



# UNIVERSITY OF GOTHENBURG

## SCHOOL OF BUSINESS, ECONOMICS AND LAW

The financial performance differences between ESG and Non-ESG  
Firms in the Nordic Region – A quantitative analysis

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## Abstract

This thesis presents a rigorous empirical analysis on the relationship between financial performance and ESG scores in Nordic firms from 2017 to 2022. The analysis utilizes fixed effects regression methods with cluster-robust standard errors at the company level. The findings indicate a negative relationship between ESG scores and financial performance, though the significance level varies across different metrics. The analysis does not support the two hypotheses that ESG-compliant firms outperform non-ESG firms, as the coefficients for ESG scores are not statistically significant. The findings align with the Efficient Market Hypothesis (EMH), suggesting that ESG information is already reflected in asset prices. The results also support shareholder theory, indicating no evidence that prioritizing ESG considerations leads to superior financial performance. The paper acknowledges the limited explanatory power of the model and suggests future research to explore different aspects of ESG and their impact on financial and non-financial outcomes. Overall, the findings provide insights for policymakers, investors, and managers in the Nordic region, encouraging the adoption of sustainable practices for improved financial performance and broader societal benefits.

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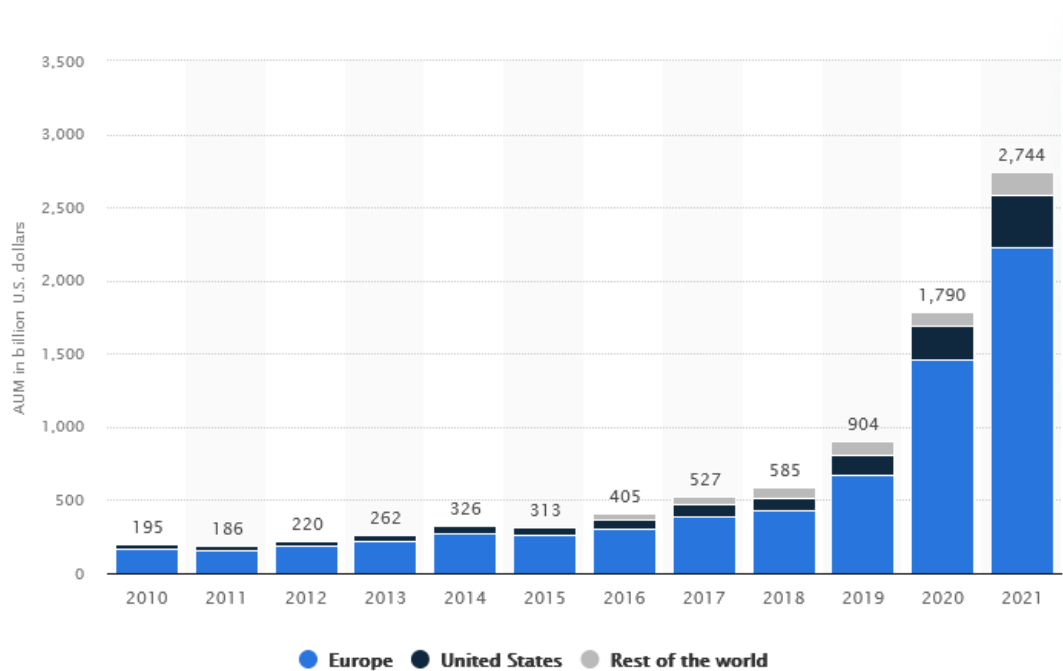
## 1. Introduction

Climate change has become one of the most pressing global challenges of our time. As the world grapples with the impacts of this phenomenon, there is growing awareness that businesses must play a pivotal role in addressing it. The impetus for this initiative was the 2015 Paris Agreement, a global accord signed by nearly 200 countries, which aims to limit the increase in global average temperatures to well below 2 degrees Celsius above pre-industrial levels and pursue efforts to limit warming even further to 1.5 degrees Celsius (United Nations, 2022). In light of this, companies are expected to adopt sustainable practices and contribute to the worldwide effort to combat climate change.

The Global Sustainable Investment Alliance (GSIA, 2021) has reported a significant increase in assets under management (AUM) in the global sustainable investment market, which highlights the increasing significance of ESG factors in investment decisions. Specifically, there has been a substantial increase in the value of AUM allocated to sustainable funds, with developed markets primarily driving this trend.

In 2010, the total AUM allocated to sustainable funds was 195 billion U.S. dollars, the majority of which was located in Europe (Figure 1). Europe remained the foremost source of allocated AUM to sustainable funds through 2021, followed by the United States, which accounted for the second-largest inflow to the market. While the rest of the world had not invested in sustainable funds to the same extent as the United States and Europe, the growth in AUM allocation was notable, increasing from \$40 billion in 2016 to \$156 billion in 2021 (Statista, 2022). In this context, Environmental, Social, and Governance (ESG) factors have grown in importance because they help evaluate a company's ability to manage its impact on the environment, society, and corporate governance.

Figure 1. Total assets under management (AUM) of sustainable funds worldwide from 2010 to 2021, by region (in billion U.S. dollars)



Source: <https://www.statista.com/statistics/1319691/sustainable-funds-aum-global-allocation/>

Environmental, social, and governance (ESG) refers to the three main factors of a company's ethical and sustainable impact. These factors apply to the environmental effect of a company's operations, the social impact of its business practices, and its decision-making processes and policies. Historically, a focus on ESG began in the 1970s as a result of the efforts of a small group of investors concerned with the environmental and social policies of the firms in which they invested (Richardson, 2009). Commonly associated with ethical or socially responsible investing (Richardson, 2009), ESG have also become important indicators of managerial competency, risk management, and non-financial performance (Boerner, 2011; Kiernan, 2007; Yegnasubramanian, 2008). ESG concerns are increasingly seen as financially 'material' to an investment portfolio. An ESG score which measures how well a company addresses risks with respect to environmental, social, and governance issues in its day-to-day work and operations, is one way that investors assess a company's ESG concerns (Krychiw, 2023). This is why the finance world places a premium on ESG (Richardson, 2009). Consequently, ESG encompasses a wide range of issues associated with the environment, social responsibility, and corporate governance (Galbreath, 2013).

ESG is defined and viewed in a variety of ways due to diverse viewpoints on the role of business in society, such as the stakeholder and shareholder theories. According to the standpoint of stakeholders, ESG and profitability are not mutually incompatible. According to Porter and Kramer (2002), the original proponent of this idea believed that social and economic objectives were interdependent. Therefore, a manager's engagement in ESG initiatives will benefit shareholders in the long run. Nevertheless, the shareholder theory represents a distinct perspective on the function of business in a community. The objective function of a company, according to this perspective, is to maximize shareholder value. It fosters the notion that managers are the shareholders' agents. Therefore, it is their duty to do business in accordance with their owners and to increase their wealth (Friedman, 1970).

In recent years, investors, firm managers, and many other stakeholders have paid attention to ESG performance, since it is a well-known and increasingly significant means to boost the value of a company (Ahmad, Mobarek & Roni, 2021). In essence, research has indicated that the incorporation of ESG considerations in the operations of a company can lead to a notable enhancement in its overall value (Malik, 2015). Such value creation can be attributed to the integration of ESG performance into the broader strategic plans and management practices of the organization (Rezaee, 2016). Due to the crucial role of financial markets in maintaining many social activities, ESG information is advantageous for investors and society (Shiller, 2013).

