Petra Partanen

THE ASSOCIATION OF ESG FACTORS ON FINANCIAL PERFORMANCE IN THE ENERGY AND UTILITY COMPANIES

Master's Thesis

Department of Finance

April 2024

UNIVERSITY OF OULU
Oulu Business School

ABSTRACT OF THE MASTER'S THESIS

Unit			
Department of Finance			
Author		Supervisor	
Partanen, Petra		Sahlström, Petri	
Title			
The association of ESG factors on financial performance in the energy and utility companies			
Subject	Type of the degree	Time of publication	Number of pages
Finance	Master's Degree	April 2024	73 + 20

Abstract

The aim of the thesis is to examine the possible association of companies' financial performance and ESG factors within the energy and utility sectors. The study is conducted from a within industry point of view to examine the differences of renewable and fossil-based companies globally. The energy and utility sectors are confronting constantly growing demand and shifting from fossil-based to renewable energy forms. Energy as an industry and a commodity are closely tied to societal and economic issues related to shortcoming of resources, pollution, employment, and climate change.

Corporate social responsibility (CSR) and sustainability of companies have been theorized widely with different perspectives of legitimacy and social performance theories which have been criticised to lack measurability and comparability. This study gathers theories to compare and utilize different frameworks of Global Reporting Initiative (GRI), Principles of Responsible Investing (PRI), Global Sustainable Investment Alliance (GSIA) and United Nation's Sustainable Development Goals (SDGs). The application of external ratings with environmental, social, and governmental factors provides externally audited information and measures for the companies' actions and performance.

The traditional outlook in finance has focused on the perceived risk with a measure of beta that essentially sets the required return for the investments. Justification of including sustainability as an additional factor to consider has been rationalized to lower the possible risks, reduce the unnecessary use of resources, and gain competitive advantage. This study conducts an overview of adding a behavioural aspect to asset pricing and its association with risk, stakeholder theory and agency theory with the issue of asymmetric information. The idea of a premium for "being green" raises the issue of lowering the discount rate to value the companies and thus raises the valuation compared to low performers. The issue of perceiving sustainability as a component for valuation derives from investors' different utilities.

The study conducts multiple linear regression models to demonstrate does the comprehensive ESG or its sub-factors statistically explain financial performance. Price to Earning (P/E) as a market ratio examines the perception of investors for their required return whereas Return on Equity (ROE) utilizes accounting-based information to measure effectiveness and profitability. The results of the study align with the mixed results regarding the previous studies in the field. ESG factors association with financial performance was not evident, but industry and size of the companies provided significant differences. Renewable companies are perceived to have a lower risk measured by beta but higher P/E ratio. The constant change and growth in the energy sector provides a remarkable sector to examine the perception of sustainability and the possibilities of taxation, policies, and development for a broader shift within the industry.

Keywords

ESG, Financial Performance, Price to Earnings, Return on Equity, Sustainability, Energy Sector

Additional information

CONTENTS

FIGURES

TABLES

1 INTRODUCTION

The aim for the study is to analyse energy sector companies' financial performance and possible association of their financial success with environmental, social and governance factors and their comprehensive measure ESG. The study is conducted from a within-industry to gain perspective of the possible association of ESG performance in the whole energy and utility sector and possible differences within the renewable and non-renewable fossil-based companies. The study is utilizing a theoretical background on sustainability, development of behavioural aspect of financial and economic theories and how they relate to financial performance. The energy industry was selected to examine the possibilities of the field by incorporating empirical research conducted with regression modelling. The study provides an overview of the main frameworks around corporate sustainability by examining Global Sustainable Investing Alliance (GSIA), The Sustainable Development Goals (SDGs) by United Nations, Principles of Responsible Investments (PRI) and application of environmental, social and governance by ESG measurements from an outside authority perspective.

Global energy demand has been estimated to grow around 1% annually and the estimated increase of utilizing electricity as a source for energy is predicted to rise from the current 20% share up to 50% by the year 2050. Usage of natural gas and oil are reaching the high point of usage and the share of fossil fuels in energy use is estimated to fall from the current 80% to 60% around year 2035. The energy sector recently has faced shocks caused by the Russian invasion to Ukraine in 2022. (IEA, 2022.) Since energy consumption is constantly growing globally, it presents a remarkable sector to examine with its sustainability and possible association with the companies' financial performance measured in this study by price per earnings (P/E) and return on equity (ROE). The financial measures are explained in detail in the later parts of the study.

The importance of energy companies' sustainability is a part of the global pressure for fighting against climate change. Constantly growing global economic development especially in the large emerging countries, for example India and China, contributes to

economic benefits. This shift improves the standard of living for people which therefore contributes to a higher usage of energy. The energy sector is closely tied to societal and economic issues of shortcoming of resources, pollution, employment, and climate change within a global perspective. (Stjepcevic, & Siksnelyte, 2017.) The renewable energy investments have been increasing rapidly and displays an increased energy capital in the markets (IEA, 2022). The International Energy Association (IEA) capacity calculations confirm that already 90% of the capacity expansions are renewable based. Growth has been uppermost in China, but Europe's growth is estimated to accelerate due to the governmental policy support and corporates' power purchase agreements. Whereas, the USA is estimated to have an extension through the tax credits to accomplish its emission targets. Solar power development has globally increased after the year 2019 by capacity growth by 50% and wind capacity additions have increased by 90%. (IEA, 2021.) Sustainable investing, companies' responsibility and environmental liability has been a widely discussed topic and the importance is constantly growing as we know that the global resources are limited, and climate change is heavily affecting the whole globe. The energy sector is facing major changes and investments in the future. However, the constant economic growth in the long term combined with sustainability goals have not been resolved completely with actions. This study aims to showcase does the sustainability measures estimated by ESG factors create advantages for companies and thus for their shareholders.

1.1 Purpose of the Study

The aim for this research is to analyse energy and utility sector companies' financial performance and its possible association with environmental, social and governance factors and their comprehensive ESG measures. The study combines a theoretical background of how the socially responsible investment methodologies have developed over time to its current form. Originally the markets integrated corporate social responsibility to its current form of environmental, social, and governmental reporting and measurements. This has created a new opportunity for incorporating new perspective of non-financial information to consider with investment decisions. The aim of the research is to find is there currently an association between the companies' financial performance and sustainability measures and its subcategories of environmental, social and governance within the energy and utility sector.

The suggested original concept of sustainability could be defined by the United Nations Bruntland Commisions (1987): “Meeting the needs of the present without compromising the ability of future generations to meet their own needs”. Pigou’s (1920) economic ideal of a fair market approach is the ought for policies to balance market failures and inequalities by employing taxation to balance socially harmful behaviour. The corporate social responsibility (CSR) approach is based on the “win-win” ideology. This is based on the theoretical thought of companies which have been considered as good corporate citizens would affect the firms’ profitability positively, but the actual interpretation faces the issues of companies and their managers operating in a short-term bias due to monetary incentives (Bénabou & Tirole, 2010).

Historically, investment decisions and strategies have been built on the fundamental information of the company’s financial strategy, intrinsic value, growth possibilities and technical information of the company’s historical stock performance and indicators for its trend momentum or movement in the future. The addition of nonfinancial information provided by ESG has been linked and studied how it affects companies’ financial performance. (Verheyden et al., 2016). Socially responsible investment (SRI) is a screening framework of selecting or excluding assets based on criteria of ecological, social or governance activities (Renneboog et al. 2008). Sustainable investing and financing are contributing an additional perspective via utilizing the non-financial information of the company’s actions and processes (Hoepner at al., 2016) and it differs from the traditional approach that company’s fundamental intention of maximizing shareholder wealth (Soppe, 2004).

Pástor at al. (2022) emphasized the factor of industry’s overall attribution to sustainability to be more significant compared to the individual stock’s environmental performance within-industry. This study is done from a within-industry point of view to showcase the differences on a company and sub-industry level. Previous studies of companies’ sustainability and responsible investing are frequently concluded on a broader level by comparing funds and portfolios with different weightings. Cornell (2021) concludes the two-sided issue about the premium of “being green” regarding pricing. If the companies receive a premium for being green, it will lower the discount rate used to value the company and raise the valuation compared to the low performers. This creates an issue in the markets since if the market valuation is higher, investors

would then expect a lower rate of return for their investment since the initial investment is pricier.

Regarding the extent of companies' sustainability communication, it is critical to understand the limitations of the available data since the self-reported non-financial information is often biased to managements' interests (Gray, 2010; Unerman, 2007) and often incorporates only a portion of the significant news (Boiral, 2013). When focusing the area of Principles of Responsible Investing (PRI) and agency costs with asymmetric information, the results show that especially low ESG performers tend to have weak incentives to change their activities, but they still practise using a sustainability related terminology in their communications (Liang et al., 2021). This study utilizes to theoretically examine the area of sustainability via different frameworks of SRI, PRI and GSIA among with development of ESG as a measure and their effectiveness through different periods.

1.2 Previous Studies

This study conducts an overview around the sustainability of the companies and the key studies and theories around the subject. Sustainable corporate finance popularity started to rise in the late 1970's and the ideology was first studied by Walton (1960) and Frederik (1960) about companies' social responsibility and resource utilization. The research around the matter was later continued by Wood's (1991) framework and theory of the issue regarding immeasurableness of the actions. Sethi (1979) conceptualized CSR to analyse physical, social, and political actions of the company whereas Ullmann (1985) studied the effect of companies' social and financial disclosures. The Carrol's (2016) well-recognised pyramid of hierarchy regarding the companies' responsibilities within economic, legal, ethical, and philanthropic aspects summarizes the perspective around the matter. The legitimacy theory by Dowlig and Pfeiffer (1975) approached the issue by broadening the companies' responsibilities from a within company perspective to include all stakeholders. These theories and their association to corporate sustainability are discussed in more details in the following chapters.

Freeman's (1984) stakeholder theory had similarities with Ackoff's (1970) theory of companies operating within a network, not solely as an individual. Stakeholder approach was studied by Donald and Peterson (1995) among Phillipsen et al. (2003) and its loudest critiques were provided by Gioia (1999) and Marcoux (2000) of equalizing stakeholders. Agency theory by Jensen and Meckling (1976) theorizes the problems of different stakeholders and their dissimilar relationships and requirements. CSR engagement is studied within agencies by Cadbury (2000), Jensen (2002), Aguilera et al. (2007), Cilibretti et al. (2011) and Drover et al. (2014). The incorporation of sustainability as an additional non-financial information to financial performance are discussed by various approaches. Most eminent financial theories include the capital asset pricing models theorized by Sharpe (1964), Lintner (1965), Fama and French (2015), and Malkiel (2003). Black (1985) proposes the perspectives of how risk affects the price of the asset. Financial performance and risk have been studied by Bollen (2004), Statman (2004), Michaelson (2004), Tippet (2001) and Halfstrom et al. (1992). This study highlights the two perspectives of financial performance measured by price to earnings (P/E) and return on equity (ROE) and sustainability metrics by its development over time within the theoretical framework in more detail.

2 THEORETICAL FRAMEWORK

This chapter of the study concludes an overview of the historical development of corporate sustainability and its evolution throughout the years. The field of corporate sustainability has adapted and formed around conceptualized ideologies but have been criticized to lack accountability. This chapters gathers the main studies and researchers around the subject and aims to showcase the difference aspects and development of how sustainability is perceived by the shareholders and more widely by stakeholders. The controversial role of non-financial information and companies own external reporting are discussed in the later part of the section and followed by the creation of external rating systems for ESG.

2.1 CSR Development and Key Concepts

Corporate Social Responsibility (CSR) was introduced first in the 1950's as an ideology of which the company's responsibility is a broader compilation of social needs and utilisation of the resources and social relationships (Frederik, W.C., 1960; Walton, C. 1967). The concept of CSR from the beginning rose with two critical issues of what and how the corporates' action should be measured and how to define corporate social performance (CSP) compared to social responsibility actions (Wood, 1991).

Sethi (1979) provided a categorized manner to legitimate companies' actions regarding their physical, social, and political manners and actions. The study's methodology incorporated how the company acted compared to its perceived social obligations and how corporate's behaviour compares to responsibility and responsiveness. Since the area of CSR was lacking a clear consensus, Jones (1983) focused theorizing CSR as the idea of social control and not directly through performance as a variable for businesses. Ullman (1985) gathered three categories or viewpoints of social disclosure, social performance, and financial performance for CSR since the field was lacking a consensus on measurable performance metrics.

2.1.1 Conceptualization of CSR with Carrol's and Wood's Models

The development of sustainability theories and categorization followed then Carrol's (1975; 2016) first take on the subject conducting a three-level framework for corporate social performance consisting of integration of corporate's social responsibility, responsivity, and social issues. Wartwick & Cochran (1985) criticized Carrol's CSP model for lacking dynamic evolution to which they responded by redefining the scope of responsibilities concerning economic, public, and social responsiveness. The adjusted model utilized Tuzzolino and Armandi's (1981) modification of the traditional Maslow's hierarchy of need which for companies would give the lowest needed level to be economical profitability and the highest being social responsibility. Carrol's (2016) pyramid is based on the equivalent hierarchy of starting with economic responsibilities that must be upheld for the company to exist in the long term. Furthermore, the ideology was progressed into the four dimensions of CSR and visualized by Carrol's pyramid with four different layers. The pyramid initiated at the base of the economic responsibilities which summarizes the financial requirements that must be sustained by the company to exist in the market. (Carrol, 2016.)

Figure 1. Carrol's Pyramid (Adapted from Carrol, 2016)

According to Carrol (2016) The company must be profitable and add value for its stakeholders and operate in the markets. The pyramid is followed by an added layer of

the legal responsibilities which sets the standard for the companies to operate within the laws and regulations. The model transferred to add and determine the ethical responsibilities which have been set by society's expectations to operate with business integrity, ethically and morally correctly towards all of its stakeholders. At the top of the pyramid, is the philanthropic responsibilities which includes the discretionary and voluntary actions that incorporate giving back to the society and stakeholders among being a good corporate citizen.

Most eminent critique to oppose CSR was made by Friedman's in the 1970's that firms' and its' managers only responsibility is to maximize the profits for the shareholders. The doctrine focuses on the ideology that only people can have responsibilities and therefore companies' actions for social interest reduces returns for stockholders (Friedman, 1970). Davis (1973) provided an annotation on supporting the very strict ideology that companies' social responsibility creates additional costs, which take away the concentration on the actual business and the difficulty to control the accountability of the said actions. Zenisek (1979) asserted that corporate social responsibility essentially constitutes a supplementary layer of managerial duty emerging from the progression of American capitalism. However, Davis (1973) provided a conforming outlook to support CSR. If the business aims to be viable in the long-term and thus, social, and environmental problems could offer a profitable possibilities and prevention of the social issues in advance. The companies would profit correspondingly financially by limiting the possibility of issues and costs caused by its own harmful actions. The conflicting theories to oppose CSR were later theorized yet again by its possibility to limit the strategic opportunities for management and wasting resources since the discussion was debated between are the investments regarding CSR's trade-offs for economic gains and maximation of financial utility (McGuire et al, 1988; Herrermans et al., 1993). The most critiqued theories focused heavily on the highly traditional aspects of economic theories which are discussed later in this study. Corporate social performance has been researched by focusing on the perspective of how the companies should be managed to support the established strategies. (Epstein 1987; Miles, 1987.)

The companies' social policies were broadly conducted from top to bottom perspective by executives or by the CEOs (Epstein 1987; Miles, 1987). In the terms of social

responsiveness, Wood (1991) examined that it could be more valuable for utilization if the used social values were demonstrated with a “from bottom to up” perspective. Wood correspondingly conceptualized by progressing from Carrol’s and Wartwick & Cohran’s ideology of CSP to stand as the summary of the companies’ social responsibility and responsiveness. The perspective of what CSP values in theory varies between the different stakeholders and within the stakeholder groups by the value structures and preferences which may differ significantly (Harvey et al., 1984). The application and development of the behavioural theories and stakeholder theory are discussed in more details in later parts of this study. Jamali and Mirshak (2007) apprehended when measuring and analysing companies’ CSR activities, that it should be noted that different countries are substantially in different states regarding sustainability generally. This is due to the differences of the developed and developing countries with their major differences within social, economic, and environmental backgrounds.

Legitimacy theory by Dowlig and Pfeffer (1975) implies that the company must act within the society’s values and norms, legally, economically, and socially to remain and operate in the markets. Gray et al. (1995) noted that companies need to legitimize and sustain relationships with various interest groups in the complex social and political environment. The legitimacy theory is followed by the developed consensus studied by Lanis and Richardson (2013) that companies cannot just operate to maximize their profits for shareholders and therefore the social and environmental consequences should be noted regarding all stakeholders instead. Deegan and Rankin, (1996) emphasize that the legitimacy theory is used and proven to some extent to explain the reasons of why companies have increased their CSR reporting and communication. Companies are biased to report favourable environmental information when media is focusing on the environmental themes in their public outcomes. Patten (1992) analysed after the Exxon oil spill that the number of disclosures increased after perceiving negative media attention in the industry. Therefore, companies could react to negative actions by providing new or additional information to change the image of their companies for stakeholders. Similar results have been found by Dube and Maroun (2017) for other companies and industries which can indicate that CSR reporting can be utilized by companies aiming to fulfil their social contracts for stakeholders.

2.1.2 Contemporary Modelling with Triple Bottom Line

The ideology of the Triple Bottom Line (TBL) theory was introduced by Elkington (1998) and it has shaped the CSR into its contemporary form. TBL structures by forming the companies three responsibilities that are noted as the economic, social, and environmental attributes. Triple Bottom Line theory is also identified as the 3Ps or three pillars since it combines the responsibilities under the main three features of Profit, People and Planet (Księżak & Fischbach, 2018). The ideology conforms to Porter's (1991) theory that companies' voluntary actions may provide them with a competitive edge (Hussain et al., 2016).

TBL's pillar of profit includes the profitability for the shareholders but also a wider perspective of the economic profitability for the stakeholders as individuals and communities (Księżak & Fischbach, 2018). Uddin et al. (2008) studied the economic profitability and the way it can aggregate a positive social outcome through taxes, the multiplier effect of wages, purchasing power parity and gross domestic product growth which would lead to improving the standard of living. People pillar stands for a social dimension that pools all the people that may be affected by the company and its actions. People pillar includes the company's internal labour resources, customers and supply chain and the responsibility actions towards the personnel groups. (Księżak & Fischbach, 2018; Uddin et al. 2008). The environmental aspect is assessed through the dimension which Planet and Gupta (2011) summarizes as the minimum level companies should perform at to minimize their environmental impact. Environmental responsibility can enable an additional profitable operation by optimizing costs and decreasing risks in the future (Księżak & Fischbach, 2018).

CSR has been conceptualized and theorized over various times, but the research has not been able to assess a transparent framework of how it can be defined. Dahlsrud (2008) studied the area with a measurement of frequency on how the different dimensions were brought up and the findings support Carrol's (1979; 2016) and Wood's (1991) framework with the five main aspects. These were the environmental, social, economic, stakeholder and voluntary dimensions (Dahlsrud, 2008). The European commission uses related dimension for their definition for CSR and "Green Paper" is made to guideline the extensive concept politically within Europe Union but

also globally (European Commission, 2001). The five dimensions of CSR principles adapted by Dahlsrud (2008) explain the dimensions by institutional, organizational, and individual perspective and how the companies' actions can be perceived. The principles combine previous studies and perspective of CSR to understand the motives and applications to actions.

Table 1. Five Dimensions of CSR Principles

Dimensions	Social / Institutional	Public / Organizational	Managerial /Individual
Economic	Produce goods and services	Pricing reflecting the actual costs	Use of low-polluting technologies
	Economic development		Cost reduction by minimizing waste and use of resources
	Preserve profitability		
Legal	Obey laws and regulations	Co-operation with public policies	Take advantage of regulatory requirements (R&D)
Ethical	Follow fundamental ethical principals	Provide accurate information	Use the information as an advantage
		Enhance products beyond legal requirements	
		Integrate social social concerns	
Voluntary	Act as good corporate citizen beyond legal requirements	Invest charitable resources	Apply effectiveness criterion on charitable actions
Stakeholder	Interaction with all stakeholder groups	Interaction with suppliers, customers, and communities	Benefits from stakeholder approach to gain advantages

(Adapted from Dahlsrud, 2008 & Wood, 1991)

2.1.3 Global Reporting Initiative for CSR Reporting

The current procedures of CSR reporting have increased the amount of non-financial information but the increasing pace of reporting and use of the multiple different frameworks and structures does not provide comparable information. Auditing and

assurance processes are needed to reduce the amount of asymmetric information of the companies' past, ongoing, and future operations. To utilize the increased amount of non-financial information requires comparable CSR performance measures to be accomplished as an addition to the traditional financial information. (Kurittu, 2018, pp. 7-12.) It is significant to acknowledge that the voluntary information that companies disclose by themselves are often biased and reflect generally more the managements' interest instead of the company's general position in the field and area (Gray, 2010; Unerman, 2007). The issue of asymmetric information is later discussed in more detail under agency theory.

The Global Reporting Initiative (GRI) has been constructed to present a balanced and reasonable presentation of both the positive and negative contributions of the companies and their processes (GRI, 2006 p. 3). GRI is based on a similar framework as the TBL for accounting the company's sustainability (Gray, 2010). Compared to the other rather theoretical frameworks, GRI has utilized verification for its results by auditing (Deegan et al., 2006: Boiral & Gendron, 2011). GRI is referred as the current standard for sustainability reporting, but it has not been ratified as one by independent participants (Kurittu, 2018 p. 11-12). Tschopp and Nastanski (2014) compared the different non-financial frameworks which indicated the GRI methodology to provide the maximum amount of information for decision making. The other four most common non-financial reporting structures are produced by the Sustainability Accounting Standards Board (SASB), the International Integrated Reporting Council (IIRC), Climate Disclosure Standards Board (CDSB) and Carbon Disclosure Project (CDPI) (KPMG, 2020). The benchmark for financial disclosure curated by the International Financial Reporting Standards (IFRS) beside their accounting standards have been extending their standardizations cover a sustainability framework to further develop a global standard for the non-financial disclosures during year 2023 (IFRS, 2023; KPMG, 2020). The development of the different frameworks and auditing protocols confirms the need of comparable and trustworthy data of the non-financial actions of companies.

