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ESG: Earnings, Shareholders and Gains?

A study on ESG and Swedish firms' performance in times of uncertainty

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Abstract

Title: “ESG: Earnings, Shareholders and Gains? A study on ESG and Swedish firms’ performance in times of uncertainty”

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Key Words: ESG, CSR, Financial Performance, Covid-19, Uncertainty

Purpose: To examine the impact of ESG practices on financial performance in Sweden during times of stability compared to times of uncertainty, using COVID-19 pandemic as a proxy for uncertainty.

Methodology: The study employs a combination of Pooled OLS regression and difference in differences approaches on panel data of Swedish firms during the years 2018-2022 to investigate the relationship between ESG scores and Tobin’s Q ratio.

Theoretical Perspectives: The study capitalises on Shareholder, Stakeholder and Prospect Theories in order to formulate hypotheses and explain the relationship between the mentioned variables.

Empirical foundation: The initial sample is constructed of 1091 firm-observations between the years 2018-2022. Due to the lack of ESG score reporting on the sample firms, 459 observations remained. Data on each variable is reported on an annual basis.

Conclusions: We find no significant relationship between ESG scores and financial performance when controlling for accounting ratios and robustness checks, suggesting more emphasis on financial factors such as liquidity and debt levels when it comes to Tobin’s Q. In addition, we find no difference in the relationship during times of stability compared to the defined period of uncertainty.

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1. Introduction

The introduction starts off with a background section, highlighting the exemplary ESG and CSR performance in Sweden, linking it to the Covid-19 crisis to underscore their interconnectedness. It proceeds with a problem discussion, purpose, and research questions, emphasising the necessity of further studying the relationship between ESG and firm performance. After that, we present the findings along with the contribution of this study to the current literature and describe the outline of the paper

1.1 Background

Social contributions by firms today are frequently referred to as ESG (Environmental, Social and Governance), or CSR (Corporate Social Responsibility). In 2018, 86% of the companies in the S&P 500 Index reported on ESG and CSR, a major increase from less than 20% in 2011 (Governance & Accountability Institute, 2019), showing how the issue is taken more seriously nowadays. Sweden, which is the country of focus in this paper, places significant importance on social contributions by firms, viewing them as essential to business operations. In their Country Sustainability Report, Robeco (2023), reports on ESG profiles across 150 countries around the globe. In the report, Sweden ranks at the very top, showcasing its excellent ESG initiatives. In recent years, due to higher recorded temperatures and environmental concerns, the environmental factor (E) has received increasing attention (HSBC, 2023). However, it is important to remember that ESG encompasses all social aspects such as improved labour rights, board diversity and ethical business practices, not just environmental motives. To address these challenges and many more, the United Nations has adopted the 17 Sustainable Development Goals, aiming to end global issues by the year 2030 (UNDP, 2024). Among the 193 UN member nations, Sweden again emerged as a top performer, securing the second position only trailing Finland (Sachs et al., 2023).

In 2020, the world was struck by the COVID-19 pandemic (C19). This outbreak led to a dramatic 33% plunge in the stock market between February 21 and March 23, as noted by Baker et al. (2020). The authors conclude that, compared to previous disease outbreaks, C19 had the biggest impact on the stock market in history. Unlike the purely financial crash of the Global Financial Crisis (GFC) in 2008-2009, C19 was a health crisis that required governments to address not just economic impacts but also complex social issues such as distancing measures, lockdowns, and testing procedures (Albuquerque et al., 2020; Ashraf, 2020). During the post-C19 period, there were claims that high ESG stocks served as a buffer against the widespread value

destruction, acting as a protector against downside risks¹ (Albuquerque et al., 2020). The investments in social capital would, according to the authors, pay off in times of crisis. Other researchers argue against this view, concluding that ESG investments did not offer immunity against market crashes (Leite and Cortez, 2015). The differing outcomes regarding the role of ESG on firm performance can largely be attributed to two prevailing theories. On one hand Shareholder theory by Friedman (1962) proposes that a company's primary obligation is to maximise its profits, not to contribute to society. On the other hand, Stakeholder theory, proposed by Freeman in 1984, argues that companies should focus on creating long-term value for all stakeholders, including the community and the broader society in which they operate.

