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The Impact of ESG Performance on the Cost of Equity

Evidence from the Nordic Countries

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ABSTRACT:

The human-caused climate change is said to be the most extensive threat our planet has ever faced. Hence, it is no wonder that the last decade has shown an immense growth in socially responsible investing (SRI) and a growing interest in the environmental, social, and governance (ESG) issues. As a result, firms have started to disclose more non-financial sustainability performance related information. On the other hand, investors and academics have started to discuss the impact of this non-financial information and sustainability performance on firms' financial performance. The objective of this thesis is to investigate the relationship between ESG performance and the cost of equity. In particular, the scope is to examine if better ESG performance is linked with lower costs of equity.

The relationship between ESG performance and the cost of equity is examined through a multiple regression model for over 200 publicly listed firms in the Nordics. The study period covers the years 2018–2021. The cost of equity is proxied by the CAPM and ESG performance is assessed by using the ESG Combined Scores provided by the Refinitiv Eikon database. Appropriate control variables, such as size, leverage, and book-to-market ratio are included in the regression.

Empirical results suggest that there is no statistically significant relationship between the cost of equity and ESG performance in the Nordics. Moreover, the results suggest that there is no significant relationship between the control variables and the cost of equity, except for the firm-specific leverage ratio. As several prior studies find that firm size, leverage, and book-to-market ratio have a significant effect on the cost of equity, we can conclude that the empirical methods used in this paper are not appropriate and do not provide reliable results. Using approaches other than CAPM to proxy for the cost of equity could have provided more reliable results. Hence, based on the results of this thesis, we cannot conclude whether a relationship exists between the cost of equity and ESG performance. However, this paper contributes to the existing literature by showing the limitations when examining the relationship between ESG performance and the cost of equity.

KEY WORDS: Yhteiskuntavastuullinen sijoittaminen (SRI), Ympäristövastuu, Yhteiskuntavastuu, Hyvä hallintotapa (ESG), Yrityksen yhteiskuntavastuu (CSR), oman pääoman kustannus, CAPM, taloudellinen suorituskyky

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TIIVISTELMÄ:

Ihmisestä aiheutuneen ilmastonmuutoksen väitetään olevan laajin uhka, jonka planeettamme on koskaan kohdannut. Viimeisten kymmenen vuoden aikana kiinnostus yhteiskuntavastuullista sijoittamista (SRI) sekä ympäristöön, yhteiskuntaan ja hyvään hallintotapaan (ESG) liittyvä kasvu on ollut valtavaa. Tämän seurauksena yritykset ovat alkaneet julkaista yhä enemmän vapaaehtoista, ei-taloudellista kestävyyteen ja vastuullisuuteen liittyvää tietoa. Toisaalta sijoittajat ja tutkijat ovat alkaneet keskustella tämän tiedon ja ESG-suorituskyvyn vaikutuksesta yritysten taloudelliseen suorituskykyyn. Tämän opinnäytetyön tavoitteena on tutkia ESG-suorituskyvyn ja oman pääoman kustannusten välistä suhdetta. Tarkemmin ottaen tarkoituksena on selvittää, liittyykö parempi ESG-suorituskyky alhaisempiin oman pääoman kustannuksiin Pohjoismaissa.

ESG-suorituskyvyn ja oman pääoman kustannusten välistä suhdetta tutkitaan monimuuttujaregressiomallilla yli 200:lle julkisesti noteeratulle yritykselle Pohjoismaissa vuosien 2018–2021 aikana. Oman pääoman kustannukset lasketaan CAPM-mallilla ja ESG-suorituskyky arvioidaan käyttämällä Refinitiv Eikon -tietokannan tarjoamia ESG-pisteitä. Kontrollimuuttujat valitaan aiempien tutkimusten mukaan ja sisällytetään regressiomalliin. Kyseiset kontrollimuuttujat ovat yrityksen koko, velkaantuneisuusaste ja kirjanpitoarvo suhteessa markkina-arvoon.

Empiiriset tulokset osoittavat, että Pohjoismaissa ESG-suorituskyvyn ja oman pääoman kustannusten välillä ei ole tilastollisesti merkittävää suhdetta. Lisäksi tulokset viittaavat siihen, että muiden kontrollimuuttujien kuin velkaantuneisuusasteen ja oman pääoman kustannusten välillä ei ole tilastollisesti merkittävää suhdetta. Koska useat aiemmat tutkimukset kuitenkin osoittavat, että yrityksen koko, velkaantuneisuusaste ja kirjanpitoarvo suhteessa markkina-arvoon vaikuttavat merkittävästi oman pääoman kustannuksiin, voimme päätellä, että tässä tutkimuksessa käytetyt empiiriset menetelmät eivät ole sopivia eivätkä tuota luotettavia tuloksia. Toisenlaisen lähestymistavan kuin CAPM käyttäminen oman pääoman kustannusten laskemiseen olisi voinut tuottaa luotettavampia tuloksia. Tutkimuksen tulokset antavatkin tärkeää ymmärrystä rajoitteista, joita ESG-suorituskyvyn ja oman pääoman kustannusten välisen yhteyden tutkimiseen liittyy.

AVAINSANAT: Yhteiskuntavastuullinen sijoittaminen (SRI), Ympäristövastuu, Yhteiskuntavastuu, Hyvä hallintotapa (ESG), Yrityksen yhteiskuntavastuu (CSR), oman pääoman kustannus, CAPM, taloudellinen suorituskyky

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ABBREVIATIONS

CAPM	Capital Asset Pricing Model
CSR	Corporate Social Responsibility
ESG	Environmental, Social, and Governance
PRI	Principles for Responsible Investment
SRI	Socially Responsible Investing/ Socially Responsible Investment

1 Introduction

Sustainability is one of the most current issues of the modern times. Factoring in environmental, social, and corporate governance elements into the investment decision-making process is no longer considered voluntary but rather a compulsory way of acting. (Skancke & Reynolds, 2020.) Thus, channeling capital to responsible investments is not solely a concern of lending institutions and regulators but rather an issue investors and businesses have become conscious about (Ahmed, Ahmed & Hasan, 2018).

By the year 2021, as much as 121,3 trillion US Dollars were in assets under management by signatories of the United Nation's Principles for Responsible Investment (PRI). This, as such, is enough to elucidate the growing interest for incorporating the sustainability aspect, known as ESG, to investing (UN PRI, 2022). In fact, environmental, social, and governance (ESG) is a concept that has become one of the central financial themes of the ongoing century as it can be used for scanning business sustainability performance (Ng & Rezaee, 2015).

The connection between financial performance and ESG performance has been widely researched. Though, there is still relatively little evidence about the association between the cost of capital and ESG (Nazir, Akbar, Akbar, Poulovo, Hussain, Qureshi, 2022). The cost of capital is the rate of return on an investment demanded by investors. From another perspective, it is the cost that a firm must pay for its funds. The cost of capital can be divided into the cost of equity and cost of debt. (Bernström, 2014, p. 107–119;). This paper focuses on the nexus between the cost of equity and ESG.

Several papers suggest that higher ESG performance implies a lower cost of equity (El Ghoul, Guedhami, Kwok, & Mishra, 2011; Ng & Rezaee, 2015; Ok & Kim, 2019). Hence, these studies propose that firms with better ESG scores experience lower costs of equity capital than those with poor ESG performance. The inverse relationship can be explained by larger investor bases, lower perceived risk-level (Ng & Rezaee, 2015), and higher

expected future returns (Ok & Kim, 2019) of the firms with superior ESG scores. However, some papers find that there is a positive association between ESG performance and the cost of equity. That is, many investors still do not consider ESG as value-adding, but rather conceive financial efforts in ESG as redundant. (Nazir et al., 2022; Dahiya & Singh, 2021).

It is globally acknowledged that European countries are frontrunner nations in promoting sustainable development. (Buallay, 2019; Johansson, Malmström, & Wincent, 2021). This paper aims to find evidence on the nexus between ESG performance and the cost of equity in a Nordic setting, where evidence is currently limited. Motivation to study such specific geographic area as the Nordic countries accrues from the common understanding that they have among the highest ESG performance ratings in the world. (Blasco & King, 2017; Liang & Renneboog, 2017; RobecoSAM, 2021).

Moreover, the Nordics are firmly interconnected as they share many cultural values, policies, and even institutions with one another (Aggarwal, 2013). This makes it an attractive and homogeneous area to research. The Nordic countries also have a long history of ESG initiatives, such as environmental cooperation, equality and democracy efforts, and being among the first countries to grant women the right to vote. Thus, it is interesting to investigate whether and how firms' ESG performance affects the stock market and, more closely, the cost of equity in the Nordics.

1.1 Purpose of the study

The purpose of this study is to investigate whether superior ESG performance implies a lower cost of equity capital. Currently, a research gap exists in the academic literature investigating the relationship between sustainability performance and financial performance in the Nordic countries. That is, there is only a limited number of studies that focus specifically on the Nordics. The objective of this thesis is to contribute to the

current ESG literature by examining whether ESG ratings impact the cost of equity of Nordic firms.

This study will investigate the impact of sustainability performance on the cost of equity in four Nordic countries, Norway, Finland, Sweden, and Denmark. Iceland is excluded from the final sample of this study due to the number of missing observations. To evaluate the sustainability performance, this paper utilizes ESG data from the Refinitiv Eikon ESG company scores, which evaluate firms in ten main areas of sustainability performance and with more than 630 different ESG measures (Refinitiv, 2023). The cost of equity in this study is estimated with a common approach for pricing assets.

Previous literature suggests that there is a negative relationship between sustainability performance and the cost of equity. More closely, several researchers find that superior ESG performance is one of the factors that can explain the lower costs of equity of firms. From an investor perspective this implies that the higher the ESG performance, the smaller the required rate of return on an equity investment is (El Ghoul et al., 2011; Ng & Rezaee, 2015; Ok & Kim, 2019).

The hypothesis of this thesis is developed based on prior literature about the topic and are as follows:

H_1: Companies with high ESG performance have a lower cost of equity capital

1.2 Structure of the study

This thesis is divided into eight main chapters. The paper will proceed in the following manner. The second chapter presents the concepts of Socially Responsible Investing (SRI), and Environmental, Social, and Governance (ESG), and provides explanations for the broad umbrella term, its three sub-factors, as well as insights into the methods through which ESG performance can be assessed. Chapter three will cover the basic idea behind

the cost of capital and will discuss the cost of equity in more detail. The fourth chapter will provide a framework on relevant theories that can be linked to ESG and financial performance. Chapter five discusses the existing academic literature on the topic and outlines the most important findings of these papers. The sixth chapter explains the data and methodology used in this thesis. Chapter seven presents the empirical findings of the paper. The last chapter summarizes the major findings, concludes the paper, discusses the limitations, ideas for future research, as well as policy implications.

