**Table 5.** The influence of ESG and board characteristics on profitability

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Dependent variable | ROE | ROA | NPM | ROE | ROA | NPM |
|  | OLS | OLS | OLS | Tobit | Tobit | Tobit |
| Model | (1) | (2) | (3) | (4) | (5) | (6) |
| Independent variables |  |  |  |  |  |  |
| ESG | 0.03\* | 0.65\*\* | 1.1\*\*\* | 0.03\* | 0.4 | 0.01 |
| BSIZE | 0.16\*\* | 2.94\*\* | 1.51\*\* | 0.16\*\* | 2.3 | -0.001 |
| GENDER | -0.33 | 0.97\*\* | 20 | -0.03 | 0.94 | -0.002 |
| BOMEET | 0.00 | -1.4\*\* | -1.3\*\* | 0.03 | -1.39\*\* | 0.001 |
| Control variables: |  |  |  |  |  |  |
| Year fixed effect | Y | Y | Y | Y | Y | Y |
| Industry effect | Y | Y | Y | Y | Y | Y |
| No of firm-year observations | 1166 | 1210 | 1129 | 1166 | 1210 | 1129 |
| R2 | 0.04 | 0.05 | 0.19 | 0.01 | 0.01 | 0.01 |

Notes: (1) \*, \*\*, \*\*\* indicate significance at the 10%, 5%, and 1% levels of confidence, respectively. (2) See Table 1 for the variable definitions.

Table 6 shows the country- and industry-level influence of ESG and board characteristics on profitability. In Denmark, ESG is positively significant for ROE and NPM, whereas gender is statistically significant for all profitability factors. By contrast, board size is negatively significant for ROE and NPM, where board meetings do not have any statistically significant influence. The reason for the negative result might be ineffective board members and meetings. We find surprising results for Finland, where the results show no significant relationship between ESG and the profitability matrix, while board characteristics are negatively significant for ROE and NPM. Therefore, it could be due to an ineffective corporate board that does not properly acknowledge ESG. In addition, ESG is significant for NPM in Norway, while board size is also statistically significant for ROE, ROA, and NPM, indicating a positive and effective board. The findings also signify that a larger size allows a board to serve the diverse interests of stakeholders to legitimize their activities (Ntim et al. 2013). The results also show that in Sweden, ESG is positively significant for NPM, whereas gender is significant for ROA and NPM.

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| **Table 6** Countries and industries level influence of ESG and board characteristics on profitability |
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| --- | --- | --- | --- |
| **Denmark** |  |  |  |
| Dependent variable | ROE | ROA | NPM |
| Model | (1) | (2) | (3) |
| Independent variables |  |  |  |
| ESG | 0.003\*\* | -0.3 | 0.001\*\* |
| BSIZE | -0.01\*\* | 1.39 | -0.01\*\* |
| BOMEET | -0.02 | -0.42 | 0.00 |
| GENDER | 0.03\*\* | 0.73\*\* | 0.02\*\* |
| Control variables: |  |  |  |
| Year fixed effect | Y | Y | Y |
|  R2 | 0.43 | 0.18 | 0.50 |

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| **Finland** |  |  |  |
| Dependent variable | ROE | ROA | NPM |
| Model | (1) | (2) | (3) |
| Independent variables |  |  |  |
| ESG | -0.02 | -0.03 | 0.000 |
| BSIZE | -0.05\*\*\* | -0.61 | -0.02\*\* |
| BOMEET | -0.01\*\*\* | -0.01 | -0.005 |
| GENDER | -0.03\*\* | -0.06 | -0.000 |
| Control variables: |  |  |  |
| Year fixed effect | Y | Y | Y |
|  R2 | 0.34 | 0.07 | 0.30 |

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| **Norway** |  |  |  |
| Dependent variable | ROE | ROA | NPM |
| Model | (1) | (2) | (3) |
| Independent variables |  |  |  |
| ESG | 0.06 | 0.02 | 0.01\*\* |
| BSIZE | 3.12\*\* | -0.01 | 0.01\*\*\* |
| BOMEET | -0.01 | -0.03 | -0.001 |
| GENDER | -0.07 | 0.1 | 0.005 |
| Control variables: |  |  |  |
| Year fixed effect | Y | Y | Y |
|  R2 | 0.14 | 0.10 | 0.32 |