Boiral (2013) researched the highest sustainability performers contained by the GRI reporting methodology and perceived companies incorporate only a small portion of the significant news of sustainable development into their reports. Companies tend to

overemphasize their positive achievements, and the proliferation of companies' impacts promoted an unrealistic picture of their role and actions. It should be noted that that GRI is a stakeholder communication tool, and it uses a modular form with an introduction to a newer addition for sector level standards (GRI, 2023). Gray and Milne (2002) propose the idea of sustainability reporting essentially to have a good intension to enhance transparency of the non-financial attributes. Though, to achieve an effectful reporting method, it will require a more complex and detailed analysis of a company's interactions with ecological systems, societies, and use of resources. Moneva et al. (2006) propositioned that frameworks tend to focus on overly specific issues instead of assessing the entire business model and a way of operating which supported studies argue result to flawed forming of selections (Aras & Crowther, 2009; Byrch et al., 2007; Fonseca et al., 2014).

2.2 SRI and its Association with ESG

Socially responsible investing (SRI) enhances compared to the traditional investing decisions the idea of impacting environmental issues, human rights, labour practices, sustainable consumption and involving communities (Sparkes, 2017; Silva & Cortez, 2016; Ooi & Lajbcygier, 2013; Capelle-Blancard & Monjon, 2012; Viviers & Eccles, 2012; Aras & Crowther, 2009; Friedman & Miles, 2001). The increasing number of investors and population generally are additionally interested in integrating their personal values into their financial decisions. The financial and consumption choices include a variety of investments that are aimed to provide a yield for the invested capital or more generally decisions of which product to purchase. (Fritz & von Schnurbein, 2019; Sparkes, 2017; Schueth, 2003.) SRI is differentiating partly from the traditional utility and profit maximalisation. The development of behavioural aspect of asset pricing and financial requirements are discussed in the later parts of the study.

SRI has been theorized originally in the 1980's (Bruyn, 1987; Hylton, 1992) but similarly to CSR there was not a clear and consistent framework around the matter. The ideology was associated with the terms of social, green, and divergent (Bruyn, 1987; Simpson, 1991; Schotland, 1980). The concept of an ethical investment was used already in the 1970's (Domini, 1984; Simon et al., 1972) but it was further related

to the growing phenomenon of churches owning their own investment portfolios in the UK, the USA, and Australia. However, other investors did not comply with associating ethical as a suitable term for investing (Sparkes, 2002). Sparkes (2001) projected that ethical investment as a concept could be used for the non-profit organizations, environmental groups, and churches since they would be acting based on values. Ethical investing would not fit for the management funds and companies that were based on esteeming the profit-maximization aspect with their investment decisions (Andersson, 1996). In the 1990's the ideology of SRI focused to concentrate on sustainability development of the companies' environmental actions (Richardson, 2008; Brundtland, 1989).

SRI was utilized to set the acceptable threshold for companies to operate but was subsequently conducted to take both the positive and negative actions into an account. Originally, the negative criteria were more frequently used because the positive factors were more difficult to agree on and evaluate. (Schepers & Sethi, 2003.) The protocol of negative screening excluded investing in harmful industries, for example in alcohol, tobacco, gambling, or companies with a poor performance regarding work safety or violation of human rights. After screening companies were evaluated with a traditional financial and quantitative selection (Renneboog et al., 2008). Overall, it is notable to recognize that all investors do not consider the stock to be green or socially responsible. If a part of the investors do not participate in owning sinful stocks such as tobacco or alcohol, the prices of the shares would theoretically be relatively cheap in terms of price to book or price per earning measures. Therefore, they could create a good investing opportunity for the neutral investors. Neutral investors are not incorporating into their investment decisions additional information of the social responsibility. (Hong & Kacperzyk, 2009.) The growth in SRI has advanced due to countries developing their own legislation and pressure from the current and future beneficiaries. The turning point in the investment area could be set when the UK required all pension investment funds to adopt SRI. (Solomon et al., 2002.) Since there were no clear classification, SRI was introduced with funds being classified as "green" and promoting the idea of industries of the future which would provide a dual benefit throughout sustainability and its long-term growth possibilities or by screening and avoiding investments in the "unethical" companies (Sparkes & Cowton, 2004; Mansley, 2000).

Adapting SRI into investment choices, theoretically, could be expected lower the risk of the investment, and this could possibly lead to investors adapting to lower returns (Sparkes & Cowton, 2004; Lewis & Mackenzie, 2000). The risk-optimization goes along with the traditional approach to investing and combining both the financial and SRI criteria (Sparkes & Cowton, 2004). However, the negative screening and avoiding certain industries would limit the sectors and diversification, investment funds started to adapt to "Best in Class" which intended that all sectors can be included in the investment portfolios, but the investors' would only choose to invest in the companies that are making the most effort in improving social responsibility (Solomon et al., 2002). This is utilized by using positive screening of the companies and their actions compared to their peers and selecting companies which complies the CSR standards in a superior manner (Renneboog et al., 2008). Alternative resolution for investors to invest responsibly, is to act through an engagement, in which they would use their ownership rights to influence the company's actions and decisions (Friedman & Miles, 2001).

SRI drivers can be divided to external and internal drivers. Externals drivers include governmental actions, non-governmental organizations (NGOs), increased interest in CSR and company's reputation. Internal drivers involve a more individual perspective by the funding managers and disclosure requirements, and these may pressure investors regarding funds, investment trusts, banks, and insurance companies to practice SRI (Solomon et al., 2002). For instance, whether the company participates in socially responsible actions, it is indicated to possibly affect the relative cost of capital (Sharfman & Fernando, 2008; El Ghou et al., 2011). Investors' motivation for SRI is studied to be the most apparent when combined by in cooperation the financial and non-financial motivations (Bea et al., 2005; Mackenzie & Lewis, 1999) whereas others find it to be identifying individualistic impediments and some as a regulatory framework (Renneboog et al., 2008b; Sandberg et al., 2008).

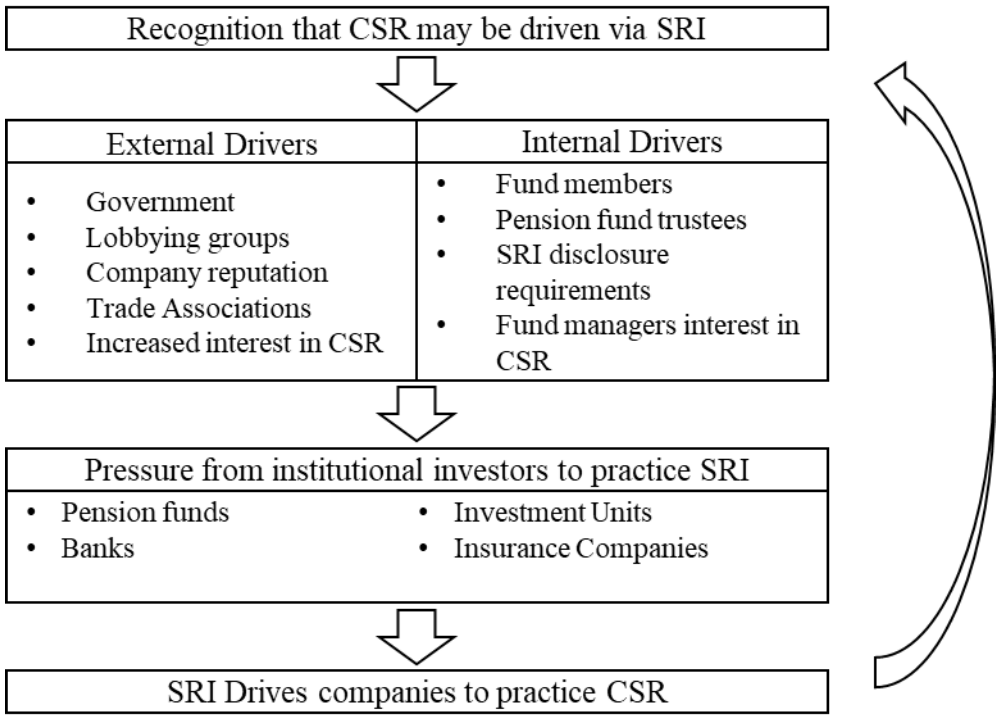

Figure 2. Drivers of SRI and its Role in CSR (Adapted from Salomon et al., 2002).

Short-term perspective weighted the monetary incentives of the company's performance more instead of the long-term maximisation. Even if the trade-off cost would reduce the profits for the shareholders in the long term. This created the original idea that CSR is a function of the long-term perspective of maximizing profits intertemporally, and the long-term market value cannot be maximized if the company mistreats or ignores any of its stakeholders. (Bénabou & Tirole, 2010; Jensen 2001). The idea of strategic welfare was introduced by Baron (2001) study in which the socially responsible actions of the company could strengthen the company's market position, and therefore, increase the long-term profitability. Related stakeholder theory will be discussed later in more details.

SRI are screened amongst the three ESG parameters of environmental, social and governance manners which are often evaluated by specialized contractors (Brooks & Oikonomou, 2018; Camilleri, 2015a, Camilleri, 2015b). ESG stands for the three categories of environmental, social and governance. Environmental factors are measured by greenhouse gas emissions, pollution, use of renewable energy and wastewater disposal, social measures the humanly practices towards their employees

and stakeholders and governance emphasizes the company structure, long-term strategy, and value of the company, (Mihail et al., 2021; Agarwal et al., 2023.)

Investors utilize SRI and ESG measures differently, part use them to lower the perceived risks and possible to improve returns and others focus solely on sustainable development (Brooks & Oikonomou, 2018; Leite & Cortez, 2015; Humphrey & Lee, 2011). ESG analysis of the companies consists of the evaluation of the benchmarks and engagement strategies and while SRI funds outline the investment strategies, screening criteria and voting policies that they require (Leite & Cortez, 2014). The amount of the ESG data has increased significantly which has resulted investors and analysts to utilize additionally the untraditional and non-financial data for their evaluation processes (GRI, 2019; Diouf & Boiral, 2017). Even with the gained knowledge and extended amount of available data, investors frequently retain to balanced portfolios containing a variety of different industries. If the investors are constructing their investing decisions by using screening and "Best in Class" diversification, they may still invest in controversial industries. (Camilleri, 2021.) The ideology of classifying companies based on their ESG performance is still mixed. Cornell (2021) rationalizes if there is a premium for being green, it would lower the discount rate that companies are valued at and raise their valuation compared to the low performers. This ideology could cause the company's market valuation to be higher and the neutral investors would then expect a lower rate of return on their investments because the initial investment is more expensive.

Milne and Gray (2013) question a criticism on the companies' CSR practices that are limited to issues of themselves since they rarely consider a systemwide sustainability issues of poverty, social justice, and ecosystem degradation. The issue of measuring CSR actions is the providing a measurable and consequently a more controlled framework in which data can be utilized for activities throughout the value chains that include all stakeholders, even the society and environment (Searcy, 2014). Verheyden et al. (2016) summarizes that the notable impact of the ESG practices is to improve risk-adjusted returns and its' volatility for the extreme negative impacts. Mostly, SRI funds are found to be less sensitive when measured by their market performance (Renneboog et al., 2008; Bialkowsi & Starks, 2016). Findings by Flammer (2019) and Godfrey et al. (2008) summarize CSR actions to possibly increase the firm value,

reduce emissions, offer a more opportunities of “green” investments and provide a shield like effect when facing a negatively impacting events in the market.

The studies regarding SRI and stock market performance are relatively mixed due to receiving positive, neutral, and negative results depending on the study (Revelli et al., 2015; Chequt et al., 2011). Several SRI investment studies are related to portfolio performances, and this may cause measurement issues if the SRI portfolios are similarly composed compared to the conventional funds (Chequt et al., 2011). Correspondingly, the issue of measuring SRI or ESG absences a global standardization, transparency, and independence to provide a comprehensive framework. It should be noted that the idea of sustainability and what should be considered as sustainable is constantly evolving (Billio at al., 2021; Windolph, 2011).

2.3 Principles of Responsible Investment

Principles of responsible investment (PRI) is a curated outline by the United Nations to guideline companies integrating ESG factors to their decision-making processes and practices. PRI investor association was founded in 2005 to promote the six principles regarding incorporating ESG issues into decision-making processes, actively issue ESG policies and practices, disclosure of ESG matters, promote the principles for future investments, work in cooperation to enhance effectiveness of responsible investing and report their progress towards the signed principles. PRI has disclosed to include over 3400 signatories which manage assets of over 121 trillion USD in 2021. PRI advocates the idea of responsible investment by the markets’ needs of ESG factors and their possible association on risk and return, demand for transparency for investments and better regulation for ESG factors. (Principles for Responsible Investments, 2021.)

The growing demand for global recognition and frameworks is increasing the demand for SRI (Louche, 2009; Gifford, 2010). Investors perceive SRI to construct a part of the value creation (Crifo & Forger, 2013) but the organizational and normative legislation is considered to communicate company level sustainability to the stakeholders (Majoch et al. 2014; Eesley & Lenox, 2006). However, the regulators have questioned are the investors and asset managers using the information correctly

(Dikolli et al., 2022). For instance, the European Union has agreed on the Sustainable Finance Disclosure Regulation (SFDR) to standardize reporting and require more open disclosure of asset managers (European Parliament, Council of the European Union, 2019). Study of the USA's institutional investors by Gibson et al. (2021) found that PRI signatories portfolios do not differ from un-signed portfolios, and this may be explained that commercial incentives for PRI may be higher outside the USA and a clear regulation could be absent.

PRI signatories which received a low ESG rates tend to exhibit a weaker incentive to change their alignment and thus continue to underperform. This supports the theory of agency costs and asymmetric information, and it is notable that these signatories still use ESG related terminology on their websites. (Liang et al., 2021.) The study by Kim and Yoon (2023) compared the influence of the PRI engagement after joining the signatory and the results showed little to none difference in their actions. The funds inflow was on the same level before and after, fund-level ESG performance did not improve, and the return level of fund's PRI portfolio did not increase. These results may suggest that PRI signatory could be used to greenwash the funds actions and implementation. There are mixed findings of the PRI signatory effecting the proposals for environmental and social decision-making. Dikolli et al. (2021) study found that signatories support E & S proposals more often, but Kim & Yoon (2021) resulted that the shareholder proposals are only brought up, but management almost certainly votes against them.

2.3.1 GSIA as a Sustainable Investing Framework

The Global Sustainable Investment Alliance (GSIA) is an international organization which has focused on creating visibility of sustainable investing and providing visibility globally (GSIA, 2020). The current impacts on the sustainability have been led by the Paris Agreement and the United Nations Sustainable Development Goals which have showcased the potential both in the short and long term for financial investment opportunities (GSIA, 2020). United Nations Framework Convention on Climate Change (2023) has created the The Paris Agreement as a global agreement within 196 parties with the goal to limit the temperature rise. Its implementation requires an economic and social change by each nation with nationally determined

contributions that have been created with the best available science. The Paris Agreement has set guidelines for climate finances since the investments required are large scaled and financial assistance is necessary between the more developed and less endowed countries. (United Nations, 2023.)

GSIA (2020) has defined the seven focal themes for sustainable investments which includes ESG, corporate engagement, norms-based screening, negative screening, Best-in-Class screening, sustainably themed investing and investing among an impact within communities. The ESG integration considers the three factors of environmental, social and governance and interprets as an addition for financial analysis. Corporate engagement consists of the shareholder power that has influenced the company and its board or management. Screening with norms-based considers how the investments meet the minimum standards for the business set to achieve international transparency by United Nations (UN), The Organization for Economic Cooperation and Development (OECD) or International Labor Organization (ILO).

GSIA (2020) has utilized negative screening for investing by creating exclusions for funds and portfolios by setting a criterion based on the values and norms to product categories, for example of tobacco and weapons, or due to the controversial practices of the company, for example due to corruption or violation of the human rights. Positive screening is done by the opposite, and it includes the investments that have a positive ESG performance compared to their peers. Investing with a sustainable theme is conducted by choosing the asset by its contribution to environmentally or socially sustainable solutions. Impact investing has been classified as the investment that achieves a positive social or environmental impact whereas community investing is directed towards underserved individuals or communities (GSIA, 2020; Billio et al., 2021). Silva & Cortez (2016) gave an example of a clean energy investment that will likely involve negative and adverse effects on flora and fauna and would cause long-term issue for the environment and thus cannot be classified as an impact investment.

The development of sustainable investing has grown globally by 15% during the years 2018-2020 and the whole contribution of total assets under management with sustainable investing has reached 35.9% and converted to USD is 98.4 trillion by the year 2020 (GSIA, 2020). According to the GSIA (2020) report, Europe has changed

its legislation during the follow-up period which is the only declining area which may be due to difficulties in the measurements. ESG integration is globally the most used type for sustainable investing, and it is followed by exclusionary screening as the second most common.

2.3.2 The Sustainable Development Goals

The Sustainable Development Goals (SDGs) is a newer framework conducted by the United Nations in cooperation with the private sector to provide a shared value creation model for increasing positive impacts regarding for example poverty, health, quality of living and reducing negative activities such as pollution, violation of human rights and unnecessary consumption (Schonherr, 2017). SDG number seven is to "ensure access to affordable, reliable, sustainable, and modern energy for all". This goal objects to issues of the rising population and economic growth due increase in the demand for energy and energy systems' resiliency to handle the economic and environmental shocks. The issues regarding energy must be improved and the focus is already on the year 2050 goals which are aiming for net zero or decarbonized systems. (United Nations, 2021.) The amount of sustainable energy is estimated to only reach 21% of all consumption in 2030 and this is affected directly by the investments into green technologies and micro and macro level economic policies which are needed to achieve both short and long-term goals (United Nations, 2018). SDG implementation globally requires national level policies and standards to be used but the change can be executed within businesses, industries, and civil society (Bowen at al., 2017).

SDG is built on the Millenium Development Goals that were not achieved and the framework was targeted to countries' government and the public sector, whereas SDG is meant to broaden the participation into the private sector by including new partnerships (Marx, 2019). The ideology of the framework is to provide a general framework and goals that interfere with each other. For instance, education significantly reduces the carbon emissions by increasing awareness and shifts behaviour regarding energy consumption to consume less and more savingly (Zafar et al., 2021). Environmental evaluating of the impacts is still needed to delimit the purpose and ambition for the context (Maas et al, 2016) and consider the factual boundaries for environmental and social systems (Whiteman et l., 2013). The

implementation of SDG to CSR still needs development of clear indicators for utilized data and creating straightforward valuation factor for stakeholders and how the results are used in action to develop companies' actions (Searcy, 2014; Hörisch et al., 2014).

2.4 Application of ESG Rating

Utilization of the ESG ratings has provided efficiencies to compare the companies and their sustainability actions compared to the more traditional screening methods and Best-in-Class practices since they require supplementary resources and extensive research (Dorfleitner et al., 2015). The companies' own non-financial disclosures can cause the issue of absence of quality and completeness of the company's actions if the companies report only within the minimal required level (Niskala et al., 2019 p. 56-57, 108-112). ESG ratings can be interpreted as an additional information for the stakeholders, comparative to credit ratings, to support the decision making and evaluation of the company for investors (Puttonen & Puttonen, 2021).

The increasing demand to measure CSR performance has steered the sustainability measures to have multiple frameworks and similarly ESG measures provided by different agencies have a variation in their measurement methods and characteristics. Refinitv, MSCI KLD, MSCI MSCI, Sustainalytics, Moody's and Standard and Poor's (S&P) divergence was studied by Berg et al. (2022) and their study conducted that measurement differences explain 56% of the divergence, measurement scope contributes 38% and weightings have the least impact by around 6%. The accuracy between the different agencies varied between 79-99%. Gibson et al. (2019) observed the governance measure to have the biggest variation and environmental results were the most similar between the different agencies. Their study emphasized that environmental rating disagreement could raise the capital allocation costs and that disagreement levels variate between different industries. It should be noted that due to differences in measurements, companies' actions may affect only some agencies ESG measures and overall ESG agencies need higher transparency and comparable information similarly to CSR measurements (Berg et al., 2022). ESG investing and its effect on earnings ratios, idiosyncratic risk and valuation has been examined by Giese et al. (2019) and their study found that ESG itself did not have enough statistical

significance to explain the financial performance, but it was more effective when combined with traditional factors used in finance.

Refinitiv has utilized in their ESG rating data framework to gather information of the companies ESG execution, integration and it calculates industry related materiality issues and biases. The environmental, social and governance matrix includes the main categories and is then further on divided into different themes that have a different weighting when calculating the final pillar scores. (Refinitiv, 2023). However, it should be noted that larger companies usually provide more ESG related data that might be related to higher visibility and the higher publicity leads to public pressure from stake- and shareholders (Hörisch et al., 2015).