According to Van Duuren, Plantinga, and Scholtens (2016), ESG investment is similar to fundamental investing, and the majority of investors purchase extra shares based on ESG-related information. Slager, Gond, and Moon (2012) found that a number of firms begin an assessment of their ESG ratings and inform interested parties of the findings. As high-sustainability firms are more long-term focused and able to attract long-term investors, Eccles, Ioannou, and Serafeim (2014) explain that companies publish their information not just to shareholders but also to stakeholders.

ESG encompasses a company's economic, environmental, social, and corporate governance performance. In today's market, individual and institutional investors prioritize financial returns that also benefit communities and the environment (Ahmad et al., 2021). As a consequence, the prevalent belief today is that ESG performance information is an important component to consider when making investing decisions (Kölbel et. al., 2020).

## 1.1 Background

Several studies have attempted to measure the impact of ESG elements on performance and value. How ESG elements influence the financial performance and, ultimately, the value of a firm has been the subject of passionate debate. Early assumption, rooted in neoclassical theory, was that the link between ESG and financial performance was consistently negative (e.g., see Vance, 1975; Wright & Ferris, 1997). Recent research suggests that socially responsible conduct may have a net beneficial effect on performance and firm value (Fatemi & Fooladi, 2015; Malik, 2015). Within the context of stakeholder theory (Freeman, 1984), it may be claimed that socially responsible conduct better fulfills the interests of nonowner stakeholders, allowing for more efficient contracting (Jones, 1995) and creating new avenues for further expansion and risk reduction (Fatemi et al., 2015). Porter and Kramer (2006, p. 2), evaluating the topic from a strategic management viewpoint, concur that "CSR may be much more than a cost, a constraint, or a charitable deed; it can be a source of opportunity, innovation, and competitive advantage."

On the empirical front, several studies have shown a negative (Boyle, Higgins & Rhee, 1997; Vance, 1975; Brammer, Brooks & Pavelin, 2006) or insignificant association between ESG performance and financial performance or firm value (Alexander & Buchholz, 1978; Aupperle, Carroll, & Hatfield, 1985; Horvathova, 2010; McWilliams & Siegel, 2000; Renneboog, Horst, & Zhang, 2008a, 2008b), while others have discovered a favorable association (Bajic & Yurtoglu, 2017; Dimson, Karakas, & Li, 2015; Eccles et al., 2014; Edmans, 2011; Fatemi et al., 2015; Ge & Liu, 2015; Krüger, 2015).

Then, more research (Orlitzky, 2011; Borgers, Derwall, Koedijk, & ter Horst, 2013; Orlitzky, 2013; Reynolds, 2014) raises doubts over the ESG's measurability and durability. Due to the lack of ESG data and the contradicting definition and quantification of the ESG variable, the study's conclusions are inconsistent. Several data sources, like as Bloomberg, Thomson Reuters, MSCI, S&P, etc., already provide ESG data of standardized companies (Maiti, 2021).

Practitioners and academics investigate several methods for integrating ESG considerations into investing portfolios. The factor-based investing approach of incorporating ESG considerations into investment portfolios is the most prevalent. Moreover, several research have indicated that each ESG component has some influence on stock performance (Maiti, 2021).



A widely accepted theory, the cost of capital reduction, is one possible response to the question of why ESG should improve performance, with the current position being that the costs incurred in a firm by the establishment of a socially responsible structure are paralleled by a reduction in its cost of capital (Buallay, 2018).

Overall, the empirical research that examine the relationship between ESG and financial performance provide inconsistent and conflicting findings (Orlitzky et al., 2003). In accordance with stakeholder (agent) theory, the majority of these investigations indicated a positive relationship (Godfrey, Merrill, & Hansen, 2009; Barnett & Salomon, 2006). This favorable outcome is also supported by meta-analyses (Wu, 2006) or literature reviews (Beurden & Goessling, 2008; Margolis & Walsh, 2003). According to stakeholder (agent) theory and previous empirical study findings, ESG is believed to be favorably associated to financial performance (Velte, 2017). Thus, based on this premise, we will subsequently build our hypotheses.

The Nordic countries have been particularly engaged in sustainable development. According to Buder (2019), Sweden and Denmark were among the top five most environmentally friendly nations in 2018, while Norway ranked sixth. These rankings validate Strand, Freeman, and Hockerts's (2015) claim in their article that Nordic countries are the leaders in sustainable development and CSR. The 2020 SDG Index, which analyzes a country's overall progress toward attaining all 17 SDGs, rated Sweden, Denmark, Norway, Iceland, and Finland as the top five countries. In addition, they led the ISS ESG Country Ranking. Sweden and Finland scored exceptionally well in education, healthcare, and social security infrastructures among the top-performing nations. In addition to Norway and Iceland, these two nations performed very well in the category of "Climate Change and Energy" (Scanlon, 2021). According to Hodgson (2018), the Nordic countries are among the most equal in the world. For instance, the income disparity between men and women in these countries is lower than in the majority of other countries, indicating a high social standard in these countries.

Typically, at the corporate level, issuers from these nations have good sustainability ratings. According to the Morningstar Sustainability Atlas, Finland, Sweden, and Denmark are three of the top five countries in terms of corporate sustainability. Since they have a long history of collaborating to promote sustainable development on a national and international scale, it is unsurprising that Nordic nations score well in key ESG rankings. As stated in the 2017 report given by the Nordic Council of Ministers, these nations have already formed a strong basis for

working cooperatively toward the 2030 Agenda. This effort is backed by a strong political commitment at the highest level and is conducted at all levels (Scanlon, 2021).

As for institutional investors in the Nordic area, ESG considerations have been acknowledged for some time as a crucial aspect of investing. NN Investment Partners' poll of Nordic institutional investors suggests that ESG has become the standard in the Nordic asset management business, with Sweden and Denmark leading the pack. Several studies demonstrate that the Nordic nations are dedicated to a more sustainable future and have fostered the market with decades of experience, a high degree of responsibility and openness, and continual attempts of innovation (Scanlon, 2021).

## 1.2 Purpose

As previously discussed, sustainable finance has gained significant momentum as companies around the world increasingly recognize the importance of integrating sustainability into their operations. With the aim of assessing a company's sustainability strategy, ESG ratings have emerged as a recognized tool for investors to ensure that their investments align with their values and sustainability goals. These ratings provide a comprehensive evaluation of a company's environmental, social, and governance practices and enable investors to make informed decisions based on a company's sustainability performance. As sustainability continues to be a key driver of business success, ESG ratings are expected to play a critical role in shaping the future of sustainable finance.

The objective of this research is to determine if ESG firms in the Nordic countries perform better financially than non-ESG firms. The expanding amount of literature in this field implies that ESG practices may have a positive effect on financial performance (Friede, Busch, & Bassen, 2015); however, research on this connection in the Nordic region is scarce. This is the case despite the fact that these nations have distinct combinations of environmental, social, and governance practices and policies (Scanlon, 2021).

Due to its strong commitment to sustainability at both the government and business levels, the Nordic region is of special relevance to this study. It has a long history of sustainable development, and many of the world's top ESG-focused companies are headquartered there (Scanlon, 2021). This, along with a relatively high degree of environmental and social

awareness among consumers, makes the Nordic countries an ideal location for examining the influence of ESG on financial performance.