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| **Sweden** |  |  |  |
| Dependent variable | ROE | ROA | NPM |
| Model | (1) | (2) | (3) |
| Independent variables |  |  |  |
| ESG | -0.001 | 0.01 | 0.001\*\* |
| BSIZE | 0.001 | 2.26 | -0.01\*\* |
| BOMEET | -0.002 | -0.33 | 0.00 |
| GENDER | -0.001 | 1.34\*\* | 0.02\*\* |
| Control variables: |  |  |  |
| Year fixed effect | Y | Y | Y |
|  R2 | 0.05 | 0.03 | 0.50 |
| **Industrial** |  |  |  |
| Dependent variable | ROE | ROA | NPM |
| Model | (1) | (2) | (3) |
| Independent variables |  |  |  |
| ESG | 0.01\*\* | 0.14 | 0.001\* |
| BSIZE | -0.00 | 0.29 | -0.01\* |
| BOMEET | -0.01\* | -0.19 | -0.03\* |
| GENDER | 0.01\* | 0.04\*\* | 0.00 |
| Control variables: |  |  |  |
| Year fixed effect | Y | Y | Y |
|  R2 | 0.08 | 0.05 | 0.19 |

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| **Consumer Staple** |  |  |  |
| Dependent variable | ROE | ROA | NPM |
| Model | (1) | (2) | (3) |
| Independent variables |  |  |  |
| ESG | 0.001 | -0.02 | -0.00 |
| BSIZE | 0.002\*\* | 0.02 | 0.00 |
| BOMEET | 0.01\*\* | 0.03 | -0.00 |
| GENDER | -0.01 | 0.06 | 0.004\* |
| Control variables: |  |  |  |
| Year fixed effect | Y | Y | Y |
|  R2 | 0.01 | 0.09 | 0.32 |

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| **Real Estate** |  |  |  |
| Dependent variable | ROE | ROA | NPM |
| Model | (1) | (2) | (3) |
| Independent variables |  |  |  |
| ESG | -0.00 | -0.97\* | 0.01 |
| BSIZE | 0.01 | 5\*\* | -0.23\*\* |
| BOMEET | 0.03 | 1.28 | -0.00 |
| GENDER | -0.00 | 1.47\* | 0.01 |
| Control variables: |  |  |  |
| Year fixed effect | Y | Y | Y |
|  R2 | 0.05 | 0.38 | 0.24 |

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| **Basic Materials** |  |  |  |
| Dependent variable | ROE | ROA | NPM |
| Model | (1) | (2) | (3) |
| Independent variables |  |  |  |
| ESG | 0.2\*\* | -0.02 | 0.01\*\*\* |
| BSIZE | 1.21 | 1.4\*\* | 0.04\*\*\* |
| BOMEET | -0.11 | 0.25 | 0.02\*\* |
| GENDER | 0.16 | 0.28\*\* | 0.04\*\* |
| Control variables: |  |  |  |
| Year fixed effect | Y | Y | Y |
|  R2 | 0.07 | 0.04 | 0.36 |

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| **Consumer Discretionary** |  |  |  |
| Dependent variable | ROE | ROA | NPM |
| Model | (1) | (2) | (3) |
| Independent variables |  |  |  |
| ESG | 0.00 | 0.2 | 0.00 |
| BSIZE | 0.01 | 0.7 | 0.01\*\* |
| BOMEET | -0.01\*\* | 0.7 | -.01\*\*\* |
| GENDER | 0.02\* | 0.6\*\* | 0.00 |
| Control variables: |  |  |  |
| Year fixed effect | Y | Y | Y |
|  R2 | 0.13 | 0.08 | 0.23 |