1.2 Problem Discussion

Previous studies investigating the relationship between ESG and firm performance focus on periods of market stability, as well as instability such as market shocks and crises. These studies have yielded mixed results, demonstrating both positive and negative impacts. For instance, Albuquerque et al. (2020) and Ding et al. (2021) find that companies with higher ESG incentives experienced better returns during the C19 crisis. Also, during non-crisis times, strategies like purchasing stocks of companies with high CSR and shorting² those with low CSR generated abnormal returns, reinforcing the idea that investing in CSR is beneficial under both stable and unstable market conditions (Kempf and Osthoff, 2007). However, well known papers suggesting the opposite relationship also exist. For instance, Lioui and Sharma (2012), observe significant negative impacts of high CSR activities on firm performance under normal market times, while Bauer et al. (2022) observe that brown stocks outperformed green stocks during crisis times.

Prospect theory by Kahneman and Tversky (1979) explains why individuals prioritise avoiding losses over achieving equivalent gains. As market conditions worsen, this behaviour intensifies and managers often adopt less risky corporate strategies and try to free up liquidity and cash (Hofmann, 2022). As noted, managers engage in CSR practices as a form of risk insurance, effectively minimising downside risk (Lins et al., 2017; Albuquerque et al., 2020; Godfrey et al., 2005). These studies conclude that during crises, the additional costs associated with CSR activities are justified by the resultant benefits that help mitigate problems. As a result, ESG incentives seem primarily advantageous during times of crisis rather than under normal conditions. Nofsinger and Varma (2014) analyse the return alphas between Socially Responsible

¹ Also see former Unilever CEO Paul Polman's (2020) article in Fortune "The Coronavirus Pandemic Maybe Turning point for responsible business".

² Shorting refers to the practice of selling a borrowed asset, hoping it goes down in value for it to be bought back at a later date for a cheaper price. In other words, it means betting against a stock.

Investing (SRI) funds and conventional funds, revealing that SRI funds outperform their conventional peers (Non-SRI) during crises, but tend to underperform during stable periods. Buchanan et al. (2018), on the other hand, demonstrate the opposite scenario in their study showing that CSR firms displayed a higher Tobin's Q compared to non-CSR firms before the crisis, but once the crisis began CSR firms experienced a more significant decline in firm value than their non-CSR counterparts. Here, CSR acts more like a speculative leverage tool than a safeguard against downside risks. As a response to the mixed literature, Demers et al. (2021) conducted their study and proved that ESG factors did not positively influence stock returns during crisis times. In addition, they also criticise previous studies, including Albuquerque et al. (2020) and Ding et al. (2021), for not using adequate control variables.

Lastly, the geographical aspect of ESG and its impact on firm performance presents a significant area of debate within the literature. Engelhardt et al., (2021) argues that ESG is especially value-enhancing in low trust countries with poorer security and where lower disclosure standards prevail. On the other hand, Ding et al. (2021) note that ESG is value enhancing especially in countries noted for their good environmental and societal concerns. Other researchers also support the idea that nations with greater trust, higher freedom of expression, lower uncertainty aversion, and stronger social norms experience more positive returns and less volatility during crises (Erdem, 2020; Ashraf, 2021). The discrepancy in findings is concerning as it leaves investors uncertain about the geographical aspects of ESG and its implications for firm performance.

1.3 Purpose and Research Questions

The primary purpose of this study is to examine the influence of ESG scores on firm performance in Sweden as well as whether there lies significant differences in different market conditions. This research adopts a similar approach of including more risk related control variables as recommended by Demers et al. (2021) to address previous criticisms regarding the adequacy of controls in studying the impacts of ESG on firm performance. Furthermore, our focus on Sweden allows us to compare our findings with similar existing research, particularly in countries where CSR standards may not be as high as those in Sweden, thereby providing valuable insights into the dynamics of ESG within different geographical contexts.

1.4 Findings

The empirical analysis of the study reveals various key relationships between ESG and financial performance within Swedish listed companies. The results indicate a negative relationship, significant to the 10%, between ESG scores and Tobin's Q in a Pooled Ordinary Least Squares (POLS) regression, with a major effect exhibited by the environmental pillar score (E). However, the inverse relationship becomes statistically insignificant after controlling for Random and Fixed effects, along with the controls proposed by Demers et al. (2021), which is consistent with their own results.