This research will fill a gap in the literature by investigating the particular financial performance of ESG firms in the Nordic area, therefore shedding light on the unique problems and possibilities encountered by ESG-focused firms in this region. By examining the link between ESG and financial performance in the Nordic region, this research will also make many contributions to the current body of knowledge. First, it will provide important insights into the unique effect of ESG variables in the Nordic environment, which investors and companies operating in these markets will find beneficial. Second, the research will contribute to the current literature by giving a more nuanced view of the link between ESG and financial performance, taking into consideration the unique characteristics of Nordic markets.

Moreover, by comparing the performance of ESG and non-ESG firms, our research will provide insight into the actual financial advantages of ESG policies for firms and investors. This will assist to shed light on the practical consequences of ESG practices for firms and investors operating in the Nordic, therefore providing decision-makers with useful information. Lastly, by using a rigorous research design and methodology, the study will contribute to the development of a more credible and strong body of information about the link between ESG and financial performance. This will boost investors' and practitioners' awareness of ESG investment, eventually leading to a greater adoption of ESG practices and improved financial performance for firms and investors.

The research question of *whether ESG firms outperform non-ESG firms in financial performance in the Nordic countries* will be examined in this study. To answer this question, we will utilize panel data to explore the association between ESG and financial performance. This enables and streamlines the evaluation of changes in variables across time and between firms (Bell & Jones, 2015). By using panel data, we will be able to evaluate the dynamic correlations between ESG elements and financial performance while controlling for a number of variables that might potentially impact this link, such as company size, and macroeconomic conditions. This will enhance the reliability and validity of our findings and offer a more thorough evaluation of the link between ESG and financial performance in the Nordic area.

## 2. Literature Review and ESG

The theoretical area of ESG comprises a vast body of academic literature, including research on the link between ESG performance and financial performance, the influence of ESG practices on firm value, and the function of ESG in corporate decision-making. In general, ESG is a developing and dynamic area, with several methodologies and opinions on the importance of ESG in business and investment. To have a deeper understanding of the theoretical domain of ESG, it is required to evaluate and assess prior research and findings.

Accounting-based and market-based metrics have been largely used to evaluate financial performance in a number of studies published in the literature. Accounting-based indicators, such as Return on Assets (ROA), provide a picture of a company's financial health by analyzing its capacity to create profits from its assets. In contrast, market-based measurements, such as Tobin's Q ratio, evaluate the financial performance of a company by comparing its market value to its replacement cost.

In the literature, the implications of a positive, negative, or insignificant relationship between ESG practices and financial performance have been extensively explored. A favorable association between ESG and financial performance suggests that companies that emphasize ESG practices may create more profits and have higher financial performance than those that do not. In contrast, a negative link means that ESG practices have a negative effect on financial performance, whilst a non-significant relationship shows that there is no discernable association between ESG practices and financial success.

In the subsequent part, we will evaluate and synthesize the available research on the link between ESG practices and financial performance, culminating in the creation of the hypotheses that will lead this study. This comprehensive literature evaluation will offer a strong framework for the empirical analysis that will be done to examine the research question given at the outset of this thesis.

The literature assessment on the relationship between ESG criteria and corporate financial performance (CFP) reveals that the business case for ESG investment is backed by empirical data to a large degree. Friede et al. (2015) reviewed over 2200 papers and found that over 90% reported a non-negative association between ESG and CFP, with the majority reporting positive results. Kumar, Smith, Badis, Wang, Ambrosy, and Tavares (2016) used a novel mathematical technique and showed that firms that consider ESG elements tend to have less volatility in their

stock performance and may even generate better returns than their counterparts who do not consider these elements. Velte (2017) also found a positive correlation between a company's ESG rating and its economic success, as measured by ROA and Tobin's Q, with a one-year time lag between ESG and financial performance being important. Tarmuji, Maelah, and Tarmuji (2016) extended this analysis by concluding that ESG practices may have a beneficial effect on economic performance in Malaysia and Singapore. Furthermore, Maiti's (2021) research demonstrated that taking ESG risk factors into account can substantially enhance the performance of investment portfolios.

Other studies conclude that the impact of ESG on firm performance varies depending on the pillar of ESG being considered. Environmental (E) disclosures were found to have a positive impact on market performance in all studies. However, the studies by Alareeni & Hamdan (2020) and Han, Kim, and Yu (2016) found that E disclosures had a negative impact on operational and financial performance, while Buallay (2018) found a positive impact on return on equity and Tobin's Q. Social (S) disclosures did not have a significant association with financial performance in the study by Han et al. (2016). However, in the studies by Alareeni and Hamdan (2020) and Buallay (2018), CSR disclosures had a positive impact on market performance but a negative impact on operational and financial performance. Governance (G) disclosures were found to have a positive impact on operational and market performance in the studies by Alareeni & Hamdan (2020) and Han et al. (2016). Nonetheless, Buallay (2018) found that CG disclosures had a detrimental impact on operational and financial performance while having a beneficial impact on market performance.

Another study regarding ESG disclosure and firm performance among publicly traded companies in the S&P 500 index found that governance had the highest level of transparency, while environmental had the lowest, and that the percentage of companies disclosing information about specific social policies varied significantly (Tamimi & Sebastianelly, 2017). This is consistent with Galbreath (2013), who confirmed the hypothesis that any improvement in the ESG performance of Australian firms will be stronger in the governance dimension than in the environmental and social dimensions, and with Van Duuren et al. (2016), who discovered that the greatest emphasis is placed on the governance of firms in relation to the ESG dimensions, possibly because it is closely related to the quality of management. This may suggest that firms see governance as the most essential ESG factor.

Some academics hesitate to forecast the direction of the relationship between ESG and financial performance metrics. Some studies have shown theoretical, methodological, and conceptual problems that make it challenging to establish a direct correlation between ESG and financial success. Lahouel et. al. (2019) focused on the problem of endogeneity in the ESG-financial performance link in light of these concerns. This is because endogeneity may result in overestimation and misleading data.

Similarly, Waddock and Graves (1998) contend that there are an excessive number of factors that might impact the link between ESG and financial performance. Auer and Schuhmacher (2016) and Loof and Stephan (2019) found no correlation between ESG and risk-adjusted return in more recent research. They imply that the influence of ESG efforts on financial performance takes time to materialize (Ullman, 1985).

In general, the research on the link between ESG performance and company performance has shown favorable associations. This suggests that companies may benefit from adopting ESG principles. It is important to note, however, that each factor-dimension of ESG may have different impacts on performance, and that some studies have yielded contradictory results. In addition, a variety of limitations in the research, such as sample size, geographic emphasis, and time periods, may limit the generalizability of the findings.

It was also observed that the transition in investors' attitudes toward ESG factors has altered the findings of recent research. In stark contrast to the negative or non-negative findings of earlier studies, the most recent studies demonstrate a positive association between ESG criteria and corporate financial performance. This change is attributable to investors' growing awareness and recognition of the significance of ESG factors, which has led them to incorporate them into their investment decisions. With the increasing emphasis on sustainability and incorporation of ESG investing, investors are realizing that companies that prioritize ESG practices are likely to be more resilient, have better long-term prospects, and generate superior returns. As a result, investors are progressively demanding greater transparency and disclosure regarding ESG issues, which is prompting businesses to enhance their ESG performance (Eurosif, 2021).