Environmental pillar includes the three categories of emission, innovation and used resources. These emission subcategories aim to measure the emissions incorporating waste, biodiversity, and environmental management systems. Product innovation, research and development, capital expenditure among the green revenues area a part of the innovation category. Use of resources includes water and energy usage, packaging, and environmental aspects of supply chains. Social pillar includes categories regarding community, human rights, product responsibility and workforce. Community score is a measure of how the company has affianced to good corporate citizenship, ensuring public health for its stakeholders, and following good business ethics. Whereas responsibility score estimates how the company is capable of producing quality goods and services while incorporating to its processes data privacy in addition to health and safety of the customer. The workforce is a measure of the company's efficiency within job satisfaction, development possibilities, workplace safety and creating an equal opportunity for its personnel while simultaneously maintaining diversity. (Refinitiv, 2023.)

The third pillar considers the measurements for governance which is formed by the combination of CSR categories measuring ESG reporting, transparency in its processes among management and shareholder related performance. Management score measures how comprehensively a company is following the best practices of governance principles. Shareholder scoring measures in the model the equal treatment towards the shareholders and monitoring anti-takeover actions in the markets.

(Refinitiv, 2023.) ESG factors create a multipoint perspective to evaluate the company's actions and the numerical estimators provide a statistically comparable data.

3 ECONOMIC THEORIES AND THE ROLE OF ENERGY SECTOR

The following chapter focus on explaining the development of financial incentives and explaining the differentiating aspects of investors' actions from traditional asset pricing theories and strictly neutral investors. The chapter aims to explain the different phenomena along traditional profit maximation and possibilities of how sustainability and ESG measures could be used to achieve additional profits or lowering the risk or volatility of the investments. The chapter examines first the traditional asset pricing models adaption with a behavioural aspect and its contribution to perceive risk. Stakeholder theory examines the perception of different stakeholders' relation to the company's actions and follows by agency theory which observes the asymmetric distribution of knowledge. Lastly, the chapter examines energy sector from the shareholders perspective.

3.1.1 Behavioural Asset Pricing and its Association with Risk

The original asset pricing model assumes that value of the company and its shares equals to the present value of the expected future cash flow and if the price differs, the markets will immediately react to the mispricing and arbitrage corrects the pricing. The neoclassical models are based on the Morgenstern (1994) utility theory and investors preference to maximize their expected utility (Nanaykkara et al., 2019). The ideology then morphed incorporating the Markowitz's (1959) portfolio theory which describes the efficiency to be achieved when portfolio has the highest possible expected return for given risk or, vice versa, the least risk for aimed level of returns. The risk is measured with the standard deviation of variance, and this gives theoretical efficient frontier of portfolio options to choose from to maximize expected return comparing the level of risk. Portfolio theory rationalizes the ideology of maximizing utility, and that correlation of assets can be utilized to enhance benefits for diversification. (Markowitz, 1959.)

Capital Asset Pricing Model (CAPM) established by Sharpe (1964) followed the well-known portfolio theory by creating a model for the stock returns which emphasized the relationship of risk and return for investments. CAPM consists of the risk-free rate which investors can earn without a risk for instance through governance bonds and

augments the systematic market risk which cannot be diversified away and specific unsystematic risk that is unique for each asset and can be diversified away (Sharpe, 1964; Lintner 1965.) The introduction of beta into the asset pricing measures attaches the sensitivity of the asset compared to the systematic risk which is used to measure movement of the asset compared to the whole market (Fama & French, 2015). Yet, Nanaykkara et al. (2019) concludes that traditional equity pricing models are not aligning with multiple different puzzles such as equity premium puzzle by Mehra and Prescott (1985), excess volatility by Shiller (1989) and Fama and French's (1998) issue of predictability.

To rationalize the element of information and its importance with investment decisions, Fama's (1970) Efficient Market Hypothesis (EMH) provides is a very traditional theory in finance. EMH is based on an ideology for the price to reflect all of the available information in the markets and the market equilibrium is formed with expected returns and this would create a situation of fair game when investor cannot gain additional profits. The efficiency in the theory requires all market participants to have a costless access to all information, there are no transaction costs for trading and all parts reflect the current information on the future prices of the security (Fama, 1970). The hypothesis relies on the idea of a random walk, in which prices would only reflect the current and newest information and therefore act in an unpredictable manner, but the psychological and behavioural elements were incorporated in later studies. The original theory rationalizes that the stock-prices could be predicted at least to some extent and enable excess returns compared to the risk (Malkiel, 2003). Malkiel (2008) later provided results that even though EMH does not hold in its original form, it has provided information that markets react effectively to new information and support the pricing information that is then provided.

The complement the EMH, the environmental and social aspect can be reproduced through of the inefficiencies where the pollution and discharge of the harmful substances involves inefficiency or incomplete usage of resources. Therefore, the sufficient use of resources does not generate the highest possible value. Thus, if the inefficiency and or incomplete use of resources can be limited it would benefit the environment and companies' profitability and therefore also the shareholders. (Porter & Linde, 1995.) The companies could use socially responsible ways to operate and

still maximize profit by minimizing the inefficiencies and creating possible advantages compared to the competitors in the market.

Behavioural finance theories are not replacing the fundamental ideology of traditional asset pricing, but they should be used as complementary addition for the classical theories of financing (Subrahmanyam, 2007). The noise trader theory by Black (1986) consists of the idea that irrational traders cause noise in the markets as they falsely create information. This creates inefficiency into the markets that increases costs and risks. (Shleifer & Vishny, 1997.) However, it is notable that part of the investors systematically acts differentiating from the expected utility theory and their risk awareness by not trying to maximize their profits compared to the risk (Barberis & Thaler, 2003). Traditional assumption of markets being information efficient was questioned by De Bondt and Thaler (1985) with their overreaction hypothesis in which they experienced that people overreact to unanticipated news. Behavioural approach to finance highlights the association of expected risk and return (Soppe, 2004).

The Prospect Theory by Kahneman and Tversky (1979) adds an individualistic approach and framework for the loss aversion. This is due to people being more sensitive when losing money opposed to gaining it and diminishing sensitivity in which gaining or losing additional proposition goes down when the possibility of abnormal profits increases enough. The theory discusses the difference between risk aversion and seeking by preferring smaller profit with more certainty and risk-seeking among riskier options with the higher possibility of losses. The effect of framing conceptualizes how people make different choices regarding on how the decision is framed even though the outcome and their probabilities are the same. (Kahneman & Tversky, 1979.) Frederick's (2005) study of cognitive reflection and decision-making emphasizes the differences of individual´s moral and preferences which explain why people and investors make different choices compared to the traditional utility theory. Decision makers who require overall a high quality within standards and expectations regarding their social values, have overall higher standards for their investments and their CSR performance (Hafstrom et al. 1992). The negative CSR actions could be perceived to have a higher possibility for costly damages and therefore be neglected from responsible investment portfolios (McLahlan & Gardner, 2004).

Bollen (2007) studied the relation of SRI funds during 1980-2002 to have a substantial response to positive returns and smaller response to negative returns than conventional funds. Investors need to gain some sort of utility if they invest according to their beliefs rather than just maximizing profits compared to the risk (Statman, 2004; Bollen, 2007). Nofsinger & Varma (2014) studied the performance of SRI funds during 2000-2011 and the SRI funds outperformed conventional funds only during the financial crisis and the asymmetric return pattern could be used to seek downside protection in the market. This theory is also supported by the findings of Michaelson (2004) and Tippet (2001) that a portion of investors are willing to compensate part of financial returns for non-financial returns.

Milton Friedman's doctrine (1970) focused on the classical view where companies should only focus on creating value for their shareholders and owners of the company, since the company itself cannot act as an individual who is responsible for others. Friedman highlights in his disapproval that responsibilities to shareholders are achieved when the company maximizes profits complying with the laws since doing more than required would cause a conflict of interest with shareholders. Davis (1973) reasoned that companies' resources and capabilities are limited and thus CSR is not the businesses' responsibility to solve.

3.1.2 Stakeholder Theory

Freeman's (1984) Stakeholder theory is frequently the key approach for the environmental and social sustainability management research (Frynas & Yamahaki, 2016; Montiel & Delgado-Ceballos, 2014). The prominence of recognizing the key stakeholders was introduced by Ansoff's (1965) classic book of corporate strategy but the ideology concluded how the stakeholders were a constraint, but Ansoff rejects the hypothesis due to unusefulness. Systems and organization theory has a complex background and sets the similar ideology that was adapted into the stakeholder theory. (Freeman et al., 2010). The theory implies that external links are a part of every company and organization, hence working as a network with collective strategies would be needed to optimize the whole network or the so-called open system (Ackoff, 1970, Ackoff 1974). Later, the term stakeholder was defined by Freeman (1984; 2010)

as the group or individuals that can affect or are affected by the actions of the company and its value creation and trade.

Donaldson and Preston (1995) acknowledged that the stakeholder theory can be diffracted to descriptive theory for management to identify the relevant stakeholders, instrumental theory of management's achievements of corporate objective and integrative theory that combines all the versions including the original stakeholder theory that is also referred as normative. The idea of managing stakeholder relationships is criticized for treating all stakeholders equally (Gioia, 1999; Marcoux, 2000), but Phillips et al. (2003) implied that the theory does not indicate that all stakeholders should be treated equally. The stakeholder theory's core ideology is the generated shared interests within different stakeholders rather than focusing on the idea of trade-offs and maximization of utility (Hörisch et al., 2014). The focus of stakeholders incorporates the idea of companies' need to act respectively towards all of their stakeholders instead of shareholders.

Freeman et al. (2010) devotion on stakeholder theory is supposed to provide a flexible strategic framework for management rather than for strategic planning which would shift the focus from predicting market environment and preparation of the company's position and direction. Compared to the traditional idea of companies' requirement to maximize their shareholders' wealth, the stakeholder theory implies to balance all stakeholder relationships and consequences of the company's actions towards them in the long term. Stakeholder theory expands the scope of companies and their social independence to create value for all stakeholders (Freeman et al., 2010.) by widening the scope of how largely companies' actions affect others (Pedersen at al., 2013). Whereas the similarity with corporate sustainability is the demand of companies to contribute towards sustainable development of the economy and society (Schaltegger & Burritt, 2005, p. 195). Both theories expand the traditional maximization of shareholder value and profits in the short-term but widens the abilities, obligations, and possibilities for the companies into a long-term perspective (Hörisch, et al., 2014).

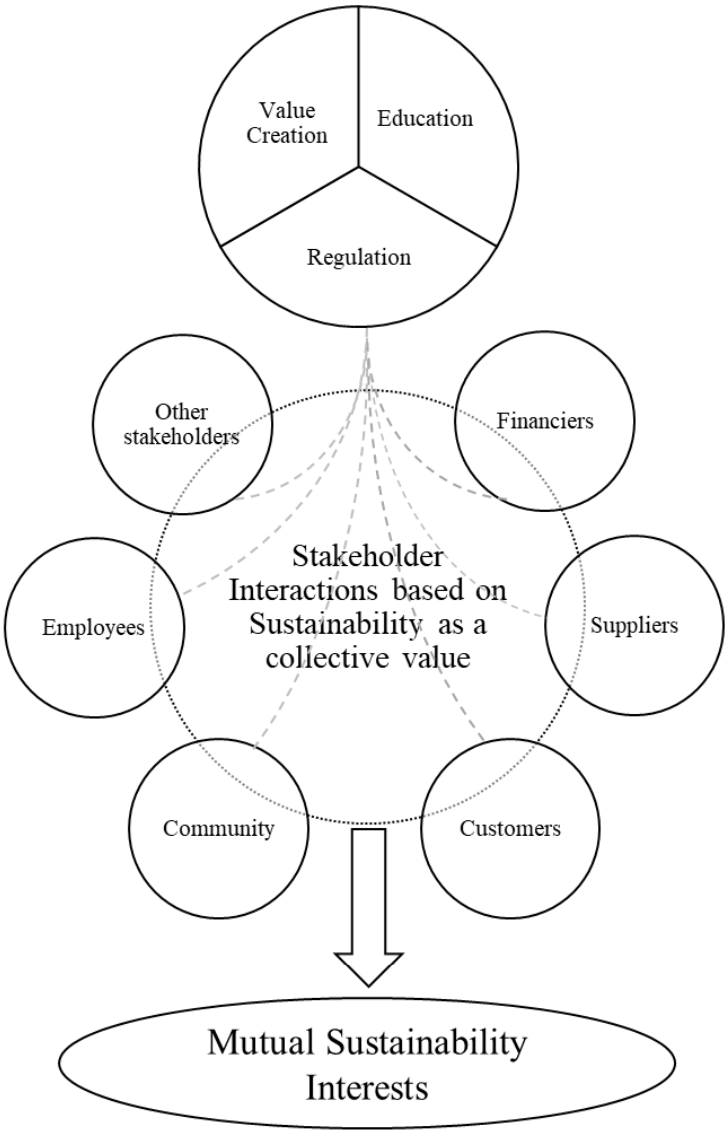

Figure 3. Framework of Stakeholder Approach to Strengthen Sustainability Actions (Adapted from Hörisch et al., 2014).

Stakeholder theory and companies' sustainability management combined creates an added value for the stakeholders whilst contributing to the sustainable development regarding social and environmental issues (Freeman et al., 2010; Kolk & Pinkse, 2007). Freeman at al. (2000) comments on the issue of value-based capitalism and that sustainability is one of the values for all stakeholders to consider in their decision making. Business models must be reconceptualized that value creation is done in a sustainable manner (Székely & Knirsch, 2005) and both concepts reject the ideology that companies could use compensation and philanthropy to redistribute their unsustainable actions (Hörich et al., 2014). CSR and stakeholder theory both augment

a long-term perspective, in which the companies must act responsibly in a long-term time horizon. Companies' way of operating in the short-term within financial and sustainability goals is still a necessity to operate and participate in the markets (Albrecht, 1994). The stakeholder perspective follows the previously introduced models and frameworks by emphasizing financial performance to nonetheless stay as the basis requirement and other requirements are only then achievable. Hillmann and Kleim (2001) resulted stakeholder management to enhance the value that key stakeholders, e.g. personnel, customers and supply chain perceive and enable competitive advantage in addition therefore improved financial performance. Reported ESG performance can be perceived to legitimate the stakeholders needs to communicate sustainability and way of operating to prevent the riskiness and its role in the governance of the company (Li et al., 2021).

The Salience theory is an addition to the stakeholder approach of how the attributes of power, legitimacy and urgency affect significance or importance of stakeholders to the companies. Power could be noted as how strongly the stakeholder, or its actions can affect the company. Legitimacy illustrates the validity for company's actions regarding risk or social expectations and urgency provides order to prioritize stakeholder's needs and response to those. (Mitchell et al., 1997). Most companies justify environmental actions due to competitive advantage and compliance reasons, but the companies' own CSR reports are not directly comparable to other companies (Jose & Lee, 2007).

3.1.3 Agency Theory and Asymmetric Information

Agency theory by Jensen and Meckling (1976) can be utilized additionally for the shareholder theory to identify the complexity of the stakeholders. Agency theory is conceptualized under the agency relationships in which the principals engage with the agents that provide services on their behalf which shifts authority of decision making to the other. The principal may limit the divergences from their original interests and limit the unwanted actions of the agent, but this increases agency costs for the principal. Agency costs are defined as the summary of expenditure monitoring, expenditures for bonding with the agent and the residual loss which is the measure of welfare loss that is caused by the issue. The issue is originally within the principal which can be thought as the shareholders and agents that are the management of the

company. In addition, also the debt and equity that is provided outside of the company which have also different needs and preferences for the company and its actions. (Jensen & Meckling, 1976.) The issue of conflicting interest arises from the conflicting behaviours of utility-maximization capital investors with the principal and other stakeholders (Drover et al., 2014).

The agency relationship and their differences are caused by asymmetrical information in which one or more parties have either more or better information available compared to the others. The difference in information levels can cause a moral hazard, in which the agent that has more or better information available. This may differ with their actions from the principals' interests, or the information has changed and caused adverse selection of knowledge and it is not communicated towards the principal. (Cilibretti et al., 2011.) Agency theory compared to Fama's (1970) ideology of companies to act only towards their own profit maximization and thus for monitoring and rewarding can be used for agents to act towards their principal and their preferences, but these results therefore add the cost of the residual for the companies (Eisenhardt, 1989).

CSR engagement is considered by Barnea and Rubin (2010) between the principal and agent relationship of shareholders and managers to influence the corporate governance with possible over-investing in CSR if it provides personal reputation benefits for the managers. Corporate governance is defined by Cadbury (2000) as the system that is used to control and direct the company whereas Jensen (2002) and Aguilera at al., (2007) provides in their studies that CSR is linked closely to corporate governance which are part of companies' moral and ethical contributions to the stakeholders. The issue of "green talk" without actual actions is a misleading way to engage and communicate towards stakeholders (Brunton et al., 2017).

3.2 Financial Performance in a Relation to Economic and Environmental Communication

Ullmann (1985) studied the association of social disclosure to social performance, social performance to economic performance and social disclosure compared to economic performance. Social performance measures company's responses compared

to expected social demands (Strand, 1983). Social performance and its relationship to economic performance is rather complex but based on a hypothesis that positive correlation is explained by that company effectively met their stakeholders' social demands which would reflect on the firm's stock price and systematic risk (Ullman, 1985). CSR and ESG performance were shown to affect the downside risks of stock price by inhibitory with asymmetric stock return distribution (Chen at al., 2001). This is supported by De and Clayaman (2015) results of strong ESG performance and stock volatility to have a strong negative correlation.

Bradgon and Marlin (1972) utilized pollution performance as a proxy in their study for social performance which showcased positive correlation with average return on equity (ROE), return on capital (ROC) and earnings per share (EPS). The findings were supported by Spicer (1978a, 1978b) studies where higher profitability, lower risk and larger firm size were associated with a better pollution performance. The reduction of toxic emissions was found to increase firms' market value (Konar & Cohen, 2013). The relationship of CSR and corporate value was significantly positively correlated in the empirical studies of Cochran and Wood (1984). However, the Hong & Kacperczyk (2009) study of "sinful" stock such as alcohol, gambling, and tobacco industries earn significantly positive alphas for their profitability. But again, opposing findings of higher alphas for portfolios with high CSR ratings has been done by Kemp & Osthoff (2007) and Statman & Glushkow (2009) among with Edmans (2011) findings of firms that were listed within the best 100 of best companies to work for in the USA had also higher alphas.

The social disclosures' association with economic performance is to measure does the markets react to the information and are there indicators in risk regarding the expensive social performance issues for example fines or social sanctions which could expand attached overall risk for the company. Based on the Fama (1976) efficient market hypothesis, there were still relevant questions of how the information was utilized in the markets and it was dependent on the size, industry, and company visibleness (Ullmann, 1985). Nonetheless, later the studies found to have too small samples to provide statistically markable proof (Al-Tuwajiri, 2003), however the concept was still supported by Narver (1971) finding that firm's social responsibility can reduce the risk that company faces in the markets. To support the ideology of finding inefficiencies,

Feldman (1997) noted that improving operating efficiency with environmental control can benefit companies without increasing the cost of environmental management. The studies have presented that companies which have received an environmental performance award, gain significant positive abnormal returns and negative returns if it faces a public environmental crise in both developed and developing countries (Klassen & McLaughlin, 1996; Dasgupta et al., 2001).

Al-Tuwajiri (2003) researched based on Ullmann's conceptual framework to study jointly effects of environmental disclosure, environmental performance, and economic performance to answer the original questions of "is going green good for profits?". The study is based on measuring environmental disclosures which refer to pollution and occurrence information for example toxic waste emissions and environmentally hazards accidents that might be affecting investors estimates of future cash flow (Al-Tuwajiri, 2003). When companies' ESG performance is valued by the shareholders in the desired direction with public reporting, it increases the future value evaluations of the firm and similarly the weak performance decreases them (Mervelskemper & Streit, 2017; Fatami et al., 2018). The study by Murray et al. (2006) found that companies with high returns are expected to have a high voluntary social and environmental disclosure and vice versa, low returns have lower disclosures. The data is inconsistent with year-to-year level and does not hold in the long term to explain the higher or lower returns. Pástor et al. (2022) found a correlation between stock's greenness and its return but accounting climate-concern shocks, they fully explain the relation among with industry-level greenness outperforms within-industry greenness and the industry has overall relatively significant impact.

Al-Tuwajiri's (2003) study found that economic and environmental performance relation is statistically significant and extensive environmental quantifiable disclosure is positively associated with a good environmental performance. This supports the Porter and Linde's (1995) hypothesis of reducing inefficiency that is associated with pollution enhances the competitive advantages within industrial and environmental manners and shifts the focus on opportunity costs associated with the environmental pollution. Good environmental performers have provided additional level of environmental related information compared to the poorer performers. This supports the discretionary disclosure theory that companies which are classified as good

performers are more outspoken in their performance. (Al-Tuwajiri, 2003). Sustainable stocks could be used to hedge against climate shocks to comply with the risk and include a negative premium if the investor preference is averse to climate related shock (Pátron, 2022). Zhou et al. (2022) study showed that ESG improvement can be beneficial for the operating capacity which can then lead to an improvement of market value but has no effect on the profitability or growth prospects.

Previous studies have shown the stock market to respond positively for companies' environmentally responsible actions (Flammer, 2013; Klasse & McLaughlin, 1996; Kruger, 2015) by utilizing green bonds to confirm their environmental actions with a positive market reaction and stronger reaction towards green bonds (Flammer, 2021). Flammer (2021) finds green bonds to be more utilized in industries where environmental is considered as a resource material for the company, for instance in the energy sector. However, there does not seem to be a pricing difference for the green and normal bonds, and it supports the findings of Larcker and Watts (2020) by resulting that investors would not accept a lower yield for sustainable bonds. When using pollutants as a measure for the environmental performance, it was found that companies with a lesser amount of pollutant emissions had similarly a better profitability (Telle, 2006.). Study of Iwta & Okada (2011) conducted in Japan, provided however variation between different environmental performance measures affect the company's financial performance. The companies' action that had the most effect on profitability was reducing greenhouse gas emissions and the least impact was with reducing waste discharges. It is remarkable to note that the difference was significant statistically only in the whole sample and companies that were classified as clean but not in the ones that were categorized as polluting (Iwta & Okada, 2011). Bolton and Kacperczyk (2021) found a risk premium for high carbon emissions which suggests that investors would be concerned about the carbon risk.

