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# ESG AND COMPANY PERFORMANCE IN THE NORDIC REGION DURING 2018-2022

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The document length is 11524 words from the introduction to the end of the conclusion.

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# ABSTRACT

As major contributors to the sustainability crisis, companies are facing a growing demand for non-financial disclosure. This trend highlights how stakeholders, from investors to consumers, increasingly support companies that assess their Environmental, Social, and Governance (ESG) practices more efficiently. To answer these expectations, a growing number of businesses are incorporating ESG metrics into their reporting. Since the companies in the Nordic region are regarded as leaders in ESG practices, it is essential to understand how increased sustainability actions can affect their financial performance.

This thesis aims to determine if ESG and company performance are related in the Nordic region by examining data from 2018 to 2022. Instead of the commonly used pillar scores, various ESG metrics are used as the explanatory variables. These metrics offer multiple views on ESG development and aim to give a detailed analysis of how sustainability factors affect financial performance.

Panel data was gathered from the Eikon database, which led to a sample of 117 companies from the Nordic region. The study used four different ESG performance metrics as the explanatory variables, while Return on Equity (ROE) and Tobin's Q were chosen as the dependent variables. Independent regression models were used to determine the relationship between these variables from two sub-periods: 2018-2020 and 2021-2022. The results from both regression models showed no significant relationships between ESG performance and company performance, indicating that ESG development does not affect company performance in the Nordic region.

Keywords: ESG performance, Company performance, Nordic region, Panel data, Sustainable finance

# INTRODUCTION

Progress is constantly being made towards a more responsible and sustainable future. This can be seen societally as well as economically. Climate change, equality, and corporate governance are central considerations in modern society. Consumer and company behaviour has changed noticeably as individuals tend to prioritise environmentally friendly products and distance themselves from unethical organisations. Simultaneously, companies are actively responding to the shifting consumer preferences. Environmental, Social, and Governance (ESG) standards were created to track the sustainability and social responsibility efforts of organisations. This helps investors, as well as consumers, identify and evaluate if and how much companies are contributing towards sustainability goals.

In essence, ESG is a set of metrics and practices used to measure companies' non-financial performance. Simply put, ESG measures a company's health and stability without considering its balance sheet. Responsible investors are on the lookout for companies that do well in these areas. Examples of environmental factors are water usage, pollution, greenhouse gases and materials used. Some of the elements investors evaluate for the social pillar are employee turnover rates, inclusion, contributions to the local community, and working conditions. Governance, on the other hand, considers how the directors take care of the stakeholders and how the ESG factors are driven forward (BDC, 2024). Most often, these scores are then calculated by rating agencies using the non-financial data provided by companies (Wolfe, 2022).

Sustainable finance, often referred to as the process of considering ESG factors in investment decisions, is gaining importance (European Commission, n.d.). This is evident as the global climate crisis is pushing a growing number of investors towards sustainable finance practices. As a result, companies have been actively trying to enhance their ESG factors as demand for ESG disclosure has risen (Statista, 2024). According to Bloomberg (2024), ESG investments exceeded $30 trillion in 2022 and are projected to reach over $40 trillion by 2030, which is more than 25% of all managed assets.

The Nordic region stands as a global leader in ESG considerations. In 2023, each Nordic country was included in the world's top 6 most sustainable countries (Robeco, 2023). This is also seen in the higher average ESG scores between Nordic companies and the rest of the world. As the demand for ESG disclosure is high in Nordic countries, even well-rated ESG companies and fields are pushing to make constant improvements. In other words, companies are aiming towards positive ESG development.

For this thesis, ESG performance refers to the development of ESG scores rather than focusing on high or low-rated ESG numbers. This means that low-rated ESG companies might have good ESG performance, while high-rated ESG companies might have the opposite. This thesis aims to determine if ESG and company performance are related in the Nordic region by examining data from 2018 to 2022. By using different ESG performance metrics and evaluating them with financial measures, this paper aims to understand the relationship between these variables. More precisely, this paper seeks to evaluate the relationship between ESG performance and the financial performance of Nordic companies. Thus, the research questions for the thesis are:

Q1: How is the ESG performance related to the financial performance of Nordic companies?
Q2: How is the ESG performance related to the return on equity (ROE) of Nordic companies?
Q3: How is the ESG performance related to Tobin's Q of Nordic companies?

Eight hypotheses are used to answer the research questions, which will be presented in the first chapter. The hypotheses are based on theoretical frameworks on the topic and will be used to assess the panel data. The panel data was gathered from the Refinitiv Eikon database from 117 public companies which had their ESG and financial information available between 2017 and 2022. Using the panel data, a Variance Inflation Factor (VIF) test will be conducted to assess the multicollinearity of the variables, and the Hausman test will determine the suitability of either a fixed effects or random effects regression model based on the variables. Additionally, tests for autocorrelation and heteroskedasticity are included and will be presented in the appendices. The thesis also aims to give a new perspective on ESG studies by using ESG performance metrics as independent variables. The time period from 2018 to 2022 was selected due to the lack of ESG disclosure before 2017 and after 2022.

This paper is divided into three main sections and a conclusion. The first chapter presents background information on the topic and covers this thesis's main theoretical framework:

stakeholder theory, shared value creation theory and legitimacy theory. The first chapter will also discuss previous studies and present the hypotheses for this thesis. The second chapter will focus on sample selection, chosen variables, descriptive statistics and study methodology. Finally, the third chapter will provide the study's findings and discuss the results.

# 1. SUSTAINABLE FINANCE

This chapter provides a literature review on sustainable finance, beginning with an explanation of its meaning and broader scope. This is followed by a discussion of the theoretical frameworks that show the relationship between corporate performance and ESG outcomes. The third subchapter focuses on internal and external factors of ESG performance and ESG investing. Finally, the focus will shift to previous studies regarding ESG and financial performance, and the hypotheses for the thesis will be presented.

## 1.1. Background

Sustainable finance is a rather loose term, and therefore, it can overlap with or is mistakenly linked to other similar concepts. Migliorelli (2021) notes that sustainable finance still has no universally acknowledged "off-the-shelf" definition. Because it is hard to draw clear boundaries around the term, it should be defined in a way that explains its broader scope. Sustainable finance is often understood to consider environmental, social and governance (ESG) factors in investment decisions, promoting responsible and ethical investment practices (Archer, 2022). According to Swiss Sustainable Finance (n.d.), sustainable finance involves incorporating ESG criteria into financial services and investment decisions to benefit both clients and society in the long run. From a broader perspective, the main goal of sustainable finance is to help achieve sustainable development goals (United Nations Global Compact, n.d.).

Sustainable finance has been transforming ever since the Industrial Revolution in the nineteenth century, when faith-based organisations started to control their investment targets, and later in the 1950s and 1960s as a form of Corporate Social Responsibility (CSR) when corporate accountability beyond profit became more relevant (Eccles et al., 2020; Latapí et al., 2019). However, ESG factors are a more recent consideration. Archer (2022) explains in his article that the first mention of ESG appeared in the United Nations Global Compact report in 2004. Since then, there has been a growing demand for ESG data and disclosure, indicating increased investor awareness for more sustainable approaches (Eccles et al., 2020).

In 2006, The United Nations started to push ESG into financial decisions by creating Principles of Responsible Investment (PRI) (Arhcer, 2022). PRI aims to help institutional investors optimise both greater financial results and sustainability goals (UNPRI, n.d.). According to Majoch et al. (2017), since 2006, over 1300 organisations with a combined value of over 45 trillion dollars have adopted the PRI, showing a push towards implementing ESG factors into financial decision-making. To better understand the six principles, this is how they are listed on the UNPRI (n.d.) website:

1. We will incorporate ESG issues into investment analysis and decision-making processes.
2. We will be active owners and incorporate ESG issues into our ownership policies and practices.
3. We will seek appropriate disclosure on ESG issues by the entities in which we invest.
4. We will promote acceptance and implementation of the Principles within the investment industry.
5. We will work together to enhance our effectiveness in implementing the Principles.
6. We will each report on our activities and progress towards implementing the Principles.

The ESG market seems to be constantly growing (Aramonte & Zabai, 2021). This is also transparent in the various debt and equity instruments sustainable finance offers. The modern sustainable debt market includes green bonds, sustainability bonds, social bonds, green loans and sustainability-linked loans. Each of these instruments provides a possibility to support sustainable projects either in the form of a loan or bond. The most recent of these instruments is sustainability-linked loans, which include interest rates that are adjusted by the borrower's success in meeting ESG targets (Larsen, 2019). In addition to the debt market's possibilities, sustainable finance offers various equity-based solutions as well. Especially ESG and SRI equity funds and ESG-focused exchange-traded funds (ETFs) have experienced growth in recent years (Aramonte & Zabai, 2021).

ESG covers a broad range of criteria across its dimensions. European Commission (n.d.) includes preservation of biodiversity, pollution prevention and circular economy as some of the environmental considerations. Social issues refer to inequality problems, labour relations, and human rights problems. Lastly, governance in public and private institutions includes management practices, employee relations and executive compensation. These considerations are then measured for all three ESG pillars. The environmental pillar measures anything from water consumption to increased efficiency in resource usage. The social pillar is measured by a

company's ability to maintain diversity and offer equal opportunities across the company, to name a few. Lastly, the governance pillar evaluates factors such as board structure balance, shareholder rights, and financial and non-financial disclosure aspects (Sassen et al., 2016). As business operations vary between the sectors, the measured activities can differ (Eccles & Stroehle, 2018).