At the forefront of consumer, employee, and investor choices today are social and environmental considerations. As the issues around these initiatives increase, a growing number of businesses seek criteria that effectively quantify sustainability (Lucas, 2022). ESG scores are one of many current measures used to quantify the sustainability performance of a

company (Refinitiv, 2021). ESG is an acronym for environmental, social, and governance; an ESG score measures how effectively a firm or organization manages risks related to these three areas in its daily operations (Lucas, 2022). The total score is generated by a weighted evaluation of the three ESG pillars: the environmental pillar (E), the social pillar (S), and the governance pillar (G). The weighting of these pillars may differ based on the agency calculating the score and the firm's industry (Huber & Comstock, 2017; Dimson et al., 2020).

The E-score or rating symbolizes the environmental rating; it is designed to quantify a company's sustainability performance on the environmental front by integrating three major environmental themes: Resource consumption, Emissions, and Innovation. S-score measures a company's sustainability performance based on four social themes: labor force factors, human rights score, community score, and product responsibility score. G-score symbolizes the governance rating; it assesses a company's performance on three issues relating to its home country: management score, shareholder score, and CSR strategy score (Refinitiv, 2021).

Investors evaluate a company's long-term viability based on its ESG ratings; firms that prioritize their ESG scores are seen capable of minimizing risks. A poor ESG score might affect the perception of a company's viability. A negative ESG reputation will ultimately have a negative impact on a company's bottom line. But, ESG ratings alone do not indicate a company's potential; financial analysts use ESG scores in conjunction with other success indicators to make judgments and provide advice (Lucas, 2022).

Although ESG ratings are useful benchmarks, they should not be the only metric a firm uses when making investment choices, since they are not indicative of a company's long-term success. Organizations must combine ESG ratings with rigorous financial and operational due diligence in order to make a fully informed assessment of a company's future performance. It is essential to note that the market may also influence the success of a business. Investors should be aware that firms with high ESG ratings may underperform the market on occasion, and other companies with poor ESG scores have extraordinary market gains (Lucas, 2022).

Several academics have also disputed the legitimacy of ESG ratings. Escrig-Olmedo et. al. (2019) criticized ESG ratings for being slightly biased, stating that ESG ratings place a greater emphasis on environmental and social concerns. Hence, placing less emphasis on a company's corporate governance difficulties. In addition, they discovered that ESG ratings are short-term oriented, since these ratings assess short-term indicators and devote less attention to analyzing the firm's larger sustainability plan. In addition to the above, Billio et. al. (2021) investigated

the rating criteria and reliability of several rating agencies. The results revealed that agencies begin the grading process with an abundance of distinct raw data. Thus, there is a clear distinction between the weights assigned to each ESG grading category. These results demonstrate that there is a significant difference in how agencies assign ESG ratings to corporations.

While ESG ratings have been criticized, they continue to be one of the most effective tools for monitoring sustainability performance and are thus the most appropriate for the aim of this thesis. This is mostly due to their capacity to compartmentalize each rating, so permitting a detailed dissection of the many categories and indications. This not only permits a more thorough knowledge of each category's behavior, but also enables a deep study of the rating's constituent components. In addition, ESG ratings are simple to gather, which increases their desirability as a measuring tool. Notwithstanding questions regarding their accuracy and dependability, ESG ratings continue to be a significant tool for analyzing sustainability performance, and their widespread usage demonstrates their significance in the current business landscape.

### 3. Theoretical Framework

#### 3.1 Efficient Market Hypothesis

The Efficient Market Hypothesis (EMH), as conceived by Fama (1970), is a theoretical framework that posits financial markets to be perfectly efficient. According to this hypothesis, it is impossible for market participants to consistently achieve returns higher than the market average by utilizing publicly available information. This is due to the assumption that all market participants possess equal access to information and that prices adjust instantaneously to new information. Consequently, it becomes impossible for investors to outperform the market through the use of any available information.

The EMH is classified into three forms, namely weak, semi-strong, and strong. The weak form suggests that current stock prices reflect all historical prices and trading volumes, making technical analysis redundant. The semi-strong form asserts that not only do current prices reflect all historical data, but also all publicly available information, rendering fundamental



analysis futile. Finally, the strong form posits that all information, both public and private, is already incorporated into current stock prices, making insider trading pointless.

Despite extensive debate, the EMH has had a significant impact on modern finance theory and practice. Assuming that the market is efficient and that active management is superfluous, it has served as the basis for passive investing, which entails investing in a portfolio of stocks that mirrors a market index. However, the EMH has been criticized by a number of academics who contend that market inefficiencies do exist and that certain market participants, such as institutional investors and hedge funds, may have an informational advantage that enables them to outperform the market. In addition, the EMH presupposes that investors are rational and act so as to maximize their expected utility, which is not always the case. Despite these criticisms, the EMH remains a pillar of finance theory and is extensively studied and debated by academics and industry professionals. It has also spurred the development of new areas of study, such as behavioral finance, which seeks to explain deviations from the EMH by analyzing the psychological and affective factors that influence investor behavior (Malkiel, 2003).

### 3.2 Corporate Governance: Shareholder and Stakeholder Perspectives

Shareholder theory, commonly known as the Friedman Doctrine, asserts that an organization's primary obligation is to satisfy its shareholders (Friedman, 1970). The premise is that companies exist exclusively to serve the needs of their shareholders and therefore prioritize raising profits and the value of their stock. According to shareholder theory, corporate engagement in ESG activities may conflict with shareholder interests and have a detrimental effect on financial performance owing to the expense of these activities (Friedman, 1970). In addition, proponents of shareholder theory have claimed that executives participating in ESG activities may do so to enhance their own reputation, so creating an agency dilemma between managers and shareholders (Hussaini, Nandan, & Parbonetti, 2021).

Michael Jensen, another influential figure in shareholder theory, popularized agency theory, which posits that the separation of ownership and control in contemporary corporations creates conflicts of interest between shareholders and managers (Jensen & Meckling, 1976). Jensen suggests that executive compensation should be tied to the performance of the company's stock price in order to provide managers with incentives to prioritize shareholder value. This concept is now generally accepted in contemporary corporate governance and executive compensation.

Overall, within the scope of the shareholder theory, corporate engagement in ESG activities is expected to have a negative impact on financial performance (Friedman, 1970). While there may be potential benefits to society and the environment, the primary focus of corporations should be on maximizing shareholder value.

As an alternative to shareholder theory, stakeholder theory emphasizes that a corporation's principal goal should be to serve the interests of all its stakeholders, not just its shareholders (Freeman, Wicks, & Parmar, 2004). Freeman et al. (2004) defines stakeholders as individuals who can influence a company, have a claim on a company, and are impacted by its output. According to this theory, for a corporation to be effective and successful, it must consider not just the interests of its shareholders but also those of other relevant stakeholders.

Regarding corporate social responsibility, the stakeholder theory suggests that companies should consider the interests of all its stakeholders when making decisions. To guarantee that all stakeholders are represented, a company's board should have a representative from each stakeholder group. It would require complete transparency amongst board members, since a lack of disclosure might bring harm to some stakeholders (Brin & Nehme, 2019).