2 Environmental, Social, and Corporate Governance (ESG)

In the last ten years, there has been a notable surge in the integration of ESG criteria as a fundamental aspect of investment decision-making among investors. In 2020, socially responsible investments (SRIs) already accounted for over one third of the world's assets under management (GSIR, 2020).

Thus, it is increasingly common that both individual as well as institutional investors pay attention to firms' operations that extend beyond the outdated idea of solely maximizing shareholder wealth. Such activity is usually assessed with ESG criteria, which can be divided into three individual factors: environmental (E), social (S), and governance (G). (Gillan, Hartzell, Koch & Starks 2010.) These criteria can be integrated into the investment decision-making process as it helps in scanning companies' ESG risks, opportunities, and overall performance (Cappucci, 2018).

In short, ESG is a framework that enables different parties to review the non-financial performance and societal impact of a company. Socially responsible investing (SRI), on the other hand, refers to investment strategies that align financial returns with societal well-being, integrating both profit objectives and positive social outcomes (Robeco, 2023).

2.1 Socially Responsible Investing (SRI)

The popularity of socially responsible investing, SRI, has grown drastically in the past years, but the growth rocketed approximately after the mid-2010s (US SIF, 2020; UN PRI, 2022). The trend is unlikely to abate, as the earth is facing its most extensive and destructive threat ever, climate change (UN, 2022).

According to the United States Forum for Sustainable and Responsible Investment (2020), the amount of ESG-incorporated assets has increased by more than 650% within ten years. That said, there was approximately $2000 billion worth of ESG-incorporated assets in 2010, whereas the amount was roughly $15 000 billion in 2020.

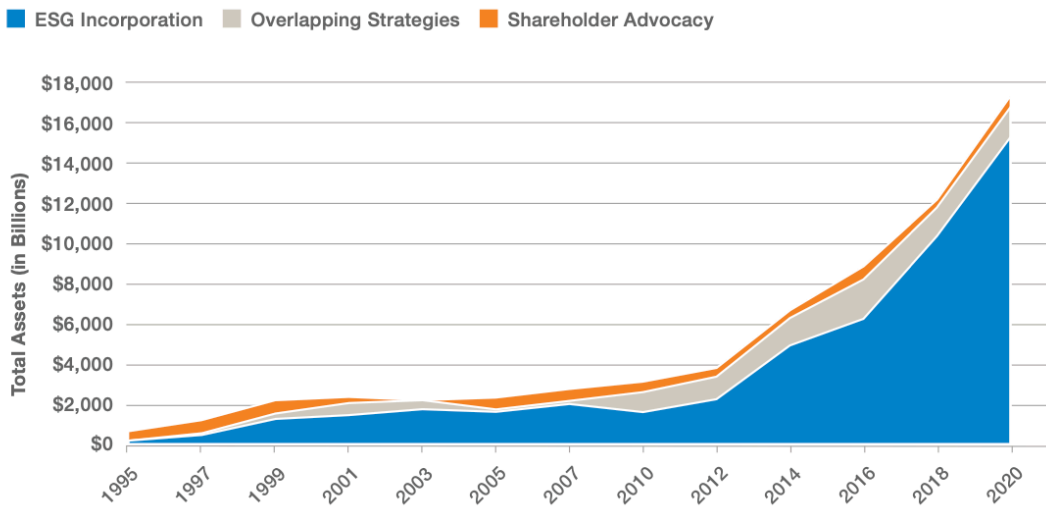

Figure 1. Sustainable Investing in the US 1995-2020 (US SIF, 2020).

Similarly, the United Nations Principles of Responsible Investment (PRI) (2022) reports a steady growth in SRI in only ten years. Between the years 2010 and 2020, the number of signatories has almost quadrupled and the amount of PRI assets under management has almost fivefolded. In 2010, the number of signatories was 784, whereas in 2020 it was already 3038. Respectively, the amount of PRI assets under management was approximately $22 trillion in 2010 and $103,4 trillion in 2020.

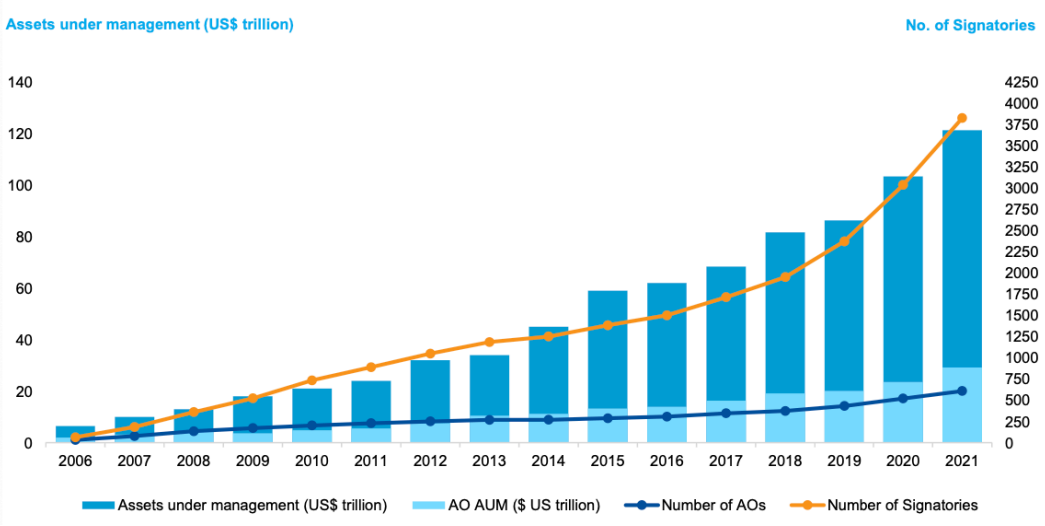

Figure 2. UN PRI Signatory Growth 2006-2021 (UN PRI, 2022).

The growth is only gaining momentum. The UN PRI (2023) reports that by the end of 2022, the number of PRI signatories was already 5319. That means a growth of more than 75 percent compared to the year 2020. Respectively, there were $121 trillion PRI assets under management in the end of 2022, which means $17,6 trillion more than in 2020. Hence, as investors are increasingly attracted to socially responsible investment objects, it is inordinately vital to have reliable methods to assess this socially responsible performance. In this context, the ESG framework plays a pivotal role.

2.2 The ESG framework

As the interest in SRI is booming, not only shareholders but various other stakeholder groups are pressuring companies to stretch their operations beyond the legally required level of sustainability practices and even positively impact the society and environment. (Eliwa, Aboud, & Saleh, 2019, p. 1-7.)

To effectively characterize and quantify these actions, the terms sustainability and responsibility must be defined and incorporated into a comprehensive assessment framework. The concept of three dimensions, ESG, is widely used to describe and

measure firms' performance among three central themes of sustainability: environmental, social, and corporate governance. (Eliwa et al., 2019, p. 1–7.) Studies related to the topic use the terms Environmental, Social, and Governance (ESG) and Corporate Social Responsibility (CSR) somewhat interchangeably. It is not necessarily incorrect since the terms lack precise definitions.

However, the term CSR generally refers to the activities pursued by companies that generate social welfare and go beyond the legal requirements of sustainability and responsibility (McWilliams & Siegel, 2001). CSR can be defined as corporate actions that benefit all stakeholder groups; these actions are philanthropic, cost-effective, moral, and legal (Hill, Ainscough, Shank & Manullang (2007). It can denote controlling emissions, paying more attention to supply chains or to the treatment of employees, for instance. However, firms often emphasize different CSR activities, and the actions may only cover some aspects of the three central sustainability themes. (Bajic & Yurtoglu, 2018.)

Whereas CSR implies companies' efforts to operate in a more sustainable or responsible way, ESG unites the three substantive aspects, environmental, social, and governance, and acts as an indicator for the performance in those areas. Hence, the term ESG can be seen as a broad umbrella term that covers the three main dimensions to be considered singly and in combination when evaluating the sustainability of an investment or a firm. (Pedersen, Fitzgibbons, and Pomorski, 2020.)

2.2.1 Environmental

The letter "E" stands for environmental, and it measures a company's activities that impact the environment. Thus, the environmental aspect takes into consideration both positive and negative actions a firm may perform within the environmental aspect. Thus, it considers both risks and opportunities linked to environmental performance. (Limkriangkrai, Koh, & Durand, 2017.)

Companies with high environmental scores operate in ways that positively influence the environment. Such firms anticipate and consider the future effects of their actions and operate in compliance with the current legislation regarding environmental issues. Companies of this kind have a minimal carbon footprint or are even carbon neutral or negative. Conversely, firms with low environmental performance operate without consideration for the environment. Such firms often have a high carbon footprint. (Limkriangkrai et al., 2017.)

The environmental pillar covers issues such as resource usage, emissions, and environmental innovativeness. Resource usage encompasses topics such as water and energy usage, whereas emissions denote all the emissions that contribute to the climate change. Environmental innovativeness, on the other hand, refers to any innovations that drive organizational change towards a more environmentally sustainable direction. (Refinitiv, 2022). For instance, fuel can be replaced with electricity in some cases. Though, it can be any environmental-friendly technological innovation that poses a threat to conventional industries and practices. Altogether, companies that disregard climate-related factors are perceived as riskier within the ESG framework compared to those actively involved in addressing the climate change. (Krueger, Sautner & Starks, 2020.)

2.2.2 Social

Social, the “S” in ESG, signifies the protection of a company’s social environment and equitable interaction with all its stakeholder groups, that is, both external and internal stakeholders. Thus, operating in a socially sustainable and responsible manner is rewarded with a higher social score and hence an increase in a company’s overall ESG rating. Vice versa, not taking the social issues into consideration decreases the social score and thus the overall ESG score of a firm. (Limkriangkrai et al., 2017.)

In particular, the social aspect covers issues such as human rights, diversity, workplace satisfaction (Van Duuren, Plantinga & Scholtens, 2016) and safety, human

resource management and ethical behavior. Hence, the score covers both risks and opportunities linked to social issues. (Limkriangkrai et al., 2017.)

2.2.3 Governance

The “G” component of ESG equals to governance and includes characteristics of good corporate governance. This includes, for instance, transparency, an effective board of directors, business ethics and integrity, as well as fair dealing. (Limkriangkrai et al., 2017.) The corporate governance pillar also refers to and evaluates issues such as corruption, bribery, tax strategies, executive compensation, as well as donations and lobbying (PRI, 2020).