The ESG pillars and the overall ESG scores are usually measured by rating agencies and financial institutions from 1 to 100 using public company data (Rau & Yu, 2024). Eccles & Stroehle (2018) note that the ESG data universe is relatively complex for investors, the most significant problem being the lack of measuring standards and reporting requirements. Researching ESG data providers, they found two attitudes to how these organisations tend to measure ESG data: the value-driven and values-oriented approaches. The value-driven approach focuses more on ESG factors that affect shareholder returns, including quantitative metrics related to financial performance. In contrast, the values-oriented approach prioritises qualitative policy-related ESG information with a stronger view of long-term societal impacts.

As visible, ESG has its shortcomings. Rau & Yu (2024) explain that the different methods between ESG rating agencies resulting in asymmetries in ESG scores are not the only problem. Increasing demand for reporting ESG data raises questions about its quality and reliability as ESG metrics risk being subject to greenwashing. Other drivers for ESG inconsistency are company size and sector bias. Larger firms have the capacity to prepare and publish ESG disclosures more efficiently. Additionally, they are more capable of controlling reputational risks, resulting in better ESG scores. Lastly, ESG ratings can be influenced by industry bias, as normalising ESG ratings across industries may result in oversimplifying them. In 2023, the EU adopted the European Sustainability Reporting Standards (ESRS) for all companies under the Corporate Sustainability Reporting Directive (European Commission, 2023). As this is a recent change, it is hard to tell how it will affect the ongoing ESG issues. However, it does offer more specific standards and requirements for sustainability reporting.

Today, sustainable finance is more relevant than ever before. With the current environmental and social climate, companies and investors should consider future generations as the main stakeholders rather than focusing only on possible profits (Abrudan et al., 2021). Dimmelmeier's (2023) article explains the modern evolution of sustainable finance from 1998 to 2018. In this period, there have been five frames of sustainable finance.

- Socially Responsible Investing (SRI) frame: Aligns investments with the ethical values of the investor.
- Risk and Opportunities frame: Considers ESG issues in investment decision-making.
- Critical frame: Aims to hold financial system actors accountable for their contribution to social and environmental issues.
- Climate Finance frame: Tries to flow investments towards a low-carbon economy transition.
- Integrated frame: Considers all the aspects of sustainable finance.

From these frames, the risk and opportunities frame has been dominant (Dimmelmeier, 2023). Looking into the future, the interaction between the frames leads towards more inclusive approaches to sustainability and balance of the ESG considerations. Positively, while many sustainable finance instruments already exist, financial markets are actively trying to find new solutions to drive towards the goals of the integrated frame (Kumar et al., 2021).

When it comes to sustainable finance, the Nordic region stands globally as a leading example. According to Dyhr's (2022) article, Nordic countries are ahead in renewable energy, energy conversion, and gender equality. This highlights various possibilities for ESG investing in the region. These claims can also be backed. In 2019, the Nordic countries were all ranked in the top 5 of the Global Sustainable Competitiveness Index, which evaluates countries on sustainability through indicators like natural capital and governance (Solability, 2019). In addition, the six most sustainable countries in the world in 2023, when it comes to ESG factors, were (in order) Finland, Sweden, Denmark, Norway, Switzerland, and Iceland (Robeco, 2023). As a leader in sustainable finance, the Nordic region offers an interesting base from which to explore ESG and company performance and their evolution in recent years.

## 1.2. Theoretical framework

This chapter goes through the theoretical concepts of increasing corporate performance by utilising Environmental, Social, and Governance (ESG) factors. The theories discussed are stakeholder, shared value creation, and legitimacy theories, which are often connected to larger organisations. These theories highlight different ways of implementing sustainable practices into business operations, with the primary goal being to enhance company performance.

### 1.2.1. Stakeholder theory

In the capitalist system, the central idea has been that companies' primary obligation is to generate profit for shareholders. Friedman (1970), a renowned economist, argued in his article "The social responsibility of business is to increase its profits" against businesses taking socially responsible actions if those activities detract from the financial interests of shareholders. To this day, many companies operate according to Friedman's shareholder beliefs. However, the stakeholder theory takes a different approach.

In his landmark study, Freeman (1984) challenged the traditional idea that the primary responsibility of businesses is to maximise shareholder value. Instead, he proposed a stakeholder approach, where the interests and well-being of all those affected by business operations (shareholders, employees, customers, suppliers, communities, e.g.) would be considered. Freeman's theory states that for a business to succeed in the long term, it must create value for all stakeholders above all else. The goal can be achieved by taking into account the unique context of each situation with practices like ethical management or corporate social responsibility. The core of the theory is that businesses are part of a large system of connections, and by considering all the stakeholders through trust, communication and transparency, loyalty and satisfaction can be created among them (Freeman, 2010). In all simplicity, the theory suggests that by considering the broader impact of business decisions, the outcomes are better for both the company and society.

Ruf et al. (2001) concluded that stakeholder theory indeed supports the idea that companies can achieve financial benefits by considering the needs of various stakeholders rather than only the shareholders. Their study found a positive relationship between corporate social performance (CSP) and financial outcomes. When CSP was improved, there were positive effects on sales growth and return on sales, indicating both short and long-term beneficial impacts.

### 1.2.2. Shared value creation theory

As the name suggests, shared value creation connects corporate and social success from the idea that businesses can benefit by focusing on societal challenges. In their work "Creating Shared Value", Porter and Kramer (2011) explained shared value creation to be a strategic concept where business opportunities are found when working on social and environmental issues. The shared value approach directly takes corporate social responsibility into core business strategies rather than making it an additional profit-making method. They argued that competitive advantage and

economic possibilities are improved by benefiting the communities where they operate. Porter and Kramer (2011) point out that economic and social value comes from three key aspects:

- Products and markets: By considering societal needs, new products and markets can be achieved. Companies can offer solutions for critical issues and improve their product development, ultimately benefiting both the company and society.
- Productivity in the value chain: Productivity can be enhanced by optimising the use of resources in the value chains. Acts such as waste reduction, sustainable sourcing, and improved labour practices can reduce costs and increase efficiency while benefitting the workers and the environment.
- Local cluster development: Firms can invest in local infrastructure and, in that way, contribute to the economic and social development of the communities they operate in.

Nestle and IBM are good but very different examples of companies that have utilised the shared value approach. Porter and Kramer also used these companies as examples in their studies. Nestle recognised a societal problem in their coffee supply chain, which was seen as weak farming practices that led to negative use of resources and low-quality coffee. They responded by supporting and training coffee farmers with the Nespresso AAA sustainable quality program, which had positive impacts on the quality and productivity of the coffee farms (Nestle-Nespresso, 2023). The IBM Service Corps, launched in 2008, also represents shared value creation by sending teams to work on societal problems in different emerging markets. IBM's work offers societal improvements to communities while giving IBM employees experiences and skills, ultimately connecting business growth and social progress (IBM, n.d.).

While many companies have used shared value creation principles in their business practices, few studies have been conducted that directly relate to the concept. From a resource perspective, Li et al. (2023) studied the impact of shared value creation on corporate sustainable development, focusing on its effects on social, environmental and financial performance. Using resource-dependence and resource-based theories, they found that enhanced resource provision and acquisition can improve all of these factors. Furthermore, they concluded that competitiveness can be improved by fulfilling social and environmental duties.

### 1.2.3. Legitimacy theory

Suchman (1995) defines organisational legitimacy as a perception that an organisation's actions are correct and proper when within socially constructed norms and beliefs. He highlights that organisations can handle legitimacy strategically and institutionally to build, keep, and restore their acceptance. While it is essential to maintain and gain this status of legitimacy, companies must also be prepared to adapt to changes in expectations set by society over time. From a strategic viewpoint, companies can build legitimacy in multiple ways while strengthening their business. Trust can be increased by matching their actions with existing standards, choosing operating environments that align with their practices, and shaping their public image through communication, legitimacy, and reputation.

Sustainability reporting is part of legitimacy theory, as it is a way for companies to promote their values in important societal factors to secure legitimacy. A study conducted by Raimo et al. (2021) found that companies that disclose more ESG information tend to have a lower cost of debt. This indicates that lenders and investors see companies with clear ESG disclosure as more trustworthy and lower risk, likely because of their tendencies to be more sustainable and responsible. Another study by Tripopsakul & Puriwat (2022) showed that all three ESG elements have a positive connection to brand trust and customer engagement in Thailand. These studies support the idea that legitimacy indeed can affect how customers as well as investors feel about socially aware and transparent companies.

## 1.3. ESG dynamics

This chapter will focus on the dynamics of ESG performance and the principles of ESG investing to provide a comprehensive understanding of their impact on corporate and investment levels. It will focus on internal and external ESG performance factors and give an overview of sustainable investing.

### 1.3.1. ESG performance factors

The theoretical concepts showed various ways of increasing financial performance while concentrating on sustainability practices. Companies can also shape their ESG performance with more minor adjustments or be affected by external factors. While efficient ESG adjustments can contribute to a company's profitability and resilience, external factors are more unpredictable. For

this thesis, it is wise to understand the mechanisms and reasons behind the behaviour of ESG performance.

One direct way companies can enhance their ESG performance is by strengthening the board of directors with expertise in ESG factors. A study by Iliev & Roth (2023) showed that a board gaining sustainability expertise could boost a firm's overall sustainability performance by 7.1% from the enhancements in both environmental and social practices. Another direct ESG strategy can be shown in a study conducted by Au et al. (2023). They explained that big firms, especially, are trying to become as transparent as possible in their disclosure and ESG reporting. The transparency strategy is often associated with reduced risk and increased investments. However, ESG reporting does not always give a clear picture of the actual ESG outcomes. A study states that in Sweden, ESG information quality has improved steadily, but the actual ESG performance plateaued in 2015 (Arvidsson & Dumay, 2022). While companies may be increasing their efforts in ESG reporting and disclosure to meet the requirements and expectations of investors, these actions do not directly lead to real improvements in the ESG criteria.