3.3 Energy and Utility Sectors

Panwar et al., (2011) classifies the renewable energy sources to include solar, wind, water, geothermal, modern biomass, and hydropower. Renewable technologies are often considered as clean due to decreasing environmental impacts and minimizing amounts of secondary waste. They provide opportunities to lower the greenhouse gas

emissions and reduce global warning by replacing fossil fuel-based energy sources. It should be noted that renewable energy sources still provide emissions which is around 50% during the production process compared to fossil-fuel based energy methods (Bölük & Mert, 2014). Within the oil and gas extraction industry, older and larger companies tend to have more CSR information and utilize their leadership reputation within the industry (Hughey & Sulkowski, 2012).

Table 2. Energy and Utility Industry Classification

Industry number	Industry	Sub-industry	Fossil/ Renewable
101010	Energy Equipment & Services	Oil & Gas Drilling	Fossil
		Oil & Gas Equipment & Services	Fossil
101020	Oil, Gas & Consumable Fuels	Integrated Oil & Gas	Fossil
		Oil & Gas Exploration & Production	Fossil
		Oil & Gas Refining & Marketing	Fossil
		Oil & Gas Storage & Transportation	Fossil
		Coal & Consumable Fuels	Fossil
551010	Electric Utilities	Electric Utilities	Renewable
551020	Gas Utilities	Gas Utilities	Renewable
551030	Multi-Utilities	Multi-Utilities	Renewable
551040	Water Utilities	Water Utilities	Renewable
551050	Independent Power and Renewable Electricity Producers	Independent Power Producers & Energy Traders	Renewable
		Renewable Electricity	Renewable

(Adapted from MSCI, 2023)

Renewable energy sources are distributed further evenly geographically and thus the renewable energy companies overall contribute into a more stable energy markets and lover price volatility (Owusu et al., 2016; Edenhofer at al. 2011). This study utilizes the Global Industry Classification Standard (GICS) to study energy and utility sectors. GICS allocates in its classification for the energy sector only fossil-based fuels of oil, gas and coal, and their exploration, production, storage, transportation, and equipment services. Whereas the utility sector includes electricity producers and distributors, water, wind, and renewable electricity companies. (MSCI, 2023.) This categorizes the utility sector to be considered including renewable energy companies and the energy sector consists of traditional unrenewable fossil fuel-based companies.

While integrating the TBL and ESG into renewable energy solutions, it should be noted that economic development of energy technologies is based on profits (Elkington, 1998). Policymakers can use tax policies and public funding to promote research and development (Mallett, 2007; Mascarenhas et al., 2010). Regarding funding of the energy transition, its private and public expenditure to innovation has risen and long-term economic growth must be done sustainably also for the social reasons to issue problems for example of poverty and stagnation (Lerman at al., 2021; Cavicchi et al., 2014: Islam et al., 2003).

Social aspect of the TBL theorizes how people will be affected by the actions (Elkington, 1998) and renewable energy projects affect positively employment (Omri et al., 2015), providing energy access (Chirambo, 2016) and income progression (Selfa, 2010). TBL's environmental dimension focuses on reduction in pollution, energy and waste management (Gimenez et al., 2012) and the emphasis at the moment is in the renewable energy transition (Busch & McCormick, 2014). The negative effects may include agricultural and river damage, pollution, rising noise levels, have a visual landscape impact and disturb animals and birds (Evans et al., 2009) which both can cause a social and environmental affect for different stakeholders.

Environmental economic literature had been split between the pollution haven and Porter's hypothesis (Dechezleprêtre & Sato, 2017). The pollution haven theory is based on the trade-off theory, which hypothesizes that stricter environmental policies would increase costs for unsustainable options and therefore shift energy production into less polluting forms (Levinson & Taylor, 2008). Porter and Linde (1995) theorized that stricter environmental policies would advocate companies to enhance their processes via innovation and improvements. These actions would then offset the regulatory costs that companies face. Both theories emphasize the importance of environmental regulation and policies for sustainable development. Bölük and Mert (2014) studied the impacts of EU's energy policies and noticed that the emissions did not decrease for the countries that had a high economic growth. Greenhouse gas emissions additionally increased at first but begin to diminish as the GDP continued to grow. The results show that constant economic growth needs stricter environmental policies and promotions to meet the set goals.

The asymmetric environmental policies affect companies differently depending on the location, innovation, and competition but also regarding the regulatory stringency that may differ regarding the sector. Differences studied in environmental regulations can affect the competition advantages for the companies. The relative production costs can be measured through the first-order effect by direct and indirect cost impacts. Second-order effect is the firm's response by their production volume, pricing and investments in productiveness and abatement. Thirdly, the economic outcome is the effect on companies' profitability, employment rate, and market share. The demand for the environmental regulation to limit climate change solely by enhancing performance of the companies does not allow companies to have a significant competitive advantage and incentive to operate in a more sustainable matter. (Dechezleprêtre & Sato, 2017.)

It is important to recognize that the fossil fuels, oil and gas, are generally industries dependent on their country's sustainability and credit rating since the reserves are counted as sovereign asset especially if the companies are regularly partly or fully owned by states (EY, 2014; Hoepner et al., 2016). Energy investments are thus significantly influenced by the country specific governance policies since the asset owners need to considerate their own ESG measurements and requirements into their investment processes and decisions (Létourneau, 2015; Scholtens & Sievänen, 2013, Hoepner et al., 2019). ESG factors may affect expected returns and for instance with fossil fuel-based companies and providers, the risk could be associated with the climate and regulatory shocks which renewable energy providers would not be affected by (Cornell, 2019).

4 DATA AND RESEARCH METHODS

This section explains the conduction of the empirical part of the study to examine the ESG association of the energy sector companies to financial performance. First, the section introduces deductive reasoning for guiding the creation of the hypotheses and models. The second part describes the use of Refinitiv as a database, constructing the sample and its possible limitations and industry classification. Lastly, the chapter justifies the regression models and parts of their different independent and dependent variables among binary variables and how they have been conducted.

The research question is studied by applying four hypotheses that are divided into comparing total ESG performance and separately each subcategory of ESG, environmental, social and governance. This thesis applies the performance of Price per Earnings (P/E) and Return on Equity (ROE) to compare different viewpoints to evaluate companies' profitability. Hypothesis 1 concludes broad ESG performance's relation to financial performance. Hypothesis 2 includes only the environmental performance of the companies and its association with financial performance. Hypothesis 3 includes therefore only the social performance of the company and its association with financial performance and hypothesis 4 includes only the impact of governance measures and its association with financial performance. Thus, the hypotheses are presented as follows:

Hypothesis 1: Company's comprehensive ESG score is associated with P/E and/or ROE
Hypothesis 2: Company's environmental E score is associated with P/E and/or ROE
Hypothesis 3: Company's social S score is associated with P/E and/or ROE
Hypothesis 4: Company's governance G score is associated with P/E and/or ROE

4.1 Research Methodology

This thesis follows a deductive methodology to create hypotheses to study the matter with a multiple linear regression model to study the ESG association with financial performance. Regression analysis consists of the calculation of for what degree of y-axis variable is explained by x-axis variables. Linear regression model x and y

variables are continuous if they retain a linear dependence. Dependent variable (y) is a value that the regression model attempts to explain its relationship with explanatory variables (x). Mathematically regression analysis aim is to explain or predict the dependent variables' variance with the independent, control or dummy variables. However, it should be noted that variables can have a correlation with each other which may affect the statistical explanatory power (Ketokivi, 2009. p. 86-91). This is noted in the study by calculating the variance inflation factor (VIF) to measure the impact of multicollinearity, where the factors measure how much the variance regression coefficients are inflated when dependent variables are not linearly related (Kutner et al., 2005).

This study is approached by utilizing the deductive reasoning to generalize the issue based on the previous research and what kind of variables and approaches they have used for examination. Thus, the formation of the hypotheses is created to issue the mathematical induction and to measure the possible statistical significance of the association. A multiple linear regression model was chosen to control more than one independent variable to predict the results of the hypotheses. (Aityan, 2022 p. 40-47, 392). The hypotheses which are followed by the regression models are formed to measure the financial performance and its association with ESG and its different sections. The model utilizes a panel data model of retrieved data from multiple companies included in the sample from three time periods (t). A balanced dataset includes all data points for the companies used in the sample for all three time periods which are included in the study. This model utilizes dummy (binary) values to estimate individual fixed effects based on the deductive hypothesis forming. (Stock & Watson, 2020, p. 370, 390, 511 & 185-186).

4.2 Sample Selection of the Data

This study applies a panel data sample that has been retrieved from Refinitiv database. The criterion for the sample is based on the GICS industry classification of the energy and utility sectors, there were no set geographic limitations, data is fully retrieved in USD and company has both the financial and ESG data available for the corresponding years. The sample consists of publicly traded companies. Sample is retrieved from the last three fiscal years within years 2020-2023. It should be noted that the fiscal years

for some companies differ from calendar year, but they are matched with the corresponding ESG ratings which are set on a calendar year basis. The study endorses a balanced dataset which may consequence that a company is included in the analysis only if it the company retains all data points to be available for all three fiscal years. A company is included in the sample on a fiscal year basis if it has all the data available for the corresponding years.

The data is conducted by the Global Industry Classification Standard using the industry groups of energy and utilities. The energy industry group also includes energy equipment and services which has sub-industries of oil and gas drilling, oil, and gas equipment services. The second group includes oil, gas, and consumable fuels with the sub-industries of integrated oil and gas companies, oil and gas exploration and production, oil and gas refining and marketing, storage and transportation, coal, and consumable fuels. (MSCI, 2023.)

The utilities industry includes electric, gas, water, independent power and renewable electricity and multi-utilities. Electric utilities include companies which distribute or produce electricity and may contain nuclear facilities. Gas utilities are incorporating companies which mainly transmit and distribute natural or manufactured gas but exclude storage and transportation companies. Water utilities combine the purchasers, distributors, and major water treatment systems. Independent power producers, gas and power marketing, trading and merchants are included in the independent power producers and energy traders' segment. Renewable electricity consists of the companies which participate in the generation and distribution of the renewable energy forms including for instance biomass, geothermal energy, and solar power. This sub-industry excluded equipment manufacturers and technological services. If the company is diversified by operating additionally to electric, gas or water utilities, it is noted under the multi-utilities. (MSCI, 2023.) Table 3 provides information of publicly listed energy and utility companies and the distribution of available data utilized in this study.

Table 3. Industry Categorization and Data Availability

GICS Sub-Industry	Industry Name	Companies retrieved	Data available	%
10 101 010	Oil & Gas Drilling	31	11	35.48 %
10 101 020	Oil & Gas Equipment & Services	106	46	43.40 %
10 102 010	Integrated Oil & Gas	34	27	79.41 %
10 102 020	Oil & Gas Exploration & Production	123	53	43.09 %
10 102 030	Oil & Gas Refining & Marketing	74	39	52.70 %
10 102 040	Oil & Gas Storage & Transportation	96	43	44.79 %
10 102 050	Coal & Consumable Fuels	49	19	38.78 %
55 101 010	Electric Utilities	141	82	58.16 %
55 102 010	Gas Utilities	52	36	69.23 %
55 103 010	Multi-Utilities	37	32	86.49 %
55 104 010	Water Utilities	39	20	51.28 %
55 105 010	Independent Power Producers & Energy Traders	82	31	37.80 %
55 105 020	Renewable Electricity	103	27	26.21 %
	All industries	967	466	48.19 %
	Fossil	513	238	46.39 %
	Renewable	454	228	50.22 %

*Fossil-based includes all GICS industries that are classified under main category 10

*Renewable includes all GICS industries classified under main category of 55

The final sample consists of the 466 companies that have both the financial and ESG data available for the examined three fiscal years. The data is retrieved by applying companies' recent fiscal year to be completed during year 2023 or 2022 given that all companies did not follow a calendar year with their financial statements. The study is conducted by using a balanced dataset and therefore the whole sample N is 1398 since all included companies have data from three fiscal years available. The dataset was retrieved by currency set to USD. The sampling process of the retrieved data was done by firstly limiting the data set to only include companies that had their financial information available of the fiscal year ending during 2022 or 2023 and then following backwards three consecutive years. Thus, the process followed limiting the companies to be included in the sample that had any missing data points for required financial or ESG measures utilized in the study.

Table 4. Geographic Distribution of Companies' Continents of Headquarters

Continent of Headquarter	Retrieved companies	Included in the sample	% within the industry	% in the final sample
	Panel A: Geographical distribution of renewable companies			
Africa	4	0	0.00 %	0.00 %
Americas	119	84	70.59 %	18.03 %
Asia	211	88	41.71 %	18.88 %
Europe	108	47	43.52 %	10.09 %
Oceania	12	9	75.00 %	1.93 %
Total	454	228		48.93 %
	Panel B: Geographical distribution of fossil-based companies			
Africa	9	1	11.11 %	0.21 %
Americas	208	111	53.37 %	23.82 %
Asia	156	63	40.38 %	13.52 %
Europe	113	50	44.25 %	10.73 %
Oceania	27	13	48.15 %	2.79 %
Total	513	238		51.07 %

The geographical location is based on the location of the headquarters of the company and does not necessarily indicate directly where the companies operate. The table 4 summaries the geographical distribution and data availability. The renewable companies' headquarters are most frequently located in America or Asia and thirdly in Europe. Fossil-based companies are more heavily focused with 23.82% to be based in the America, following with 13.52% in Asia and thirdly in Europe by 10,73%. American based renewable companies have a full required data available with highest rate by 70.59% and followed by the American fossil-based companies with 53.37%. Even though the study did not have geographical limitations, it should be noted that companies located at Africa have only a one company included in the sample. The lack of African based companies is probably partly explained due to the companies being owned privately or by the states. The number of African companies is relatively low to begin with when retrieving data and the summary would show if the reason to be excluded would be the missing data points.

.

4.3 Empirical Models

The empirical model follows earlier research, in which multiple studies have been conducted around examining the association of CSR or recently ESG's association on financial performance. The empirical model is conducted by combining various studies such as Bradgon and Marling (1972) with pollution performance as a proxy for ROE and EPS, Spicer (1978a, 1978b) with a higher profitability with lower risk and large cap firms with better pollution performance and Cochran and Wood (1984) study of CSR and corporate value being positively correlated. Ullman (1985) study of the social and economic disclosure was supported later with Chen at al., (2001) strong ESG performance with lower volatility. Meta-analysis of CSP and corporate finance performance (CFP) studies incorporate usually accounting based financial performance among utilization of market ratios regarding financial performance which may provide a stronger impact statistically when measuring the association. ROE as a measure had slightly more significant results compared to Return on Asset (ROA). (Lu et al. 2015.)

To contribute into the model the stock specific risk, originated from Sharpe's (1964) capital asset pricing model, beta is used as a control variable in the model which indicates the stock specific risk that follows an additional detailed explanation by Fama & French (2004). The model utilizes a similar approach as Alareeni & Hamdan (2020) to study total comprehensive ESG score and the impact of environmental, social and governance individual scores by comparing the differences between each sub-components and is there a primary association with the financial performance. Thus, this thesis is based on the four hypotheses to test the association of ESG, E, S and G and their statistical explanatory power to P/E and ROE. This thesis emphasizes the overall economic and financial theories to create an overview of the subject and the issue to construct the hypotheses.

Hypothesis 1: Company's comprehensive ESG score is associated with P/E and/or ROE

$$\begin{Bmatrix} P/E_{i,t} \\ ROE_{i,t} \end{Bmatrix} = \beta_0 + \beta_1 ESG_{i,t} + \beta_2 BETA_{i,t} + \beta_3 RENEW_{i,t} + \beta_4 MCAP_{i,t} + \epsilon \quad (1)$$

Hypothesis 2: Company's environmental E score is associated with P/E and/or ROE

$$\begin{Bmatrix} P/E_{i,t} \\ ROE_{i,t} \end{Bmatrix} = \beta_0 + \beta_1 E_{i,t} + \beta_2 BETA_{i,t} + \beta_3 RENEW_{i,t} + \beta_4 MCAP_{i,t} + \epsilon \quad (2)$$

Hypothesis 3: Company's social S score is associated with P/E and/or ROE

$$\begin{Bmatrix} P/E_{i,t} \\ ROE_{i,t} \end{Bmatrix} = \beta_0 + \beta_1 S_{i,t} + \beta_2 BETA_{i,t} + \beta_3 RENEW_{i,t} + \beta_4 MCAP_{i,t} + \epsilon \quad (3)$$

Hypothesis 4: Company's governance G score is associated with P/E and/or ROE

$$\begin{Bmatrix} P/E_{i,t} \\ ROE_{i,t} \end{Bmatrix} = \beta_0 + \beta_1 G_{i,t} + \beta_2 BETA_{i,t} + \beta_3 RENEW_{i,t} + \beta_4 MCAP_{i,t} + \epsilon \quad (4)$$

Regression model includes the following variables and their explanations:

i,t = indicates the companies' fiscal year, where t = 2020 - 2023

$P/E_{i,t}$ = Price per Earnings per Share at the end of fiscal year t

$ROE_{i,t}$ = Return on Equity at the end of fiscal year t

$ESG_{i,t}$= Comprehensive ESG score at the end of fiscal year t

$E_{i,t}$= Environmental score (E) at the end of fiscal year t

$S_{i,t}$= Social score (S) at the end of fiscal year t

$G_{i,t}$= Government score (G) at the end of fiscal year t

$BETA_{i,t}$ = Beta at the end of fiscal year t

$MCAP_{i,t}$ = Dummy variable, which receives a value of 1 if the company is smaller in market capitalization than the median in the sample

$RENEW_{i,t}$ = Dummy variable, which receives a value of 1, if the company is according to the GICS categorized in the renewable energy industry

The dependent variables used in the study are P/E and ROE and the regression model aims to explain the significance of the explanatories with independent variables. Within the regression model β_0 is the intercept of the model and β_1, β_2, β_3 and β_4 are the regression coefficients and ε is the error term. Confidence level is set for the standard of 95%.

Dependent Variable – Price to Earnings Ratio

Theoretically under a perfect market condition, the price of the stock would reflect the present value of the future cash flows. Across an infinite time-horizon, this could be summarized as the amount of stream of the upcoming dividends. Thus, the ratio is given by the Gordon-Shapiro valuation form, where the constant dividend payout ratio is divided with a riskless rate which has been reduced by a constant growth rate. P/E ratio therefore can be utilized to identify the transitory aspects of current earnings but additionally the investors' perspective through the stock price. (Beaver & Morse, 1978.) The P/E ratio is conducted by the direct market related information of the stock price and its development and how it compares with the accountable information of the earnings per share (EPS) as reported in the financial statements for the given period. When studying the effect of P/E and its power as an indicator, it should be noted to control beta and size of the company. (Ou & Penman, 1989.)

$$P/E_{i,t} = \frac{Share\ price_{i,t}}{Earnings\ per\ Share_{i,t}} \quad (5)$$

P/E ratio has been applied in the studied dataset retrieved from Refinitiv and it is classified as a market ratio. In the formula 5, share price is the market price of the stock, and the denominator is reported annual earnings divided with the amount of share during the time *t*. (Basu, 1977.) P/E as a financial ratio is used to explain the possible association and perception of the investors. The ideology follows Gregory et al. (2014) economic rationale that if highly ESG scored companies had a competitive advantage, it should generate abnormal results which then would lead to higher

profitability. As a financial ratio, P/E ratio is used from the investors perspective to evaluate the required return on the investment. The ratio can be utilized as an expectation of the share value and therefore companies with good financial performance and expected demand normally have a higher P/E ratio. A low P/E ratio can also be seen as a good investment opportunity if the investors' perspective is that the company's performance is undervalued and therefore, with lower initial price offer larger profits. (Chua et al., 2015.) However, it should be noted that the P/E ratio does not always indicate a rational measure if the company has abnormal profits or losses.

Dependent Variable - Return on Equity

The second hypothesis is formed around reviewing return on equity and does the ESG factors explain the association between the financial performance. Bradgon and Marlin (1972) utilized ROE in their early studies and found a positive correlation, but it should be noted that the sample sizes used were limited. ROE as a dependent variable is chosen to possibly explain the accountability aspect of possible additional profitability of highly scoring ESG companies. ESG impact was studied on SP500 listed companies by Alareeni and Hamdan (2020) in which they find that the higher level of ESG and its partial categories the higher the firms ROE was. ROE is an accounting-based ratio to measure how effectively companies can operate and create sales and therefore profit for the investors. Raza et al. (2012) found a positive relation which was found in a majority of the studies using financial performance indicators and the study included measures of ROE, ROA and return on sales RAS.

$$ROE_{i,t} = \frac{Net\ income_{i,t}}{Shareholder's\ equity\ of\ the\ firm_{i,t}} \qquad (6)$$

This study follows a similar approach to study as Alareeni and Hamdan (2020). Return on equity is a percentage measure of the net income divided by shareholder's equity and it is frequently used to quantify comparably the financial performance of the company. ROE as a firm's performance measure equals to the net income divided by equity of the firm *i* in the period *t.* The calculation based on accounting values were

provided by Refinitiv in the default currency in USD and they include possible corporate actions such as stock splits to measure the profitability of the companies.