Additionally, according to the stakeholder theory, ESG initiatives may have a favorable effect on a company's financial performance (Porter & Kramer, 2002). Due to the fact that a company's activities might influence several individuals and places, it is essential to consider the interests of all stakeholders in order to enhance the quality of decision-making and the management function as a whole (Freeman et al., 2004).

While stakeholder theory was not initially intended for CSR, it has numerous parallels with CSR activities. These principles are intended to urge companies to evaluate the effect of their activities on all stakeholders and to behave in the best interest of society and the environment, not simply for the profit of shareholders (Freeman, 2015). Generally, stakeholder theory is a more holistic approach to corporate management, stressing the need to consider the interests of all stakeholders in order to achieve long-term success and sustainability (Wijnberg, 2000).

## 4. Methodology

Based on the literature and theory reviewed, the following two hypotheses can be developed:

**H1:** There is no significant difference in the financial performance between ESG firms and non-ESG firms in the Nordic region.

**H2:** There is no significant difference in the Market-to-Book Ratio (MBR) between ESG firms and non-ESG firms in the Nordic region.

The underlying premise of these hypotheses is that companies with a commitment to ESG possess a more favorable reputation and image, attract a consumer base that prioritizes responsibility and sustainability, and exhibit improved governance practices. These factors are believed to culminate in enhanced financial performance and MBR (Eccles et al., 2013).

The practical implications of this study's potential findings are significant for a variety of stakeholders. If the hypotheses are confirmed, it suggests that ESG firms in the Nordic region have a financial performance competitive advantage over non-ESG firms. This finding could have a substantial impact on investors, as it demonstrates the importance of ESG factors as indicators of financial performance and the potential for ESG firms to provide attractive investment opportunities.

Moreover, the potential findings of this study may have significant implications for Nordic businesses. The findings indicate that implementing ESG practices could improve the financial performance of businesses and their image and reputation among consumers. This could give businesses a competitive advantage in attracting customers who place a premium on responsibility and sustainability. In turn, this could serve as an incentive for businesses to adopt ESG practices and contribute to the promotion of sustainable business practices.

In addition, this study's findings could influence regulatory policy in the Nordic region. If it is determined that ESG firms outperform non-ESG firms, this could lend support to policies that promote ESG reporting or ESG performance. This may involve regulatory incentives or mandates that encourage businesses to adopt ESG practices.

This thesis is to investigate the link between ESG and financial performance in a sample of Nordic firms from diverse sectors, and to provide empirical insights into the relationship between ESG and financial performance in the Nordic area. The selected public companies include small, medium, and large-capitalized in the Nordic countries of Sweden (Nasdaq OMX

Stockholm), Norway (Oslo Brs), Finland (Nasdaq OMX Helsinki), Denmark (Nasdaq OMX Copenhagen), and Iceland (Nasdaq OMX Iceland).

This quantitative analysis evaluates the differences in financial performance between ESG and non-ESG firms in the Nordic Region. In order to do this, we used a multivariate regression model with three dependent variables: Return on Assets (ROA), Return on Equity (ROE), and Market-to-Book Ratio (MBR). The ESG Score Dummy, an interaction term between the ESG Score Dummy and Net Profit Margin (NPM), and control variables Beta, Leverage, Market Capitalization, Capital Expenditures, Income Tax Rate, and Quarter are also included in our model. To account for probable heteroscedasticity and autocorrelation, we used robust standard errors. As previously indicated, the inclusion of the ESG Score Dummy variable and the interaction term between the ESG Score Dummy and NPM enables us to study the influence of ESG performance on financial performance while also taking into account the possible moderating effect of NPM. Our use of ROA, ROE, and MBR as dependent variables allows for a thorough examination of financial performance, including both short- and long-term impacts. In addition, Quarter was added as a fixed effect to account for any possible seasonality in the data. Using the suggested approach, we are able to analyze the degree to which disparities in financial performance between ESG and non-ESG firms in the Nordic are attributed to ESG practices. This information may be very beneficial to investors, governments, and companies operating in the area, and can shape future company strategy and investment decisions.

$$FP (ROE, ROA, MBR) = \beta_0 + \beta_1 \text{ESG Score Dummy} + \beta_2 (\text{ESG Score Dummy} \times \text{Net Profit Margin}) + \beta_3 \text{Beta} + \beta_4 \text{Leverage} + \beta_5 \text{Size} + \beta_6 \text{Capital Expenditures} + \beta_7 \text{Income Tax Rate} + \text{Quarter} + \varepsilon$$

## 5. Data and Summary Statistics

The data utilized in this analysis was sourced from Thomson Reuters, a trusted and reliable provider of financial data. Specifically, the dataset consisted of information on a sample of 414 Nordic companies, with a total of 3,778 observations collected on a quarterly basis over a period of six years (2017-2022). This data collection aims to examine the relationship between ESG performance and financial performance in the Nordic region by comparing the financial

performance of firms with a significant emphasis on ESG concerns to those without such a focus. The study used a quantitative research approach and split the sample into ESG firms and non-ESG firms based on their ESG score. A binary variable was employed to separate the financial performance between the ESG group and the non-ESG group in order to assess the difference in financial performance between these groups. The ESG score varied from 0 to 100, and firms with a score more than 50 were called ESG firms, and those with a score less than 50 were termed non-ESG firms.

In addition, an interaction term was established between the binary ESG score variable and net profit margin to investigate the moderating effect of net profit margin on the relationship between ESG and financial performance. This interaction term will allow us to assess whether the impact of ESG on financial performance varies based on the level of net profit margin, and whether the effect of ESG on financial performance is stronger or weaker for firms with higher or lower net profit margins.

This analysis is constrained by its sole reliance on ESG data gathered by Thomson Reuters, hence eliminating companies listed on Nordic stock markets that are not covered by this data source. Thomson Reuters provides a consistent method for evaluating a company's ESG performance, which lowers the possibility of biased findings resulting from disparities in scoring models across rating agencies. By relying on Thomson Reuters data, this research takes use of the consistency and rigor of the data gathering process to improve the validity and reliability of the ESG measures included in the analysis.

The data were thoroughly cleansed before being analyzed using panel data regression analysis in STATA. The panel data approach empowers us to account for firm-specific variables and temporal relationships within the data (Stock & Watson, 2015). The regression model contains ESG score dummy and the interaction term between this and net profit margin as the independent variables, and financial performance indicators including ROE, ROA, and MBR as the dependent variables. In addition, the model adjusts for several pertinent economic and financial factors, including Beta, Leverage, Size, Capital Expenditures, Income Tax Rate, and Quarter.

The focal point of this study was centered around three key dependent variables: Return on Assets (ROA), Return on Equity (ROE) Ratio, and Market to Book Ratio. These variables were selected due to their intrinsic nature, which provides a comparative framework across firms of varying sizes.

ROA (return on assets), ROE (return on equity), and MBR (market-to-book ratio) are extensively employed in academic research and corporate practice as proxies for financial performance. These financial indicators are very popular since they give diverse viewpoints on the profitability, efficiency, and market value of a firm.

ROE, for instance, is regarded as a vital indicator of a company's financial health and a measure of management's efficiency in creating profits from equity (Rappaport, 1986). ROA is one of the most prominent accounting-based financial performance measures, demonstrating a company's profitability in relation to its total assets (Velte, 2017). These two metrics have been widely utilized in empirical study to evaluate the financial performance of a company (Biddle, Hilary, & Verdi, 2009; Kim, Li, & Zhang, 2019).