Much like direct ESG strategies, indirect factors can increase or decrease ESG performance in various ways. These external factors are more straight-forward to explain as they happen frequently. These factors can include market shocks, trends, and technological advancements. One solid example of an indirect effect on ESG performance was the Covid-19 pandemic. During the pandemic, companies in developed nations performed well in terms of their social performance, while their governance performance declined (Al Amosh & Khatib, 2023). The results make sense, as health and support were prioritised during the pandemic. At the same time, the whole governance structure shifted to a new situation of remote work and emergency decision-making.

### 1.3.2. ESG Investing

ESG investing gives people more control and understanding of their investment decisions. It is not only about creating wealth and value but also about helping current and future generations. For example, almost all of the increase in greenhouse gases in the atmosphere over the last 150 years can be explained by human activities (EPA, 2024). When it comes to social problems, women globally handle most unpaid care work, spending three to six hours on average, while men contribute much less, typically half an hour to two hours (Ferrant et al., 2014). While many investors may focus on the opportunities of the hot market, the evermore apparent ethical factors are pushing investors towards ESG investing. In his article, Naditz (2023) mentions that the

Economist Intelligence Unit's research found that 76% of the younger generation born between 1965-2000 view ESG factors as "increasingly important" compared to 37% born in 1964 or earlier.

The most common sustainable investment approaches are negative and positive screening, ESG integration and impact investing (Major Sustainability, n.d.). Michelson et al. (2004) explain that in negative screening, certain businesses are excluded due to being involved in activities like gambling or selling alcohol. Conversely, in positive screening, companies that are socially responsible remain as good investment targets. ESG integration is defined as an approach where ESG factors are explicitly and systematically included in investment analysis, considering ESG risks and opportunities in decision-making (Busch et al., 2022). Finally, in impact investing, investors aim to generate financial returns with positive and measurable social and environmental impacts. Impact investing tends to be more specific than ESG integration, as chosen investments are aimed at specific outcomes, such as reducing carbon emissions (Barber et al., 2021).

Harvey (2021) encourages investors to focus on transparent firms and reflect on carbon emissions, air and water pollution, deforestation, labour standards, and gender diversity, to name a few. Harvey's research concluded that ESG investing indeed has an impact on a more sustainable future. However, this requires better disclosure and improved regulations, especially in developing nations. From an investor's perspective, there are risks, but there are also countless opportunities, such as renewable energy, green real estate, and eco-tourism, which are constantly evolving (Harvey, 2021). Like any other investing, ESG investing does not promise higher returns. Various studies have been done on ESG investing, and different results have been obtained. Verheyden et al. (2016) found that by using ESG screening to select companies that rank higher in ESG considerations can result in higher returns, lower risks and maintained portfolio diversification. However, Cornell (2021) found that investors tend to get smaller returns from highly rated ESG companies. Conversely, lower expected returns might suggest a lower discount rate, indicating more significant investments in green projects and greater market valuations for ethical companies.

## 1.4. Previous studies and hypotheses

This chapter focuses on previous studies and the formulation of the hypothesis for this paper. First, an overview of prior findings will be presented to showcase possible results. Finally, the hypotheses will be formed using the theoretical framework as the foundation.

As already stated, ESG strategies and different corporate social responsibility actions can have positive effects on companies in various ways. However, as this thesis explores the relationship between ESG performance and corporate performance, it is vital to find more direct connections between these factors. In previous studies, ESG scores have been used as the independent variables more frequently than ESG performance, which focuses on the development of the ESG score. The usage of ESG performance is crucial because, as already mentioned, in Sweden, ESG performance plateaued in 2015, while the ESG reporting quality has improved. As such, the shift towards examining the actual ESG performance is essential in sustainability reports as well as future studies. However, as studies with ESG performance are rare, the previous studies that will be explored will focus on ESG scores. In most of the studies shown, the term ESG performance can mean plain ESG scores and pillar scores rather than their development.

ESG and corporate performance have been researched across the globe. Velte (2017) studied the impact of ESG performance on the financial performance of companies listed in the German Prime Standard between 2010-2014. The study found that ESG performance has a positive impact on return on assets, but no effects on Tobin's Q. Another study by Alareeni & Hamad (2020) researched US S&P 500 firms' ESG disclosure on their financial and market performance using Return on assets (ROA), Return on Equity (ROE) and Tobin's Q as the dependent variables. They found that while ESG as a whole had positive effects on ROA and Tobin's Q, ROE was negatively affected when measured independently with each pillar score. Similarly, Rao et al. (2023) researched larger Indian companies and found negative relationships between ROE and environmental and governance factors, while social pillar scores showcased insignificant effects. For Tobin's Q, Aydoğmuş et al. (2022) found a positive relationship when evaluating it with the overall ESG scores. When measured independently, social and governance pillar scores positively affected firm value, while no effects on the environmental pillar score and Tobin's Q were found.

The Nordics are the best-ranked ESG countries in the world, as mentioned earlier in this chapter. However, there are still large gaps between the ESG scores of the Nordic companies. Saha & Khan (2024) researched the relationship between ESG factors and financial performance between firms across the Nordics from 2012 to 2021. Their study found that higher ESG scores have a significant role in return on assets, equity, and net profit margin. Most findings for ROE were negative, while the opposite was apparent for ROA. Another study by Rahi et al. (2021) found varying results when focusing on the Nordic financial sector, as they found both positive and negative results between ESG practices and financial performance. Negative results were apparent when focusing

on return on invested capital, return on equity and earnings per share, while positive effects were found between the governance factor and return on assets.

Various meta-studies have been done regarding the topic as well. While meta-studies may face limitations in a regional context, they still provide a strong overview of the topic. One meta-study combined the findings of nearly 2200 studies. The results showed that about 90% of the studies found a non-negative relationship between ESG and financial performance, while a large portion of them indicated positive findings. This shows that the impact of ESG on financial performance over time appears stable (Friede et al., 2015). Another more recent meta-study focused on over 1000 studies between 2015 and 2020. Common financial metrics used were return on assets and return on equity. The findings showcased 13% neutral impact, 21% mixed results, and only 8% negative results, while 58% indicated a positive relationship between ESG and financial metrics (Whelan et al., 2021).

The results from previous empirical studies are relatively mixed. A strong positive connection is often found between ESG scores and company performance. This is especially apparent for ROA and Tobin's Q, which are usually positively or non-negatively associated with ESG scores. ROE seems to be affected negatively in most studies, while some studies still indicate positive or non-negative outcomes depending on whether overall or pillar scores are used as independent variables. As the ESG performance metrics used in this thesis are rarely seen in previous research of a similar nature, the findings do not accurately reflect what to expect regarding this thesis.

The metrics used in this thesis aim to give a broader picture of ESG development through the research period, using ESG performance metrics as the independent variables. The ESG metrics used in this research are ESG Gain, ESG Return, ESG Relative Return and ESG Combined Returns. These variables vary in their dimensions as they measure the development of the overall ESG scores from different viewpoints. The dependent variables for the study are Tobin's Q and ROE, which will reflect company performance in two different ways. Tobin's Q represents the firm's market value relative to its assets, while ROE measures the profitability generated from shareholders' equity. To create the hypotheses, reflecting on the theories discussed in Chapter 1.2 with ESG factors in mind is essential.

From the theoretical foundation, the stakeholder theory regards all of the ESG factors well when aiming for better financial performance. This is because it considers all stakeholders affected by

businesses in their operational decisions (Freeman, 1984). The increased trust and reputation achieved by the company from all stakeholders can lead to improved investments and innovative business practices, leading to increased performance. Ruf et al. (2001) found that improving the needs of multiple stakeholders, which increases Corporate Social Performance (CSP), also results in better financial performance.

Porter and Kramer's (2011) shared value approach encourages firms to view societal challenges as opportunities for innovation. By focusing and investing in the community where the company operates and contributing to employee productivity and satisfaction, better financial results can be achieved, especially in the long run. Eccles et al. (2014) found that companies that adopted sustainability practices earlier outperformed low-sustainability companies, especially in the long run, which supports the shared value theory.

Legitimacy theory, on the other hand, focuses on aligning the business with social norms and expectations to achieve legitimacy in the stakeholders' eyes (Suchman, 1995). With such alignment, support, investments, and operational efficiency can be increased. While legitimacy can be improved by focusing on environmental factors such as reducing emissions, it is highly notable in disclosure. More transparent non-financial disclosure helps attract new investors and increase societal validation, which can lead to improved performance. Saleh et al. (2011) found a positive relationship between environmental disclosure and financial performance, supporting the transparency related to legitimacy theory.

Every theory mentioned covers ESG pillars well in business decisions. Refinitiv (2022) calculates the environmental pillar scores from resource use, emissions, and innovation. The social pillar, on the other hand, is based on the workforce, human rights, product responsibility, and community. Therefore, stakeholder and shared value theories are highly linked to the environmental and social pillars due to their focus on innovation and stakeholder considerations. Finally, the governance pillar is calculated from CSR strategy, management and shareholder activities (Refinitiv, 2022). This is highly linked to the legitimacy theory due to the importance of non-financial disclosure and governance strategies.

Better individual ESG pillar scores and financial performance can also be achieved through the theories discussed. Porter and Van Linde (1995) noted that active environmental improvements and stakeholder engagement also increase company productivity and performance. Additionally,

Fombrun et al. (2000) stated that companies prioritising employees and the community become more attractive to workers and other stakeholders, ultimately leading to better company performance. Finally, Radhi and Sarea (2019) state that when companies implement effective corporate governance policies, they can create a transparent picture for all the stakeholders, leading to stronger connections and improved financial efficiency.