Independent Variables

Independent variables within the regression models are used to explain possible association with the dependent variables explained above. Statistical relevance for the independent variables aims to explain the association with variance analysis for the dependent variables. (Ketokivi, 2009. p. 97-98.) ESG as a measurement for the companies' actions and investors' perception is more thoroughly explained in the pervious parts of the study. The methodological justification to utilize the ESG comprehensive score and subcategories of E, S and G provides a method to study the possible difference between the total score in comparison to the studied subcategories. By defining which subcategory could have the most significant impact as an explanatory variable. ESG formation and theoretical background have been assessed in the previous chapters in this study.

All independent variables are obtained directly from the Refinitiv database, and the corresponding values are calculated separately for each studied time periods *t* for each included company. The comprehensive ESG score is combined from the subcategory values and performances by weightings. Environmental pillar includes three main categories including emissions, innovation, and resource usage. Social subcategory includes themes of community, human rights and responsibility including workforce and product. Governance pillar is developed to measure the managements actions, governance related measures regarding transparency, reporting in addition to management and shareholder related performance. (Refinitiv, 2023.)

ESG integration is currently the most used method to measure and categorize sustainability of companies and therefore investments decisions globally (GSIA, 2020). ESG ratings provide efficiency to compare the companies' sustainability numerically (Dorfleitner et al., 2015). The usage of ESG ratings provides a similar approach to evaluate the company as traditional credit ratings (Puttonen & Puttonen, 2021). ESG calculation follows the characteristic of TBL theory by Elkinton (1998) which rationalizes that the companies' have a economic, social, and environmental

aspect. The most common ESG ratings among Refinitiv are provided by Moody's, S&P Global, MSCI, Sustainalytics and KLD. The most notable difference in their ratings is that Refitiniv partakes four dimensions, KLD incorporates seven dimensions, and the others receive three dimensions. Refinitiv asserts the most individual indicators and for its data includes the utmost unclassified ratings which means that the indicators are not used by other raters. These individual indicators note the economic dimensions for example capital expenditure and net income growth. (Berg, 2020.)

Control Variable Beta

Beta is applied as a control variable in the study to follow Sharpe's traditional CAPM to indicate stock specific risk (Sharpe, 1964). The traditional approach to divide measure of risk into systematic market risk, which cannot be diversified away, and beta as a measure for unsystematic risk for each individual asset (Sharpe, 1964, Lintner, 1965). If following the approach of TBL, companies' sustainability and responsibility factors would decrease risks and additionally possible costs (Księżak & Fischbach, 2018). When approaching risk with SRI perspective, theoretically, expectations of decreasing the risk of the investment, investors would accept a lower profit in return (Sparkes & Cowton, 2004; Lewis & Mackenzie, 2000). Even though this thesis is centred on the individual companies within the energy and utility sectors, the consistent idea of risk is measured by following the portfolio theory in which investors require higher return for higher risk (Markowitz, 1959).

Behavioural aspect of the financial theories highlights the aspect that investors may not always seek the optimal maximum results which highlights the association of expected risk and return (Soppe, 2004). Risk is a measure for both the investors and for equity lenders to estimate the proxy for the cost to capitalize in the company. Generally, risk is used as a discount the rate for expected future cash flows (Botosan & Plumlee, 2005). Beta coefficient can be interpreted as a measure of the individual company and has been used widely in past research (Alexander & Buchholz, 1978; Anderson & Frankle, 1980).

This study incorporates BETA as a variable in the regression model to study the company specific risk and its association with financial performance. Beta as measure

for the market volatility is by an average one (1), which indicates that companies below that are considered less risky than the average. By opposite, the companies with higher betas than one, are considered riskier than the average and thus investors would rationally require correspondingly higher returns. The calculation of the stock specific beta, in which the covariance of the stock is divided by the variance of the compared benchmark. Beta therefore measures how sensitive variation in the return of the stock is compared to market level return. (Fama & French, 2004.)

Dummy Variables

The energy and utility sectors are divided into two different categories of renewable or fossil-based companies. The concept of measuring the effect of industry specifics follows roughly Pastor et al. (2022) findings of the stock's greenness that overall performance tends to be associated more with the industry-level performance rather than company level impact. The renewable dummy variable is created to exemplify if the companies' product classifications assert a significant difference to explain the financial performance. The ideology of TBL is incorporated to profitability and companies must be profitable as a base requirement if investing in energy technologies (Elkington, 1998). It should be noted that policy choices and public funding can promote the development and construction of energy production and research (Mallett, 2007; Mascarenhas et al., 2010). Therefore, possible affect also on the market environment and how investors perceive the companies and industry. In this study, a company receives a value of 1, if the company has according to GICS (2023) industry category starting with 55, it is considered as a renewable, and then the dummy variable RENEW has value of 1 for the company. If the industry category begins with 10, the company has been classified as a fossil company and receives a value of 0. The dummy is used to estimate fixed individual effect in the study to differentiate the companies within the overall industry.

Market capitalization or size of the firm is often used as a variable in the traditional financial models to identify the possibility of the company size to have an impact on the financial performance. And thus, market capitalization was chosen as second a dummy variable to control the possible significant impact on the financial performance measure. Fama and French (2004) and their traditional three and five factor models

incorporates small minus big which is the difference on the returns. For simplicity, this thesis incorporates firm size as a dummy variable into the model by dividing the sample into two categories of small and big. A firm receives a value of 1, if in the first fiscal year its market capital value is lower than the median value of the sample in the year 1. And therefore, if the company has a higher market value than the median, it receives a value of 0 in the model. In the utilized dataset and sample, the currency studied was set to USD. Traditional theories and studies have also indicated that firm size or value may have an impact on both financial performance and CSR or Pollution (Spicer, 1978a & 1978b, Konar & Cohen, 2013, Cochran & Wood, 1984, Ullmann, 1985, Murray et al., 2006). Therefore, market capitalization is used to distinguish if the size of the company affects the results and possibly promote higher financial possibilities.

5 RESULTS

This section of the thesis includes descriptive statistics to familiarize with the key figures of the sample and its nature. These results are followed by the correlation matrix and variance inflator factor (VIF) analysis to gather more detailed outlook on the variables and their correlation with each other in pairs and by groups. Multicollinearity of the variables is an important factor to consider in the study since if the independent variables are highly correlated, the results could be misleading in the regressions. The chapter follows then onto two multiple regression models based on the four hypotheses that were introduced in the previous chapter with more details.

5.1 Descriptive Statistics

Descriptive statistics for the sample provide measures of the sample to analyse and gather the ideology of companies overall ESG performance, P/E ratio and ROE along with variables of beta and companies' size. Descriptive statistics are provided for the whole sample and for dividing renewable and fossil-based companies to showcase the possible differences. The statistics include for all variables mean and median values, standard deviation (SD), smallest 5th percentile and largest 95th percentile, kurtosis, and skewness.

Table 5. Descriptive Statistics of the Comprehensive Sample

Variable	N	Mean	Median	SD	5 %-ile	95 %-ile	Kurtosis	Skew
ESG	1398	54.560	55.454	18.442	6.822	81.273	-0.542	-0.256
E	1398	52.545	53.302	22.950	0.000	85.973	-0.730	-0.228
S	1398	54.471	56.134	22.670	1.515	87.579	-0.877	-0.196
G	1398	57.575	59.798	22.827	2.074	88.436	-0.841	-0.348
P / E	1398	20.460	12.230	58.146	0.000	46.660	399.697	16.966
ROE	1398	0.104	0.096	0.254	-1.262	0.366	30.450	-1.200
BETA	1398	1.210	0.985	0.872	-0.100	2.838	2.888	1.525
MCAP	1398	18175	4436	103179	45	43724	407.370	19.499

Market capitalization (MCAP) values are measured in millions by USD

Refinitiv's own categorization of the ESG scores is split into 25-point quartiles and the minimum value that company can receive 0 and highest 100. First quartile of point with 0-25 is categorized as the poor relative performance and deficient transparency in the materials. Second quartile from > 25-50 implies satisfactory level of ESG performance and moderate transparency within reporting. Third quartile > 50-75 indicates good relative level of ESG performance and above average reporting and last > 75-100 indicates excellent performance and high transparency in reported data. It should be noted that Refinitiv practises different weightings within the diverse subindustries, and this causes that comprehensive ESG total score is calculated as the relative sum by utilizing category weightings. (Refinitiv, 2023.)

Table 5 provides descriptive statistics of comprehensive ESG, and their separate values which are relatively close within their mean values of lowest with E 52.545 and highest G 57.575. Median values follow the same with lowest value for E by 53.302 and highest for G 59.798. ESG measures are according to Refinitiv categorized under the third quartile of relatively good level in their performance and above average reporting. However, when considering SD, it indicates that the companies are widely spread with their performance. SD is smallest for ESG with 18.442 and all individual factors of E, S & G have relatively similar values between 22.670 -22.950. The lowest performing 5th percentile have received close to zero values and the highest 5th percentile is scores lowest with ESG score of 81.273 and highest for G 88.436. Kurtosis for ESG and subcategories are slightly negative which indicates platykurtic distribution which could indicate fewer extreme values. Skewness measures the symmetricity of the values which are relatively close for all four measures varying from minimum from S -0.196 to G with -0.348.

Control variable P/E ratio received a mean of 20.460 and median value of 12.230 and standard deviation is eminent by 58.146. However, it should be noted that P/E ratio cannot receive negative values which may cause to explain the deviation. For comparison S&P500 P/E ratio has historically resulted with a mean of 15.60 and median 14.63 (Ghaeli, 2016). The lowest 5% has 0 as received value and 95th with 46.66. The kurtosis is extremely high and possibly caused by the ratio's nature that it does not incorporate negative values. This is supported by the skewness of 16.966 that measures that the data is positively skewed and concentrated towards lower values.

ROE compared to P/E is a percentage measure and has a mean of 0.104 (or 10.4%) and slightly lower median of 0.96 (9.6%). ROE SD is 0.254 and the lowest 5th percentile has rather extreme negative values of -1.262 and highest 5th percentile receive an average 0.366. Kurtosis is prominent with 30.450 which could indicate low number of extreme values and skewness is slightly negative by -1.2 but on average the results are quite symmetric. Market capital is noted as the MCAP in the model and is included to showcase the difference in the companies' sizes. The following table differentiates the companies from the sample by their dummy value to study how renewable companies differ from fossil-based companies.

Table 6. Descriptive Statistics for Renewable and Fossil-Based Companies

Variable	N	Mean	Median	Standard Deviation	5th percentile	95th percentile	Kurtosis	Skewness
	Panel A: Statistics including companies categorized under renewable GICS industry							
ESG	684	54.818	54.487	17.590	8.132	76.055	-0.436	-0.152
E	684	53.806	52.913	22.014	3.117	81.255	-0.748	-0.100
S	684	54.191	55.459	22.282	1.982	80.141	-0.784	-0.162
G	684	57.293	58.365	22.177	8.454	83.800	-0.854	-0.275
P / E	684	26.008	16.462	70.867	0.000	34.256	349.452	16.818
ROE	684	0.105	0.093	0.118	-0.295	0.183	22.402	1.816
BETA	684	0.726	0.677	0.378	0.099	1.130	2.718	1.152
MCAP	684	12040.35	5701.88	17921.66	354.14	22929.53	28.928	4.449
	Panel B: Statistics including companies categorized under fossil based GICS industry							
ESG	714	54.312	56.281	19.232	8.642	75.250	-0.652	-0.326
E	714	51.337	53.669	23.765	0.000	78.108	-0.790	-0.304
S	714	54.739	57.089	23.047	4.845	81.298	-0.953	-0.227
G	714	57.847	61.991	23.446	3.056	84.099	-0.833	-0.410
P / E	714	15.146	6.558	41.904	0.000	24.662	136.912	10.317
ROE	714	0.104	0.102	0.337	-1.262	0.325	18.002	-1.085
BETA	714	1.674	1.418	0.956	-0.100	2.838	1.337	0.985
MCAP	714	24051.45	3258.34	43109.98	45.13	31749.82	212.783	14.208

Panel A includes the companies that retrieve value 1 for the RENEW dummy. Panel B companies retrieve the value 0 for RENEW dummy. Market capitalization (MCAP) values are measured in millions by USD.

When comparing the descriptive statistics in a table 6 of Panel A which consists of the companies categorized with dummy value 1 for renewable and Panel B for companies with value of 0 and are categorized under fossil-based companies. The values for ESG does not show a notable difference. For example, comprehensive ESG score for Panel A has a mean of 54.818 and for Panel B 54.312. 5th percentile for renewable companies has slightly higher ratings. Surprisingly, fossil-based companies lowest 5th percentile has higher markings for social performance than renewable companies. For the 95th percentile Panel A has slightly higher ESG and E scoring, but Panel B performs higher for S & G measures.

Renewable companies provided greater P/E ratio with a mean of 26.008 and median 15.462 and fossil-based companies the ratios are 15.146 and 6.558. SD is smaller for Panel B with 41.90 than Panel A value of 70.867. This compared to kurtosis and skewness could indicate that renewable companies in the Panel A have more variance in their P/E ratio. ROE for both panels received almost identical means for A 10.5% and for B 10.4%, but median is 0.9 percentage point lower for panel A. SD is relatively lower for the panel A compared to the panel B by $0.118 < 0.337$ and this can be seen when comparing lowest and highest fifth percentiles. Panel B lowest 5% received value -1.262 and highest 0.325. For both panels kurtosis measures leptokurtic distribution which indicates higher possibility for extreme values at the end of both tails.

Beta, the measure of risk, provides substantially different results for the panels. Renewable companies in the Panel A have mean 0.726 and median 0.677 and Panel B mean 1.674 and median of 1.418. Renewable companies tend to perceive lower variance in their beta values compared to the fossil-based companies. When examining at the average based figures, renewable companies could provide generally lower risk when measuring beta. However, when observing the fossil-based companies the lowest 5th percentile is slightly negative -0.100 which could indicate the opposite reactions to market risk. Kurtosis for both betas may indicate elevated amount of the extreme values in the tails but overall, the data is quite normally distributed. Renewable companies present a reduced volatility compared to the market whereas fossil-based companies experience extensiveness in volatility and possibly in their reactions to market conditions.

5.2 Correlation Matrix and VIF

Correlation matrix of the whole sample provides an outlook of the variables and their linear correlations and directions. Correlation coefficient ranges from -1 to +1 and in between value 0 would suggest that the variables do not have linear relationship. It is noteworthy that high correlation does not mean directly causation since the statistical method is linear. Thus, the results can be nonlinear for variables that show a weaker linear correlation. Correlation matrix is limited to examine the dual sided correlation between the two variables. (Anderson et al. 2014). Pearson correlation matrix is the utmost applied method to measure the correlation of the coefficients (Ketokivi, 2009 p.225).

Table 7. Correlation Matrix

	ESG	E	S	G	P / E	ROE	BETA	MCAP	RENEW
ESG	1.000								
E	0.882***	1.000							
S	0.892***	0.731	1.000						
G	0.583	0.262	0.326	1.000					
P / E	-0.015	-0.013	-0.009	-0.014	1.000				
ROE	0.060*	0.075*	0.076*	-0.013	-0.019	1.000			
BETA	-0.044	-0.125	-0.044	0.101***	-0.048	-0.162	1.000		
MCAP	-0.351	-0.385	-0.299	-0.119	-0.060*	-0.166	0.246	1.000	
RENEW	0.014	0.054*	-0.012	-0.012	0.093***	0.001	-0.544	-0.157	1.000

* = 0.05 level of significance, ** = 0.01 level of significance, and *** = 0.001 level of significance

The question of collinearity is examined in the matrix in table 7 to detect possibility of the variables correlating linearly with each other. If the variables used in the regressors are reacting linearly significantly, the regression model results might not be statistically significant with their explanatory power (Ketokivi, 2009. p. 221). Comprehensive ESG score and its partial pillar scores E & S have as expected high correlation but ESG with G has relatively lower correlation for 0.583. Similarly, G correlates weakly with E by 0.262 and S with 0.326. This indicates that companies' environmental and social performance correlate often with each other, but governance does not exhibit a similar correlation with environmental and social performance.

Overall, the correlation matrix does not show an issue of collinearity for the variables since the values are generally close to zero.

P/E ratios received a weak negative correlation from comprehensive ESG by -0.015, E -0.013, S -0.009, and G -0.014. ROE has a weak statistically significant positive correlation with ESG, E & S but negative weak correlation with governance. Beta compared to other variables has a slightly negative correlation with other variables but the opposite weak positive correlation only with G by 0.101. Market capitalization and renewable have been utilized in the tests with their dummy variable values. These binary values received a close to non-existent correlation for the ESG factors but renewable companies' correlation with beta received a value of -0,544, which was not statistically significant. The result supports the findings of the descriptive statistics which presented generally renewable companies to experience lower beta measured by mean and median.

Table 8. Variance Inflator Factor Analysis

Model 1	VIF	Model 3	VIF
ESG	1.144	S	1.102
BETA	1.476	BETA	1.475
RENEW	1.422	RENEW	1.425
MCAP	1.216	MCAP	1.170
Model 2	VIF	Model 4	VIF
E	1.176	G	1.036
BETA	1.478	BETA	1.504
RENEW	1.422	RENEW	1.424
MCAP	1.233	MCAP	1.089

Model 1. $\beta 0 + \beta 1 ESGi,t + \beta 2 BETAi,t + \beta 3$RENEW$i,t + \beta 4$MCAP$i,t + \varepsilon$
Model 2. $\beta 0 + \beta 1 Ei,t + \beta 2 BETAi,t + \beta 3$RENEW$i,t + \beta 4$MCAP$i,t + \varepsilon$
Model 3. $\beta 0 + \beta 1 Si,t + \beta 2 BETAi,t + \beta 3$RENEW$i,t + \beta 4$MCAP$i,t + \varepsilon$
Model 4. $\beta 0 + \beta 1 Gi,t + \beta 2 BETAi,t + \beta 3$RENEW$i,t + \beta 4$MCAP$i,t + \varepsilon$

To recognise more thoroughly the studied variables and possible effects of multicollinearity, this study incorporates the variance inflator factor analysis (VIF) in the table 8. VIF utilizes the OLS regression model by measuring OLS estimators' variance and its strength due to multicollinearity. If the variables received in the VIF test a value of 1, it would interpret that the estimators do not have any multicollinearity. Whereas generally values over three can be considered to have a high multicollinearity and it may affect the quality of the regression model and its tested variables. VIF values

over ten are considered remarkably high. (Ketokivi, 2014.) For this study, VIF is analysed for the four models that include same variables to study their effectiveness on the independent variables of P/E or ROE.

All four models have received fairly similar VIF results, the minimum value is received for G in the model four by VIF value of 1.036 and maximum value 1.504 for beta in the same model. All VIF tests results for the models follow a highly similar pattern, the lowest values are for ESG factors and market cap and slightly higher for beta and binary value for renewable. Therefore, the study supposes that the variables do not perceive and incorporate the issue of the multicollinearity among the variables and estimators when considering correlation matrix and VIF analysis for the whole sample.

5.3 Regression Analysis

This chapter consist of the regression model for P/E that was introduced in the previous chapter in more detail. Table 9 includes the multiple linear models for P/E which consists of four models to test explanatory power of the comprehensive ESG, and its subcategories E, S and G. P/E ratio is commonly used as a valuation method to determine stocks' valuation compared to earnings and possible under or overvaluation. A more detailed introduction is included in the previous chapter. This study concludes coefficients as a measure, their standard deviation, P-values and adjusted R-squared, F-value and Significance F to conclude the effectiveness and results of the tested models itself. Regression model results for ROE are in table 10.

The regressions results for the Models 1-4 in table 9 showcase similar results for all hypotheses. Model 4 received the smallest value of -0.053 and highest value was received by Model 1 for ESG for -0.120 but none of the models had any statistically significant explanatory power at any of the models. Beta as measure for company specific risk received slightly positive results varying from Model 2 0.830 to highest for G by 1.199 but similarly to ESG factors they did not hold significance statistically on the minimum of set level of $p < 0.05$.

All models incorporate two dummy variables, which first is categorized as RENEW which receives a value of 1 if the company is categorized under renewable energy. The results show significant positive results for the RENEW for ESG 10.756, E 10.721, S 10.706, and G 11.010. All the models provide statistical significance at least on the 0.05 level. The second binary variable used in the model incorporates the market capitalization by partitioning the companies smaller than the median value for year 1 with value of 1, and the companies above the benchmark receive a value of 0.

Table 9. P/E Regression Results

Explanatory Variable	Model 1	Model 2	Model 3	Model 4
Intercept	24.160***	23.442***	20.652***	19.715***
	(6.964)	(6.334)	(6,237)	(5.718)
ESG	-0.120			
	(0.090)			
E		-0.104		
		(0.073)		
S			-0.061	
			(0.072)	
G				-0.053
				(0.069)
BETA	1.042	0.830	0.962	1.199
	(2.157)	(2.158)	(2.157)	(2.178)
RENEW	10.756*	10.721**	10.706**	11.010**
	(3.692)	(3.692)	(3.697)	(3.696)
MCAP	-7.330*	-7.528*	-6.571*	-6.090
	(3.413)	(3.438)	(3.350)	(3.232)
Adjusted R-squared	0.009	0.010	0.009	0.009
F-value	4.330	4.388	4.058	4.025
Significance F	0.002	0.002	0.003	0.003

* = 0.05 level of significance, ** = 0.01 level of significance, and *** = 0.001 level of significance. All models include 1398 observations. Refinitiv screener is used to gather the data for the model. Model 1. P/Ei,t = β0 + β1$ESGi,t$ +β2$BETAi,t$ +β3RENEWi,t + β4MCAPi,t + ε
Model 2. P/Ei,t = β0 + β1Ei,t +β2$BETAi,t$ +β3RENEWi,t + β4MCAPi,t + ε
Model 3. P/Ei,t = β0 + β1Si,t +β2$BETAi,t$ +β3RENEWi,t + β4MCAPi,t + ε
Model 4. P/Ei,t = β0 + β1Gi,t +β2$BETAi,t$ +β3RENEWi,t + β4MCAPi,t + ε

MCAP received statistically significant results for ESG, E and S with negative association. The most negative effect -7,330 was received for Model 1 measuring comprehensive ESG and lowest statistically significant for Model 3 for G by -6,571. The results were relatively similar for all models which indicates that market

capitalization could overall have an impact on lowering the P/E. Whereas renewable companies overall could potentially be perceived by the investors' high expectations for the stock and profits in the future. In contrast, smaller companies could overall be assumed to have lower profits and valuation from investors but similarly a lower level of risk.