MBR, on the other hand, is a market-based financial performance indicator that compares the market value of a firm to its book value. This ratio is significant because it demonstrates investors' faith in the company's future profits and growth potential (Wang & Sarkis, 2017). In addition, MBR is seen as a leading predictor of financial success since it indicates market expectations of a company's future profitability.

ROA, ROE, and MBR are well-established and commonly used financial performance proxies in both academic research and business practice. These indicators provide useful insights into a company's profitability, efficiency, and market value, and they are often used in empirical studies to assess a company's financial health and performance.

In the topic of ESG, the Thomson Reuters database has often been utilized for research purposes (Eccles et al., 2013, Velte, 2017). Thomson Reuters ESG data includes an aggregate overall ESG score based on ESG's three components (E, S, and G) with a score range of 0-100. (Refinitiv, 2021). Thus, using the Thomson Reuters ESG Disclosure Score as a binary independent variable in the investigation of the research question facilitates the research in a number of ways. As a number that is either high or low, the ESG Disclosure Score presents a clear contrast between firms who prioritize ESG issues and those that do not. In addition, the use of the well-known and esteemed Thomson Reuters ESG Disclosure Score within the financial sector lends legitimacy and rigor to the research. The ESG Disclosure Score is determined using a comprehensive set of criteria, which takes into consideration a company's policies, practices, and disclosure addressing environmental, social, and governance concerns (Thomson Reuters, 2023). Incorporating this score as an independent variable enables a thorough and detailed assessment of the ESG-financial performance relationship.

The introduction of the interaction term between the binary ESG score variable and the net profit margin strengthens the analysis by providing for a more nuanced understanding of the relationship between ESG and financial performance. This interaction term accounts for the possible moderating influence of net profit margin on the ESG-financial performance link, as indicated before. It permits an analysis of whether the beneficial effect of ESG on financial performance is greater or weaker for firms with larger or lower net profit margins.

This interaction term is crucial because it allows for a more accurate examination of the relationship between ESG and financial performance. Past research has produced contradictory findings about the intensity and direction of this link, with some studies showing a positive relationship (Eccles & Serafeim, 2013) and others suggesting a negative relationship (Flammer, 2015). By integrating the interaction term, this research may investigate possible moderating factors that may help explain these contradictory results and give a deeper understanding of the relationship between ESG and financial performance.

As a control variable, beta helps to account for systemic risk or market risk. By doing so, the model is better able to identify the effect of ESG considerations on financial performance while adjusting for wider market variables that may influence the financial performance of both ESG and non-ESG firms. In accordance with Velte (2017), the use of beta as a control variable in the regression model mitigates the effect of market risk on the study and provides a more robust examination of the ESG-financial performance link.

In addition to controlling for systemic risk through the inclusion of beta, the Debt to Asset ratio serves as a control for unsystematic risk, or firm-specific risk, in the regression model. As a measure of a firm's leverage, the Debt to Asset ratio acts as a proxy for unsystematic risk (Velte, 2017). By incorporating the Debt to Asset ratio into the model, the relationship between a firm's financial performance and its financial structure can be accounted for, allowing for a more accurate assessment of the impact of ESG considerations on financial performance while controlling for firm-specific risks.

In financial analysis, a company's size is generally seen as a significant driver of its financial performance, and it is commonly controlled for in regression models. This is due to the fact that firm size may have a considerable effect on a range of variables that drive financial success, including access to financing, economies of scale, and market competitiveness. By incorporating size as a control variable in the model, the effect of company size on financial performance may be accounted for. This strategy is consistent with results from prior studies

indicating that business size may have a substantial effect on financial performance (Amihud & Lev, 1981; Fama & French, 1992). In our research, market capitalization will serve as an indication of firm size, as it reflects the entire value of outstanding shares of stock.

Capital expenditures are funds allocated by a company for the acquisition, maintenance, or improvement of long-term assets like property, plant, and equipment (Investopedia, 2022). Prior research has shown that capital expenditures may have a substantial effect on a company's financial performance. According to Gompers and Lerner (2001), capital expenditures are one of the primary drivers of a firm's future growth, and a greater level of capital expenditures has been proven to correlate favorably with future profitability and market value. Additionally, research indicates that capital expenditures have a considerable influence on the stock returns of a firm. For instance, Shiyong and Jiani (2019) discovered that firms with more capital expenditures enjoyed greater stock returns.

In order to eliminate any confounding effects and guarantee that the observed association between ESG and financial performance is not entirely driven by variations in capital expenditures across firms, it is essential to control for capital expenditures.

Income tax is a significant expenditure for companies, and higher income tax rates may diminish a company's profitability and financial performance (Hanlon & Heitzman, 2010). In contrast, lower income tax rates may boost a company's profitability and financial performance. Moreover, research has shown that income tax rates can have a significant impact on a company's financial performance. Hanlon and Heitzman (2010) note that lower corporate tax rates have been found to be positively associated with higher corporate profitability and market value, while higher corporate tax rates have been found to be negatively associated with corporate profitability and market value. By integrating income tax rate as a control variable in our regression model, we can guarantee that the findings truly represent the link between ESG practices and financial performance, rather than only reflecting changes in income tax responsibilities. If, for instance, ESG firms tend to have higher income tax rates than non-ESG firms, then the positive association between ESG performance and financial success might be explained by the lower income tax requirements of non-ESG firms. By controlling for the rate of income tax, we can ensure that this is not the case and that the link between ESG performance and financial success is not influenced by income tax requirements.

As key control variables, dummy variables for each of the 24 quarters (covering the period 2017-2022) the dependent variables correspond to may capture the influence of time-varying



factors that may affect the financial performance of both ESG and non-ESG firms. Changes in the broader economic climate, adjustments in customer preferences, and modifications to government laws might, for instance, affect the financial success of both ESG and non-ESG firms. By using dummy variables for each quarter, we can account for the impacts of these time-varying factors and guarantee that the regression analysis produces valid findings.

To assess the characteristics of the dataset, a tabular summary was collected, providing the count of observations, measures of central tendency in the form of mean values, as well as the corresponding measures of dispersion, represented by standard deviation. Additionally, the range of values captured by the variables of interest were represented by the minimum and maximum values. In order to mitigate the influence of outliers in the dependent variables, a robust approach was adopted in the empirical analysis. More precisely, the 0.01 percentile of the ROA, ROE, and MBR were subjected to winsorization, an effective technique that tackles the issue of extreme values that could exert an unwarranted influence on the results. The Winsor approach involves replacing extreme values with less extreme values rather than completely removing them from the distribution (Sullivan, Warkentin, & Wallace, 2021).

On the other side, the independent variables were transformed using the natural logarithm (ln), while the ESG score dummy, Interaction Term, and Capital Expenditures were kept unchanged to maintain interpretability. This standardization method ensures that all variables are on a consistent and comparable scale, reducing the potential impact of unit and measurement level discrepancies among the independent variables (Gelman, 2008). By adopting this approach for normalizing the independent variables, the validity and reliability of the findings are enhanced, and the treatment of outliers in the dependent variables is also improved.;

Next, in addition to the aforementioned, we further quarter-lagged all independent variables, except the ESG score dummy. This was done in order to account for the lag between the adoption of ESG practices and their effect on financial performance. We can better capture the influence of ESG policies on financial performance over time by lagging the independent variables. This is especially crucial considering that the influence of ESG practices on financial performance may not be immediate and may take time to manifest (Choi & Wang, 2009). By including the lagged independent variables into our study, we may more accurately capture the long-term impacts of ESG practices on financial performance, so enhancing our understanding of the advantages of such practices for firms.