In parallel with the other two factors, the governance score also takes both weaknesses and strengths into consideration. Thus, companies that do not fulfill the requirements of good corporate governance or are associated with a great number of risks have a low governance score, and vice versa. (Limkriangkrai et al., 2017.)

2.2.4 ESG scores

ESG scores or ratings, provided by independent sustainability rating agencies, offer objective, standardized, and comparable assessments of firms’ ESG performance. (Crane, Matten, Glozer & Spence, 2019.) They measure the exposure or impact of an organization to different ESG aspects and conformity to global sustainability characteristics and climate agreements by utilizing a systematic rating system (ESMA, 2021).

These ratings examine a broad spectrum of CSR activities and policies, and measure companies’ performance within the three central themes of ESG. The scores then combine the performance of these three main areas into an aggregate measure

for each company, while also providing separate scores on each of the three pillars. (Yoon, Lee & Byun, 2018).

Due to the increasing demand for ESG information, the number of ESG rating agencies is growing rapidly (Avetisyan & Hockerts, 2017). The ratings all share the same three basic dimensions but vary in terms of their methodologies, scoring, (Elbasha & Avetisyan, 2018) criteria, audience, (Scalet & Kelly, 2010) data sources and quality, number of analysts, and the respective weightings given to the three pillars (ESMA, 2021). ESG rating providers encompass a vast array of companies in their analyses, allowing for the comparison of ESG performance among different companies within the ESG score provider. However, the comparison of ESG ratings between different rating agencies is problematic due to their many differences. (Scalet & Kelly, 2010.)

In general, ESG scores cover both ESG-related risks and opportunities. That is, they gauge how the two are taken into consideration in a firm's business model. The ratings generally use a wide set of indicators in examining the risks and opportunities of each pillar: E, S, and G. (Giese & Lee, 2019.) Risks associated with ESG issues include, for example, negative externalities or unexpected financial costs related to ESG issues. In contrast, ESG opportunities represent businesses' ability to leverage ESG related trends. (Briand, Urwin & Chia, 2011). While some ESG scores cover solely non-financial issues, others measure long-term sustainability through both non-financial and financial information. (Scalet & Kelly, 2010.)

Data for the ESG ratings is commonly gathered from public sources such as news and reports. However, some ESG score providers also collect data directly from the firms through inquiries and communicating with the management. Some even report that they use third-party data or artificial intelligence (AI) generated information in their score construction. (ESMA, 2021.)

There are numerous ESG rating providers globally. However, it seems that there are around 10 to 15 primary providers. Some of the leading providers are Bloomberg, Sustainalytics, RobecoSAM, MSCI, and Refinitiv Eikon. (SustAinability, 2020). This study utilizes the Refinitiv Eikon ESG database, as it has been cited in the academic literature over 1500 times. (Berg, Fabisik, & Sautner, 2020). Furthermore, in 2020, the OECD named Refinitiv Eikon as one of the top three ESG score providers (Boffo & Patalano, 2020) and in 2019, the World Economic Forum cited it in their white paper. (WEF, 2019).

3 Cost of capital

The expected rate of return market participants require in favor of attracting funds to a certain investment is called the cost of capital. In other words, to raise capital from the market, a firm must engage in paying the demanded price, return, which is referred to as the cost of capital. Therefore, the one to set the cost of capital is the market, not the company itself. (Pratt & Grabowski, 2014, p. 3-4) As for investors, the cost of capital equals to the rate of return they demand for an investment in a certain project or company (Sharfman & Fernando, 2008). Hence, there are two fundamental perspectives to the cost of capital: that of the borrower (a company) and that of the lender (an investor).

One way to view the term is to perceive it through the concept of opportunity cost. According to Kielholz (2000), capital markets determine the cost of capital, and the market participants consider it an opportunity cost to other investments. Thus, the cost of capital, or the estimated return from an investor's point of view, must compensate for all the other possible investment opportunities. As for the notion of opportunity cost, it can be used in measuring the value of what must be sacrificed to obtain something else (Mankiw & Taylor, 2017, p. 4).

The cost of capital plays a key role in corporate financing and investment decisions (Pratt & Grabowski, 2014, p. 16). It signifies the rate of return at which an investment is worthwhile, that is, when the expected return on capital outweighs the cost (Bassen, Meyer & Schlange, 2006). As stated above, it is the return rate market counterparts require in order to invest (Fama & French, 1999; Gebhardt, Lee & Swaminathan, 2001).

Practically, it is the rate at which future cash flows are discounted to a present value. Therefore, assessing an appropriate cost of capital for each project or investment is essential. If the estimated cost of capital is higher than it should be, firms and investors are likely to turn down valuable projects that are, hence, executed by others. Mutually, an excessively low estimate can lead to investing in projects that reduce value and profitability. (McNulty, Yeh, Schulze & Lubatkin, 2002.) Regarding representation, the

cost of capital is typically expressed in percentage form. To be specific, it expresses the annual amount of money an investor expects or demands from a certain investment in percentage terms (Pratt & Grabowski, 2014, p. 3).

Moreover, it is worth noting that one of the main elements of the cost of capital is that it is particularly forward-looking. That is to say, it is an estimate of the future returns. However, historical data is often used to provide clues on the future returns. There are two components to the expectations of the future returns, that of the risk premium and that of the risk-free interest rate. One crucial consideration in calculating the cost of capital is ensuring the risk is priced appropriately, meaning that the expected return aligns with the corresponding level of risk. The risk premium serves as a compensation for taking on risk and functions as the mechanism for pricing risk. (Pratt & Grabowski, 2014, p. 4–10, 72).

Out of the two components of the cost of capital, the risk premium is considered more intricate to estimate. The risk-free interest rate is easier to determine, as it often involves the utilization of a widely used short-term interest rate. (Liang, 2012, p. 97.) Because the risk-free rate can be easily estimated, the focus of this chapter is mainly on the risk premium calculations.

In general, firms' assets are financed with either internal equity or borrowed debt capital. However, the majority of publicly listed companies finance their operations through both equity and debt. The cost of capital refers to the overall cost of capital, which is a combination of the two: namely, a weighted average of a company's cost of equity and cost of debt capital. A common formula used to calculate the overall cost of capital is called the weighted average cost of capital (WACC). (Sharfman et al., 2008.) Thus, the cost of capital can be divided into the cost of equity and the cost of debt.

As debt holders offer external financing and equity investors become shareholders of the firm, the cost of capital is not the same for each of the two capital sources. For equity investment, the cost of capital equals the cost of equity, whereas for a debt investment applies the term cost of debt. Both can be separated into two factors, namely the risk-

free interest rate and risk premium. (Bernström, 2014, p. 107-119.) For a debt investment, the required return over the risk-free interest rate is called the credit risk premium (Chiarella & Ostinelli, 2020). It represents the credit or default risk of a company perceived by an external debt investor. The risk premium for equity investment is called the equity (market) risk premium, and it represents the perceived riskiness of a stock investment over a risk- free rate of interest (Bernström, 2014, p. 107-119).

If the prevalent interest rates and a company's financial situation have remained the same, current interest paid on debt can be used in estimating the cost of debt capital. However, if the conditions of the firm have significantly altered, one needs to re-estimate the cost of debt to correspond with the current interest rates and credit risk premium. Generally, it can be computed by calculating the yield to maturity (YTM) on each outstanding bond issue of the company and then weighting each of these respective to their portions of the total outstanding debt. (DePamphilis, 2019.)

When estimating the cost of equity, one has to rely on more abstract approaches, since the yields of the equity markets are not directly detectable (Bruner, Eades, Harris & Higgins, 1998). Most cost of equity models use the risk-free rate as a base and then add the equity market risk premium, which can be estimated in different ways. It can be computed by using realized returns or expected returns, that is, the current share price plus expected future dividends. (Gode & Mohanram, 2003.) The most used methods will be covered later on.

3.1 Cost of equity

To put it simply, the cost of equity can be defined as the rate of return an investor requires on an equity investment in a company (Damodaran, 2012). The required rate on equity factors in the total yearly compensation for common equity holders, ergo,

both increase in the value of the investment and the expected dividends (Bernström, 2014, p. 107).

Unlike open to public yields in the bond markets, there is no easily observable equivalent for the equity market. Thus, in estimating the cost of equity researchers must rely on more theoretical and abstract methods. (Bruner, Eades, Harris, & Higgins, 1998). Estimating the risk premium of the cost of equity, that is, the difference between the expected stock return and a risk-free rate, is considered to be extremely challenging (Lee & Upneja, 2008; Bruner et al., 1998). Consequently, there is no single model for estimating the cost of equity, and particularly, the equity risk premium.

Most cost of equity models use the risk-free rate as a base and then add the equity market risk premium, which can be estimated in different ways. It can be computed by using the ex-post realized returns approach or, respectively, the ex-ante expected returns approach, that is, the current share price plus expected future dividends. (Gode & Mohanram, 2003.)

For decades after its development in the 1960s, a model called the CAPM had been dominantly used to estimate the expected return on asset. At the beginning of the 1990s, two additional factors were introduced to supplement the CAPM, and a model called the Fama-French three-factor model was invented. Both models have been widely used in practice and academic research ever since they were developed. However, these two models were investigated more closely by Fama & French (1997) and Elton (1999), and they found that the models were not giving reliable estimates of the expected returns. In 1997, a completely new approach for estimating the cost of equity was established by Botosan. This method was called the “implied cost of equity capital,” which has been increasingly used by researchers. (Lee & Upneja, 2008.)

Despite its deficiencies, using CAPM in estimating the cost of equity has become a standard approach for both investors and companies (McNulty et al., 2002). As it is the

most well-known and broadly taught model for estimating the cost of equity (Truong, Partington & Peat, 2008; Pratt & Grabowski, 2014), this thesis will focus on this method as well. However, as the model has proved its deficiencies in estimating the expected return on equity, the two other methods, the Fama-French three-factor model and implied cost of equity, are discussed as well.

3.1.1 Risk-free interest rate

The two fundaments of the cost of equity calculations are the risk-free rate and risk premium. As for the risk-free interest rate, it is considered to be easier to determine than the risk premium (Liang, 2012). Thus, most cost of equity models, such as CAPM and the Fama-French three-factor-model, begin with defining the rate of a risk-free investment. The risk-free rate of interest is, in general, the interest rate one can expect to receive when investing in a bank deposit or a government bond. It is the rate of return market-participants consider as free of default risk (Pratt & Grabowski, 2014, p. 91–109.)

Cost of equity models that build upon the risk-free rate of interest can use it as a mechanism for adapting to changes in inflation. When the inflation expectations decrease, risk-free rates tend to decrease, which then decreases the estimated returns of the cost of equity models. Correspondingly, when the expected inflation increases, there is typically an increase in the risk-free rates. Hence, the estimated returns of the cost of equity models increase. (Pratt & Grabowski, 2014, p. 91.)