All four models received similar results for adjusted r-squared values with almost nonexistent variation with results of 0.009-0.010. These low results indicate that the model would only explain approximately 0.1% of the variability of the dependent variable. However, the measurement of r-squared cannot be simplified since prior research have provided controversial results on the subject in previous studies. F-value is a measure of the model to test the significance of the model if it would have zero predictor variable. All four models received F-values over 4 by highest for model 2 for 4.338 and lowest for model 4 by 4.025 which would indicate that the model is still significant with its explanatory power to some extent. The significance levels for all models were less than 0.01 which would mean that the null hypothesis could be rejected since the explanatory variables do not have any significance. Therefore, the results overall indicate that ESG factors do not hold a significant amount of explanatory power on their own but when incorporating the industry variables of RENEW and MCAP the model explains in more possible reasonings for P/E.

ROE Regression

The following section analyses the four models in table 10 and their explanatory power for ROE to study how ESG performance and control variables explain companies' financial profitability. ROE as a financial measure has been explained in the previous chapters of this study. To enhance the difference to P/E ratio, it should be noted that ROE is a percentage measure whereas P/E is a ratio. This chapter trails similar analysis of the four models that are otherwise identical, but ROE is used as a dependent variable for these models. This chapter concludes similarly coefficients as a measure, their standard deviation, P-values. adjusted R-squared, F-value and Significance F to conclude the effectiveness and results of the tested models itself. The required level of significance is set similarly for minimum of $p < 0.05$.

Table 10. ROE Regression Results

Explanatory Variable	Model 1	Model 2	Model 3	Model 4
Intercept	0.237	0.237	0.222	0.248
	(0.030)	(0.027)	(0.027)	(0.024)
ESG	0.000			
	(0.000)			
E		0.000		
		(0.000)		
S			0.000	
			(0.000)	
G				0.000
				(0.000)
BETA	-0.058	-0.058	-0.058	-0.057
	(0.009)	(0.009)	(0.009)	(0.009)
RENEW	-0.065	-0.065	-0.064	-0.065
	(0.016)	(0.016)	(0.016)	(0.016)
MCAP	-0.069	-0.069	-0.066	-0.071
	(0.015)	(0.015)	(0.014)	(0.014)
Adjusted R-squared	0.052	0.052	0.053	0.052
F-value	20.196	20.195	20.453	20.234
Significance F	0.000	0.000	0.000	0.000

* = 0.05 level of significance, ** = 0.01 level of significance, and *** = 0.001 level of significance.
All models include 1398 observations. Refinitiv screener is used to gather the data for the model.
Model 1. ROE$i,t = \beta 0 + \beta 1 ESGi,t + \beta 2 BETAi,t + \beta$3RENEW$i,t + \beta$4MCAP$i,t + \varepsilon$
Model 2. ROE$i,t = \beta 0 + \beta 1 Ei,t + \beta 2 BETAi,t + \beta$3RENEW$i,t + \beta$4MCAP$i,t + \varepsilon$
Model 3. ROE$i,t = \beta 0 + \beta 1 Si,t + \beta 2 BETAi,t + \beta$3RENEW$i,t + \beta$4MCAP$i,t + \varepsilon$
Model 4. ROE$i,t = \beta 0 + \beta 1 Gi,t + \beta 2 BETAi,t + \beta$3RENEW$i,t + \beta$4MCAP$i,t + \varepsilon$

.

When analyzing the results of table 10, comprehensive ESG and its partial factors E, S and G do not receive any explanatory power for ROE. Similarly, BETA received slightly negative results for all four models with close to zero variation by -0.058 to -0.057. These results are not significant statistically. Interestingly, the model does not provide at all similar results for binary variables RENEW and MCAP which held statistically significant portion for explaining P/E ratio. The binary variables received slightly negative results within all four models for RENEW between models 1, 2 and 4 by -0.065 and for model 3 -0.064 with no statistical significance. MCAP the results varied with minimal differences between -0.066 in model 3 to -0.071 in model 4.

However, when studying the results of the whole regression model, the explanatory power for models 1, 2 and 3 is 5.2% and for model 4 5.3%. These are higher than the first regression model for P/E, but the results are still highly controversial when comparing them to the previous results of the model. F-values are again following a similar approach with almost identical results. F-value was lowest for Model 2 with E by 20.195 and highest for Model 3 with S by 20.453 which means that model itself does hold significant amount of variance compared if the variables could be expected by random choice. The significance level F with p-value of 0.000 does indicate that the model could hold against the null hypothesis in which the coefficients are set to equal zero. Overall, the results indicate that ROE as a dependent variable cannot be explained statistically significantly with this model. The model is experiencing limitations in its explanatory power. ROE is an accounting measure of the company's profitability whereas P/E leans on market valuation of the company's current price per share and its estimated value in the future for earnings, which could explain the differences in the results to some extent.

6 CONCLUSIONS

The final chapter of this study summarizes key findings of the research topic, discusses limitations and validity of the study, and provides suggestions for further research in the field. The aim of the paper was to study is there an association between the energy sector's companies' financial performance and ESG factors. The study was conducted with data from the last 3 fiscal years ending 2020-2023 with no geographical limitations by utilizing a balanced dataset. The studied dependent variables were chosen with two different perspectives where P/E aims to showcase investors perception of the companies and where ROE utilizes accounting-based information. To study both dependent variables, the study utilized otherwise similar regression models to display possible association with ESG.

Theoretical background of the study emphasized various aspects around historical ideology of sustainable investing and its development to its current form of measuring the differences between environmental, social and governance factors and summarizing the findings with a comprehensive ESG score. The traditional outlook in finance has gathered around the idea of risk, often measured by beta, that sets the required return for investments. Sustainable investors have often rationalized the idea that companies could thus lower their risks, unnecessary use of resources and gain competitive advantage by participating in operating in a sustainable manner. Behavioural finance adapted a slightly different perspective of maximation of shareholders' utility to exchange part of the profits to example more environmentally conscious actions and later stakeholder and agency theories empathized the companies' actions to other stakeholders than just focusing on shareholders. Overall, the theoretical background provided mixed results does the ESG performance reflect on financial performance and this study received similar empirical findings where possibly industry and size of the company could play a more significant role.

6.1 Key Findings

This paper studied the association of ESG performance with financial performance measured be P/E ratio and ROE my utilizing four linear regression models. The studied models incorporated a comprehensive ESG score and its partial pillar scores of E, S

and G. The empirical results for both dependent variables did not show that ESG measures would explain significant amounts of the companies' financial performance. The results were slightly negative for P/E and zero for ROE. As a simplified result, at least within the energy sector the models did not find sustainability metrics to significantly explain the differences. The models did have some explanatory power statistically, but ESG factors itself could not explain it adequately.

Interestingly, the binary values of companies' industry classification between renewable and non-renewable among market capitalization explained more of the differences. Companies that were classified under renewable had significant positive association to P/E ratio. This could be explained by the rising need of renewable energy forms, investments possibilities and fundings, environmental policies of countries and an overall shift in the energy market. In this study, companies with lower market capital overall have a negative impact on P/E ratio. Another reasoning behind the results could be that within the studied industry, larger companies could be perceived as less risky and therefore providing more certain earnings for shareholders. The examined period follows the covid pandemic and the invasion of Ukraine which can possibly affect the data and reaction of the stock prices, if investors seek more certain profits from larger companies. Descriptive statistics of the sample provided similar information, in which renewable companies had significantly higher P/E ratio but also a lower beta. This can be interpreted that shareholders perceive renewable companies less risky than the average and especially compared to fossil-based companies. Another possibility is that fossil-based companies have been receiving abnormally good financial performance due to market situation and thus their P/E ratio is lower. Fossil-based companies are overall perceived riskier than renewable companies when comparing descriptive statistics for beta.

The empirical models for measuring the effectiveness of ROE however did not provide any statistical evidence that ESG factors or other explanatory factors of beta, industry, or size, leads to questioning how fitting the models are for accounting-based information. Higher ROE is a fundamental value for investors to compare companies' profitability over the time within the industry. Descriptive statistics of renewable and fossil-based companies provide insightful differences since the ROE for renewable companies are by mean 10,5% with mean beta of 0.726 and for fossil-based ROE

10,4% with beta 1,674. Empirical results for the models did not find statistically significant explanatory power for the whole sample. TBL and financial perspective on sustainability has in previous research tried to explain competitive advantage for the companies. Księżak and Fischbach (2018) studied additional profitability when optimizing costs and decreasing risks in the future, but this study's regression test cannot capture it when measured with ROE within the energy industry. The descriptive statistics for renewable companies resulted that renewable companies have significantly lower betas and that possibly is explained by the Owusu et al. (2016) and Edenhofer at al. (2011) studies that indicated that renewable energy markets have lower market volatility which might transfer to lower betas in the industry as well.

The study conducted an outline of the main frameworks around corporate sustainability by examining Global Sustainable Investing Alliance (GSIA), The Sustainable Development Goals (SDGs) by United Nations and Principles of Responsible Investments (PRI). The consensus over the theoretical research is still that many of the sustainable frameworks are lacking actual comparable data framework and ways to analyze the companies' actions quantitatively. Therefore, application of environmental, social and governance by ESG measurements from an outside authority perspective with numerical data provides a more comprehensive outlook on the companies' actions. It should be noted that Refinitiv has a different weighting in their ESG ratings for different industries which makes reviewing different industries to each other more complex. However, for a within industry outlook the measurement provides a relatively good measure to analyze companies' financial performance with the ESG performance. Descriptive statistics provide an opportunity to look industry specific traits of significantly lower beta and higher P/E ratio even though ESG metrics did not have significant statistical explanatory power around the association with financial performance.

6.2 Limitations and Validity of the Study

Data for the study was collected from Refinitiv's database by using screener to utilize data for the categorized industries under energy and utility sectors. The GICS classification simplified categorized fossil-based energy companies under energy categories whereas utility sectors covered renewable companies. There were not set

any geographical limitations for the companies studied. All company related valuations were converted automatically to USD by Refinitiv and therefore the dataset was screened to include all utilized information. Manual additions to the dataset were applied by the set rules for dummy values RENEW and MCAP. Since the study used a balanced dataset, it should be noted companies that ended their operations or companies that were not listed to public exchange during the periods studied are not included in the sample.

Firstly, it should be noted that the study utilized balanced dataset, which meant that all datapoints were required from the companies' to be included in the sample. On average 48,19% of the companies in the industry in the selected period had complete data available. Renewable companies had slightly higher availability of the data by 50,22% compared to fossil-based 46,39% but the study still included a decent number of companies to be included in the sample by 466 companies. Possible limitations of the sample can be caused by using a balanced dataset. Adding a third group to the sample could have incorporated companies without any ESG ratings. This might have provided even more comparable information and data to separate different groups and benchmarks of the industry. However, it should be noted that when retrieving data from Refinitiv, the companies that were not included in the sample, were not classified by why the data was not available and therefore part of the unselected companies in the sample might have been companies that are no longer operating. Data for the study were retrieved completely from the same database and followed consistent form and information.

The dependent variables of the study were chosen based on the theoretical background to measure two different perspectives where P/E is considered to measure investors' perspective of the price compared earnings. In comparison ROE, which is strictly an accounting-based measure for profitability. To interpret the correlation between the studied variables of ESG factors, BETA, RENEW and MCAP in the regression model the correlation matrix did not find issue of collinearity. The variables were tested with VIF additionally to test the variables, which provided similar results that variables in the model did not have an issue with multicollinearity. The regression model had two dummy variables of RENEW for companies categorized under renewable utilities with value of 1 and fossil-based companies received a value of zero. The second dummy

MCAP indicated a benchmark for the sample median in the year 1 of the market capitalization. This dummy variable and its measure are a very simplified form to measure companies' size to utilize the possible effect of companies' "small to big" phenomenon in the traditional factor models. Even though the measure is simplified, it did show significant results in the regressions for P/E, but the results were interestingly negative which is opposite to the traditional understanding that has been discussed earlier. The study is focused on the evolved knowledge around sustainable investments and how the investors' perspective has shifted to a broader view from utility maximation. Regression models therefore provided relatively different results by confirming the possible effect of industry and size of the company regarding P/E. However, it should be noted that BETA did not receive in both models statistically significant results.

The theoretical background of sustainability and its association to financial performance has received mixed results and often incorporated to reviewing funds and portfolios instead of a within industry perspective. This study mixed the theoretical implications of risk through beta and two dummy variables to differentiate the studied sample. Internal validity of the study and its statistically significant results were based on the variety of empirical studies and measures that have been commonly used to evaluate companies and their performance and the characterises of the variables. The omitted variable bias has been assessed by forming the hypothesis on various theoretical backgrounds and testing the selected variables with collinearity. However, it should be acknowledged that since the overall regressions did absence a statistical explanatory power, the results are still useful compared to prior research due to it having mixed reviews as well. External validity of the results and generalization is limited to certain industry characteristics. One of the variables were strictly conducted to differentiate within industry differences of the companies' and their main operating field between the renewable and non-renewable energy forms. Nonetheless, the models used in this study are transferable to utilize with different databases and time periods. It should be noted that when interpreting the results, the markets overall experienced two shocks of covid pandemic and the start of Russian invasion and war against Ukraine. Therefore, the time period of the study might affect the results which should be noted when interpreting the results.

Overall, when comparing the theoretical background for sustainability and how it may affect investments, the field is still lacking a clear consensus of how to explain and measure the phenomenon. The issue of investors making decisions outside from profit maximisation creates an issue of how to perceive and calculate the correct worth for sustainability. In theory, sustainability would be incorporated under the risk with the measure of beta, while ESG measurements would only provide a supplementary data for investment decisions and calculations for risk. Overall, to measure do Refinitiv's ESG scores measure accurately the companies' performance, it could be complementary to duplicate the study with data from another provider.

6.3 Recommendations for Further Research

The within industry study provides a new perspective to examine the field of sustainability and its association with risk. Energy sector's financial performance could be tested with similar modelling but with different dependent variables that strictly measure the share price development or by duplicating the study for different time period. The study discussed different databases and their measurement systems for ESG. It would be beneficial to run the study with different ESG evaluations to study are there some statistically significant differences and what could cause them. Also additionally creating a dummy variable for companies with no ESG rating could create an additional comparative information but it should be noted that possibly the majority of the companies nowadays receive ESG ratings if they are actively operating.

This study was conducted with a balanced dataset, but it could be reasonably to study the difference between unbalanced datasets to possibly showcase some differences but again these might not cause statistically significant differences to the results. Possibly the biggest difference in the results may be caused by the war in Ukraine caused by Russia due to its large impacts on energy markets especially within Europe. Therefore, it could be potentially significant to assess the study when energy markets are not facing external shocks. In addition, the model could be developed to interpret variables for geographical aspects. The geographical dependency could be beneficial to measure and to understand how it overall affects the ESG performance. This could enhance and showcase of how much public funding, regulations and taxation might affect the results.

REFERENCES

Ackoff, R. (1970). A concept of corporate planning. *Long Range Planning,* 3(1), 2-8. https://doi.org/10.1016/0024-6301(70)90031-2

Ackoff, R. (1974). *Redesigning the future: a systems approach to societal problems.* New York: Wiley.

Agarwal, B., Gautam, R. S., Jain, P., Rastogi, S., Bhimavarapu, V. M., & Singh, S. (2023). Impact of environmental, social, and governance activities on the financial performance of Indian health care sector firms: Using competition as a moderator. *Journal of Risk and Financial Management*, 16, 109. http://doi.org/10.3390/jrfm16020109

Aityan, S. K. (2022). *Business research methodology: Research process and methods*. Springer.

Alareeni, B. A., & Hamdan, A. (2020). ESG impact on performance of US S&P 500-listed firms. *Corporate governance*, 20(7), 1409-1428. https://doi.org/10.1108/CG-06-2020-0258

Albrecht, K. (1994). The power of bifocal vision. *Management Review*, 83(4), 42-46.

Alexander, G. J., & Buchholz, R. A. (1978). Corporate social responsibility and stock market performance. *Academy of Management Journal*, 21(3), 479-486.

Anderson, D. (1996). *What has 'Ethical Investment' to do with ethics?* (Social Affairs Unit, London).

Anderson, D. R., Sweeney, D. J., Williams, T. A., Camm, J. D., & Cochran, J. J. (2014). *Statistics for business & economics.* 12th edition. Cengage Learning. 139-140.

Anderson, J. C., & Frankle, A. W. (1980). Voluntary social reporting: An iso-beta portfolio analysis. *The Accounting Review*, 467-479. http://www.jstor.org/stable/246408

Ansoff, I. 1965. *Corporate strategy*. New York: McGraw Hill.

Aras, G. and Crowther, D. (2009). Corporate sustainability reporting: a study in disingenuity?. *Journal of Business Ethics,* Vol. 87 No. S1, pp. 279-288. https://www.jstor.org/stable/40294968

Barnea, A., & Rubin, A. (2010). Corporate social responsibility as a conflict between shareholders. *Journal of Business Ethics*, 97, 71–86. https://www.jstor.org/stable/40929374

Baron, D. (2001). Private politics, corporate social responsibility and integrated strategy. *Journal of Economics and Management Strategy*, 10, 7–45. https://doi.org/10.1111/j.1430-9134.2001.00007.x

Basu, S. (1977). Investment performance of common stocks in relation to their price-earnings ratios: a test of the efficient market hypothesis. *The Journal of finance*, 32(3), 663-682. https://doi.org/10.1111/j.1540-6261.1977.tb01979.x

Beaver, W., & Morse, D. (1978). What Determines Price-Earnings Ratios? *Financial Analysts Journal,* 34(4), 65–76. http://www.jstor.org/stable/4478160

Bénabou, R., & Tirole, J. (2010). Individual and Corporate Social Responsibility. *Economica*, 77(305), 1-19. https://doi.org/10.1111/j.1468-0335.2009.00843.x

Berg, F., Kölbel, J. F., & Rigobon, R. (2022). Aggregate Confusion: The Divergence of ESG Ratings. *Review of Finance, 26*(6), 1315-1344. https://doi.org/10.1093/rof/rfac033

Bialkowski, J., Starks, L.T., (2016) SRI Funds: Investor Demand, Exogenous Shocks and ESG Profiles. San Francisco, CA, USA: 2016 BlackRock Research Conference. http://hdl.handle.net/10092/12492

Billio, M., Costola, M., Hristrova, I., Latino, C., & Pelizzon, L. (2021). "Inside the ESG ratings:(dis) agreement and performance." *Corporate Social Responsibility and Environmental Management* 28.5: 1426-1445. https://doi.org/10.1002/csr.2177

Black, F. (1986). Noise. *The Journal of Finance,* 41(3), 529-543. https://doi.org/10.1111/j.1540-6261.1986.tb04513.x

Boiral, O. (2013). Sustainability reports as simulacra? A counter-account of A and A+ GRI reports. *Accounting, auditing & accountability journal,* 26(7), 1036-1071. https://doi.org/10.1108/AAAJ-04-2012-00998

Bollen, N. P. B. (2007). Mutual fund attributes and investor behavior. *Journal of financial and quantitative analysis*, 42(3), 683-708. https://doi.org/10.1017/S0022109000004142

Bolton, P., Kacperczyk, A.: 2021, Do Investors care about carbon risk? Forthcoming. *Journal of Financial Economics.* https://doi.org/10.1016/j.jfineco.2021.05.008

Bölük, G., & Mert, M. (2014). Fossil & renewable energy consumption, GHGs (greenhouse gases) and economic growth: evidence from a panel of EU (European Union) countries. Energy (Oxford), 74, 439-446. https://doi.org/10.1016/j.energy.2014.07.008

Botosan, C. A., & Plumlee, M. A. (2005). Assessing Alternative Proxies for the Expected Risk Premium. *The Accounting review*, 80(1), 21-53. https://doi.org/10.2308/accr.2005.80.1.21

Bowen, K. J., Cradock-Henry, N. A., Koch, F., Patterson, J., Häyhä, T., Vogt, J., & Barbi, F. (2017). Implementing the "Sustainable Development Goals": Towards addressing three key governance challenges—collective action, trade-offs, and accountability. Current opinion in environmental sustainability, 26-27, 90-96. https://doi.org/10.1016/j.cosust.2017.05.002

Bragdon,. H., & Marlin, J. A. T. (1972) Is pollution profitable? *Risk Management*, 19(4), 9-18.

Brooks, C. and Oikonomou, I. (2018), "The effects of environmental, social and governance disclosures and performance on firm value: a review of the literature in accounting and finance", *The British Accounting Review,* Vol. 50 No. 1, pp. 1-15. https://doi.org/10.1016/j.bar.2017.11.005

Brundtland, G.H. (1989), "Global change and our common future", *Environment: Science and Policy for Sustainable Development*, Vol. 31 No. 5, pp. 16-43. https://doi.org/10.17226/1411.