While previous studies have shown mixed results between financial performance and ESG scores, the meta-studies by Friede et al. (2015) and Whelan et al. (2021) mostly align with the theory. From the theoretical point of view, the following hypotheses are formed:

H1: There is a positive relationship between ESG Gain and Tobin's Q
H2: There is a positive relationship between ESG Gain and ROE

H3: There is a positive relationship between ESG Return and Tobin's Q
H4: There is a positive relationship between ESG Return and ROE

H5: There is a positive relationship between ESG Relative Return and Tobin's Q
H6: There is a positive relationship between ESG Relative Return and ROE

H7: There is a positive relationship between ESG Combined Returns and Tobin's Q
H8: There is a positive relationship between ESG Combined Returns and ROE

# 2. DATA AND METHODOLOGY

This chapter explains the data selection process and research methodology for this paper. It indicates the quantitative nature of the study by researching ESG and corporate performance. First, the sample selection will be introduced. A presentation of the dependent, independent, and control variables follows this. The independent variables used in this paper will be explained more precisely, as ESG performance metrics are rarer in ESG research. Finally, the chapter will summarise the data and explain the regression method used in the paper.

## 2.1. Sample selection

This quantitative study aims to find connections between corporate and ESG performance. Therefore, correct historical ESG and financial information is needed. To do so, the sample, ESG scores, and financial values were gathered from the Eikon database and Eikon's screener application. It considers all public companies from the Nordic region between 2018 and 2022. In the given period, Eikon was able to provide information on 1672 Nordic companies, of which 145 had ESG scores available. The sample considers only companies which had all the needed financial and ESG information in the time frame. Due to missing financial information, the final sample size was reduced to 121. However, with additional inconsistencies and errors in the information, the sample was further decreased to 117. A link to the dataset can be found in Appendix 1. The sample better represents the larger companies in the region. This is because bigger companies hold more resources to provide ESG information, have more economic activity and are required to disclose more necessary information (Begenau et al., 2018; Drempetic et al., 2020).

Sweden had the most companies included in the sample, while Norway had the least. However, Finland, Denmark and Norway were closely similar, with Finland having 24, Denmark 21 and Norway 17 companies included in the sample. This was expected as Sweden tends to share the largest majority of the Nordic region's biggest companies (statista, 2023). Icelandic companies were excluded from the research due to limitations on the number of public companies and ESG

information. The overall number of observations was 585. Table 1 provides a more specific distribution of the public companies, countries and total observations.

Table 1. Public companies used

| Country | Number of companies | Number of observations |
|---|---|---|
| Sweden | 55 | 275 |
| Finland | 24 | 120 |
| Denmark | 21 | 105 |
| Norway | 17 | 85 |
| Total | 117 | 585 |

Source: Pulliainen (2024); author's compilation

## 2.2. Variables

The chosen variables are based on previous studies relating to ESG scores and company performance. However, rather than using ESG pillar scores, the study will focus on ESG performance metrics used by Post (2022). This will give a different perspective to the traditional ESG performance studies of a similar nature.

Return On Equity (ROE) and Tobin's Q (TQ) were chosen as the dependent variables for this study. Tobin's Q is usually calculated as a ratio of enterprise market value to total asset replacement cost, as shown in Equation 1 below. The total asset replacement cost is the total amount it would cost to replace all of the company's assets with new ones at the current price. A Tobin's Q over 1 indicates that the market values the company's assets at a premium. This shows potential overvaluation and suggests solid financial performance.

$$Tobin's\ Q = \frac{Enterprise\ market\ value}{Total\ asset\ replacement\ cost} \quad (1)$$

Return on equity is calculated by dividing net income by shareholders' equity. The formula for ROE is shown below in Equation 2. ROE indicates how efficiently a company is able to generate profits from shareholders' equity. Higher ROE reflects stronger financial performance.

$$ROE = \frac{Net\ income}{Shareholdes' Equity} \quad (2)$$

The explanatory variables used in this study are ESG gain, ESG return, ESG relative return and ESG combined returns, as used by Post (2022). Each of these performance metrics measures ESG development differently. For the formulas, "i" stands for the individual company, "t" stands for time and "t-1" represents the previous year. This is also why the ESG scores needed to be gathered from 2017 – 2022.

ESG Gain is the most straight-forward metric out of the four. It assumes that ESG performance is constant no matter the level of ESG score—an increase from 20 to 25 results in an ESG gain of 5, as does from 80 to 85. Given the information, this assumption is reasonable, but other assumptions are possible. The other ESG performance metrics will have different assumptions. Equation 3 shows how ESG gain is calculated.

$$ESG\ Gain_{i,t} = ESG\ Score_{i,t} - ESG\ Score_{i,t-1} \quad (3)$$

ESG return gives a percentage-based number that represents ESG performance. This measurement does not assume that ESG performance is constant no matter the level of ESG score. An increase from 20 to 25 results in an ESG gain of 25%, while a rise from 80 to 85 results in 6,25%. Therefore, ESG return assumes that an increase and decrease in ESG score is more impactful when the ESG score was relatively low in the previous year. Formula 4 shows the calculation.

$$ESG\ Return_{i,t} = \frac{ESG\ Score_{i,t}}{ESG\ Score_{i,t-1}} - 1 \quad (4)$$

ESG return assumptions could be reasonable. It is, however, possible that ESG scores are easier to increase when they are low, resulting in better ESG performance. If true, this would naturally contradict the assumptions of this measure. ESG relative return will have different assumptions to balance this issue.

ESG relative return is the opposite metric of ESG return. This formula considers how much the ESG score could have increased. For example, when the score increases from 20 to 25, the increase is 5, while it could have been 80. However, if the increase went from 80 to 85, the overall increase could have only been 20. Therefore, the ESG relative return would be $\frac{5}{80} = 6{,}25\%$ and $\frac{5}{20} = 25\%$. ESG Relative Return assumes that an increase and decrease in ESG score is more impactful when

the ESG score increases relatively more compared to the maximum increase possible. Formula 5 below illustrates how ESG relative return is calculated.

$$ESG\ Relative\ Return_{i,t} = \frac{ESG\ Score_{i,t} - ESG\ Score_{i,t-1}}{100 - ESG\ Score_{i,t-1}} \quad (5)$$

Both ESG Return and ESG Relative Return share a similar issue. ESG return has a downward limit but not an upward one. The opposite is apparent for ESG relative return. For ESG return, this means that if it is negative, the maximum value can be -100%, while a positive value could exceed 100%. ESG combined returns variable aims to counter this problem.

ESG combined returns formula connects both ESG return and ESG relative return; therefore, it also combines their assumptions. It has a downward and upward range of -100% to 100%. Formula 6 shows the logic behind combining the two performance metrics mentioned.

$$ESG\ Combined\ Returns_{i,t} = \begin{cases} ESG\ Relative\ Return_{i,t} & ,if\ ESG\ Gain_{i,t} > 0 \\ ESG\ Return_{i,t} & ,if\ otherwise \end{cases} \quad (6)$$

As seen, the metrics calculate ESG performance very differently. This gives an opportunity to see the ESG development from various angles. For example, a company that has a high ESG return but a lower ESG relative return may indicate that the company started with a low ESG score and has made improvements. Still, there is room for improvement when considering the full maximum potential. At the same time, ESG gain gives an absolute number of the company's progress. This way, the study does not focus only on high or low scores but considers overall development.

This paper uses financial leverage, asset turnover and company size as the control variables. All of these variables were found to be essential when testing the impact of ESG scores on financial performance as well as other similar CSR and financial performance studies (Alareeni & Hamdan, 2020; Andersen & Dejoy, 2011; Hamdan et al., 2018).

Previous studies have often used financial leverage as a control variable in ESG and financial performance studies. Alareeni & Hamad (2020) found a significant positive relationship between financial leverage and ROE. Financial leverage measures the extent to which a company uses debt to run its operations. Usually, it is calculated by the debt-to-equity ratio shown in Formula 8 below.

$$Financial\ Leverage = \frac{Total\ debt}{Total\ Equity} \quad (7)$$

The size variable is calculated using the total assets' natural logarithm. Alareeni and Hamad (2020) found a significant positive relationship between firm size, ROA, and Tobin's Q. Equation 8 illustrates how firm size is calculated in this paper.

$$Size = ln(Total\ assets) \quad (8)$$

Finally, this thesis uses asset turnover as a control variable. The turnover value was gathered directly from Eikon's database. The asset turnover ratio measures how efficiently a company utilises its assets to generate revenue. Alareeni and Hamad (2020) found asset turnover to have a significant positive correlation with all performance measures, including ROE and Tobin's Q.

## 2.3. Descriptive statistics

Table 2 provides a summary of the descriptive statistics. This includes all the variables used in the paper. It shows the minimums, first quartiles, medians, third quartiles, maximums, standard deviations, and number of observations.