There is variability in how the risk-free interest rate is determined. However, calculations often set it as some predefined government debt obligation, for instance, the U.S. Treasury rate, or what's commonly known as T-bill. The maturity of the bond that is used as the risk-free rate in calculations is also predetermined. For example, a 3-month T-bill is most typically used in determining the rate of interest for risk-free investments in the U.S. (Liang, 2012.) However, the maturity should vary depending on the purpose of use and the time horizon of the investment. That is, the period an investment is held before being realized. To clarify, an investor expecting realized cash

flows in 10 years would most probably use a maturity of 10 years when valuating future cash flows. Another way to approach this maturity is to proceed as many academic researchers do. They believe that bonds with a maturity of 30 days reflect the purest estimate of the risk-free interest rate. (Pratt & Grabowski, 2014, p. 92.)

3.1.2 Risk premium

In theory, a creditor or an investor requires a higher compensation for the higher risk taken, which denotes that the risk premium increases and thus the cost of capital increases. On the contrary, the cost of capital decreases when the observed risk decreases. (Bassen et. al 2006.) Thus, the risk premium can be defined as the reward demanded by an investor for a certain risk level. Alongside risk-free rate, it is one of the two components of the cost of capital. (Liang, 2012).

As stated above, the risk premium for the cost of equity is called equity risk premium. It denotes the additional return investors demand in order to invest in the riskier shares rather than the risk-free rate. Investors require this extra return because of the higher risk level, i.e., volatility of the equity returns. That is, the yearly returns of e.g., a government bond are broadly predictable given that one holds it until its maturity, whereas those of an equity investment are not. In other words, the precise yearly rate of return is not available for an investor that invests in a firms' shares. Furthermore, the shareholder may even lose the invested capital or a part of it. Hence, as a compensation for this additional risk taken the shareholder demands an extra return, premium, over the risk-free rate. (Bernström, 2014, p. 108–109)

The equity risk premium is considered to be difficult to calculate, as most errors in the cost of equity calculations are due to the risk premium. Hence, no universally acknowledged method for estimating the equity market risk premium exists, but it can be calculated in multiple ways. (Pratt & Grabowski, 2014, p. 113).

The equity market risk premium can be estimated ex-post by using realized returns or ex-ante from today's price and expected dividends in the future (Gode & Mohanram,

2003). Most traditional models, such as CAPM and the Fama-French three-factor model use past returns to infer the risk premium for the cost of equity capital. This ex-post approach is predominantly used in the existing literature on the subject, mainly because realized returns are observable, unlike future returns. More recent studies use an ex-ante approach in estimating the risk premium for the cost of equity. The ex-ante, or implied cost of equity, refers to a method in which the current stock price is discounted to the present value of all future cash flows to stockholders. (Gebhardt et al., 2001.) The next subchapter is an overview of the commonly used cost of equity, or specifically, equity risk premium calculations, as the risk-free rate can be easily assessed.

3.1.3 Ex-post approach

There are several, widely used models that use the ex-post realized returns approach when calculating the cost of equity. That is, the estimations of these approaches are based on historical returns. The most extensively renowned models are the Capital Asset Pricing Model developed (CAPM) by Sharpe (1964), Lintner (1965), Treynor (1965), Mossin (1966), and Black (1972) as well as the Fama-French three-factor model by Fama and French (1992, 1993). These two models will be discussed in more detail in the theoretical framework later on.

3.1.4 Ex-ante approach

Despite their popularity, models like CAPM and the Fama-French three-factor model that use the ex-post approach to estimate the cost of equity have proven somewhat unsatisfactory, as realized returns do not directly reflect future returns. (Gebhardt et al., 2001.) Hence, many researchers have started to use the ex-ante approach called the implied cost of equity (Lee & Upneja, 2008). The implied cost of equity can be defined as the internal rate of return or the discount rate that equates a company's current share price to the present value of all expected future cash flows (Gebhardt et al., 2001; Hou, Van Dijk, & Zhang, 2012; Guay, Kothari, & Shu, 2011).

The implied cost of equity approach assumes that the current share price is a better reflection of the discounted future returns expected by the market than estimates derived from realized returns. Thus, calculations of the implied cost of equity begin with an assumption that these market expectations can be estimated using stock prices. Researchers then assume a valuation model that builds on discounted cash flows. (Guay et al., 2011). The most used models are the residual income model and different dividend discount model applications (Dhaliwal, Krull, Li & Moser, 2005). Then, the prevalent share price as well as analysts' short- and long-term earnings forecasts, which are used as proxies for market returns, are introduced into the assumed model. Ultimately, the internal rate of return, i.e., the discount rate, is solved (Lee & Upneja, 2008.)

As for the implied cost of equity approach, it is considered as an advantage that it does not rely on a particular asset pricing model or past returns. Alternatively, estimates about the market's expectations of future returns are derived from analysts' forecasts and current share prices. (Hou et al., 2012.) However, as the implied cost of equity utilizes analysts' forecasts when determining the expected market returns, the method has its deficiencies (Lee & Upneja, 2008). Multiple studies demonstrate that analysts' forecasts have a tendency of being excessively optimistic and not necessarily up to date. (Dechow and Sloan, 1997; Lys and Sohn, 1990). Moreover, no consensus exists on which implied cost of equity model offers the most reliable estimates of the cost of equity (Gode and Mohanram, 2003).

4 Theoretical background

The main meaning of sustainability performance is that a company should broaden its perspective beyond solely maximizing immediate shareholder profit. Instead, it should contemplate the broader effects of its operations on various stakeholders, including the environment, community, and society. By recognizing the interconnectedness of these stakeholders, a firm enables the creation of long-term value and benefits that extend beyond immediate financial gains. (Freeman, 1984.)

The purpose of this chapter is to provide the theoretical framework supporting this study. There are two contradictory theories, the shareholder and the stakeholder theory, that can provide us with insights into the value implications and the economic function of sustainability performance. This chapter will discuss both shareholder and stakeholder theories in this context. Furthermore, information asymmetry and signaling theories as well as the risk-return tradeoff will be discussed. These theories can explain the underlying mechanisms of the relationship between ESG performance and the cost of equity. Using existing academic literature and common methodologies, the chapter attempts to connect the mentioned theories with ESG and the cost of equity.

4.1 Shareholder theory

In 1970, Friedman (1970) developed a theory called the shareholder theory. According to the shareholder theory, the main objective of a company ought to be maximizing shareholder wealth. That is, the firm should pursue projects that yield positive net present value (NPV), as the theory implies that this creates value for shareholders and maximizes their overall wealth. The shareholder theory emphasizes that shareholders hold ownership of the company, which places a fiduciary duty on management to diligently pursue actions that maximize shareholders' wealth and financial prosperity. (Shleifer & Vishny, 1997, p. 738.)

Activities related to CSR are not traditionally linked to direct financial gains. Thus, according to the shareholder theory, if CSR activities do not align with maximizing shareholder value, managers may face challenges in justifying such investments without the shareholders' consent. Engaging in CSR activities entails implies expenses, which can be seen as consuming resources that could otherwise be used to generate wealth for the owners of the company. (Friedman, 1970.)

4.2 Stakeholder theory

In the decade following the birth of the shareholder theory, another challenging approach emerged in the academia. This was called the stakeholder theory. (Mason & Mitroff, 1981; Mitroff, 1983; Freeman, 1984.) The stakeholder theory suggests that instead of only maximizing shareholder wealth, a company ought to consider all of its stakeholders in its operations. The stakeholders include all individuals or entities that have a stake in the firm; ergo, are involved in its activities. This comprises employees, suppliers, customers, investors, governments, and societies. (Freeman, 1994.)

According to the stakeholder theory, a company can build long-term value by maximizing the welfare of all stakeholders. In this context, it means generating long-term value through sustainability performance and practices. That is, the firm may strengthen in value by enhancing their reputation, meeting the environmental requirements, and fulfilling its social responsibilities. (Freeman, 1994.)

However, investments in sustainability may contradict with the shareholder theory's objectives about wealth maximization, as such efforts often require substantial resource usage. Within the framework of maximizing shareholder wealth and promoting stakeholder welfare, sustainability efforts can result in both positive synergies and conflicts. Thus, it is an empirical question whether and how sustainability performance impacts the financial performance of a company.

Jensen (2001) suggests that it is imperative for a company to consider the interests of its stakeholders in order to effectively maximize its value for shareholders. Failure to prioritize and accommodate the needs of stakeholders can impede the firm's capacity to attain optimal value generation. Brockett and Rezaee (2012) report that a successful ESG investment may minimize the company's negative externalities and maximize its positive externalities.

On the other hand, Harris (1998) and Leuz (2004) find that deploying and disclosing sustainability initiatives denotes various costs for a company. In addition to the monetary expenses required for such initiatives, there are also opportunity costs due to the time and effort invested by managers in sustainability-related activities. Moreover, there are proprietary costs linked to voluntary disclosure of ESG weaknesses and strengths. These costs may be substantial if the company discloses valuable information, such as defeats in its operations or reporting, or details about potential markets. Contrary to this, some studies suggest that disclosing ESG information helps to decrease information asymmetries (Dhaliwal, Li, Tsang, & Yang, 2011) and provides investors with valuable insights to support their investment decision-making (Yoon & Lee, 2019).

4.3 Information asymmetry theory

As the interest in SRI and ESG has been increasingly growing, several researchers have begun to study the association between information asymmetry and non-financial ESG disclosure or ESG performance.

Information asymmetry arises when certain investors possess private or undisclosed information that is not available to others in the market. This can cause adverse selection issues and higher costs in the capital markets. (Akerlof, 1970).

Information, on the other hand, is viewed as an invaluable asset for investors, as it plays a crucial part in their investment decision-making (Naqvi, Shahzad, Rehman, Qureshi, & Laique, 2021). Asymmetry, in turn, implies that there are gaps in this knowledge between

investors, which complicates the decision-making process for some of the investors (Bilyay-Erdogan, 2022).

Several searchers suggest that information asymmetries could be reduced with policies on corporate disclosure. That is, requiring firms to disclose more information about their business activities would imply more publicly available and less private information, and thus less information asymmetries. (Diamond & Verrecchia, 1991; Botosan, 1997.) This leads us to the signaling theory.

4.4 Signaling theory

In finance, the signaling theory describes a situation where there is an imbalance of information between a firm and its external stakeholders and in which the management of the firm can decrease this information asymmetry by voluntary disclosure. In other words, firms may publish voluntary information to signal their stakeholders about a diversity of corporate activities, and hence positively affect their perceptions and decision-making. (Spence, 1978; Connelly, Certo, Ireland, & Reutzel, 2011.)