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| **Health Care** |  |  |  |
| Dependent variable | ROE | ROA | NPM |
| Model | (1) | (2) | (3) |
| Independent variables |  |  |  |
| ESG | 0.02\*\* | 0.01 | 0.00 |
| BSIZE | 0.03\*\*\* | 0.63\*\* | 0.01\*\* |
| BOMEET | -0.04 | -0.06 | -0.01\*\* |
| GENDER | -0.02 | 0.04 | 0.00 |
| Control variables: |  |  |  |
| Year fixed effect | Y | Y | Y |
|  R2 | 0.22 | 18 | 0.09 |

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| **Telecommunications** |  |  |  |
| Dependent variable | ROE | ROA | NPM |
| Model | (1) | (2) | (3) |
| Independent variables |  |  |  |
| ESG | -001\*\*\* | -0.1 | -0.00\*\* |
| BSIZE | -0.03\*\* | -0.3 | -0.01\*\* |
| BOMEET | -0.01\*\* | 4.7\*\*\* | -0.00 |
| GENDER | -01\*\*\* | -0.7 | -0.00 |
| Control variables: |  |  |  |
| Year fixed effect | Y | Y | Y |
|  R2 | 0.5 | 0.44 | 0.41 |

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| **Technology** |  |  |  |
| Dependent variable | ROE | ROA | NPM |
| Model | (1) | (2) | (3) |
| Independent variables |  |  |  |
| ESG | 0.00 | -0.06 | 0.00 |
| BSIZE | -0.04 | 0.42\*\* | -0.01 |
| BOMEET | -0.02 | -0.01 | 0.01 |
| GENDER | 0.02 | 0.01 | 0.01\*\* |
| Control variables: |  |  |  |
| Year fixed effect | Y | Y | Y |
|  R2 | 0.02 | 0.44 | 0.16 |

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| **Financials** |  |  |  |
| Dependent variable | ROE | ROA | NPM |
| Model | (1) | (2) | (3) |
| Independent variables |  |  |  |
| ESG | -0.00 | 2.2 | -0.01 |
| BSIZE | 0.03 | 21 | -0.05 |
| BOMEET | -0.00 | -3 | -0.00 |
| GENDER | 0.00 | 2 | -0.01 |
| Control variables: |  |  |  |
| Year fixed effect | Y | Y | Y |
|  R2 | 0.05 | 0.09 | 0.03 |

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| **Energy** |  |  |  |
| Dependent variable | ROE | ROA | NPM |
| Model | (1) | (2) | (3) |
| Independent variables |  |  |  |
| ESG | -0.56\* | -0.18 | 0.001 |
| BSIZE | 4.14\*\* | 1.5\*\* | 0.01\*\* |
| BOMEET | 0.34 | -0.02 | -0.01 |
| GENDER | -0.58\*\* | -0.06 | -0.001 |
| Control variables: |  |  |  |
| Year fixed effect | Y | Y | Y |
|  R2 | 0.19 | 0.05 | 0.06 |

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| **Utilities** |  |  |  |
| Dependent variable | ROE | ROA | NPM |
| Model | (1) | (2) | (3) |
| Independent variables |  |  |  |
| ESG | -0.01\*\* | -0.55 | -0.003 |
| BSIZE | 0.003 | 19\*\* | -0.002 |
| BOMEET | 0.007 | -5 | 0.005 |
| GENDER | -0.004 | 3.78\*\* | 0.005 |
| Control variables: |  |  |  |
| Year fixed effect | Y | Y | Y |
|  R2 | 0.5 | 0.84 | 0.68 |

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| Notes: (1) \*, \*\*, \*\*\* significance at 10%, 5%, and 1% levels of confidence, respectively. (2) See Table 2 for variable definitions. |

Collaboration with other industries is also a key factor in increasing a company’s sustainability, provided it aligns with rules and regulations applicable in the countries where the company operates (Niesten, 2017). Therefore, Table 6 also shows the influence of ESG and corporate governance characteristics on the profitability of different industries, which is consistent with earlier research by Xie et al. (2019), who focus on the relationship between ESG initiatives and the financial performance of large sample firms and find a positive association with financial performance. For the Industrial sector, ESG is statistically positively significant for ROE and NPM, whereas ROA remains neutral. The results indicate that ESG practices accelerate firms' ROE and NPM, which is similar to De Lucia et al. (2020), who investigated a sample of 1038 public companies in 22 European countries and found that ESG has a positive association with ROE and ROA. In contrast, board size and board meetings are negatively significant for ROE and NPM, indicating that the industrial sector is negatively associated with corporate governance. The results remind us that as the industrial sector is responsible for environmental degradation, management overlooks the importance of environmentally friendly decisions.