Brunton, M., Eweje, G., & Taskin, N. (2017). Communicating corporate social responsibility to internal stakeholders: Walking the walk or just talking the talk?. *Business Strategy and the Environment,* 26(1), 31-48. https://doi.org/10.1002/bse.1889

Bruyn, S. T.: 1987, *The Field of Social Investment (*Cambridge University Press, Cambridge). https://www.jstor.org/stable/29769442

Busch, H., & McCormick, K. (2014). Local power: Exploring the motivations of mayors and key success factors for local municipalities to go 100% renewable energy. *Energy, Sustainability and Society*, 4(1), 5. https://doi.org/10.1186/2192-0567-4-5

Cadbury, A. (2000). The corporate governance agenda. *Journal of Corporate Governance,* 8, 7–15. https://doi.org/10.1111/1467-8683.00175

Camilleri, M.A. (2015a). Valuing stakeholder engagement and sustainability reporting. *Corporate Reputation Review*, Vol. 18 No. 3, pp. 210-222. https://doi.org/10.1057/crr.2015.9

Camilleri, M.A. (2015b), Environmental, social and governance disclosures in Europe. *Sustainability Accounting, Management and Policy Journal*, Vol. 6 No. 2, pp. 224-242. DOI:10.1108/sampj-10-2014-0065

Camilleri, M.A. (2021). The market for socially responsible investing: a review of the developments. *Social Responsibility Journal,* 17, 412-428. DOI:10.4018/978-1-7998-2193-9.ch009

Capelle-Blancard, G. and Monjon, S. (2012), "Trends in the literature on socially responsible investment: looking for the keys under the lamppost*", Business Ethics: A European Review,* Vol. 21 No. 3, pp. 239-250. DOI:10.1111/j.1467-8608.2012.01658.x

Carrol, A. B. (2016, July 5). Carroll's pyramid of CSR: Taking another look. *Int J Corporate Soc Responsibility* 1, 3. https://doi.org/10.1186/s40991-016-0004-6

Carroll, A. B. (1979). A Three-Dimensional Conceptual Model of Corporate Performance. *The Academy of Management Review*, 4(4), 497–505. https://doi.org/10.2307/257850

Cavicchi, B., Bryden, J. M., & Vittuari, M. (2014). A comparison of bioenergy policies and institutional frameworks in the rural areas of Emilia Romagna and Norway. *Energy Policy*, 67, 355–363. https://doi.org/10.1016/j.enpol.2013.12.059

Chegut, A., Schenk, H., & Scholtens, B. (2011). Assessing SRI fund performance research: Best practices in empirical analysis. *Sustainable development,* 19(2), 77-94. https://doi.org/10.1002/sd.509

Chen, J., Hong, H., & Stein, J. C. (2001). Forecasting crashes: Trading volume, past returns, and conditional skewness in stock prices. *Journal of Financial Economics*, 61(3), 345–381. https://doi.org/10.1016/S0304- 405X(01)00066-6

Chirambo, D. (2016). Addressing the renewable energy financing gap in Africa to promote universal energy access: Integrated renewable energy financing in Malawi. Renewable and Sustainable Energy Reviews, 62, 793–803. https://doi.org/10.1016/j.rser.2016.05.046

Chua, A., DeLisle, R. J., Feng, S., & Lee, B. S. (2015). Price-to-Earnings Ratios and Option Prices. *The journal of futures markets, 35*(8), 738-752. https://doi.org/10.1002/fut.21707

Ciliberti, F., de Haan, J., de Groot, G., & Pontrandolfo, P. (2011). CSR codes and the principal-agent problem in supply chains: Four case studies. *Journal of cleaner production*, 19(8), 885-894. https://doi.org/10.1016/j.jclepro.2010.09.005

Cochran, P. L., & Wood, R. A. (1984). Corporate social responsibility and financial performance. *The Academy of Management Journal,* 27(1), 42–56. https://doi.org/10.2307/255956

Collins, D. 1990. *The relation of gainsharing to work climate and company social performance.* University of Pittsburgh. Retrieved from https://philpapers.org/rec/COLTRO-30

Cornell, B. (2021). ESG preferences, risk and return. *European Financial Management,* 27(1), 12-19. https://doi.org/10.1111/eufm.12295

Dahlsrud, A. (2008). How corporate social responsibility is defined: an analysis of 37 definitions. *Corporate Social Responsibility and Environmental Management*, *15*(1), 1-13.

Dasgupta, S., Laplante, B., Mamingi, N., (2001). Pollution and capital markets in developing countries. *Journal of Environmental Economics and Management* 42, 310–335. https://doi.org/10.1006/jeem.2000.1161

Davis, K. (1973). The Case for and against Business Assumption of Social Responsibilities. Academy of Management journal, 16(2), 312-322. https://doi.org/10.5465/255331

De Bondt, W. F. M., & Thaler, R. (1985). Does the stock market overreact? *The Journal of finance* (New York), 40(3), 793-805. https://doi.org/10.1111/j.1540-6261.1985.tb05004.x

De, I., & Clayman, M. R. (2015). The Benefits of Socially Responsible Investing: An Active Manager's Perspective. *The Journal of investing,* 49. https://doi.org/10.3905/joi.2015.2015.1.048

Dechezleprêtre, A., & Sato, M. (2017). The Impacts of Environmental Regulations on Competitiveness. *Review of environmental economics and policy, 11*(2), 183-206. https://doi.org/10.1093/reep/rex013.

Deegan, C., & Rankin, M. (1996). Do Australian companies report environmental news objectively?: An analysis of environmental disclosures by firms prosecuted successfully by the Environmental Protection Authority. *Accounting, auditing, & accountability, 9*(2), 50-67. https://doi.org/10.1108/09513579610116358

Dikolli, S. S., Frank, M. M., Guo, Z. M., & Lynch, L. J. (2022). Walk the talk: ESG mutual fund voting on shareholder proposals. *Review of accounting studies*, 27(3), 864-896. https://doi.org/10.1007/s11142-022-09692-

Diouf, D. and Boiral, O. (2017), "The quality of sustainability reports and impression management: a stakeholder perspective", *Accounting, Auditing & Accountability Journal*, Vol. 30 No. 3, pp. 643-667. https://doi.org/10.1108/AAAJ-04-2015-2044

Domini, A. K.: 1984, *Ethical Investing.* Reading, MA: Addison-Wesley.

Donaldson, T., & Preston, L. E. (1995). The Stakeholder Theory of the Corporation: Concepts, Evidence, and Implications. *The Academy of Management review, 20*(1), 65-91. https://doi.org/10.5465/amr.1995.9503271992

Dorfleitner, G., Halbritter, G., & Nguyen, M. (2015). Measuring the level and risk of corporate responsibility–An empirical comparison of different ESG rating approaches. *Journal of Asset Management*, 16(7), 450-466. https://doi.org/10.1057/jam.2015.31

Dowling, J., & Pfeffer, J. (1975). Organizational Legitimacy: Social Values and Organizational Behavior. *The Pacific Sociological Review*, 18(1), 122–136. https://doi.org/10.2307/1388226

Drempetic, S., Klein, C., & Zwergel, B. (2020). The Influence of Firm Size on the ESG Score: Corporate Sustainability Ratings Under Review. *Journal of business ethics*, 167(2), 333-360. https://doi.org/10.1007/s10551-019-04164-1

Drover, W., Wood, M. S., & Fassin, Y. (2014). Take the money or run? Investors' ethical reputation and entrepreneurs' willingness to partner. *Journal of business venturing*, 29(6), 723-740. https://doi.org/10.1016/j.jbusvent.2013.08.004

Dube, S., & Maroun, W. (2017). Corporate social responsibility reporting by South African mining companies: Evidence of legitimacy theory. *South African Journal of Business Management*, *48*(1), 23-34. https://doi.org/10.4102/sajbm.v48i1.17

Edenhofer, O., Pichs-Madruga, R., Sokona, Y., Seyboth, K., Matschoss, P., Kadner, S., von Stechow, C. (2011). Renewable Energy Sources and Climate Change Mitigation. *Cambridge University Press*. http://dx.doi.org/10.1017/CBO9781139151153

Edmans, A. (2011). Does the stock market fully value intangibles? Employee satisfaction and equity prices. *Journal of financial economics*, 101(3), 621-640. https://doi.org/10.1016/j.jfineco.2011.03.021

Eesley, C., & Lenox, M. J. (2006). Firm responses to secondary stakeholder action. *Strategic Management Journal*, 27(8), 765–781. https://doi.org/10.1002/smj.536

Eisenhardt, K. M. (1989). Agency theory: An assessment and review. *Academy of Management Review*, *14*(1), 57-74. https://doi.org/10.2307/258191

El Ghoul, S., Guedhami, O., Kwok, C. C., & Mishra, D. R. (2011). Does corporate social responsibility affect the cost of capital? *Journal of banking & finance,* 35(9), 2388-2406. https://doi.org/10.1016/j.jbankfin.2011.02.007

Elkington, J. (1998). Partnerships from cannibals with forks: The triple bottom line of 21st-century business. Environmental quality management, 8(1), 37-51. https://doi.org/10.1002/tqem.3310080106

Epstein, E. M. (1987). The corporate social policy process: Beyond business ethics, corporate social responsibility, and corporate social responsiveness. *California management review.* 29(3):99-114. https://doi.org/10.2307/41165254

European Commission (2001). *Green paper promoting a european framework for corporate social responsibility*. COM/2001/366 final. European Commission, Brussels. Retrieved from http://eur-lex.europa.eu/

European Parliament, Council of the European Union. (2019). *Regulation (EU) 2019/2088 of the European Parliament and of the Council of 27 November 2019 on sustainability-related disclosure in the financial services sector*. Official Journal of the European Union L317/1. Retrieved from https://eur-lex.europa.eu/legal-content/ EN/TXT/?uri=celex%3A32019R2088.

Evans, A., Strezov, V., & Evans, T. J. (2009). Assessment of sustainability indicators for renewable energy technologies. *Renewable and Sustainable Energy Reviews*, 13(5), 1082–1088. https://doi.org/10.1016/j.rser.2008.03.008

EY (2014) *Funding challenges in the oil and gas sector. Innovative financing solutions for oil and gas companies*. Ernst & Young LLP.

Fama, E. F., & French, K. R. (2004). The capital asset pricing model: theory and evidence. *The Journal of economic perspectives*, 18(3), 25-46. https://doi.org/10.1257/0895330042162430

Fama, E.F., French, K.R. (1998), Value versus growth: The international evidence. *Journal of Finance*, 53, 1975-1999. https://doi.org/10.1111/0022-1082.00080

Fama, E.F., French, K.R. (2015), A five factor asset pricing model. *Journal of Financial Economics,* 116, 1-22. https://doi.org/10.1016/j.jfineco.2014.10.010

Fatemi, A., Glaum, M., & Kaiser, S. (2018). ESG performance and firm value: The moderating role of disclosure. *Global Finance Journal*, 38, 45–64. https://doi.org/10.1016/j.gfj.2017.03.001

Feldman, G. A. (1997). Performance measure congruity and diversity in multi-task principal/agent relations. *Accounting Review,* 69(3), 429–453. https://www.jstor.org/stable/248233

Flammer, C. (2013). Corporate social responsibility and shareholder reaction: the environmental awareness of investors. *Academy of Management Journal*. 56, 758-781. https://doi.org/10.5465/amj.2011.0744

Flammer, C. (2021). Corporate green bonds. *Journal of financial economics,* 142(2), 499-516. https://doi.org/10.1016/j.jfineco.2021.01.010

Flammer, C., Hong, B., & Minor, D. (2019). Corporate governance and the rise of integrating corporate social responsibility criteria in executive compensation: Effectiveness and implications for firm outcomes. *Strategic Management Journal*, 40(7), 1097-1122. https://doi.org/10.1002/smj.3018

Fonseca, A., McAllister, M. L., & Fitzpatrick, P. (2014). Sustainability reporting among mining corporations: a constructive critique of the GRI approach. *Journal of cleaner production*, 84, 70-83. https://doi.org/10.1016/j.jclepro.2012.11.050

Frederick, S. (2005). Cognitive Reflection and Decision Making. *The Journal of economic perspectives,* 19(4), 25-42. https://doi.org/10.1257/089533005775196732

Frederick, W. C. (1960). The Growing Concern over Business Responsibility. *California Management Review,* 2(4), 54–61. https://doi.org/10.2307/41165405

Freeman, R. E. (1984). *Strategic management: a stakeholder approach*. Pitman.

Freeman, R. E., Harrison, J. S., Wicks, A. C., Parmar, B. L., & de Colle, S. (2010). Stakeholder theory: the state of the art. *The Academy of Management annals,* 4(1), 403-445. https://doi.org/10.1080/19416520.2010.495581

Freeman, R. E., Pierce, J., & Dodd, R. H. (2000). *Environmentalism and the new logic of business. How firms can be profitable and leave our children a living planet*. Oxford, England: Oxford University Press.

Friedman, A. L. and S. Miles: 2001, Socially responsible investment and corporate social and environmental reporting in the U.K.: An exploratory study, *British Accounting Review* 33, 523–548. https://doi.org/10.1006/bare.2001.0172

Friedman, M. (1970). *The Social Responsibility of Business is to Increase its Profits*. Retrieved from https://www.nytimes.com/1970/09/13/archives/a-friedman-doctrine-the-social-responsibility-of-business-is-to.html

Fritz, T.M. and von Schnurbein, G. (2019), Beyond socially responsible investing: effects of mission driven portfolio selection. *Sustainability,* Vol. 11 No. 23, pp. 6812-6827. https://doi.org/10.3390/su11236812

Frynas, J. G., & Yamahaki, C. (2016). Corporate social responsibility: Review and roadmap of theoretical perspectives. *Business ethics (Oxford, England), 25*(3), 258-285. https://doi.org/10.1111/beer.12115

Ghaeli, M. R. (2016). Price-to-earnings ratio: A state-of-art review. *Accounting*, 3(2), 131-136. https://doi.org/10.5267/j.ac.2016.7.002

Gibson, R., Krueger, P., & Schmidt, P. S. (2019). ESG rating disagreement and stock returns. *Swiss Finance Institute Research Paper*, (19-67). https://dx.doi.org/10.2139/ssrn.3433728

Gibson, Rajna, Simon Glossner, Philipp Krueger, Pedro Matos, and Tom Steffen. (2021). Do responsible investors invest responsibly? Swiss finance institute research paper no. 20-13; *European corporate governance institute – Finance working paper* 712/2020. https://ssrn.com/abstract=3525530

Giese, G., Lee, L. E., Melas, D., Nagy, Z., & Nishikawa, L. (2019). Foundations of ESG investing: How ESG affects equity valuation, risk, and performance. The *Journal of Portfolio Management,* 45(5), 69-83. https://doi.org/10.3905/jpm.2019.45.5.069

Gimenez, C., Sierra, V., & Rodon, J. (2012). Sustainable operations: Their impact on the triple bottom line. *International Journal of Production Economics*, 140(1), 149–159. https://doi.org/10.1016/j.ijpe.2012.01.035

Gioia, D. A. (1999). Response: Practicability, paradigms, and problems in stakeholder theorizing. *Academy of Management Review,* 24, 228-232. https://doi.org/10.2307/259077

Global Reporting Initiative (GRI). (2023). *GRI Standards*. Retrieved from https://www.globalreporting.org/standards/

Godfrey, P. C., Merrill, C. B., & Hansen, J. M. (2009). The relationship between corporate social responsibility and shareholder value: An empirical test of the risk

management hypothesis. *Strategic management journal*, 30(4), 425-445. https://doi.org/10.1002/smj.750

Gray, R. (2010). Is accounting for sustainability actually accounting for sustainability ... and how would we know? An exploration of narratives of organisations and the planet. *Accounting, Organizations and Society,* 35(1), 47-62. https://doi.org/10.1016/j.aos.2009.04.006

Gray, R., Kouhy, R. & Lavers, S. (1995). Corporate social and environmental reporting: a review of the literature and a longitudinal study of UK disclosure. Accounting, Auditing & Accountability Journal, 8(2), 47-77. https://doi.org/10.1108/09513579510146996

Gregory, A., Tharyan, R., & Whittaker, J. (2014). Corporate social responsibility and firm value: disaggregating the effects on cash flow, risk and growth. *Journal of business ethics,* 124(4), 633-657. https://doi.org/10.1007/s10551-013-1898-5

GRI (2019). *Linking GRI standards and the EU directive on non-financial and diversity disclosure.* Retrieved from www.globalreporting.org/standards/resource-download-center/linking-gri-standards-andeuropean-directive-on-non-financial-and-diversity-disclosure/

Gupta, A. (2011), "Triple Bottom Line (TBL a" 3BL)", *International Journal of Management,* 2,71–77 http://dx.doi.org/10.53739/samvad%2F2011%2Fv2%2F98244

Hafstrom, J.L., Chae, J.S. & Chung, Y.S. (1992). Consumer decision-making styles: comparison between United States and Korean young consumers. *Journal of Consumer Affairs,* 26(1), 146-158. https://doi.org/10.1111/j.1745-6606.1992.tb00020.x

Harvey, B., Smith, S., & Wilbnson, B. (1984). *Managers and corporate social policy: Private solutions to public problems?* London: Macmillan Press Ltd.

Herremans, I. M., Akathaporn, P., & McInnes, M. (1993). An investigation of corporate social responsibility reputation and economic performance. *Accounting, Organizations and Society, 18*(7-8), 587-604. https://doi.org/10.1016/0361-3682(93)90044-7

Hillman, A. J., & Keim, G. D. (2001). Shareholder value, stakeholder management, and social issues: what's the bottom line?. *Strategic management journal*, 22(2), 125-139. https://doi.org/10.1002/1097-0266(200101)22:2<125::AID-SMJ150>3.0.CO;2-H

Hoepner A. , Oikonomou I. , Scholtens B. , Schröder M. (2016). The effects of corporate and country sustainability characteristics on the cost of debt: an International Investigation. *The Journal of Business Finance & Accounting*, 43: 158–190. https://doi.org/10.1111/jbfa.12183

Hoepner A. G. F. , Majoch A. A. A. , Zhou X. Y. (2019). Does an asset owner's institutional setting influence its decision to sign the principles for responsible investment? *Journal of Business Ethics*. 168(2) 389-414. https://doi.org/10.1007/s10551-019-04191-y

Hong, H., & Kacperczyk, M. (2009). The price of sin: The effects of social norms on markets. *Journal of financial economics*, 93(1), 15-36. https://doi.org/10.1016/j.jfineco.2008.09.001

Hörisch, J., Freeman, E. R., & Schaltegger S. S., (2014). Applying stakeholder theory in sustainability management. *Organization & Environment*, 27(4), pp. 328-346. https://doi.org/10.1177/1086026614535786

Hörisch, J., Johnson, M., & Schaltegger, S. (2015). Implementation of sustainability management and company size. *Business Strategy and the Environment*, 24(8), 765–779. https://doi.org/10.1002/ bse.1844. https://doi. org/10.1109/9780470545454.ch1.

Hughey, C. J., & Sulkoski, A. J. (2012). More disclosure=better csr reputation?: an examination of csr reputation leaders and laggards in the global oil & gas industry. *Journal of Academy of Business & Economics*, 12(2), 24–34.

Humphrey, J.E. & Lee, D.D. (2011). Australian socially responsible funds: performance, risk and screening intensity. *Journal of Business Ethics*, 102(4) 519-535. https://doi.org/10.1007/s10551-011-0836-7

Hussain, N., Rigoni, U. & Orij, R. P. (2018). Corporate governance and sustainability performance: Analysis of triple bottom line performance. *Journal of business ethics*, 149(2), pp. 411-432. https://doi.org/10.1007/s10551-016-3099-5

Hylton, M. O., (1992). Socially responsible investing: doing good versus doing well in an efficient market, *American University Law Review* 42, 1–52. Retrieved from https://digitalcommons.wcl.american.edu/cgi/viewcontent.cgi?article=1557&context=aulr

IEA (2021), *Renewable Energy Market Update 2021, IEA.* Retrieved from https://www.iea.org/reports/renewable-energy-market-update-2021

IEA (2022), *World Energy Outlook 2022, IEA.* Retrieved from https://www.iea.org/reports/world-energy-outlook-2022

International Financial Reporting Standards (IFRS) Foundation. (2023). *International Sustainability Standards Board.* Retrieved from https://www.ifrs.org/groups/international-sustainability-standards-board/

Islam, S. M. N., Munasinghe, M., & Clarke, M. (2003). Making long-term economic growth more sustainable: Evaluating the costs and benefits. *Ecological Economics*, 47(2–3), 149–166. https://doi.org/10.1016/S0921-8009(03)00162-9

Iwata, H., & Okada, K. (2011). How does environmental performance affect financial performance? Evidence from japanese manufacturing firms. *Ecological Economics,* 70(9), 1691–1700. https://doi. Org/10.1016/j.ecolecon.2011.05.010

Jamali, D., & Mirshak, R. (2007). Corporate Social Responsibility (CSR): Theory and Practice in a Developing Country Context. *Journal of business ethics*, 72(3), 243-262. https://doi.org/10.1007/s10551-006-9168-4

Jensen, M. (2002). Value maximization, stakeholder theory, and the corporate objective function. *Business Ethics Quarterly,* 12, 235–256. https://doi.org/10.2307/3857812

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*(4), 305-360. https://doi.org/10.1016/0304-405X(76)90026-X

Jensen, M., 2004. Agency costs of overvalued equity and the current state of corporate finance. *European Financial Management*, 10 (4), 549–565. https://doi.org/10.1111/j.1354-7798.2004.00265.x

Jose, A., & Lee, S. M. (2007). Environmental reporting of global corporations: A content analysis based on website disclosures. *Journal of business ethics,* 72, 307-321. https://doi.org/10.1007/s10551-006-9172-8

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica,* 47(2), 263-292. https://doi.org/10.2307/1914185

Kempf, A., and P. Osthoff. 2007. The effect of socially responsible investing on portfolio performance. *European financial management: the journal of the European Financial Management Association, 13*(5), 908-922. https://doi.org/10.1111/j.1468-036X.2007.00402.x

Ketokivi, M. (2009). Tilastollinen päättely ja tieteellinen argumentointi. Gaudeamus Helsinki University Press. 86-91, 97-98, 225, 221

Kim, S. and Yoon, A. (2021) Assessing active managers' commitment to ESG: Evidence from United Nations principles for responsible investment. *Management science, 69*(2), 741-758. https://doi.org/10.1287/mnsc.2022.439

Kim, S., & Yoon, A. (2023). Analyzing Active Fund Managers' Commitment to ESG: Evidence from the United Nations Principles for Responsible Investment. *Management science*, 69(2), 741-758. https://doi.org/10.1287/mnsc.2022.4394

Klassen, R., & McLaughlin, C., 1996. The impact of environmental management on firm performance. *Management Science,* 42 (8), 1199–1214. https://www.jstor.org/stable/2634452

Kolk, A., & Pinkse, J. (2007). Towards strategic stakeholder management? Integrating perspectives on sustainability challenges such as corporate responses to climate change. *Corporate governance (Bradford), 7*(4), 370-378. https://doi.org/10.1108/14720700710820452

Konar, S., & Cohen, M. A. (2001). Does the Market Value Environmental Performance? *The review of economics and statistics, 83*(2), 281-289. https://doi.org/10.1162/00346530151143815

KPMG IMPACT. (2020). *Survey of Sustainability Reporting.* Retrieved from https://home.kpmg/xx/en/home/insights/2020/11/the-time-has-come-survey-ofsustainability-reporting.html

Krueger, P., Sautner, Z., & Starks, L. T. (2020). The importance of climate risks for institutional investors. *The Review of financial studies,* 33(3), 1067-1111. https://doi.org/10.1093/rfs/hhz137

Księżak, P. & Fischbach, B. (2018). Triple Bottom Line: The Pillars of CSR. *Journal of Corporate Responsibility and Leadership,* 4(3), 95. http://dx.doi.org/10.12775/JCRL.2017.018

Kurittu, K. (2018). *Yritysvastuuraportointi. Kiinnostavan viestinnän käsikirja.* Helsinki: Alma Talent

Kutner, M. H., Nachtsheim, C. J., Neter, J., & Li, W. (2005). *Applied linear statistical models*. McGraw-hill.