Additionally, we find an insignificant relationship between financial performance before and after Covid-19, the main proxy for uncertainty. This suggests a lack of evidence regarding the effect of sustainability practices on financial performance during different market conditions, failing to align with either Shareholder theory nor Stakeholder theory. In line with Prospect theory, during uncertain periods, managers tend to adopt defensive strategies to safeguard their businesses from potential risks, such as defaults. While a great amount of literature supports the idea that ESG factors could help mitigate additional risks during uncertain times, and that firms with robust ESG practices tend to perform better during crises (Nofsinger and Varma, 2014; Lins et al., 2017; Albuquerque et al., 2020; Ding et al., 2021) our findings reveal no significant disparity in performance between high ESG firms and low ESG firms during periods of stability and uncertainty, aligning with Demers et al. (2021).

1.5 Contribution

As mentioned, the relationship of ESG and firm performance have been highly researched in recent times, yielding mixed results. However, the paper from Demers et al. (2021) stands out as it criticises prior methodologies, particularly for suffering from omitted variable bias. We view the advancements made by the authors as crucial for the field, offering valuable insights for both managerial decision-making at the micro level and regulatory considerations at the macro level. While we align with the critique concerning prior studies we recognized an opportunity to enhance the robustness of their findings through further examination. Our study yielded similar results to those of Demers et al. (2021) - the main difference in methodology being that their study focuses specifically on the Covid-19 shock, whereas our study adopts a pre/post-Covid approach, using the post-Covid period as a proxy for uncertainty.

Furthermore, we drew inspiration from the methodology of Engelhardt et al. (2021). Our variables are similar to a large extent, the main difference being their use of stock returns, while we rely on Tobin's Q as proxy for firm performance, as well as our addition of the Economic Policy Uncertainty Index (EPU) control variable. We further extend their study by integrating the pre/post approach using a diff-in-diff methodology, while Engelhardt et al. (2021) focuses solely on the Covid shock using a POLS Model. Moreover, Engelhardt et al. (2021) examines sixteen different European countries and finds that ESG is value-enhancing in low-trust countries. We narrowed our focus to Sweden, a high-trust country, thus filling an important gap in the literature. To the best of our knowledge, no published paper has specifically covered Sweden or the Nordics in general, with the exception of Semenova et al. (2010). However, inspired by Demers et al. (2021), we conclude that their paper lacks robustness due to omitting important controls such as risk and accounting variables, focusing only on firm age and sales growth. As our paper controls for leverage, size, liquidity and return on equity, this paper determines whether investing in ESG continues to serve as an effective safeguard against downturns such as in Engelhardt et al. (2021), or if different behaviours are observed among managers in a high-trust environment like Sweden.

The findings from this study are particularly relevant for investors and policymakers, providing them with a deeper understanding of how ESG contributes to resilience and performance in uncertain times. The results are expected to benefit a broad spectrum of stakeholders by providing a clearer understanding of the strategic value of ESG under various market conditions.

1.6 Outline

The paper is organised as follows. Section 2 provides general information about concepts of relevance to the study. Section 3 presents a literature review, including theoretical frameworks and empirical findings that led to the hypotheses formulated. Section 4 provides information on data collection and summary statistics. Section 5 shows the methodology including the different tests and robustness checks. We present the empirical findings along with interpretations in Section 6. Finally, Section 7 connects the empirical results to the theories, comments on the results and discusses the limitations we faced while conducting the study, and possible future research directions.

2. General Information

This section offers essential context before reviewing the literature. It begins by tracing the history of Social Responsibility and detailing the emergence of the acronyms CSR and ESG, our independent variable. Subsequently, it explains our dependent variable Tobin's Q and provides a broader understanding of firm performance. The Covid-19 pandemic is then briefly contextualised, emphasising its connection to uncertainty, a key aspect within our study's timeframe. Finally, we highlight why the Nordic countries, Sweden in particular, stand out in integrating ESG into both everyday and corporate practices.

2.1 Social Responsibility

While Social Responsibility has received increased attention in recent times, the concept has been around for a lot longer, several centuries according to Carroll (2015). With the rise of philanthropy along with worsened working conditions, executives started to reconsider their business operations in the late 1800s (Schoff, 2024). It took until the 1930-40's that the social role of corporations started appearing in literature (Carroll, 1999). In his book "Social Responsibilities of the Businessman" (1953) Howard Bowen coined the term Corporate Social Responsibility (CSR). With this new acronym, Bowen highlights the significant influence of corporations and acknowledges the substantial impact they have on society. He argues that executives and managers in power are obligated to pursue agendas that contribute to the common good.