Similarly, in the case of Consumer Staple, the profitability matrix does not have any statistically significant relationship with ESG, while board size and board meetings are positively significant for ROE. The results also show that female directors are significantly and positively related to NPM. Our finding is consistent with those of Velte (2017), who examined German firms and found that governance has a significant effect on financial performance. This result signifies that Consumer Staple firms with higher ESG scores tend to have more ROE and NPE.

Interestingly, the ROA and NPM of the Real Estate sector are negatively significant for ESG and board size, respectively, whereas board size and gender are statistically positively significant for ROA, which is consistent with earlier studies by Fariha et al. (2022). A possible reason is that the Real Estate sector is directly responsible for deforestation and environmental degradation, and thus, management is not concerned about ESG.

For companies in the Basic Materials sector in Nordic countries, ROE and NPM are positively significant for ESG. Similarly, board size, gender, and board meetings were statistically significant for ROA and NPM, respectively. The findings indicate that both ESG and the corporate governance matrix are positively associated with the Basic Materials sector, which is also similar to the earlier study of Velte (2017).

However, our investigation does not find any influence of ESG on Consumer Discretionary, except for a few corporate governance matrices where board size and gender are positively significant to NPM and ROA, respectively, which is consistent with Velte (2017), while board meetings are statistically and negatively significant to ROE and NPM, which is consistent with Brammer et al. (2006).

The ROE of healthcare firms is statistically significant to ESG, whereas board size is positively significant for all the profitability matrices, and the findings are confirmed by Bhaskaran et al. (2020). In contrast, board meetings negatively affect NPM, while gender does not have any significant influence, which is also supported by earlier studies by Pandey et al. (2022). Moreover, the findings are consistent with Ahmad et al. (2021), who explore the effect of ESG on the financial performance of 351 FTSE350 companies for the period 2002–2018 and find that overall ESG scores significantly and positively affect the financial performance of companies, but individual ESG performance has mixed results.

The Telecommunications sector shows mixed findings, where only board meetings are positively significant for ROA, whereas ESG, board size, and gender are negatively significant for ROE, ROA, and NPM. These findings are similar to those of an earlier study by Barnett (2007), which indicated that ESG and the governance matrix might not be utilized efficiently to improve firm profitability.

In the Technology industry in Nordic countries, ESG has no influence on the profitability matrix, whereas board size and gender are significant to ROA and NPM, respectively, which is consistent with previous studies by Naeem et al. (2022). The outcome illustrates that ESG does not influence technology firms. Surprisingly, the Financial sector is indifferent to the ESG score and corporate governance matrix. A possible reason behind the outcome might be the identical legislation applied in the financial sector. A similar result was found by Lopez-de-Silanes et al. (2020), who revealed that ESG scores have no impact on a firm’s financial performance.

The ROE of the Energy sector is negatively significant for ESG and female directors, whereas board size is positively significant for ROE, ROA, and NPM. From a theoretical point of view, these results support stakeholder theory, with the exception of ESG and GENDER. One reason for the lack of a relationship between ESG and firm value for this sector is that energy-producing firms are environmentally sensitive and require high investment costs associated with a longer period of time (Aydoğmuş et al., 2022). This negative relationship is also supported by an earlier study by Landi and Sciarelli (2019), who focused on 54 listed Italian companies from 2007 to 2015 and reported a negative relationship between their ESG scores and financial performance.

Similarly, ESG is negatively significant to the ROE of the utility sector, while ROA and NPM are indifferent. Our findings are similar to those of Folger-Laronde et al. (2020), who analyze the link between ESG ratings and the financial returns of ETFs (Exchange Traded Funds) during Covid-19 in Canada and conclude that high ESG performance in ETFs does not ensure financial performance during the severe downturn of the market. However, board size and gender are positively significant to the ROA of the Utility Sector in Nordic region, while other corporate governance characteristics do not have any influence. In an earlier study, Velte (2017) confirmed similar outcomes, denoting that governance has a significant effect on financial performance.