Table 2. Descriptive statistics

| | ROE | TQ | ESG Score | ESG G | ESG R | ESG RR | ESG CR | LEVE | TURN | SIZE |
|---|---|---|---|---|---|---|---|---|---|---|
| Min | -0,52 | 0,16 | 10,62 | -15,90 | -0,32 | -0,95 | -0,32 | 0,00 | 0,07 | 17,40 |
| Q1 | 0,07 | 0,58 | 57,55 | -1,46 | -0,02 | -0,05 | -0,02 | 0,32 | 0,60 | 21,60 |
| Median | 0,14 | 0,86 | 67,38 | 1,08 | 0,02 | 0,03 | 0,03 | 0,53 | 0,83 | 22,31 |
| Q3 | 0,21 | 1,36 | 76,51 | 3,92 | 0,07 | 0,11 | 0,11 | 0,90 | 1,07 | 23,12 |
| Max | 0,60 | 3,78 | 92,87 | 24,17 | 1,04 | 0,44 | 0,44 | 2,86 | 4,06 | 25,86 |
| Mean | 0,14 | 1,11 | 65,42 | 1,44 | 0,03 | 0,02 | 0,05 | 0,65 | 0,89 | 22,30 |
| St. Dev | 0,13 | 0,79 | 14,93 | 4,72 | 0,11 | 0,15 | 0,11 | 0,48 | 0,48 | 1,24 |

Source: Pulliainen (2024); Author's calculations

As mentioned, the ESG gain represents an absolute numerical value, while the ESG return, ESG relative return, and ESG combined returns are expressed as percentiles. The minimum (-15,90) and maximum (24,17) values of ESG gain express how significantly ESG scores can change in a

one-year span, while the mean (1,44), which is similar to the median (1,08) shows that companies have usually been able to improve their scores slowly. In the previous chapter, it was mentioned that ESG return assumes that a change in ESG score is more impactful if the score was relatively low the previous year and that it does not have an upward limit, while ESG relative return assumptions were the opposite. The maximum value of 1,04 can be explained by this, which indicates that a company with a low ESG score has been able to increase its ESG score significantly. The minimum value -0,95 of ESG relative return can be explained similarly. A possible reason could be that a highly rated ESG company decided to ignore its ESG practices. Apart from the minimum and maximum values of ESG return and ESG relative return, the median and means are very similar for both. ESG combined returns calculation is used to balance the issues discussed. Therefore, it also has very similar values but with a smaller gap between maximum and minimum. The average values for ROE and Tobin's Q are very standard, which can be expected as the sample consists mostly of big Nordic companies.

Table 3 shows a correlation matrix to evaluate the correlation between the variables. The ESG performance metrics have a positive correlation with each other. In a regression model, this would mean that independent variables could predict other independent variables. Therefore, to determine how accurate the results are, multicollinearity has to be tested. Aside from the independent variables, the only slightly notable correlation is between turnover and ROE. This weak positive correlation suggests that as a company's leverage increases, its return on equity increases. Interestingly, ESG performance values and ESG scores do not show correlations.

Table 3. Correlation matrix

| | ROE | TQ | ESG Score | ESG G | ESG R | ESG RR | ESG CR | LEVE | TURN | SIZE |
|---|---|---|---|---|---|---|---|---|---|---|
| ROE | 1 | | | | | | | | | |
| TQ | 0,40 | 1 | | | | | | | | |
| ESG | -0,02 | -0,07 | 1 | | | | | | | |
| ESG G | 0,04 | 0,06 | -0,04 | 1 | | | | | | |
| ESG RR | 0,04 | 0,08 | -0,20 | 0,89 | 1 | | | | | |
| ESG RR | 0,04 | 0,04 | 0,03 | 0,89 | 0,67 | 1 | | | | |
| ESG CR | 0,01 | 0,02 | 0,22 | 0,92 | 0,72 | 0,89 | 1 | | | |
| LEVE | 0,00 | -0,15 | -0,07 | -0,02 | -0,03 | -0,01 | -0,03 | 1 | | |
| TURN | 0,32 | 0,11 | -0,02 | 0,06 | 0,04 | 0,06 | 0,04 | 0,06 | 1 | |
| SIZE | -0,04 | -0,13 | 0,51 | -0,17 | -0,25 | -0,13 | -0,02 | 0,03 | -0,22 | 1 |

Source: Pulliainen (2024); author's calculations

Figures 1, 2, and 3 are presented to understand how ESG performance metrics have developed over the years. Figure 1 shows the average development of the overall ESG score from 2017 to 2018, while Figure 2 showcases the average development of ESG gain. Similarly, Figure 3 shows the same for the percentual metrics between 2018 and 2022. The Y-axis represents the performance, while the X-axis shows the timeframe. The graphs show how ESG scores have increased and plateaued while the ESG performance metrics have declined, indicating the difference between overall ESG scores and actual performance. The increased requirements for non-financial disclosure can partly explain the decline in ESG performance. The EU's ESRS standards mentioned in Chapter 1 are a good example of the increased requirements companies are facing (European Commission, 2023). These changes make ESG more reliable while decreasing the amount of greenwashing companies can create.

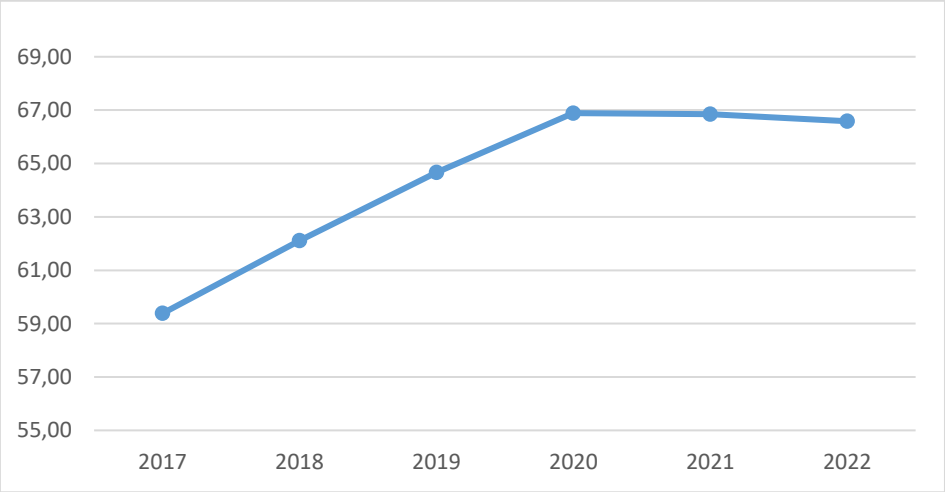


Figure 1. Yearly average ESG scores

Source: Pulliainen (2024); author's calculations

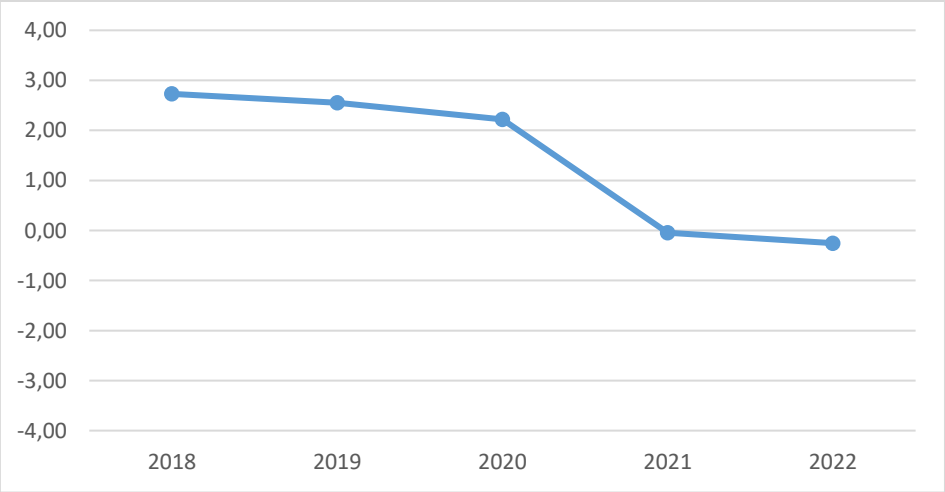

Figure 2. Yearly average ESG gain.

Source: Pulliainen (2024); author's calculations

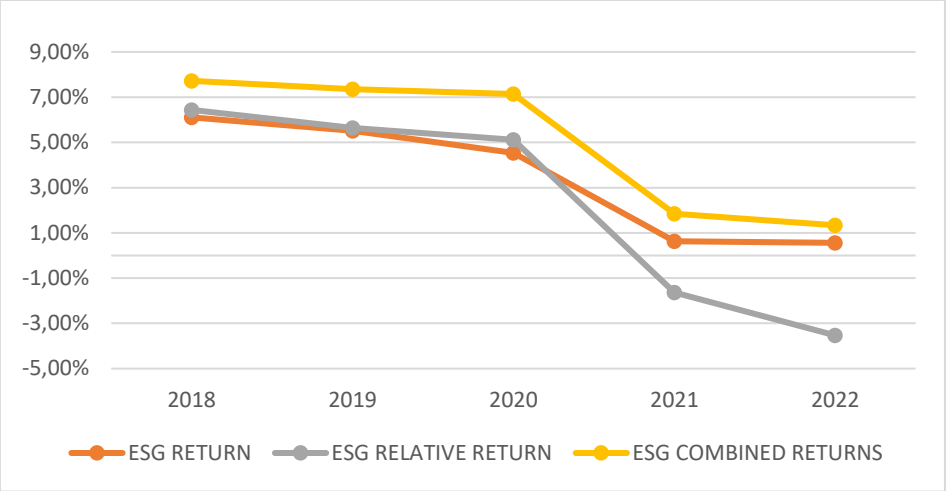


Figure 3. Yearly average ESG Return, Relative Return and Combined Returns

Source: Pulliainen (2024); author's calculations

## 2.4. Study methodology

This paper uses panel data from listed companies in the Nordic region between 2018 and 2022. Multi-model regression analysis is employed to explore the relationship between ESG and company performance and to answer the research hypotheses mentioned in chapter 1.4. Due to the high correlation between the explanatory variables shown in the correlation matrix, a combined model that considers all ESG performance variables in conjunction with the control variables is not going to be reliable. Therefore, independent models for both Tobin's Q and ROE are going to be a more fitting option. These models will independently include the explanatory variables to avoid possible multicollinearity. As seen in Figure 3, ESG Return metrics are declining. This could indicate that the relationship between ESG performance and financial performance could have changed. Thus, the relationship will be studied from sub-periods 2018-2020 and 2021-2022 to give a more precise perspective on the relationships.