Lanis, R., & Richardson, G. (2013). Corporate social responsibility and tax aggressiveness: a test of legitimacy theory. *Accounting, Auditing and Accountability Journal*, *26*(1), 75-100. https://doi.org/10.1108/09513571311285621

Larcker, D. F., & Watts, E. M. (2020). Where's the greenium? *Journal of accounting & economics, 69*(2-3), 101312. https://doi.org/10.1016/j.jacceco.2020.101312

Leite, P., & Cortez, M.C. (2014), Style and performance of international socially responsible funds in Europe. *Research in International Business and Finance,* 30, 248-267. https://doi.org/10.1016/j.ribaf.2013.09.007

Leite, P., & Cortez, M.C. (2015), Performance of European socially responsible funds during market crises: evidence from France, International Review of Financial Analysis, 40, 132-141. https://doi.org/10.1016/j.irfa.2015.05.012

Lerman, L. V., Benitez, G. B., Gerstlberger, W., Rodrigues, V. P., & Frank, A. G. (2021). Sustainable conditions for the development of renewable energy systems: A triple bottom line perspective. *Sustainable Cities and Society,* 75, 103362. https://doi.org/10.1016/j.scs.2021.103362

Létourneau H. (2015) *The responsible investment practices of the world's largest government-sponsored investment funds. The Routledge Handbook of Responsible Investment,* London: Routledge, 468–485.

Levinson, A., & Taylor, M. S. (2008). Unmasking the pollution haven effect. *International economic review,* 49(1), 223-254. https://doi.org/10.1111/j.1468-2354.2008.00478.x

Li, T. T., Wang, K., Sueyoshi, T., & Wang, D. D. (2021). ESG: Research progress and future prospects. *Sustainability,* 13(21), 11663. https://doi.org/10.3390/su132111663

Liang, Hao, Lin Sun, and Melvyn Teo. (2021). Responsible hedge funds. *Review of Finance*. https://doi.org/10.1093/rof/rfac028

Lintner, J. (1965). Security prices, risk, and maximal gains from diversification. *The Journal of finance,* 20(4), 587. https://doi.org/10.2307/2977249

Lu, Lucy & Taylor, Martin. (2015). Which Factors Moderate the Relationship between Sustainability Performance and Financial Performance? A Meta-Analysis Study. *Journal of International Accounting Research,* 15. http://dx.doi.org/10.2308/jiar-51103

Maas, K., Schaltegger, S., & Crutzen, N. (2016). Integrating corporate sustainability assessment, management accounting, control, and reporting. *Journal of cleaner production, 136*, 237-248. https://doi.org/10.1016/j.jclepro.2016.05.008

Majoch, A. A. A., Hoepner, A. G. F., & Hebb, T. (2017). Sources of Stakeholder Salience in the Responsible Investment Movement: Why Do Investors Sign the Principles for Responsible Investment? *Journal of business ethics*, 140(4), 723-741. https://doi.org/10.1007/s10551-016-3057-2

Malkiel, B.G. (2005), Reflections on the Efficient Market Hypothesis: 30 Years Later. *Financial Review*, (40), 1-9. https://doi.org/10.1111/j.0732-8516.2005.00090.x

Mallett, A. (2007). Social acceptance of renewable energy innovations: The role of technology cooperation in urban Mexico. *Energy Policy,* 35(5), 2790–2798. https://doi.org/10.1016/j.enpol.2006.12.008

Mansley, M., (2000). *Socially Responsible Investment: A Guide for Pension Funds and Institutional Investors*, Monitor Press: UK.

Marcoux, A. M (2000). Balancing act. In J. R. DesJardins & J. J. McCall (Eds.), Contemporary issues in business ethics (pp. 92-100). Belmont, CA: Thomson.

Markowitz, H. M. (1959). *Portfolio selection: Efficient diversification of investments.* https://www.jstor.org/stable/j.ctt1bh4c8h

Marx, A. (2019). Public-Private Partnerships for Sustainable Development: Exploring Their Design and Its Impact on Effectiveness. *Sustainability (Basel, Switzerland), 11*(4), 1087. https://doi.org/10.3390/su11041087

Mascarenhas, A., Coelho, P., Subtil, E., & Ramos, T. B. (2010). The role of common local indicators in regional sustainability assessment. *Ecological Indicators*, 10(3), 646–656. https://doi.org/10.1016/j.ecolind.2009.11.003

Mehra, R., & Prescot, E.C. (1985), The equity premium: A puzzle. *Journal of Monetary Economics*, 15, 145-161. https://doi.org/10.1016/0304-3932(85)90061-3

Mervelskemper, L., & Streit, D. (2017). Enhancing market valuation of ESG performance: Is integrated reporting keeping its promise? *Business Strategy and the Environment,* 26(4), 536–549. https://doi.org/10.1002/bse.1935

Michelson, G., Wailes, N., van der Laan, S., & Frost, G. (2004). Ethical Investment Processes and Outcomes. *Journal of business ethics,* 52(1), 1-10. https://doi.org/10.1023/B:BUSI.0000033103.12560.be

Mihail, B. A., Dumitrescu, D., Serban, D., Micu, C. D., & Lobda, A. (2021). The role of investor relations and good corporate governance on firm performance in the case of the companies listed on the Bucharest stock exchange. Journal of Risk and Financial Management, 14, 569.

Miles, R. A. (1987). *Managing the corporate social environment.* Englewood Cliffs, NJ: PrenticeHaU

Milne, M. J., & Gray, R. (2013). Whither ecology? The triple bottom line, the global reporting initiative and corporate sustainability reporting*, Journal of Business Ethics*, 118(1), pp. 13–29. https://doi.org/10.1007/s10551-012-1543-8

Mitchell, R. K., Agle, B. R., & Wood, D. J. (1997). Toward a Theory of Stakeholder Identification and Salience: Defining the Principle of Who and What Really Counts. *The Academy of Management review, 22*(4), 853-886. https://doi.org/10.2307/259247.

Montiel, I., & Delgado-Ceballos, J. (2014). Defining and measuring corporate sustainability: Are we there yet? Organization & Environment. Advance online publication. https://doi.org/10.1177/1086026614526413

Morgenstern, V.N. (1944), *Theory of Games and Economic Behavior*. New Jersey: Princeton University.

MSCI. (2023, March 17). Global Industry Classification Sector (GICS®). MSCI. Retrieved from https://www.msci.com/documents/1296102/11185224/GICS+Methodology+2023.pdf

Murray, A., Sinclair, D., Power, D., & Gray, R. (2006). Do financial markets care about social and environmental disclosure?: Further evidence and exploration from the UK. *Accounting, auditing, & accountability,* 19(2), 228-255. https://doi.org/10.1108/09513570610656l0

Nofsinger, J., & Varma, A. (2014). Socially responsible funds and market crises. *Journal of banking & finance,* 48, 180-193. https://doi.org/10.1016/j.jbankfin.2013.12.016

Omri, E., Chtourou, N., & Bazin, D. (2015). Solar thermal energy for sustainable development in Tunisia: The case of the PROSOL project. *Renewable and Sustainable Energy Reviews*, 41, 1312–1323. https://doi.org/10.1016/j.rser.2014.09.023

Ooi, E. and Lajbcygier, P. (2013), "Virtue remains after removing sin: finding skill amongst socially responsible investment managers", *Journal of Business Ethics,* 113(2) 199-224. https://doi.org/10.1007/s10551-012-1290-x

Ou, J. A., & Penman, S. H. (1989). Accounting Measurement, Price-Earnings Ratio, and the Information Content of Security Prices. *Journal of accounting research*, 27(2), 111-144. https://doi.org/10.2307/2491068

Owusu, P. A., & Asumadu-Sarkodie, S. (2016). A review of renewable energy sources, sustainability issues and climate change mitigation. *Cogent engineering*, 3(1), 1167990. https://doi.org/10.1080/23311916.2016.1167990

Pástor, Ľ., Stambaugh, R. F., & Taylor, L. A. (2022). Dissecting green returns. *Journal of financial economics*, 146(2), 403-424. https://doi.org/10.1016/j.jfineco.2022.07.007

Patten, D. M. (1992). Intra-industry environmental disclosures in response to the Alaskan oil spill: a note on legitimacy theory. *Accounting, Organizations and Society*, *17*(5), 471-475. https://doi.org/10.1016/0361-3682(92)90042-Q

Phillips, R. A., Freeman, R. E., & Wicks, A. C. (2003). What stakeholder theory is not. *Business Ethics Quarterly*, 13, 479-502. https://www.jstor.org/stable/3857968

Pigou, A. (1920). *The Economics of Welfare*. Macmillan.

Porter, M. & van der Linde, C. (1995). Toward a new conception of the environment-competitiveness relationship. *Journal of Economic Perspectives,* 9 (4), 97-118. https://doi.org/10.1257/jep.9.4.97

Principles for Responsible Investment (PRI). (2023). *About the PRI*. Retrieved from https://www.unpri.org/about-us/about-the-pri

Principles for Responsible Investment. (2021). *PRI brochure 2021.* Retrieved from https://www.unpri.org/download?ac=10948

Puttonen, T., & Puttonen, V. (2021). *Vastuullinen Sijoittaminen Teoriassa ja Käytännössä*. Aalto-yliopiston julkaisusarja Kauppa+Talous 4

Raza, A., Ilyas, M. I., Rauf, R., & Qamar, R. (2012). Relationship between corporate social responsibility (CSR) and corporate financial performance (CFP): Literature review approach. *Elixir Financial Management,* 46(9), 8404-8409.

Refinitiv. (2023). *Refinitiv ESG Scores Methodology*. Retrieved from: https://www.refinitiv.com/content/dam/marketing/en_us/documents/methodology/refinitiv-esg-scores-methodology.pdf

Renneboog, L., Ter Horst, J., & Zhang, C. (2008). Socially responsible investments: Institutional aspects, performance, and investor behavior. *Journal of banking & finance,* 32(9), 1723-1742. https://doi.org/10.1016/j.jbankfin.2007.12.039

Revelli, C., & Viviani, J. (2015). Financial performance of socially responsible investing (SRI): What have we learned? A meta-analysis. *Business ethics*, 24(2), 158-185. https://doi.org/10.1111/beer.1207

Richardson, B.J. (2008), Socially Responsible Investment Law: Regulating the Unseen Polluters, *Oxford University Press,* Oxford. https://doi.org/10.1093/acprof:oso/9780195333459.001.0001

Sandberg, J., Juravle, C., Hedesström, T. M., & Hamilton, I. (2008). The Heterogeneity of Socially Responsible Investment. *Journal of Business Ethics*, 87(4), 519-533. doi:10.1007/s10551-008-9956-0

Schaltegger, S., & Burritt, R. (2005). *Corporate sustainability. The International Yearbook of Environmental and Resource Economics* 2005/2006, 185-222. Cheltenham, England: Edward Elgar.

Scholtens B. & Sievänen R. (2013) Drivers of socially responsible investing: a case study of four nordic countries. *Journal of Business Ethics*, 115, 605–616. https://doi.org/10.1007/s10551-012-1410-7

Schonherr, N., Findler, F., & Martinuzzi, A. (2017). Exploring the Interface of CSR and the Sustainable Development Goals. Transnational corporations, 24(3), 33. http://dx.doi.org/10.18356/cfb5b8b6-en

Schotland, R. A. (1980). Divergent Investing for Pension Funds. *Financial Analysts Journal*, *36*(5), 29–39. http://www.jstor.org/stable/4478382

Schueth, S. (2003), Socially responsible investing in the United States. *Journal of Business Ethics*, 43 (3), pp. 189-194. https://doi.org/10.1023/A:1022981828869

Searcy, C. (2016). Measuring Enterprise Sustainability. *Business strategy and the environment, 25*(2), 120-133. https://doi.org/10.1002/bse.1861

Selfa, T. (2010). Global benefits, local burdens? The paradox of governing biofuels production in Kansas and Iowa. *Renewable Agriculture and Food Systems,* 25(2), 129–142. https://doi.org/10.1017/S1742170510000153

Sethi, S. P. (1975). Dimensions of Corporate Social Performance: An Analytical Framework. *California Management Review*, 17(3), 58–64. https://doi-org.pc124152.oulu.fi:9443/10.2307/41162149

Sharfman, M. P., & Fernando, C. S. (2008). Environmental risk management and the cost of capital. *Strategic management journal, 29*(6), 569-592. https://doi.org/10.1002/smj.678

Sharpe, W. (1964), Capital asset prices: A theory of market equilibrium under conditions of risk. *Journal of Finance,* 19, 425-442. https://doi.org/10.2307/2977928

Shiller, R.J. (1989), *Market Volatility.* Cambridge: MIT Press

Shleifer, A.,Vishny, R. (1997), The limits of arbitrage. *Journal of Finance,* 52(1), 35-55. https://doi.org/10.1111/j.1540-6261.1997.tb03807.x

Silva, F., & Cortez, M. C. (2016). The performance of US and European green funds in different market conditions. *Journal of cleaner production, 135*, 558-566. https://doi.org/10.1016/j.jclepro.2016.06.112

Simon, J. G., C. W. Powers and J. P. Gunnemann: 1972, The Ethical Investor: Universities and Corporate Responsibility (Yale University Press, New Haven, CT)

Simpson, A. (1991). *The Greening of Global Investment: How the Environment, Ethics and Politics are Reshaping Strategies*. Economist Publications.

Solomon, J. F., A. Solomon & S. D. Norton. (2002). Socially responsible investment in the UK: drivers and current issues. *Journal of General Management* 27(3), 1–13. https://doi.org/10.1177/030630700202700302

Soppe, A. (2004). Sustainable Corporate Finance. *Journal of business ethics,* 53(1/2), 213-224. https://doi.org/10.1023/B:BUSI.0000039410.18373.12

Sparkes, R. (2017), *A historical perspective on the growth of socially responsible investment"*, *Responsible Investment.* Routledge, Oxford. 39-54

Sparkes, R., & Cowton, C. J. (2004). The Maturing of Socially Responsible Investment: A Review of the Developing Link with Corporate Social Responsibility. *Journal of Business Ethics,* 52(1), 45–57. http://www.jstor.org/stable/25075231

Sparkes, R.: 2002, *Socially Responsible Investment: A Global Revolution* (Wiley, Chichester).

Spicer, B. H. (1978a) Investors, corporate social performance and information disclosure: An empirical study. *Accounting Review*, 53, 94-111.

Spicer, B. H. (1978b). Market Risk, Accounting Data and Companies' Pollution Control Records. *Journal of business finance & accounting*, 5(1), 67.

Statman, M. (2004). What do investors want? *Journal of Portfolio Management 30th Anniversary Issue*, 153–161. https://dx.doi.org/10.2139/ssrn.603683

Statman, M., and D. Glushkov. 2009. The wages of social responsibility. *Financial Analysts Journal* 65:33–46. https://doi.org/10.2469/faj.v65.n4.5

Stjepcevic, J., & Siksnelyte, I. (2017). Corporate social responsibility in energy sector. *Transformations in Business & Economics,* 16(1), 21-33.

Stock, J. H., & Watson, M. W. (2020). *Introduction to econometrics*. Pearson.

Strand, R. (1983) A systems paradigm of organizational adaptations to the social environment. *Academy of Management Review*, 8, 90-96.

Subrahmanyam, A. (2007), Behavioural finance: A review and synthesis. *European Financial Management,* 14(1), 12-29. https://doi.org/10.1111/j.1468-036X.2007.00415.x

Székely, F., & Knirsch, M. (2005). Responsible leadership and corporate social responsibility: Metrics for sustainable performance. *European Management Journal,* 23, 628-647. https://doi.org/10.1016/j.emj.2005.10.009

Tippet, J. (2001). Performance of Australias Ethical Funds. *Australian economic review,* 34(2), 170-178. https://doi.org/10.1111/1467-8462.00186

Tschopp, D., & Nastanski, M. (2014). The harmonization and convergence of corporate social responsibility reporting standards. *Journal of Business Ethics,* 125(1), 147-162. https://doi.org/10.1007/s10551-013-1906-

Tuzzolino, F., & Armandi, B. R. (1981). A Need-Hierarchy Framework for Assessing Corporate Social Responsibility. *The Academy of Management Review*, 6(1), 21–28. https://doi.org/10.2307/257137

Uddin, M.B., Hassan, M.R., & Tarique, K.M. (2008). Three dimensional aspects of corporate social responsibility. *Daffodil International University Journal of Business and Economics,* 3(1), 199–212.

Ullmann, A. A. (1985). Data in search of a theory: A critical examination of the relationships among social performance, social disclosure, and economic performance of US firms. *Academy of management review*, 10(3), 540-557. https://doi.org/10.2307/258135

Unerman, J., Bebbington, J. and O'Dwyer, B. (2007), *Sustainability, Accounting and Accountability*, Routledge, New York, NY

United Nations, 2018. *The Sustainable Development Goals Report 2018*. https://unstats.un.org/sdgs/report/2018

United Nations. (1987). *Our Common Future.* Retrieved from https://www.un-documents.net/our-common-future.pdf

United Nations. (2021). *Theme Report on Energy Transition.* Retrieved from https://www.un.org/sites/un2.un.org/files/2021/11/2021-twg_2.pdf

United Nations. (2023). *The Paris Agreement.* Retrieved from https://unfccc.int/process-and-meetings/the-paris-agreement

Verheyden, T., Eccles, R. G., & Feiner, A. (2016). ESG for all? the impact of esg screening on return, risk, and diversification. *Journal of Applied Corporate Finance,* 28(2), 47-55. https://doi.org/10.1111/jacf.12174

Viviers, S., & Eccles, N. S. (2012). 35 years of socially responsible investing (SRI) research: General trends over time. *South African journal of business management,* 43(4), 1-16. https://doi.org/10.4102/sajbm.v43i4.478

Walton, Clarence C. (1967). *Corporate Social Responsibilities.* Belmont, Calif.: Wadsworth Publishing Co, Inc.

Whiteman, G., Walker, B., & Perego, P. (2013). Planetary Boundaries: Ecological Foundations for Corporate Sustainability. *Journal of management studies, 50*(2), 307-336. https://doi.org/10.1111/j.1467-6486.2012.01073.

Windolph, S. E. (2011). Assessing corporate sustainability through ratings: Challenges and their causes. *Journal of Environmental Sustainability*, 1(5). http://dx.doi.org/10.14448/jes.01.0005

Wood, D. J. (1991). Corporate Social Performance Revisited. *The Academy of Management Review,* 16(4), 691–718. https://doi.org/10.2307/258977

Zafar, M. W., Sinha, A., Ahmed, Z., Qin, Q., & Zaidi, S. A. H. (2021). Effects of biomass energy consumption on environmental quality: the role of education and technology in Asia-Pacific Economic Cooperation countries. *Renewable and Sustainable Energy Reviews*, 142,(110868). https://doi.org/10.1016/j.rser.2021.110868

Zenisek, T. J. (1979). Corporate social responsibility: A conceptualization based on organizational literature. *Academy of Management Review*, 4, 359-368. https://doi.org/10.2307/257192

Zhou, G., Liu, L., & Luo, S. (2022). Sustainable development, ESG performance and company market value: Mediating effect of financial performance. *Business strategy and the environment,* 31(7), 3371-3387. https://doi.org/10.1002/bse.3089