### **4.4** Additional analyses

We conducted additional tests to assess the statistical differences using the parametric t-test and nonparametric Wilcoxon z-test. Consistent with our research proposition and main findings, the results in Table 7 indicate that ESG is statistically significant for ROE, ROA, and NPM, indicating that firms make more profit when they have higher ESG scores. We also find that board size is negatively significant for ROE and ROA and strongly positively significant for NPM. The female director (GENDER) shows mixed results, which is positively significant for ROE but negatively significant for ROA. In addition, ROE and NPM are positively significant for the number of board meetings, while in the case of ROA, we find mixed results.

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| **Table 7** shows the results of the T-test and Wilcoxson Rank Test |
| Variables | Mean difference | t-test | Wilcoxson Rank Test |
| **ROE** |  |  |  |
| ESG | 0.56 | 0.53 | 2.36\*\* |
| BSIZE | -1 | -2.3\*\* | -0.82 |
| GENDER  | 0.88 | 1.8\*\* | 1.1 |
| BOMEET  | -0.3 | -0.6 | 5.22\*\*\* |
| **ROA** |  |  |  |
| ESG | -9.44 | -0.51 | 2.17\*\* |
| BSIZE | -19.73 | -2.13\*\* | -0.35 |
| GENDER  | -19 | -2\*\* | 0.51 |
| BOMEET  | -19 | -2\*\* | 4.38\*\*\* |
| **NPM** |  |  |  |
| ESG | 0.15 | 1.89\*\* | 4.56\*\*\* |
| BSIZE | 0.11 | 3.1\*\*\* | 2\*\* |
| GENDER  | -0.04 | -1.15 | -1.29 |
| BOMEET  | 0.05 | 1.2 | 3.18\*\*\* |
| Notes: (1) The table presents differences in means, t-test and Wilcoxson rank-sum test results for the explanatory variables. (2) \*, \*\*, \*\*\* significance at 10%, 5%, and 1% levels of confidence, respectively. (3) See Table 2 for variable definitions. |

## 5. CONCLUSIONS AND IMPLICATIONS

Over the period, the urgency of ESG has grown faster, and it has become more important than ever to analyze the phenomena from the viewpoint of key stakeholders such as regulators (Braam & Peeters, 2018). Our study delves into the intricate relationship between corporate sustainability, as measured by ESG scores, and Nordic companies’ financial performance. Nordic countries, celebrated as sustainability leaders, were our chosen terrain. Employing an empirical approach and drawing data from a comprehensive database, we focus on firms across Nordic countries from 2012 to 2021. Our objective is to determine whether companies with higher ESG scores, indicative of sound ESG activities and governance practices, demonstrate superior financial performance.

The central research question is: Is there a relationship between corporate ESG performance and financial performance in the Nordic countries? - spurred various analyses including correlation, normality tests, and econometric examinations. We also examine the association between corporate governance and firm profitability. The inquiry was extended to both national and industry levels by evaluating the influence of ESG and corporate governance characteristics.

Our results yielded nuanced results: ESG plays a significant role in Return on Equity (ROE), Return on Assets (ROA), and Net Profit Margin (NPM) with selected board characteristics also impacting profitability factors. While some connections have emerged, others remain elusive. Regression analysis within industries indicated that future research should focus on industries rather than geographical locations. Interestingly, the selected variables did not exhibit a significant correlation with the ESG scores. This suggests that while the influence of sustainability on financial performance is increasingly being recognized, its exact dynamics remain intricate and multifaceted. This evidence will enlighten the top management of firms to understand influential corporate governance characteristics, as well as to emphasize the non-performing elements (i.e., female directors, board meetings) to secure corporate goals. Moreover, policymakers may also pay attention to the scrutiny of underperforming corporate governance factors and take the initiative to make them effective. Even the concerned authority of Nordic countries could focus on the reason behind country-to-country differences in ESG initiatives. As we find that ESG initiatives differ from industry to industry, policymakers and concerned authorities may take necessary steps to mitigate their weaknesses and attenuate their strengths (Fatemi et al., 2018).