The most commonly used regression models for panel data are the random and fixed effects models. While both of the formulas are similar in nature, there are key differences. To explain the models in simple terms, in the fixed effects model, individual-specific effects, which may be correlated with explanatory variables, are treated as random variables, while in the random effects model, these individual-specific effects are considered random and uncorrelated with the

explanatory variables (Schmidheiny & Basel, 2011). A Hausman test needs to be applied to choose which one of the models should be used. Hausman test evaluates whether or not there is endogeneity in a model by checking for correlations between the predictor variables and the model's error term. In case the test indicates significance, the fixed effects model is more suitable; conversely, a non-significant result shows that the random effects model should be used. In other words, the null hypothesis states that the covariate is exogenous. If the p-value is over 0.05 in the Hausman test, the null hypothesis is accepted, and if it falls under the null hypothesis, it can be rejected (Mainzer, 2018). Equations for the regression models are presented below in Formulas 9, 10, 11 and 12.

Fixed effects model:

$$ROE_{it} = \alpha_i + \beta_1 ESG_{it} + \beta_2 LEVERAGE_{it} + \beta_3 TURNOVER_{it} + \beta_4 SIZE_{it} + \varepsilon_{it} \quad (9)$$

$$TQ_{it} = \alpha_i + \beta_1 ESG_{it} + \beta_2 LEVERAGE_{it} + \beta_3 TURNOVER_{it} + \beta_4 SIZE_{it} + \varepsilon_{it} \quad (10)$$

$\alpha_i$ = intercept for each individual,
$\beta$ = estimated coefficient,
$ESG$ = ESG G, ESG R, ESG RR, ESG CR,
$\varepsilon$ = error term,
$i$ = individual company,
$t$ = year

Random effect model:

$$ROE_{it} = \alpha + \beta_1 ESG_{it} + \beta_2 LEVERAGE_{it} + \beta_3 TURNOVER_{it} + \beta_4 SIZE_{it} + \varepsilon_{it} + u_{it} \quad (11)$$

$$TQ_{it} = \alpha + \beta_1 ESG_{it} + \beta_2 LEVERAGE_{it} + \beta_3 TURNOVER_{it} + \beta_4 SIZE_{it} + \varepsilon_{it} + u_{it} \quad (12)$$

$\alpha$ = common intercept,
$\beta$ = estimated coefficient,
$ESG$ = ESG G, ESG R, ESG RR, ESG CR,
$\varepsilon$ = error term,
$u$ = random error,
$i$ = individual company,
$t$ = year

A Variance Inflation Factor (VIF) will be conducted to examine possible multicollinearity issues caused by the independent variables. Multicollinearity occurs when independent variables are highly correlated, making the interpretation of their effects on the dependent variables more complicated. This was also evident in the correlation matrix presented earlier in this chapter. The VIF analysis is especially relevant as the ESG performance metrics tend to give similar values and

are highly connected in their nature. However, as the regressions are conducted independently, this is not an issue. Still, the multicollinearity between the control and explanatory variables needs to be checked. VIF result lower than five indicates a moderate correlation between the independent variables. This, however, does not need to be fixed. Adjustments are required if the value is over 5 (Daoud, 2017).

Autocorrelations are addressed using the Wooldridge test. Autocorrelation occurs when variables have relationships between their past values, which is often apparent in time series data (Ao, 2009). Therefore, addressing this issue in the 2018-2020 model is essential. However, as the second model considers only the years 2021-2022, serial correlation cannot be tested because the Wooldridge test is based on a first-differenced regression (Wooldridge, 2002). The null hypothesis in the Wooldridge test states that there is no autocorrelation in the panel data. If the p-value is below 5%, it indicates evidence against the null hypothesis and suggests possible autocorrelation.

Another data problem that needs to be addressed is heteroskedasticity. This is apparent when the variance of errors differs at different values of the independent variable. Depending on the regression model, two different tests for heteroskedasticity are conducted. The modified Wald test is conducted for fixed-effect models, and the Breusch-Pagan test is used for random-effect models. The modified Wald test evaluates if groupwise heteroskedasticity is apparent, whereas the Breusch-Pagan test is a more generalised version to evaluate heteroskedasticity in the data (Baum, 2001). Both autocorrelation and heteroskedasticity are considered in the regression models by adjusting the standard errors.

# 3. ANALYSIS AND DISCUSSION

This chapter presents the study's findings and analyses the effects of ESG performance on company performance in the Nordic region from 2018 to 2022. The chapter will go through the calculation process by explaining the initial test results first, followed by a presentation of the regression models. Finally, the chapter discusses the results, the study process, and previous research findings.

## 3.1. Regression analysis

As the correlation matrix showed, there was a high correlation between the explanatory variables, which led to using independent regression models. Still, a VIF test was conducted in case there is multicollinearity between the explanatory and control variables. The results presented in Appendix 2 indicate that multicollinearity is not a concern for the models. Additionally, the tests for autocorrelation and heteroskedasticity are presented in Appendix 3. Both autocorrelation and heteroskedasticity are considered in the regression analysis. Finally, during the data cleaning process, extreme outliers were removed, which also led to fewer observations from the 117 Nordic companies. The observations are visible in the Shapiro-Wilk test presented in Appendix 4.

Tables 4 and 5 below show the independent regression models for ROE and Tobin's Q from both of the sub-periods. These tables show the individual regression results of each independent variable in their respective columns. Control variables are represented in the first column, along with R-squared values and Hausman test results. A corresponding coefficient value and p-values are presented for each dependent variable. The p-values are inside the brackets, and the significance level is stated next to them. The ROE and Tobin's Q models show differences in the R-squared values. The R-squared values are generally higher for the ROE model, indicating that the model explains the dependent variable's variability better than Tobin's Q model. The Hausman test resulted in choosing the random effects model for most models. However, the results from the Hausman test indicated that the fixed effects model is the more suitable option for Tobin's Q model in the sub-period from 2021 to 2022.

The ROE model did not show a significant relationship between the ESG performance metrics apart from a slight positive relationship between ROE and ESG Relative Return in 2021-2022. For ESG Relative Return, the slightly significant positive relationship is indicated by the p-value of 0,72 and the coefficient value of 0,0779. However, there is not enough evidence to support the relationship at the confidence level of 95% and with a p-value of 0,072. Also, the control variables turnover and firm size showed significant relationships with ROE. For turnover, a highly significant positive relationship was evident throughout both of the periods, while the significant positive relationship between ROE and firm size was visible only from 2021 to 2022. The significance level of the control variables stayed constant in both instances.

Table 4. Independent ROE model

| ROE model | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 2018 - 2020 | | | | 2021 - 2022 | | | |
| | ESG G | ESG R | ESG RR | ESG CR | ESG G | ESG R | ESG RR | ESG CR |
| ESG G | 0,0004 (0.726) | | | | 0,0023 (0.159) | | | |
| ESG R | | 0,0063 (0.897) | | | | 0,0683 (0.304) | | |
| ESGRR | | | 0,0084 (0.794) | | | | 0,0779 (0.072) | |
| ESG CR | | | | -0,0002 (0.998) | | | | 0,0678 (0.316) |
| LEVE | -0,2569 (0.272) | -0,2577 (0.271) | -0,2582 (0.268) | -0,0258 (0.272) | 0,0001 (0.996) | -0,0001 (0.997) | 0,0009 (0.972) | 0,0002 (0.993) |
| TURN | 0,0874 (0.000) *** | 0,8743 (0.000) *** | 0,0874 (0.000) *** | 0,0876 (0.000) *** | 0,1189 (0.000) *** | 0,1206 (0.000) *** | 0,1185 (0.000) *** | 0,1189 (0.000) *** |
| SIZE | -0,0055 (0.496) | -0,0056 (0.471) | -0,0056 (0.455) | -0,0057 (0.448) | 0,0212 (0.026) * | 0,0213 (0.031) * | 0,0216 (0.027) * | 0,0200 (0.035) * |
| R2 within | 0,0936 | 0,0972 | 0,0968 | 0,0981 | 0,0190 | 0,0159 | 0,0235 | 0,0210 |
| R2 between | 0,1202 | 0,1196 | 0,1197 | 0,1188 | 0,2031 | 0,1987 | 0,2056 | 0,1926 |
| R2 Overall | 0,1092 | 0,1087 | 0,1089 | 0,1083 | 0,1625 | 0,1598 | 0,1649 | 0,1561 |
| Hausman | 0,0980 | 0,0710 | 0,0880 | 0,1100 | 0,2090 | 0,1940 | 0,2910 | 0,3970 |
| Model | Random | Random | Random | Random | Random | Random | Random | Random |

Source: Pulliainen (2024); author's calculations.

Notes:

1. Statistical significance, *0.05, **0.01, ***0.001

Similarly to the ROE model, Tobin's Q model did not indicate significant relationships between the explanatory and dependent variables. However, the control variables, firm size and leverage, had significant relationships between the dependent variable. Again, the relationship was apparent for firm size only from 2021 to 2022, while the relationship was visible for leverage throughout both periods. However, this model found negative relationships between these control variables and Tobin's Q. This means that for every one-unit increase in the control variable, Tobin's Q decreases by the amount indicated by the coefficients.