Around 50 years later, in 2004, the term "ESG" was created when 20 financial institutions were invited by the UN Secretary-General Kofi Annan to better address and develop guidelines of environmental, social and governance issues into various fields of work. In the report "Who Cares Wins", the companies reiterated the need for stronger and more resilient markets, a contribution to sustainable development and an improved trust in financial institutions. These guidelines were directed towards all stakeholders in the financial sector, encompassing analysts, financial institutions, corporations, investors, trustees of pension funds, consultants and financial advisors, regulatory bodies, stock exchanges, and NGOs.

While ESG is similar to CSR, and used interchangeably in the literature and this paper, a notable difference between the two is that ESG includes the governance factor in a clear and detailed manner, while CSR regards "governance" as more indirect - a factor resulting from environmental and social aspects (Gillan et al., 2021). Similar to how corporations receive credit

ratings based on the firm's ability to repay its debts, they also receive ESG scores from different rating providers that assess how effectively the company manages its Environmental, Social, and Governance practices. For example, ESG data in this report is sourced from Refinitiv Eikon, which captures over 630 company-level ESG measures across 10 different ESG topics, based on the three E, S and G pillars (See figure 1 below). All measures combined make up a score, as for Refinitiv Eikon this score ranges between 0-100, but can differ depending on which ESG rating provider that is used.

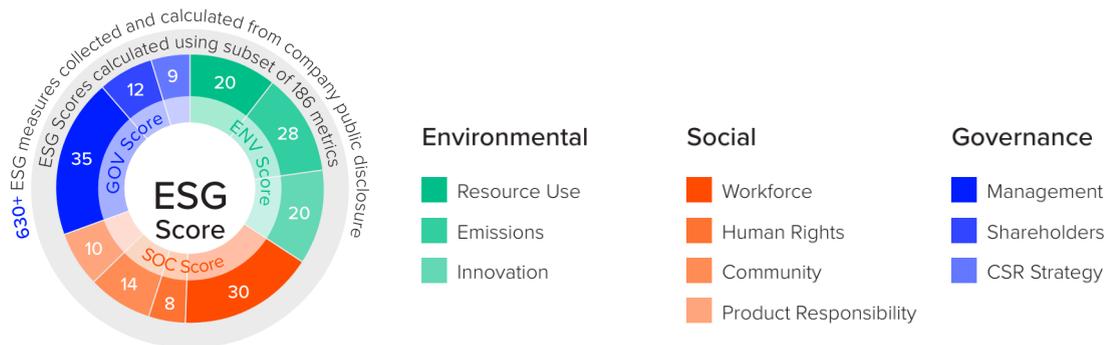


Figure 1. Breakdown of Eikon Refinitiv ESG Scores (Refinitiv, 2022).

While most rating providers use similar scoring systems and algorithms, investors should be cautious about there being a lack of convergence and commonality between the rating providers (Dorfleitner et al., 2015; Billio et al., 2021). Another issue that potentially could hurt the credibility of the ESG scoring system is *greenwashing*, which is a term that has become a more prevalent term as the importance of ESG has grown. It refers to the practice of businesses falsely reporting on sustainability measures to appear more environmentally responsible than they actually are (KPMG, 2023) - cheating the system in other words. Fortunately, regulatory bodies such as the U.S. Securities and Exchange Commission (SEC) and the Sustainable Finance Disclosure Regulation (SFDR) in the European Union are becoming aware of this practice and have begun proposing regulations to combat the problem (KPMG, 2023). These measures are important as continued greenwashing from major corporations could lead to scepticism and doubt among investors, potentially undermining the reliability of ESG scores.

2.2 The Nordic Model

Sweden, along with the rest of the Nordic countries are often placed high when it comes to quality of life, encompassing factors such as safety, inclusion, career opportunities, healthcare, democracy and corruption, just to name a few (European Commission, 2023). Andersen et al.

(2007) note that these nations exemplify a strong tradition of transparency and trust in public institutions, enhancing governance and ethical business practices. In a corporate setting, democratic systems encourage high levels of civic participation and stakeholder engagement, effectively addressing social issues such as labour rights and board diversity. Moreover, the Nordic countries often embed sustainability in their strategies, driven by government incentives and strict environmental regulations that drive businesses towards green technologies and sustainable practices. Ultimately, the notable success of the Nordic countries can be attributed to their cultural, political and economic frameworks that are deeply rooted in their egalitarian principles. Together, these practices are referred to by the authors as “The Nordic Model” (Andersen et al., 2007).