The signaling theory revolves around four key components: the communication signal, the entity sending the signal, the recipient of the signal, and the response or feedback (Taj, 2016; Connelly et al., 2011). The signal in the context of signaling theory refers to the flow of information from the company's management, acting as a signaler, to the external stakeholders, acting as the receivers. It represents the information stream that bridges the gap between the company and its stakeholders. Lastly, the receivers interpret the signal and give feedback as countersignals.

In this context, a firm could signal about CSR activities and the investor could interpret that signal in different ways. The investor may perceive it as either value-adding or as greenwashing, for instance. The investor would then countersignal its perceptions through different behaviors. Nowadays, it is considered essential to communicate ESG activities to stakeholders to attain competitive advantage (Herold & Lee, 2017). Here,

disclosing ESG information could reduce information asymmetries through signaling, and positively impact the ESG performance, and thus, the cost of equity.

4.5 Risk-return tradeoff

Previous research has discovered that SRI investing can serve as a valuable element in portfolio risk reduction. (Hickman, Teets, & Kohls, 1999). Furthermore, multiple papers suggest that there is an association between company risk profile and ESG performance (Albuquerque, Koskinen, & Zhang, 2019; Oikonomou, Brooks, & Pavelin, 2012; Sharfman & Fernando, 2008). Thus, theoretically, if ESG performance reduces the perceived risk-level of a firm, it should lead to a decreased cost of equity, or from an investor perspective, expected rate of return, for that same firm. This risk-return tradeoff will be discussed in more detail below.

The traditional asset-pricing models, like CAPM and the Fama-French three-factor model suggest that there is a positive relationship between risk and the expected returns. The CAPM serves as the foundational model for the modern asset pricing in finance. (Fama & French, 2013, 2004).

4.5.1.1 Capital Asset Pricing Model (CAPM)

The CAPM can be used to describe the association between the expected return of an asset and the risk related to the return. The latter can be divided into two components, which are called systematic and nonsystematic risk. The part of the risk that is impossible to eliminate by diversification is called systematic risk, and it refers to the market risk. On the contrary, nonsystematic risk can be diversified away because it is the unique risk that comes with each individual asset. The elimination of nonsystematic risk can be accomplished by creating a wide portfolio with several different assets. The CAPM is built upon the assumption that the expected return should depend merely on systematic risk. (Hull, 2015, p. 75.)

The general formula for CAPM is as follows:

$$Expected\ return\ on\ asset = R_F + \beta_1(R_M - R_F)$$

where: R_F = risk-free rate of return
β = parameter for systematic risk
R_M = return on the market portfolio

The CAPM suggests that a firm's cost of equity is determined by three components. These are the risk-free rate of return (R_F), the equity beta (β) that compares the riskiness of a firm to the market, and the equity market risk premium ($R_M - R_F$), which expresses the compensation expected for holding other than risk-free assets. (Bruner et al., 1998.)

In general, the return on the market portfolio (R_M) is an approximate of the return on a stock index that is properly diversified. Beta (β), in turn, indicates how sensitive the returns of an asset are towards the market returns. (Hull, 2015, p. 75.) In other words, it quantifies the exposure of an asset to systematic risk (Bernström, 2014, p. 109).

A beta of 0 implies that the returns of an asset are not sensitive to the market returns. Hence, there is no systematic risk exposure, and the risk-free interest rate is the expected return on such asset. When an asset's returns follow those of the market, beta is equal to 1. Consequently, a beta of 2 would implicate that the asset is more volatile and therefore riskier than the market as a whole. Namely, when the market prices move by one, the corresponding change in the asset is two-fold. Respectively, a beta of 0,6 indicates that the excess return on the asset over the risk-free rate is approximately 60 percent from that of the market over the risk-free interest rate, and so forth. (Hull, 2015, p. 75.)

As beta signifies the systematic risk of a firm's shares it is consequently referred to as equity beta or levered beta. Hence, it includes both financial risk as well as operating risk since the risk of the shares is determined by both of the factors. If a company is publicly listed its beta can be estimated by using historical data, thus, the firm's realized correlation with the chosen stock market index. For a non-listed firm, these historical correlations are not observable. Hence, the beta of a non-listed company can be estimated by using, for instance, the beta of its peer companies. (Bernström, 2014, p. 111).

The general formula for calculating equity beta (β) is as follows (Bernström, 2014, p. 111):

$$\beta = \frac{cov\ (R_i, R_M)}{\sigma^2(R_M)}$$

where: R_i = Return on security i

$Cov\ (R_i, R_M)$ = Covariance of the security i's return and the market index return

$\sigma^2(R_M)$ = variance of the market return

4.5.1.2 Fama-French three-factor model

A model that gained the attention of academics and practitioners at the end of the 1990s was the Fama-French three-factor model. The model was developed by Fama and French (1992, 1993) as an extension of the CAPM. They proposed two additional factors to the CAPM to better explain the cost of equity, or as often expressed, the expected return on asset. They regarded the market beta as deficient to explain the expected return alone. Thus, factors "value" and "size" were added to the calculations. (Lee & Upneja, 2008.)

As the name implies, the Fama-French three-factor model estimations use three risk factors to explain the cost of equity, i.e., the expected stock return. According to the model the expected return is dependent on the asset's sensitivity to these three risk factors (Pettengill, Chang & Hueng, 2012). The factors are called the market, value, and size factors (Connor & Sehgal, 2001).

The market factor equals the (equity) market risk premium ($R_M - R_F$). The model then adds a sensitivity coefficient, here market beta, to the market factor. Thus, this part of the model equals that of the CAPM. The model's value or book-to-market factor denotes the difference between the returns of value and growth stocks, i.e., stocks with high book-to-market ratios and low book-to-market ratios. Hence, the factor can be referred to as High Minus Low (HML). Conversely, the size factor implies the difference between the returns of small stocks and large stocks. It can be called Small Minus Big (SMB). To illustrate the asset's sensitivity to these two additional factors the model then adds sensitivity coefficients to both value and size factors, as it is done for the market factor. (Dolinar, 2013.)

For consistency, this thesis illustrates the Fama-French three-factor model including the risk-free rate. It can be calculated as follows:

$$Expected\ return\ on\ asset = R_F + \beta_1(R_M - R_F) + \beta_2(SMB) + \beta_3(HML)$$

where: β = sensitivity of each factor

SMB = returns of small stocks over large stocks

HML = returns of value stocks over growth stocks

5 Prior empirical evidence

Over the past decade, ESG has achieved worldwide prominence, capturing the attention of the finance industry as well. There has been a substantial growth of studies regarding the relationship between ESG and financial performance in a relatively short span, which highlights the swift recognition and attention that ESG has garnered. The number of papers studying the relationship between ESG and the cost of equity is also significant. The findings somewhat vary, but most studies suggest that there is a negative association between ESG and the cost of equity. (El Ghoul, Guedhami, Kwok, & Mishra, 2011; Ng & Rezaee, 2015; Ok & Kim, 2019; Chen, Li, Zeng, & Zhu, 2023). This chapter aims to provide understanding to the impact of ESG on the cost of equity by demonstrating the findings of previous studies examining this relationship.

5.1 Positive impact

El Ghoul, Guedhami, Kwok, and Mishra (2011) study the impact of companies' ESG scores on the cost of equity. They use a data sample of 12 915 firm-year observations covering as much as 2809 different US companies over a period of 15 years (1992–2007). For their large panel of US firms, the authors use an ex-ante cost of equity approach to analyze the relationship between ESG performance and the cost of equity. To proxy for sustainability performance, they utilize ESG data from the free from bias KLD STATS database, which consists primarily of US companies' sustainability scores.

El Ghoul et al. (2011) hypothesize and find that, other things being equal, companies and industries with good ESG performance experience lower costs of equity capital than those with poor ESG performance. Furthermore, the authors find that investments in CSR activities contribute to reducing the cost of equity capital. However, according to the paper not all improvements are significant. For instance, measures taken to improve contribution to human rights, community relations, and diversity are not linked to a lower cost of equity in the future. On the other hand, being involved in the two so-called

“sin” industries, nuclear power, and tobacco, has an increasing effect on a company’s cost of equity capital.

The findings of El Ghoul et al. (2011) can be explained by risk exposure and the size of the investor base of a company, as hypothesized in the study. That is, firms with higher ESG performance are less exposed to risk and have a more extensive relative investor base, which in turn, decreases information asymmetries. Respectively, companies with poor ESG performance are perceived as riskier and have a smaller set of investors, which leads to higher costs of equity capital.

Similarly, Ng and Rezaee (2015) examine the association between the cost of equity capital and ESG performance. The authors study this relationship for both the aggregate measure of ESG as well as its sub-factors. They examine a final sample of more than 3000 companies included in the KLD STATS database. To proxy for the cost of equity, the authors use both implied cost of equity approach and the industry-adjusted earnings-price ratio.

Ng and Rezaee (2015) find similar results as Ghoul et al. (2011) about the negative relationship between ESG performance and the cost of equity capital. However, the authors find that while this is true for the aggregate measure of ESG, its sub-factors have different contributions to this relationship. They find, that only environmental and corporate governance are associated with lower costs of equity capital, when examined the factors singularly. The social sustainability factor is, however, not significantly correlated to the cost of equity.

Ng and Rezaee (2015) speculate that one possible explanation for the findings is that a firm’s strong environmental and corporate governance performance directly and positively impact the financial performance of a firm. Where high environmental performance often implies less environmental liabilities, a good governance score generally means more effective corporate governance. The social pillar of ESG, on the other hand, is often not directly related with generating shareholder wealth. Hence, this

could be the underlying cause why it is not significantly associated with the cost of equity.

Ok and Kim (2019) also study the impact of ESG performance on the cost of equity. Their research is based in Korea between years 2011–2017. The study analyzes around 800 firms that have earned an ESG grade from the KCGS (Korea Corporate Governance Service) over the sample period of 17 years. To proxy the cost of equity, the authors use an ex-ante implied approach, as they utilize analysts' forecasts and current market prices to calculate the cost of equity.

Ok & Kim's (2019) findings are largely consistent with the results of Ghoul et al. (2011) as well as Ng and Rezaee (2015), as they find that companies with superior ESG performance broadly enjoy a lower cost of equity. Their findings show that the market expects sustainable income from companies with greater ESG performance. That is, investors accept a lower rate of return from these firms today because they believe in the companies' long-term returns resulting from better ESG performance.