Given the burgeoning societal emphasis on sustainability, companies, particularly in the Nordic context, are compelled to adopt non-financial annual reporting encompassing corporate social responsibility. This transparency and heightened environmental awareness could yield benefits; however, definitive proof remains elusive. Additional studies focusing on customer perceptions of sustainability issues are necessary. As society, governments, and shareholders increasingly demand sustainability integration, they will become integral to business strategies, operations, and reporting. Consequently, a broader spectrum of companies warrants investigation of the interplay between CSR and financial performance.

While this study contributes to the understanding of the ESG-finance nexus, its purview is limited to the Nordic region, and observations are circumscribed by the availability of ESG scores. Further analysis may be embraced with the intensive focus on exploring whether a higher level of firms’ profitability may in turn accelerate ESG initiatives. From a theoretical perspective, given that our sample is composed only of Nordic firms, differences arising from cross-country sample construction are incomprehensible to us and draw general conclusions for many legal systems around the world. Therefore, the research can run cross-country data across diverse industries. Companies with significant environmental footprints, driven by societal and governmental pressures, are compelled to adopt transparent sustainability practices and invest in environmental mitigation. Future studies could dissect specific company groups, expand the industry scope, and incorporate other financial indicators, such as dividends, free cash flow, net sales, and market capitalization. This multifaceted approach offers a more comprehensive view of the intricate interplay between corporate sustainability and financial performance.

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## APPENDIX A. Top 50 from the Global Sustainable Competitiveness Index (2022)

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Rank | Country | Score |  | Rank | Country | Score |  | Rank | Country | Score |
| 1 | Sweden | 60.7 |  | 21 | Luxembourg | 53.3 |  | 41 | Peru | 47.8 |
| 2 | Finland | 59.3 |  | 22 | Italy | 52.8 |  | 42 | Hungary | 47.7 |
| 3 | Switzerland  | 58.3 |  | 23 | Slovakia | 52.7 |  | 43 | Albania | 47.7 |
| 4 | Denmark | 58.1 |  | 24 | Canada | 52.5 |  | 44 | Chile | 44.0 |
| 5 | Norway | 57.6 |  | 25 | Czech Republic | 52.4 |  | 45 | Bulgaria | 47.2 |
| 6 | Iceland | 57.1 |  | 26 | New Zealand | 52.3 |  | 46 | Brazil | 47.1 |
| 7 | United Kingdom | 56.4 |  | 27 | Belgium | 51.7 |  | 47 | Panama | 47.0 |
| 8 | France | 56.3 |  | 28 | Spain | 51.7 |  | 48 | Argentina | 46.9 |
| 9 | Slovenia | 56.3 |  | 29 | Poland | 51.2 |  | 49 | Ukraine | 46.9 |
| 10 | Japan | 56.2 |  | 30 | USA | 51.2 |  | 50 | Colombia | 46.6 |
| 11 | Austria | 55.9 |  | 31 | China | 51.1 |  |  |  |  |
| 12 | South Korea | 55.9 |  | 32 | Australia | 50.6 |  |  |  |  |
| 13 | Ireland | 55.6 |  | 33 | Uruguay | 50.6 |  |  |  |  |
| 14 | Latvia | 55.4 |  | 34 | Costa Rica | 49.9 |  |  |  |  |
| 15 | Portugal | 54.8 |  | 35 | Greenland | 49.9 |  |  |  |  |
| 16 | Germany | 54.8 |  | 36 | Romania | 49.4 |  |  |  |  |
| 17 | Estonia | 54.5 |  | 38 | Israel | 49.3 |  |  |  |  |
| 18 | Lithuania | 54.2 |  | 37 | Greece | 49.0 |  |  |  |  |
| 19 | Netherlands | 53.9 |  | 39 | Malta | 48.5 |  |  |  |  |
| 20 | Croatia | 53.4 |  | 40 | Singapore | 48.5 |  |  |  |  |
| Source: https://solability.com/category/global-sustainable-competitiveness-index |

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