2.3 Covid-19 Pandemic Uncertainty

It is clear that the C19 pandemic shocked the world in 2020, and had serious implications for people and businesses globally. According to the World Health Organization over 7 million people died during the C19 pandemic (WHO, 2024.). However, we argue that the true number should be significantly higher, either obscured by political motives or hindered by insufficient reporting resources in various nations. For instance, the United States documented nearly 1.2 million deaths among its 330 million citizens, whereas China and India collectively reported 650,000 deaths among their combined population of 2.8 billion. We think these statistics cast doubt on the accuracy of the WHO's reported global death toll.

In his speech on May 21 2020, Fed Chairman Jerome Powell noted “We are now experiencing a whole new level of uncertainty, as questions only the virus can answer complicate the outlook” (Board of Governors of the Federal Reserve System, 2020), stating the fact that C19 brought profound and unprecedented challenges, which policymakers and investors faced in navigating the uncertain landscape. Altig et al. (2020) highlight two unique aspects of the C19 pandemic that explain why uncertainty reached extraordinary levels following the crisis. First, they point to the suddenness of the crisis and the great amount of job losses following lockdowns and restrictions. Second, they highlight the severity of the economic contraction, manifested in steep GDP declines, supply chain disruptions and business defaults that exceed prior health crises. Ludvigsson (2020) noted that Sweden did not adopt a general lockdown. Despite this, uncertainty regarding public health and the national economy was still prevalent. For instance, Sweden significantly exceeded its Scandinavian counterparts in reported deaths per 100.000 inhabitants (Kamerlin and Kasson, 2020). Additionally, C19 had profound implications for the

Swedish economy during the years of 2020-2022, where many sectors experienced significant declines in activity (Angelov and Waldenström, 2023).

2.4 Firm Performance

Firm performance is a multidimensional construct encompassing various factors such as effectiveness, reputation, status, innovation and survival (Richard et al., 2009). Harrison and Freeman (1999) explain that firm performance is how well a firm can respond to stakeholder demand. When it comes to pure financial performance, Gentry and Shen (2010) differentiate between accounting and market measures. Accounting measures, such as Return on Assets (ROA), Return on Sales (ROS), and Return on Equity (ROE), indicate past or short-term financial performance. These measures are derived from annual reports and reflect events that have already occurred - a detailed representation of the firm's past performance. Conversely, stock-based measures like Tobin's Q, Price-to-earnings (P/E) and market return are indicative of future and long-term financial performance. These measures capture investor expectations about the firm's future, which are integrated into the stock price.

While accounting measures and market based measures have their differences, strengths and weaknesses, most researchers consider them both as legitimate options for assessing financial performance (Hoskisson, 1994). With this in mind, this paper opts for a market based measure - Tobin's Q, as its dependent variable, believing it to better capture investor behaviour in comparison to accounting metrics. Since Tobin's Q is a quotient of the market value of assets over the replacement cost of the assets, it allows us to distinguish if our independent variable is over- or undervalued in different market times. On the other hand, in order to ensure robustness, the study also uses an accounting ratio as a proxy for financial performance. This variable being "profitability", which is net operating income before depreciation/total assets, as employed by Engelhardt et al. (2021).

3. Literature Review and Hypothesis Development

In this section, we present the literature review, which includes theories such as Shareholder theory, Stakeholder theory, and Prospect theory, along with the supporting empirical evidence. Following the presentation of the three theories, we formulate our three hypotheses, as well as address criticism directed towards the theories. Our aim in this section is to provide the reader with an understanding of the existing literature concerning our variables, the various relationships between them, and the critiques surrounding the empirical evidence and theories.