However, when investigating the ESG factors individually, the authors find somewhat different results than Ng and Rezaee (2015). Namely, they also discover that two out of three factors significantly decrease the cost of equity, but their findings suggest a different insignificant factor. That is, according to the authors the social and governance factors significantly decrease the cost of equity. The environmental factor, however, does not have any significant effect on the cost of equity. In particular, the authors find that the social pillar has the most significant effect on the cost of equity capital.

Correspondingly, Chen, Li, Zeng, & Zhu (2023) study the effect that ESG performance has on companies' costs of equity capital. Their study is based in China between years 2010–2020 and covers more than 1500 Chinese A-share companies. The authors utilize ESG data gathered from the Sino-Securities index to proxy for ESG performance and the CAPM to measure the cost of equity.

Chen et al. (2023) find that good ESG performance may significantly decrease the cost of equity for listed firms. They find that ESG efforts improve shareholder's profitability and entice more investors. This, in turn, has a positive impact on the stock price and thus, decreases the cost of equity of firms. The authors also report, that great ESG performance does not only directly affect the cost of equity, but it also has a mediating impact through better equity diversification and decreased market risk.

Differing from the previous studies, the paper by Connors and Silva-Gao (2008) focuses solely on the impact of the environmental factor of ESG on the cost of equity. The authors study two highly emitting industries: the chemical and electric industries. For the data collection, the authors utilize three different databases and for the estimation of the cost of equity, they use three implied cost-of equity approaches. Their final sample consists of 588 firm-year observations between the years 2001–2007. They find results that, for their part, support the negative relationship between the cost of equity and environmental performance. That is, firms with higher environmental scores experience lower costs of equity capital.

Connors and Silva-Gao (2008) argue that investors price the environmental performance related risks, for instance lawsuits, due to uncertain cash flows that result from weak environmental performance. However, the measure of the environmental performance in the paper refers solely to emissions, and more closely, to those generated in the chemical and electric industries. In addition, the sample is relatively narrow with 30–50 companies per year per industry.

Besides Connors and Silva-Gao (2008) also other researchers examine the association between firms' environmental issues and the cost of equity. A paper by Sharfman and Fernando (2008) investigates the relationship between the cost of equity and environmental risk management for 267 U.S. companies included in the S&P 500 index. They use two databases for constructing the measure for environmental risk management and CAPM as a measure for the cost of equity.

Sharfman and Fernando (2008) find that managing environmental risks, in effect, reduces risk as measured by beta and thus the cost of equity. Moreover, the authors find that besides beta, the size of the investor base has a mediating effect that contributes to this association. Namely, they suggest that companies with high environmental scores have a higher number of investors, which reduces the cost of equity as the risk sharing improves.

5.2 Negative impact

Dahiya and Singh (2020) study the impact of ESG performance on the cost of equity capital in an Indian setting. The authors study a sample of 68 listed Indian manufacturing companies between the years 2013 and 2018. They utilize the Bloomberg database for gathering both ESG and financial data. As a proxy for the cost of equity, the authors follow the common CAPM approach.

Dahiya and Singh (2021) find that there is a positive correlation between companies' ESG performance and their cost of equity. That is, companies with high ESG ratings face higher costs of equity. The authors suggest that ESG efforts are not perceived as value-adding by investors, but rather as unnecessary expenses for companies. However, it is worth noting that they study a relatively small set of companies within only one industry in one country.

Nazir, Akbar, Akbar, Poulovo, Hussain, and Qureshi (2022) examine the effects of ESG performance on the cost of equity focusing on universally leading technology firms. They use a final sample of 64 companies over an 8-year period between 2010 and 2017 totaling 512 firm-year observations. The authors gather both financial and ESG data from the Thomson Reuters database and emphasize that it is extensively used by both practitioners and academics. To proxy for the cost of equity, they use an ex-ante approach, namely the constant dividend growth formula.

Nazir et al. (2022) find similar results as Dahiya and Singh (2021) and posit that there is a positive and significant association between ESG ratings and the cost of equity. The authors propose that ESG scores do not diminish information asymmetry between the company and its stakeholders. Furthermore, they find that investors consider investments in ESG as merely an economic strain.

5.3 No significant impact

While most papers suggest that there is a negative association between the aggregate measure of ESG performance and the cost of equity, several researchers find that not all sustainability sub-factors are significant to this relationship. However, the findings are rather conflicting. While Ghoul et al. (2011) and Ng and Rezaee (2015) find that the social pillar is not significant in decreasing the cost of equity, Ok and Kim (2019) on the other hand find that the environmental factor is not significant in this context.

5.4 Underlying mechanisms

Several previous studies propose that investors conceive socially irresponsible companies as riskier than those operating socially responsibly (Robinson, Kleffner & Bertels, 2008; Starks, 2009; El Ghoul et al., 2011; Chen et al., 2023). In other words, high ESG performance indicates a lower risk perception, and vice versa. Furthermore, the existing literature implies that by improving their ESG performance, firms may be able to improve their risk profiles.

Some papers focus specifically on the environmental performance and suggest that companies shifting their operations to a more environmentally direction will experience a decreased investor risk perception (Feldman, Soyka & Ameer, 1997; Connors & Silva-Gao, 2008). Yet, some papers that assume risk as the main mechanism of the association

between ESG performance and the cost of equity, find that environmental factor is not significantly associated with this relationship.

According to the finance theories, the risk premium is the reward an investor demands for a given level of risk (Liang, 2012). As the risk premium increases, the cost of equity increases (Bassen et al., 2006). Thus, theoretically and based on the current literature, there should be a negative association between a company's overall ESG performance and the cost of equity, if investors assess the risk-level related to ESG performance accordingly.

Besides the impact of ESG performance on firms, also that of ESG disclosure has been studied recently. There are different expectations of how ESG disclosure affects companies. It can be presumed as having a positive impact on firms as it exposes the strengths and weaknesses of ESG. Furthermore, ESG disclosure can be expected to reduce information asymmetries. On the other hand, ESG disclosure may be seen as greenwashing and, thus, having a negative effect on firms. (Fatemi, Glaum & Kaiser, 2018.)

Fatemi et al. (2018) examine the impact of ESG performance and disclosure on firm value in the U.S. with their study covering a total of 1640 firm-year observations. They find that while great ESG performance increases firm value ESG disclosure weakens it. More closely, the authors find that the effect of ESG disclosure is different regarding the weaknesses and strengths.

According to Fatemi et al. (2018) disclosing ESG reduces the positive impact of ESG strengths whereas companies with ESG weaknesses benefit from it, since it reduces the negative effect as well. The authors argue that one underlying cause for why disclosure reduces the positive impact of ESG is that investors may comprise it as a way to justify excessive investments in ESG. On the other hand, publishing ESG activity decreases the negative effect of ESG weaknesses because unlike for strengths investors perceive it as companies' efforts to improve their ESG performance.

Byun and Oh (2018) study the relationship between shareholder value and ESG media disclosure. Their study consists of 5087 firm-year observations with companies included in the S&P 500 index from 1992 to 2009. The proxy for ESG media disclosure is computed by using different databases containing information about firms' ESG activities and media coverage. The authors find evidence that ESG disclosure plays a key role in realizing the added value of ESG activities.

The paper by Byun and Oh (2018) suggests that not publishing ESG activities may be interpreted by the market as if there were no CSR activity at all. Moreover, the authors highlight that it makes a difference where investors find ESG information. The paper says that ESG disclosure disclosed by media enhances stakeholder awareness whereas disclosure by internal sources may not enhance it, as it is seen as less credible and reliable.

A paper by Botosan (2006) discusses the relationship between the cost of equity and the level of disclosure. Worth noting is that the paper investigates the role of firms' disclosure in general, not ESG related disclosure. In conclusion, Based on relevant empirical and theoretical research, Botosan suggests that a higher level of disclosure has a reducing effect on the cost of equity capital. The findings are explained by reductions in perceived riskiness, information asymmetry and transaction costs through greater disclosure. The author points out, that a higher level of disclosure does not reduce the cost of equity through said channel if risk is not priced.

Rezaee and Tuo (2017) study firms' non-financial, voluntary disclosure collected from annual reports. The data covers 580 firm-year observations in 2010. They find that voluntary, non-financial disclosure is negatively and substantially related to information asymmetry. Furthermore, they find that greater amount of non-financial disclosure in the end of the year is linked to better ESG performance the following year. Thus, if higher level of traditional disclosure reduces information asymmetry and hence the cost of capital (Botosan, 2006), and non-financial disclosure follows the same relationship with

information asymmetry (Rezaee and Tuo, 2017) we can predict the same reducing effect on the cost of equity as well.

Rezaee and Tuo (2017) point out that the findings of their study ought to be viewed critically, as they solely examine the potential statistical association between ESG performance and non-financial disclosure, not the factors that are responsible for the association. They also stress that data of firms' non-financial disclosure is collected for one year only.

In the light of these studies, ESG disclosure seems to play a role for investors, firm value, and in delivering the effects of firms' ESG performance. Thus, it is likely to have a mediating impact on the cost of equity as well. The following papers take a more in-depth look at the association between the cost of equity, ESG disclosure, and ESG performance.

Cahan, Chen, Chen & Nguyen (2015) investigate whether companies with better ESG performance receive more favorable media coverage and whether it has an impact on the firms' financials. The authors focus on two financial measures, namely companies' valuations and their cost of equity capital. The cost of equity is calculated as an implied cost of equity and the sample for examining its association to media coverage and ESG performance covers a total of 9983 firm-year observations. Consistent with their research question the authors posit that companies performing well in ESG are rewarded with positive media coverage. They also find that firms with superior ESG performance enjoy a lower cost of equity and a higher firm value but only if their publicity is favorable.

Dhaliwal, Li, Tsang, and Yang (2011) investigate the relationship between the initiation of voluntary, nonfinancial ESG disclosure and the cost of equity capital. More closely, the authors aim to find out whether the growing trend of ESG disclosure can be motivated by a reduction in the cost of equity. Consistent with one of their hypotheses they posit a decrease in firms' cost of equity after disclosing ESG activities.

The study by Dhaliwal et al. (2011) is based in the US and consists of 213 firms during a time span of 14 years. In analyzing the cost of equity and ESG disclosure relationship the authors use a sample of companies in which data for two ESG proxies is available; they use a list of firms that publish ESG disclosure as well as the KLD database from which detailed ESG ratings of the companies can be retrieved. As a proxy for cost of equity capital the authors use an implied cost of equity that is calculated by means of three methods.