While examining the Table 1, a few important observations may be made. First, for the dependent variables, the mean of ROA is 0.0252 and the mean of ROE is 0.0656, suggesting that the sample firms have a positive average return on assets and return on equity. The very modest standard deviations for both variables show that the performance of the sampled firms is generally steady. We also see that MBR has an excessively positive mean and a rather large standard deviation. The table also displays the mean, standard deviation, minimum, and maximum values for the independent variables and control variables. The ESG\_Score\_Dummy variable has a mean of 0.601, indicating that on average, more than half of the sample firms have an ESG score over the threshold that was specified (50). The ESG\_NPM\_Interaction (interaction term) variable has a mean of 0.109, suggesting that on average, the sample firms have a slightly positive net profit margin. Market\_Cap has the greatest maximum value among the control variables at 27.58, indicating that there are certain firms in the sample with very large market capitalization, while Cap\_Exp\_Cumul has the extremely lowest. Overall, the table offers a thorough overview of the descriptive statistics of the variables employed in the research.

*Table 1. Descriptive Statistics (Nordic Firms)*

A summarizing descriptive statistics table for the adjusted, winsorized, standardized, and lagged variables. The table shows the number of firm-year observations, mean value, standard deviation, minimum and maximum value of each variable of interest.

<b>VARIABLES</b>	(1) <b>N</b>	(2) <b>Mean</b>	(3) <b>Std. Dev</b>	(4) <b>Min</b>	(5) <b>Max</b>
ROA	4,739	0.0252	0.0214	-0.00101	0.115
ROE	4,739	0.0656	0.0532	-0.0110	0.300
MBR	4,739	2.393	3.383	0.0519	22.18
ESG_Score_Dummy	4,739	0.601	0.490	0	1
ESG_NPM_Interaction	3,921	0.109	0.368	-0.411	7.720
Beta	3,900	-0.0837	0.518	-4.782	1.362
Leverage	3,921	-1.622	0.894	-8.656	-0.0394
Market_Cap	3,921	21.45	1.711	11.27	27.58
Cap_Exp_Cumul	3,921	-14.10	48.06	-991.1	-1.00e-04
Income_Tax_Rate	3,799	-1.539	0.596	-7.067	3.970

A correlation matrix is obtained in order to analyze the correlation coefficients between the variables of interest and uncover possible linkages and patterns in the data. Table 2 displays the pairwise correlations between each independent variable. The highest positive and significant correlation is observed between Market\_Cap and ESG\_Score\_Dummy (0.47), indicating that firms with higher market capitalization tend to have higher focus on ESG. On the other hand, the highest significant negative correlation is observed between Market\_Cap and Cap\_Exp\_Cumul (-0.35), indicating that firms with higher market capitalization tend to have lower cumulative capital expenditures. The ESG\_NPM\_Interaction variable shows a modest but significant positive correlation (0.21) with the ESG\_Score\_Dummy variable, which is natural given that these two variables interact. Moreover, the only negative correlation with ESG\_Score\_Dummy is observed with Cap\_Exp\_Cumul (-0.20), suggesting that companies with higher cumulative capital expenditures tend to have lower ESG scores. Notably, the stars in the correlation matrix represent the various degrees of statistical significance, with one star signifying significance at the 0.05 level, two stars at the 0.01 level, and three stars at the 0.001 level.

*Table 2. Correlation Table (Nordic Firms)*

A correlation coefficient matrix provides information about the linear relationship between different variables of interest. Each cell in the matrix displays a correlation coefficient that indicates the strength and direction of the relationship between two variables.

<b>Variables</b>	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) ESG_Score_Dummy	1.000						
(2) ESG_NPM_Interaction	0.21***	1.000					
(3) Beta	0.05**	-0.03*	1.000				
(4) Leverage	0.03	0.02	-0.02	1.000			
(5) Market_Cap	0.47***	0.15***	-0.08***	-0.04**	1.000		
(6) Cap_Exp_Cumul	-0.20***	-0.02	-0.00	-0.02	-0.35***	1.000	
(7) Inc_Tax_Rate	0.05***	-0.21***	0.02	0.03	-0.01	-0.09***	1.000

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

## 6. Results

Table 3 shows the results of a regression analysis, where three financial performance metrics (ROA, ROE, MBR) are regressed against two independent and five control variables. The first independent variable is ESG score dummy, which is a dummy variable representing whether the firm has a high ESG score. The negative coefficients suggest that there is a negative relationship between ESG scores and the financial performance metrics. Regarding the significance level, we observe that the coefficient for MBR is relatively high and has a significance level of  $p < 0.05$ . This suggests that the negative relationship between ESG scores and MBR is not due to chance, but is likely to be a true effect. However, it's important to note that the coefficients for ROA and ROE do not appear to be statistically significant at any level.

The impact of the second independent variable, the lagged value of the interaction between the ESG score dummy and net profit margin, was analyzed too with respect to the three financial performance metrics. The results indicate that the interaction term has a statistically significant negative impact on both ROA (coeff. = -0.003) and ROE (coeff. = -0.008), suggesting that companies with a larger or more positive interaction effect between their ESG score and net profit margin in the previous quarter tend to have lower returns on assets and equity in the current quarter.

The third and fourth control variables are the lagged values of a company's beta (Beta) and leverage (Leverage). The results show that Beta has no statistically significant impact on any of the financial performance metrics. In contrast, Leverage has a statistically significant negative impact on ROA, but not on ROE or MBR. This implies that companies with higher leverage tend to have lower returns on assets, which may signal greater financial risk.

The results for the rest control variables indicate that the lagged value of Market capitalization has a statistically significant positive effect on MBR (coeff. = 0.826). Specifically, companies with higher Market capitalization in the previous period tend to have higher market-to-book ratio in the current period. However, Market capitalization has no statistically significant impact on ROA and ROE (coeff. = 0.001 and 0.003, respectively), suggesting that a company's Market capitalization does not affect its returns on assets and equity. Regarding the variable Capital expenditures, it has a statistically significant negative impact on both ROA and ROE, however the relationship is weak. Moreover, the results show that Income tax rate has statistically insignificant impact on all three dependent variables, implying that a company's

income tax rate in the previous period does not affect its financial performance or market-to-book ratio in the current period.

The relationship between ESG factors, financial performance, and market valuation is a complex and multifaceted one. Despite the fact that regression analysis may give some insight into these relationships, the model's low R-squared values show it has little explanatory power. This might be attributable to a number of issues, including the complexity of the ESG concept, which makes it difficult to capture all of its significant characteristics with a single metric. Often, researchers must depend on inaccurate or insufficient ESG measurements, which may cause to measurement error and a loss in the model's explanatory ability (Friede et al., 2015). Furthermore, the influence of ESG factors on financial performance may be indirect or long-lasting, making it challenging to quantify their impacts in short-term financial performance measures (Choi & Wang, 2009). For instance, a company's investment in environmental sustainability practices may not result in immediate financial gains, but may result in long-term benefits, such as an improved reputation, a reduction in regulatory risk, and an increase in innovation. These benefits may take time to materialize, and as such, their effects may not be captured fully in short-term financial performance measures (Eccles et al., 2014).