Table 5. Independent Tobin's Q model

| Tobin's Q model | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 2018 - 2020 | | | | 2021 - 2022 | | | |
| | ESG G | ESG R | ESG RR | ESG CR | ESG G | ESG R | ESG RR | ESG CR |
| ESG G | -0,0038 (0.506) | | | | -0,0029 (0.759) | | | |
| ESG R | | -0,0900 (0.801) | | | | -0,1439 (0.774) | | |
| ESGRR | | | -0,1149 (0.446) | | | | -0,1182 (0.667) | |
| ESG CR | | | | -0,1578 (0.451) | | | | -0,0471 (0.908) |
| LEVE | -0,2723 (0.001) ** | -0,2713 (0.002) ** | -0,2701 (0.001) ** | -0,2718 (0.001) ** | -0,4808 (0.007) ** | -0,4801 (0.007) ** | -0,4848 (0.007) ** | -0,4820 (0.008) ** |
| TURN | 0,0571 (0.578) | 0,0549 (0.594) | 0,0558 (0.589) | 0,0571 (0.579) | -0,3313 (0.079) | -0,3317 (0.078) | -0,3313 (0.078) | -0,3352 (0.075) |
| SIZE | -0,0734 (0.195) | -0,0765 (0.201) | -0,0770 (0.195) | -0,0752 (0.205) | -0,9795 (0.005) ** | -0,9768 (0.005) ** | -0,9782 (0.005) ** | -0,9757 (0.005) ** |
| R2 within | 0,0338 | 0,0315 | 0,0329 | 0,0328 | 0,1097 | 0,1096 | 0,1105 | 0,1093 |
| R2 between | 0,0688 | 0,0708 | 0,0704 | 0,0712 | 0,0190 | 0,0188 | 0,0189 | 0,0194 |
| R2 Overall | 0,0595 | 0,0604 | 0,0604 | 0,0612 | 0,0109 | 0,0109 | 0,0109 | 0,0110 |
| Hausman | 0,5180 | 0,5830 | 0,6130 | 0,6490 | 0,0110 | 0,0070 | 0,0190 | 0,0320 |
| Model | Random | Random | Random | Random | Fixed | Fixed | Fixed | Fixed |

Source: Pulliainen (2024); author's calculations.

Notes:
1. Statistical significance, *0.05, **0.01, ***0.001

Since the ESG performance metrics used in this paper are rarely used in prior studies, it is essential to research the topic from multiple perspectives. Table 6 showcases a simplified yearly regression analysis from 2020 to 2022. Years 2018 to 2019 were excluded as no relationships were found during those years. It should be stated that this model provides only an initial exploration and is not as reliable as the other models used in this paper. The aim of the model is to offer new perspectives on future research and showcase possible areas that can be explored. The simplified model shows that in 2020, every ESG performance metric had a positive relationship with ROE. In 2021, a slight positive relationship was visible between ESG Relative Return, and a significant positive relationship was seen between ESG Return and Tobin's Q. Similarly, in 2022, There was again a slight positive relationship between ESG Return and Tobin's Q. These results showcase only positive relationship between the explanatory and dependent variables. As the ESG performance variables are very similar in nature, yearly regressions could be a suitable option in future studies.

Table 6. Simplified yearly model

| Simplified yearly model from 2020 - 2022 | | | | | | |
|---|---|---|---|---|---|---|
| | 2020 | | 2021 | | 2022 | |
| | ROE | TQ | ROE | TQ | ROE | TQ |
| ESG G | 0,0072 | 0,25377 | 0,0035 | 0,0233 | 0,0041 | 0,0210 |
| | (0.006)** | (0.158) | (0.100) | (0.097) | (0.246) | (0.306) |
| ESG R | 0,2936 | 1,2807 | 0,1297 | 1,6659 | 0,2226 | 1,9022 |
| | (0.023)* | (0.152) | (0.141) | (0.028)* | (0.203) | (0.064) |
| ESG RR | 0,1650 | 0,4404 | 0,1023 | 0,5208 | 0,0954 | 0,3401 |
| | (0.044)* | (0.420) | (0.077) | (0.152) | (0.294) | (0.520) |
| ESG CR | 0,2967 | 0,7579 | 0,0822 | 0,8515 | 0,0985 | 0,5213 |
| | (0.009)** | (0.323) | (0.388) | (0.176) | (0.562) | (0.596) |

Source: Pulliainen (2024); author's calculations.

Notes:
1. Statistical significance, *0.05, **0.01, ***0.001

The results did not show connections between the independent and dependent variables apart from the slightly significant connection between ESG Relative Return and ROE. However, with a confidence level of 95%, the p-value of 0,072 does not show enough evidence to support the

connection. Conversely, the simplified yearly regression model showcased relationships between the variables. While the model does not provide enough reliability, it gives a good perspective for future ESG performance studies.

## 3.2. Results and discussion

Apart from Post's (2022) studies researching ESG performance of mutual fund holdings, ESG performance variables used in this paper are rarely seen in previous research. Most often, ESG performance is referred to as the pillar and overall ESG scores. Using these scores, research is conducted to see if high or low ESG affects company performance through regression analyses similar to this paper. However, as seen from the graphs and the nature of each ESG performance metric showcased in Chapter 2, there is a big difference in the variables. Therefore, relating to earlier studies becomes more difficult. The difference in the independent variables also makes the decision of dependent variables harder. Initially, the paper should have used ROA instead of ROE as a dependent variable. However, due to the nature of the data, ROA did not work with the independent variables, which became apparent from inconsistent Hausman results. Additionally, low R-squared values for each Tobin's Q model indicate that the independent variables do not explain much of the variability in Tobin's Q. These aspects raise the question of what variables should be used in future studies.

Because the main issues in the study were related to the data and variables, there are many suggestions for future studies. Firstly, as these ESG performance metrics focus on the development of ESG scores, a more extended time period would help to get more variation to the dataset. Also, as seen from the simplified regression model and the fact that the percent-based metrics are highly similar in nature, a yearly analysis could also be a suitable option. Another alternative way to research the actual number of ESG performances could include independently calculating the ESG Gain from every pillar. Additionally, if using the percentage ESG performance metrics, the ESG Combined Returns metric could be removed as the ESG Relative Return and Return metrics already include these values. Autocorrelation, heteroscedasticity, and robustness checks are essential when working with such panel data for these variables. Finally, the suitability of the dependent variables should be tested.

Before discussing the results, it should be noted that they do not align perfectly with prior studies due to the lack of previous studies using the ESG performance metrics apparent in this paper. This is because high and low ESG scores are not equal to the ESG performance metrics. Still, similarities can and were found. First, for Tobin's Q, the individual model results indicate no significant relationship between ESG performance metrics and the dependent variable. These results lead to the rejection of every hypothesis connected to Tobin's Q presented in the first chapter of this paper. While previous literature indicates that better ESG performance is often associated with increased firm value, the findings of Velte (2017) align with the results of this paper. Velte's (2017) research focused on companies listed on the German Prime Standard between 2010 and 2014, and the results indicated that ESG performance had no impact on Tobin's Q. It should be noted, however, that the research time period may affect the results as ESG disclosure has become vastly more important in the later years. Additionally, as mentioned in Chapter 1, Nordic companies tend to focus especially on the environmental factors of ESG. This is also backed by Ecovadi's (2023) index report from 2018-2022, which compared the ESG themes and found that Nordic firms exceed expectations in environmental factors. If these statements are true, the findings can partly align with Aydoğmuş et al. (2022) research, where they found that Environmental pillar scores did not have an effect on firm value. Their research still found that the overall ESG score, as well as the social and governance pillar scores, do affect Tobin's Q positively. Similarly, Alareeni and Hamad (2020) found a positive connection between ESG performance and Tobin's Q as they researched US S&P 500 firms.

The ROE model gave similar results to the Tobin's Q model, apart from the slightly visible relationship between ESG Relative Return. However, the p-value at 0,072 does not provide enough evidence to confirm a relationship between the variables. Therefore, all the hypotheses presented in the first chapter connected to ROE were rejected. Interestingly, the simplified model showed positive connections between ROE and ESG performance, especially in 2020. This gives a solid foundation for future studies related to ESG performance metrics. Previous studies have shown varying results between ESG and company performance. Every ESG pillar score and ROE was found to have a negative association in the study by Alareeni and Hamad (2020). Rao et al. (2023) also found negative relationships between ROE and environmental and governance pillar scores. However, their study partly aligns with the results of this paper as they did not find significant connections between the social pillar scores and ROE. Additionally, multiple negative and non-significant connections were found between ESG factors and ROE in the Nordic region when researching different ESG pillar scores and subfactors (Rahi et al., 2021; Saha & Khan, 2024).

Lastly, the meta-studies by Friede et al., 2015 and Whelan et al., 2021, showcased multiple positive and non-negative relationships between ROE and ESG scores. Still, the majority of previous research indicated negative effects between the variables.

The control variables remained constant throughout the models. Firm size was found to have a significant relationship between both ROE and Tobin's Q in the second sub-period. However, this relationship was positive for ROE, and for Tobin's Q, it was negative. Turnover showed a highly significant positive relationship between ROE in both periods, while a highly significant negative relationship was apparent between Tobin's Q and leverage. This consistency naturally showcases that these metrics fit such analysis well.

The results of this thesis indicate that every hypothesis based on the theoretical framework had to be rejected. Table 7 compiles the results.