The paper by Dhaliwal et al. (2011) provides interesting observations as the authors find that firms are more likely to initiate unattached ESG disclosure if they have experienced higher costs of equity capital in the prior year. Furthermore, they find that the same companies in fact experience a reduction in the cost of equity after disclosing ESG activities, but only if their ESG performance is high compared to their peers. Their evidence about the impact of non-financial, ESG disclosure on the cost of equity is worth observing as it extends the previous literature done on voluntary disclosure. Moreover, it proposes that disclosing ESG activities, not only performing well in ESG, matters when it comes to assessing the cost of equity.

However, there are some caveats to the paper. For instance, a majority of the control variables used in the paper are the same as those used in traditional voluntary disclosure research. Thus, the authors emphasize that the study might be lacking in some important ESG control variables. Furthermore, the content of ESG reports is not investigated, and further research might even prove the used ESG ratings inadequate. (Dhaliwal et al. 2011.)

Later on, the same authors conduct another study where they further examine the impact of ESG disclosure on the cost of equity but now focusing on a stakeholder perspective. Dhaliwal, Li, Tsang and Yang (2014) study a sample is based in 31 different countries and consists of 5135 ESG reports disclosed by 1093 companies. The authors hypothesize and find, that there is a negative association between firms' ESG disclosure and the cost of equity and that the negative relationship is stronger in countries where

stakeholder orientation is higher. Moreover, the authors posit results suggesting that the association between ESG disclosure and the cost of equity and that of financial disclosure and the cost of equity are somewhat substitutable, since the two impact the cost of equity similarly.

5.5 Conclusions from prior empirical evidence

The prevailing literature seems to suggest that there is a negative correlation between ESG performance and the cost of equity. Thus, hypothesis one appears to gain strong support from the existing research. The reasons for this negative association are still somewhat obscure. However, most of the existing literature posit that the influencing factors are linked to risk perception. Namely, better ESG performance reduces perceived riskiness of a company. It may also enlarge its investor base, which yet reduces risks as they are shared with a greater number of investors.

Research regarding the association between the different factors of ESG performance and the cost of equity is somewhat inconsistent. Several papers find that the environmental, social, and governance factors have a different contribution to the correlation between the summary measure of ESG performance and the cost of equity. However, the findings regarding which factors are significant remain rather conflicting between the different papers.

One study finds that the environmental factor does not have a significant impact on this relationship whereas a couple of papers suggest the same for the social dimension. A few studies also show that superior environmental performance alone reduces firms' riskiness and, thus, the cost of equity. However, current papers seem to suggest that the corporate governance factor has a significant impact on the cost of equity. Thus, the evidence supports hypothesis two as well, as the papers find that not all three factors of ESG have a similar contribution to the negative correlation found between the cost of equity and ESG performance.

Several papers also study the impact of disclosing ESG activities. Rather little is still known about the relationship between ESG disclosure and ESG performance and about the impact of ESG disclosure on firms' cost of equity. However, the current literature seems to suggest that not only ESG performance, but also ESG disclosure plays a role for investors and, thus, affects companies' cost of equity capital. Research on the association between ESG disclosure and the cost of equity seems to suggest that the cost of equity and ESG disclosure are also negatively associated. Altogether, the findings also that ESG disclosure has a mediating effect on the relationship between ESG performance and ESG disclosure.

Several studies posit that firms with great ESG performance enjoy a lower cost of capital but only if their media image is favorable. Contrariwise, companies that publish ESG information are rewarded with a lower cost of equity but only if their ESG performance is good.

The reasons behind the findings are not examined in the current literature. However, researchers propose that the negative association between the cost of equity and ESG disclosure could be explained by the same mechanisms that contribute to the association between financial disclosure and the cost of equity. That is, the negative relationship between ESG disclosure and the cost of equity may be explained by reductions in information asymmetry and, thus, risk perception.

6 Data and Methodology

The focus of this chapter is to carefully present the research data and methodology employed in this study. The initial section of this chapter sheds light on the Refinitiv Eikon ESG Score and how the score is formed. The latter section of this chapter presents the data, variables, and the methodology used to perform the empirical analysis.

6.1 Data description

The main objective of this thesis is to examine whether or how the environmental, social, and corporate governance (ESG) performance affects financial performance. This thesis utilizes the Refinitiv Eikon database, which is one among the most extensive ESG databases in the field. The database comprises more than 88 percent of the total market value of global equities, which means over 15 000 firms globally. It measures these companies beyond 630 ESG indicators, and the first data points date back to the early 2000s. (Refinitiv, 2023.)

Refinitiv Eikon constructs the ESG ratings by gathering information from openly accessible sources like annual and quarterly reports, firm websites, CSR documents, and other verified media sources. Each ESG score measures the firm's sustainability performance in ten main ESG themes within the environmental, social, and governance pillars. It covers 186 comparable and relevant data points that evaluate the overall ESG performance of each company. (Refinitiv, 2022.) Figure 3. demonstrates the distribution across the ten different themes and the number of data points within each sub-theme.

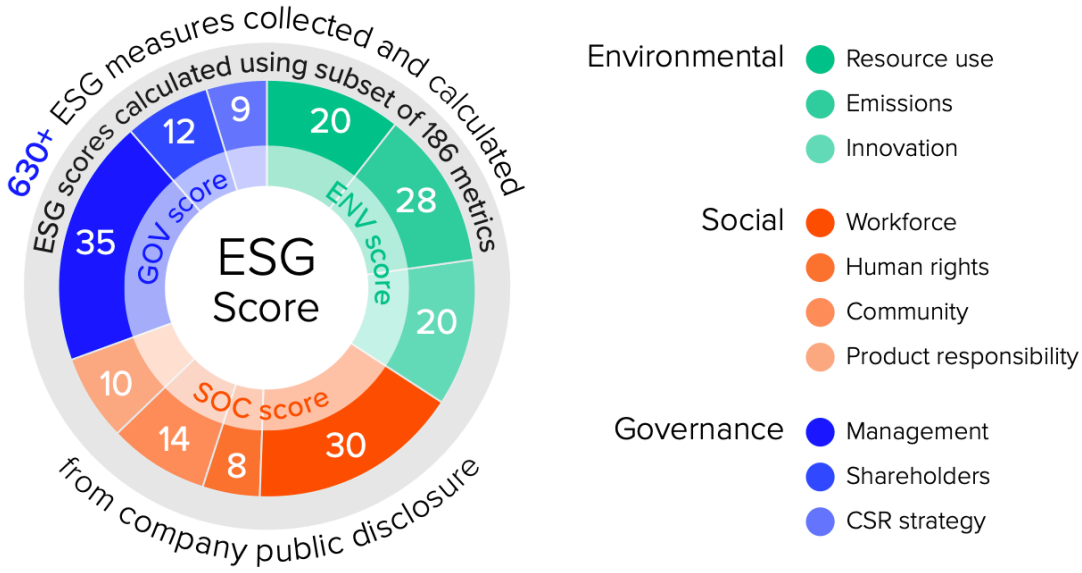

Figure 3. Refinitiv Eikon ESG Score formation (Refinitiv, 2022).

According to the Refinitiv Eikon ESG company score range, firms can be divided into four different quartiles with respect to their sustainability performance level. Firms that score 0 to 25 have insufficient transparency disclosing ESG data and poor relative ESG performance. Companies that score > 25 to 50 have a mediocre transparency in their ESG disclosure and relative ESG performance. Firms that score > 50 to 75 are considered to have better than average level of transparency in public ESG disclosure and good relative ESG performance. Firms with a score of > 75 to 100 are considered to have high level of transparency in public ESG disclosure and superior relative ESG performance. (Refinitiv, 2023.) Thus, the values reflect the ESG performance of each firm on a scale from 0 to 100, the latter indicating an excellent relative performance.

6.2 Data construction

The initial data set of this thesis covers annual ESG scores and other appropriate data for a group of Nordic publicly listed companies over the last 15 years, namely 2008–2022. The sample firms are gathered from the five Nordic stock exchanges: Nasdaq Stockholm, Nasdaq Helsinki, Oslo Exchange, Nasdaq Copenhagen, and Nasdaq Iceland. After

analyzing the initial sample, Iceland is excluded from it. This can be attributed to the insufficient number of observations available. Namely, the first ESG observations for Iceland cannot be obtained until 2020.

Furthermore, as most of the sample firms have very little observations until the year 2018, the sample period is narrowed down from the beginning. Starting from 2018, only a few values within the entire sample are missing. The most recent complete year, 2022, is also excluded from the sample due to the number of missing observations. Thus, the final sample covers the years from 2018 to 2021. Moreover, as the data set contains some duplicate values, these are eliminated from the final sample.

Besides minimizing the number of missing values, narrowing down the sample to cover only the years 2018 to 2021 can justified with ESG trendlines. As shown before in the Figures 1. and 2., the investments in ESG-incorporated assets start to grow more heavily in the latter half of the 2010s (US SIF, 2020; UN PRI, 2022). Furthermore, it can be shown that it is not until 2017 and 2018 that the value of investments in ESG funds start to actually soar. (Financial Times, 2019).

	Initial number of companies	Final sample
Nasdaq Stockholm	1622	97
Nasdaq Helsinki	398	42
Oslo Exchange	901	54
Nasdaq Copenhagen	564	44
Nasdaq Iceland	116	0
Total:	*3601*	*237*

Table 1. Data from the Nordic stock market

Table 1 demonstrates the moderately small sample of companies that have both ESG scores and betas between the years 2018–2021. The second column displays the final number of companies from Nasdaq Stockholm, Nasdaq Helsinki, Oslo Exchange, Nasdaq Copenhagen, and Nasdaq Iceland included in the final sample. As Iceland was eliminated from further analysis, the number of companies from Nasdaq Iceland is 0. Hence, the final sample consists of 237 Nordic publicly listed companies from 2018–2021.

Even so, there are still few missing values. In order to run a regression later on, I interpolate the missing values. The interpolation is conducted by following the method used by Yahaya, Ramli, and Yusof (2005), where each missing value is replaced with a mean value of all available observations. Thus, here it means replacing all missing values of a firm's ESG or financial data with a mean of all corresponding observations for that variable.

6.3 Variables

6.3.1 Dependent variable

The dependent variable of this thesis is the cost of equity (COE), proxied by the CAPM. The CAPM is computed by using the 12-month Euribor rates as the risk-free rate, yearly returns of each country's benchmark index as the market return, and yearly betas for each company as the equity beta. The data for the variable is gathered from the Refinitiv Eikon and Morningstar databases.

6.3.2 Independent variable

There are four independent variables in this study: TRESGCS, SIZE, LEVERAGE, and BTM. Besides our dependent variable, the main interest of this study is in TRESGCS, which measures companies' ESG performance, proxied by ESG scorecards by the Refinitiv Eikon database. More closely, TRESGCS is a Combined ESG Score, which addresses any controversies that could impact the sustainability performance. That is, the ESG Combined Score discounts for all adverse media coverage by including these to the overall ESG Score (Refinitiv, 2022). Hence, the variable also addresses the impact of ESG disclosure on the relationship between ESG performance and the cost of equity, as discussed before.