*Table 3. The Impact of ESG Score on Financial Performance (Nordic Firms)*

Regression Analysis of Financial Performance Metrics: ROA, ROE, and MBR. All coefficients are estimated using cluster-robust standard errors (by the company identifier, e.g., Company\_id) which are presented in the parentheses. In the table, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 indicate significance at the 1%, 5%, and 10% levels (two-tailed), respectively.

<b>VARIABLES</b>	<b>(1) ROA</b>	<b>(2) ROE</b>	<b>(3) MBR</b>
ESG_Score_Dummy	-0.000 (0.002)	-0.004 (0.005)	-1.641** (0.653)
ESG_NPM_Interaction	-0.003*** (0.001)	-0.008** (0.003)	-0.301 (0.193)
Beta	0.002 (0.002)	-0.003 (0.005)	-0.069 (0.257)
Leverage	-0.005*** (0.001)	-0.004 (0.003)	-0.382 (0.246)
Market_Cap	0.001 (0.001)	0.003 (0.002)	0.826*** (0.264)
Cap_Exp_Cumul	-0.000** (0.000)	-0.000*** (0.000)	0.011** (0.004)
Income_Tax_Rate	-0.001	0.001	0.109

	(0.001)	(0.003)	(0.150)
Constant	-0.007	-0.004	-14.525***
	(0.019)	(0.047)	(5.003)
Observations	3,778	3,778	3,778
R-squared	0.078	0.044	0.136

Robust standard errors in parentheses

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

## 7. Conclusion and Further Research

We performed a rigorous empirical analysis employing fixed effects regression methods with cluster-robust standard errors at the company level in order to examine the relationship between financial performance and ESG scores across a wide variety of Nordic firms over the period spanning 2017-2022. Additionally, we sought to ascertain any possible divergences in the financial performance of ESG-compliant firms as opposed to non-ESG-compliant firms. The findings suggest a negative relationship between ESG scores and financial performance, although the significance level of the coefficients varies across different financial performance metrics. Moreover, the lagged value of the interaction between ESG scores dummy and net profit margin has a statistically significant negative impact on both ROA and ROE financial metrics used as proxies of financial performance, indicating that companies with a larger interaction effect tend to have lower returns. In contrast, the lagged value of leverage has a statistically significant negative impact on ROA only, suggesting that companies with higher leverage may face greater financial risk.

Based on the regression findings, it seems that the first hypothesis (H1) cannot be rejected. The coefficients for the ESG\_Score\_Dummy variable are negative but not statistically significant at conventional levels, indicating that there is no statistically significant difference between the financial performance of ESG and non-ESG firms in the Nordic region. In addition, the coefficient for the ESG score dummy variable is relatively strong, negative and statistically significant for the MBR variable, showing that non-ESG firms in the Nordic region have a higher MBR than ESG firms. As with ROA and ROE, the coefficient for the ESG\_NPM\_Interaction interaction term is negative and statistically significant, indicating that the negative association between ESG scores and MBR is greater for firms with lower net profit margins. Consequently, the findings cannot reject the second hypothesis (H2) that there is no significant difference in the Market-to-Book Ratio (MBR) between ESG firms and non-ESG

firms in the Nordic region. All in all, it appears that both the `ESG_Score_Dummy` and `ESG_NPM_Interaction` variables exhibit negative associations with the proxies of financial performance, albeit at varying levels of statistical significance. Consequently, the research hypotheses under consideration cannot be substantiated by the findings of the study.

Here, it is important to note that if the Efficient Market Hypothesis (EMH) holds true, then any information related to a company's ESG performance should already be reflected in its market price. In other words, the market should already be incorporating ESG information into the prices of financial assets, making it impossible to consistently outperform the market based on ESG information alone (Fama, 1970). The findings of the analysis, which suggest that ESG performance is not significantly related to financial performance, may be seen as supporting the EMH.

Moreover, in the context of ESG, stakeholder theory suggests that companies that prioritize ESG considerations may benefit from improved stakeholder relationships, which can contribute to improved long-term financial performance (Freeman et al., 2004). The shareholder theory, on the other hand, suggests that companies should prioritize maximizing shareholder value, which may not always align with ESG priorities (Friedman, 1970). Thus, the findings can be interpreted as supporting shareholder theory, as the study found no evidence that prioritizing ESG considerations results in superior financial performance.

At this point, it's important to note that the explanatory power of the regression model is limited, which may be attributed to the complexity of the ESG concept and the challenges of measuring it accurately. Further research could explore different aspects of ESG and their impact on financial performance in the Nordic region, using more comprehensive and refined measures of ESG. Moreover, future studies could investigate the long-term effects of ESG factors on financial performance, as well as their impact on other non-financial outcomes such as reputation, employee satisfaction, and environmental impact. Finally, it may be useful to examine the role of different stakeholders such as investors, regulators, and consumers in promoting ESG practices and their impact on corporate decision-making and financial performance.

Overall, the findings of this thesis contribute to the growing body of research on the relationship between ESG and financial performance, and provide valuable insights for policymakers, investors, and managers in the Nordic region. By highlighting the importance of ESG factors for financial performance, this research may encourage companies to adopt more

sustainable and responsible practices, which could ultimately benefit not only their financial performance but also the wider society and the environment.



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## Appendix

### *A. Variables of Interest*

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The presented table encapsulates the essential dependent and independent variables implemented in a comprehensive financial analysis aimed at evaluating a company's performance. The dependent variables, including Return on Assets (ROA), Return on Equity (ROE), and Market-to-Book Ratio (MBR), reflect crucial metrics that gauge the company's profitability and market worth. The independent variables encompass Environmental, Social, and Governance Score (ESG Score) alongside its interaction with Net Profit Margin (NPM), Beta, Leverage, Market Capitalization, Capital Expenditures, Income Tax Rate, and Quarter fixed effect. These parameters, widely employed in financial analyses, constitute a composite set of indicators that help determine the impact of various factors on a company's financial performance.

<b>Dependent Variables</b>	<b>Description</b>
ROA	Return on Assets
ROE	Return on Equity
MBR	Market-to-Book Ratio
<b>Independent Variables</b>	<b>Description</b>
ESG Score Dummy	Environmental, Social, and Governance Score
ESG Score Dummy*NPM	Interaction Term between ESG Score Dummy and Net Profit Margin
Beta	Measure of a stock's volatility in relation to the market
Leverage	Measure of a company's financial leverage
Market Capitalization	Total value of a company's outstanding shares of stock
Capital Expenditures	Money a company invests in fixed assets
Income Tax Rate	Percentage of a company's profits that are paid as taxes
Quarter	Quarter fixed effect



### ***B. Nordic Firms Representation in Sample Data: A Pie Chart***

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This pie chart retrieved from STATA displays the distribution of Nordic firms in the sample data analyzed in this study. The majority of firms are from Sweden (49.08%), followed by Norway (16.75%), Denmark (16.67%), Finland (16.18%), and Iceland (1.308%). The chart provides the proportion of Nordic firms in the sample, allowing readers to understand the study's regional focus.