Table 8. Summary of the results

| Hypothesis | Description | Conclusion |
|---|---|---|
| H1 | There is a positive relationship between ESG Gain and Tobin's Q | Rejected |
| H2 | There is a positive relationship between ESG Gain and ROE | Rejected |
| H3 | There is a positive relationship between ESG Return and Tobin's Q | Rejected |
| H4 | There is a positive relationship between ESG Return and ROE | Rejected |
| H5 | There is a positive relationship between ESG Relative Return and Tobin's Q | Rejected |
| H6 | There is a positive relationship between ESG Relative Return and ROE | Rejected |
| H7 | There is a positive relationship between ESG Combined Returns and Tobin's Q | Rejected |
| H8 | There is a positive relationship between ESG Combined Returns and ROE | Rejected |

Source: Pulliainen (2024); author's compilation

# CONCLUSION

This study focused on The financial performance of Nordic companies in relation to their ESG performance from 2018 to 2022. The aim of the study was to measure the development of sustainability practices of public Nordic companies and see whether or not these efforts are effective in creating value for these firms. In addition, the study aimed to give a new perspective to earlier ESG and financial performance studies by taking a different approach and measuring ESG scores from another perspective. The overall sample consisted of 117 public companies from Sweden, Finland, Denmark and Norway. Due to the lack of companies and inconsistent financial and ESG information, Iceland had to be excluded from the sample. Errors in the sample size further reduced the overall sample. 2018-2022 was chosen as the time period for this study due to the scarce ESG information before 2017 and after 2022. While the Financial information was gathered from 2018 to 2022, ESG information had to be gathered from 2017 due to the nature of the ESG performance metrics.

Eight hypotheses were conducted to answer the three research questions:

1. How is the ESG performance related to the financial performance of Nordic companies?
2. How is the ESG performance related to the return on equity (ROE) of Nordic companies?
3. How is the ESG performance related to Tobin's Q of Nordic companies?

The hypotheses were assessed using a theoretical framework linked to sustainability and financial performance as the foundation. Based on these hypotheses, panel data was gathered from the Refinitiv Eikon database. As a result, ROE and Tobin's Q were chosen as the dependent variables, and the ESG performance metrics used by Post (2022) were chosen as the independent variables. The variance Inflation Factor (VIF) test was used to address multicollinearity issues in the models. The results showed that multicollinearity was not an issue for the independent models. The Hausman test was conducted to test whether the fixed effect model or the random effects model was more suited for the regression analysis. Additionally, autocorrelation and heteroskedasticity were tested and controlled in the regression analyses.

The main study limitations were covered in the discussion chapter. While various studies on ESG scores and company performance have been conducted, ESG performance metrics are rarely seen in these studies. The ESG performance variables used in this thesis react very differently to the dependent variables used in previous studies, making the compilation of the panel data more challenging. Therefore, it is important that the usability of dependent variables is tested carefully. Additionally, while measuring very different aspects, the performance variables tend to give similar values. Using the right mix of ESG performance variables in future research is advisable. One method could be calculating ESG Gain from each pillar score and using these as the independent variables. ESG Return or Relative Return could be used to research the ESG and financial performance of high- or low-rated ESG companies. Similarly, as ESG Combined Returns consider both return metrics, this could also work as the only independent variable for some variations of the study. Finally, a yearly regression approach could also be suitable for future research. As these metrics are not actively used in regression studies, further tests for the variables and robustness checks would be advisable.

The study results suggest that there is no relationship between ESG performance and Tobin's Q for public companies in the Nordic region. In other words, no relationships were found between the firm's value and ESG development. Similarly, no relationships were found between ESG performance and ROE. Most previous studies have found positive connections between ESG scores and Tobin's Q, while some concluded that no significant connection existed between these variables. Thus, the findings regarding Tobin's Q and ESG performance partly align with previous studies. Similarly, in the case of ROE, prior research has often concluded a negative relationship between the variables, while some studies have also reported non-negative results. Therefore, the mixed findings again partially align with the findings of this paper.

Based on the results of this paper, it can be concluded that ESG performance is not visibly connected to financial metrics such as ROE and Tobin's Q in Nordic companies. Therefore, this study indicates that no positive or negative financial outcomes have been achieved by improving sustainability practices. However, there is room for improvement in future studies. It should also be stated that previous ESG score findings indicate positive relationships between these variables. Finally, the potential lack of impact on financial performance should not overwrite the importance of sustainability improvements that benefit all stakeholders.

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# APPENDICES

## Appendix 1. Dataset

https://docs.google.com/spreadsheets/d/1QP8trBCLnOTirZqOWKjq_xjXd_sIqe4oJDv2MiNRpbc/edit?usp=sharing

## Appendix 2. VIF tests

| VIF test, ROE | | | | |
|---|---|---|---|---|
| ROE | ESG G | ESG R | ESG RR | ESG CR |
| ESG G | 1,03 | | | |
| ESG R | | 1,07 | | |
| ESG RR | | | 1,02 | |
| ESG CR | | | | 1,00 |
| LEVE | 1,01 | 1,01 | 1,01 | 1,01 |
| TURN | 1,07 | 1,08 | 1,08 | 1,08 |
| SIZE | 1,10 | 1,14 | 1,09 | 1,07 |
| MEAN | 1,05 | 1,08 | 1,05 | 1,04 |

Source: Pulliainen (2024); author's calculations

| VIF test, Tobin's Q | | | | |
|---|---|---|---|---|
| TQ | ESG G | ESG R | ESG RR | ESG CR |
| ESG G | 1,02 | | | |
| ESG R | | 1,04 | | |
| ESG RR | | | 1,02 | |
| ESG CR | | | | 1,00 |
| LEVE | 1,00 | 1,00 | 1,00 | 1,00 |
| TURN | 1,07 | 1,07 | 1,07 | 1,07 |
| SIZE | 1,09 | 1,10 | 1,08 | 1,07 |
| MEAN | 1,05 | 1,05 | 1,04 | 1,04 |

Source: Pulliainen (2024); author's calculations

## Appendix 3. Data tests

| 2018 - 2020 | Hausman test | | Autocorrelation | Heteroskedasticity | |
|---|---|---|---|---|---|
| | Results | Model type | Wooldridge | Wald | Breusch-pagan |
| ESG G model | | | | | |
| Tobin's Q | 0,518 | Random | 0,106 | | 0,000 |
| ROE | 0,098 | Random | 0,008 | | 0,000 |
| ESG R model | | | | | |
| Tobin's Q | 0,583 | Random | 0,117 | | 0,000 |
| ROE | 0,071 | Random | 0,007 | | 0,000 |
| ESG RR model | | | | | |
| Tobin's Q | 0,613 | Random | 0,112 | | 0,000 |
| ROE | 0,088 | Random | 0,007 | | 0,000 |
| ESG CR model | | | | | |
| Tobin's Q | 0,649 | Random | 0,105 | | 0,000 |
| ROE | 0,110 | Random | 0,006 | | 0,000 |

Source: Pulliainen (2024); author's calculations

| 2021 - 2022 | Hausman test | | Heteroskedasticity | |
|---|---|---|---|---|
| | Results | Model type | Wald | Breusch-pagan |
| ESG G model | | | | |
| Tobin's Q | 0,011 | Fixed | 0,000 | |
| ROE | 0,209 | Random | | 0,000 |
| ESG R model | | | | |
| Tobin's Q | 0,007 | Fixed | 0,000 | |
| ROE | 0,194 | Random | | 0,000 |
| ESG RR model | | | | |
| Tobin's Q | 0,019 | Fixed | 0,000 | |
| ROE | 0,291 | Random | | 0,000 |
| ESG CR model | | | | |
| Tobin's Q | 0,032 | Fixed | 0,000 | |
| ROE | 0,397 | Random | | 0,000 |

Source: Pulliainen (2024); author's calculations

## Appendix 4. Shapiro-Wilk test

| Shapiro-Wilk test 2018-2020 | | | | | |
|---|---|---|---|---|---|
| Variable | Obs | W | V | Z | Prob>z |
| ROE | 342 | 0,971 | 6,949 | 4,579 | 0,000 |
| TQ | 325 | 0,844 | 35,646 | 8,421 | 0,000 |
| ESG G | 351 | 0,970 | 7,325 | 4,709 | 0,000 |
| ESG R | 351 | 0,849 | 36,964 | 8,537 | 0,000 |
| ESG RR | 351 | 0,849 | 36,964 | 8,537 | 0,000 |
| ESGCR | 351 | 0,972 | 6,881 | 4,561 | 0,000 |
| LEVE | 351 | 0,904 | 23,283 | 7,441 | 0,000 |
| TURN | 341 | 0,884 | 27,737 | 7,847 | 0,000 |
| SIZE | 351 | 0,984 | 3,950 | 3,249 | 0,001 |

Source: Pulliainen (2024); author's calculations

| Shapiro-Wilk test 2021-2022 | | | | | |
|---|---|---|---|---|---|
| Variable | Obs | W | V | Z | Prob>z |
| ROE | 225 | 0,922 | 12,776 | 5,896 | 0,000 |
| TQ | 217 | 0,828 | 27,623 | 7,667 | 0,000 |
| ESG G | 234 | 0,965 | 6,038 | 4,170 | 0,000 |
| ESG R | 234 | 0,665 | 57,255 | 9,386 | 0,000 |
| ESG RR | 234 | 0,910 | 15,363 | 6,335 | 0,000 |
| ESGCR | 234 | 0,915 | 14,488 | 6,200 | 0,000 |
| LEVE | 229 | 0,867 | 22,389 | 7,201 | 0,000 |
| TURN | 231 | 0,917 | 13,995 | 6,115 | 0,000 |
| SIZE | 234 | 0,979 | 3,515 | 2,915 | 0,002 |

Source: Pulliainen (2024); author's calculations

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