The other three variables, SIZE, LEVERAGE, and BTM are control variables. The chosen control variables are based on the existing academic literature. Following El Ghoul et al. (2011), Dhaliwal et al. (2005) and Dahiya & Singh (2020), we include variables company size (SIZE), leverage ratio (LEVERAGE), and book-to-market ratio (BTM) as these are shown to be important factors impacting a firm's cost of equity. The SIZE variable measures company size and is computed as the natural logarithm of the firm's total assets. The LEVERAGE variable represents the leverage ratio of the company and is calculated as the ratio of total debt to total assets. The BTM variable represents each firm's book-to-market ratio. Regarding the relationship to the cost of equity, previous

findings suggest that the sings of the control variables in questions are as follows: SIZE (–), LEVERAGE (+), and BTM (+). (El Ghoul et al., 2011; Dahiya & Singh, 2020.)

6.4 Methodology

The methodology of this thesis follows other academic papers utilizing factor models to proxy for the cost of equity (Chen, Li, Zeng, & Zhu, 2023; Dahiya & Singh, 2020; Sharfman & Fernando, 2008). Hence, the Capital Asset Pricing Model (CAPM) will be used to estimate the expected returns of the stocks. A multiple regression will be conducted to examine the relationship between the cost of equity and ESG performance. The model will include control variables to avoid any biases. Thus, our main independent variable of interest is the sustainability performance (TRESGCS) measured by ESG Combined Scores, our control variables are SIZE, LEVERAGE and BMT, and our dependent variable is the cost of equity (COE) measured by the CAPM.

6.4.1 CAPM

As previously explained, the CAPM describes the relationship between systematic risk and expected returns. CAPM consists of the market return (R_M), the risk-free interest rate (R_F), and the beta coefficient (β) of the stock. (Hull, 2015, p. 75). The CAPM is used to proxy the cost of equity in this paper. Thus, the risk-free rate of interest is a 12-month Euribor for each respective year, beta is each firm's beta for respective year, and the market return is the yearly return of each benchmark index.

The cost of equity (COE) is calculated using CAPM and is as follows:

$$Cost\ of\ Equity = R_F + \beta_1(R_M - R_F)$$

where: R_F= Euribor 12M

β_1 = equity beta

R_M= yearly return of the benchmark index

6.4.2 Regression model

As the objective of a multiple regression model is to evaluate the relationship between a dependent variable and two or more independent variables (Ramachandran & Tsokos, 2021), this methodology can be used to examine the relationship between ESG performance, our control variables, and the cost of equity.

The basic formula of the multiple regression can be expressed as follows (Ramachandran & Tsokos, 2021):

$$y_i = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_i x_i + \varepsilon_i \, , i = 1, 2, K, n$$

where y = dependent variable

β_0 = intercept

β = regression coefficient = how much y changes when x changes

x = independent variables

ε_i = error term

Hence, the relationship between the cost of equity (COE), ESG performance (TRESGCS), firm size (SIZE), leverage ratio (LEVERAGE), and book-to-market ratio (BTM) can be expressed as follows:

$$COE = \beta_0 + \beta_1 TRESGCS_i + \beta_2 SIZE + \beta_3 LEVERAGE + \beta_4 BTM + \varepsilon_i$$

7 Empirical Analysis and Results

This chapter presents the empirical analysis and results regarding the effect of ESG performance on the cost of equity in a Nordic setting. The empirical part is conducted by using a multiple regression model, which is a widely statistical method in academic research. Regression results will be displayed in tables 1 and 2.

7.1 Descriptive statistics

First, I run descriptive statistics on the four Nordic countries to get insights on their ESG scores. Based on the results presented in table 1, the Nordic countries seem to all have better than average level of transparency in public ESG disclosure and good relative ESG performance, as they all score above 50 in the ESG Combined score. The mean of the entire sample is 54,32 while the median is 58,26. However, there is quite a lot of variation in the scores as the lowest ESG Combined score of the sample is 0 while the highest is as much as 93,32. All in all, we can conclude based on these descriptive statistics, there are no significant differences between the Nordic countries and that they perform better than average regarding ESG disclosure and ESG performance.

ESG Combined Score					
	Norway	Finland	Sweden	Denmark	Total
N	216	168	388	176	948
Mean	53,16	62,20	50,72	56,16	54,32
Median	54,17	65,00	56,15	57,94	58,26
Standard deviation	16,92	16,61	25,24	14,67	20,76
Minimum	4,11	12,96	0,00	4,19	0,00
Maximum	92,49	89,74	93,32	85,03	93,32

7.2 Regression results

After analyzing the descriptive statistics, I run a multiple regression on the entire sample encompassing all four Nordic countries over the years 2018–2021 using the cost of equity (COE) as the response variable and sustainability performance (TRESGCS), company size (SIZE), leverage ratio (LEVERAGE), and the book-to-market ratio (BTM) as the regressors.

Tables 1 and 2 present the relationship between the aggregate measure of ESG performance and the cost of equity including control variables. The results cover the entire sample period (2018–2021). There are 948 observations in total.

Regression Statistics	
Multiple R	0,0742
R Square	0,0055
Adjusted R Square	0,0013
Standard Error	0,1931
Observations	948

Table 2. The fit of the regression model

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	0,2006	0,0466	4,3004	0,0000
TRESGCS	0,0003	0,0003	1,0205	0,3078
ln(SIZE)	-0,0055	0,0034	-1,6211	0,1053
LEVERAGE	0,0647	0,0383	1,6897	0,091*
B/M	0,0024	0,0020	1,1732	0,2410

***p-value < 0,01, **p-value < 0,05, *p-value < 0,10

Table 3. The overall significance of the regression model

The regression results show that ESG (TRESGCS) is very minimally, but positively associated with the cost of equity (COE), but the results are not statistically significant. The results will be discussed in more detail below.

Table 1 shows that the R-square of the entire regression is only 0,0055 and the adjusted R-square 0,0013, which are considered very low. That is, our independent variables explain only 0,55%, or when adjusted for the number of predictor variables, only 0,13% of the variation in the dependent variable. This indicates that the model fit is not good, as the model explains almost none of the variability of the response data. This indicates that the empirical model used in this paper is not a good fit to investigate the relationship between the variables in question.

Table 2 shows the us the coefficients of the regression. The intercept of our independent variable TRESGCS is 0,0003. In this case, a one-unit increase in ESG performance (TRESGCS) would imply an increase of approximately 0,0003 in the cost of equity (COE). Thus, there is a positive correlation between the variables, which would be contrary to our hypothesis. However, the impact of ESG performance on the cost of equity is not significant, as the p-value is considerably higher than the commonly used borderline of statistical significance. The p-value is 0,31 whereas the common borderline for statistical significance is 0,05. All of the control variables, except LEVERAGE, have no significant impact on our dependent variable either. The coefficient of the leverage ratio is 0,0647, which means that a one-unit increase in leverage (LEVERAGE) would result in an increase of 0,0647 or 6,47% in the cost of equity (COE). The p-value of this relationship is 0,091, and hence, we can say that it is statistically significant at the very lowest level of significance, 0,1.

7.3 Summary of results

Our results show that our regression model explains almost none of the variability in the dependent variable. Hence, as prior research shows that there ought to be a significant

relationship between the cost of equity and company size, leverage, and book-to-market ratio, which are the control variables of our regression, we can conclude that the empirical model is not a good fit for the given data set.

The results also show that there is a very minimal positive relationship between the ESG performance and the cost of equity, which is reciprocal to what we hypothesized in the beginning. Thus, our hypothesis about the negative relationship does not get any support from our empirics. However, the results of the regression are not significant, which denotes that further research on the topic is needed before rejecting the hypothesis. Altogether, the results reveal that the chosen model is not a good fit, and the model shows that there is no significant effect of the independent variables on the dependent variable, except for the firm leverage level.

One plausible reason for such results is that this study suffers from the omitted-variable-bias (OVB). OVB occurs when some critical control variables, that correlate with the regressor or regressors and explain the dependent variable, are disregarded from the regression model. (Collot & Hemauer, 2021.) In this context, the propriate solution would have been to incorporate more control variables to the regression. For instance, El Ghoul et al. (2011) and Dahiya & Singh (2020) have also included betas in their models. However, as several important variables are already included into the model, we should also investigate if another approach than CAPM in estimating the cost of equity could provide more reliable results. Furthermore, the data set is relatively small, which could also impact the results.

8 Conclusions

The objective of this paper is to contribute to the existing academic literature on the implications of sustainability performance on the financial performance of companies in the Nordic stock market. More specifically, the scope is to investigate whether companies with superior ESG performance enjoy lower costs of equity in the Nordic countries.

As ESG is a moderately new topic to the field of finance, current empirical evidence is rather varied. Most researchers suggest that there is a positive impact and negative relationship between ESG performance and the cost of equity, there are also studies suggesting a negative impact, and thus, a positive relationship between the two variables. Some researchers even find that not all ESG factors are statistically significant in the relationship between ESG performance and the cost of equity. Several papers also find that it is not only firms' ESG performance that may affect their cost of equity, but also the media coverage and ESG disclosure they receive and publish.

To contribute to the academic literature, this thesis focuses on a specific geographic and cultural area, the Nordics. The companies for the empirical part of this study are collected from the Refinitiv Eikon -database, which assesses these companies based on their relative ESG performance and media coverage. Hence, the main objective is to examine if there is a relationship between ESG performance and the cost of equity.

This thesis begins with presenting the topics that will be empirically studied in the latter part of the paper. The motivation to study the Nordic market as well as the concepts of ESG and the cost of equity will be discussed. Moreover, a theoretical framework is provided to support the study objectives.

The empirical methods are chosen based on previous research on the topic. However, the findings do not align with much of the prior literature on the subject, as this study fails to find any statistically significant results regarding the relationship between ESG

performance and the cost of equity. Furthermore, the chosen model does not explain the variation in the cost of equity, even though three appropriate control variables have been included into the model. Thus, future research on the topic should carefully choose the empirical methods when investigating the relationship between the cost of equity and ESG performance. That is, the CAPM may not provide reliable results on the cost of equity, or its determinants should be chosen more carefully. Moreover, future research could benefit from constructing a larger set of data and including some more control variables. Nevertheless, more research studying this relationship in the Nordic market is needed, as the Nordics are considered as the leaders in ESG performance, but current number of studies is very limited.

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