3.1 Shareholder Theory

Shareholder theory³ is often linked to economist and Nobel Prize laureate Milton Friedman. In his 1962 publication “Capitalism and Freedom”, Friedman argued against the doctrine of ‘Social responsibility’ asserting that the primary objective of corporations is to maximise profits. He further elaborated on his stance in a 1970 New York Times article titled “A Friedman doctrine--The Social Responsibility of Business Is to Increase Its Profits”, where he expressed scepticism regarding the notion that businesses can have responsibilities. He viewed businesses as merely artificial constructs of individuals, thus incapable of holding responsibilities themselves. Friedman acknowledged that company executives might pursue various objectives, including what they consider to be “social responsibilities” such as commitments to family, religion, or country. However, he argued that in doing so, these individuals act as principals, by spending their own money, time and energy - not as agents, spending the money of their employers. In Friedman’s view, if there are "social responsibilities," they belong to individuals, not to businesses and the only responsibility of an executive is to work in the best interest of the firm. He suggested that tasks aimed at addressing social issues should be left to NPOs and NGOs whose primary focus is not profit-making. Friedman emphasised that the rationale behind allowing corporate executives to be appointed by shareholders is based on the understanding that these executives serve as agents for the shareholders' interests. This justification is undermined when executives involve themselves in societal matters, positioning them more as public employees or civil servants, despite being private enterprise employees. He concluded that if executives were to assume the role of civil servants, they should be selected through a political process, otherwise, their sole duty is to serve the shareholders' interests.

³ Also referred to as the “Trade-Off Hypothesis”, see Preston and O’bannon (1997).

Proponents of this theory believe CSR activities are primarily indicative of the conflicts arising from the differing interests of shareholders and managers (Barnea and Rubin, 2010). As executives employ CSR strategies to promote their own social, political, or professional objectives, it represents a misuse of company funds. This standpoint aligns with Jensen's (1986) discussion on 'Agency Costs of Free Cash Flow'. Jensen explains that excess cash in the hands of management might lead to investments that are not in best of interest for the firm.

3.1.1 Empirical Evidence Supporting Shareholder Theory

Given that ESG initiatives are often perceived as costly, a substantial body of literature suggests that firm performance and shareholder value is destroyed when managers excessively invest in ESG. Hirigoyen and Poulain-Rehm (2015) conducted a study in the Asia-Pacific region, the US, and Europe. They identify a negative correlation between CSR and financial performance using regression analysis and Granger causality tests, basing their study on 329 publicly traded companies from 2009 to 2010. In a similar fashion, Lioui and Sharma (2012) examined the effect of CSR on firm performance, using ROA and Tobin's Q as metrics, and environmental information sourced from the KLD database. Analysing around 17,000 firm/year observations from 1993 to 2007, their findings reveal a statistically significant negative influence of CSR on financial performance, observed in both ROA and Tobin's Q measurements. The authors argue that generally, investors view CSR initiatives as potential costs and expenses. A similar result is pointed out by Di Giuli and Kostovetsky (2014). They find that CSR ratings are associated with lower ROA and negative future stock returns among the largest 3000 publicly traded companies during 2003-2009. They also base their results on the fact that trying to achieve good societal duties is very costly.

Marsat and Williams (2013) explore how a company's CSR rating correlates with its value, utilising the MSCI rating database for their analysis. The research comprises close to 9,000 global observations from 2,838 companies during the years 2005-2009. They employ Tobin's Q and the price-to-book ratio as proxy of asset equity valuation. After controlling for variables such as industry, region, year, and R&D, they also conclude that CSR performance has a negative effect on the market value of a corporation. Pastor et al. (2021) analyse the performance differential between green and brown stocks in the US stock market, also using environmental ratings provided by MSCI, for the period 2012-2020. Throughout this timeframe, they observe that green stocks exceeded the performance of brown stocks. Despite this, they project lower expected returns for green stocks in the future. Their reasoning behind this stems from the fact

that green stocks only tend to outperform brown stocks primarily during periods of increased climate concerns. Similarly, Berle et al. (2023) investigate the link between brown stocks and return premiums. Their sample consists of firms excluded from Norway's "Oil Fund," the world's largest Sovereign Wealth Fund. The portfolio comprising these excluded companies (the brown firms) demonstrates a notably higher alpha of approximately 5%. Lastly, Hong and Kacperczyk (2009) investigate "sin" stocks - publicly traded corporations involved in producing alcohol, tobacco and gaming, during the years 1926-2006. They discover that these stocks are less frequently held by institutional investors like pension funds, and receive less analyst coverage. As a result, they see that these types of stocks yield higher expected returns than other comparable stocks.

Shareholder theory and the empirical evidence supporting it, suggests that brown companies outperform green companies. This is generally attributed to the notion that ESG initiatives entail financial costs. Firms that forgo these ESG investments can allocate funds in ways that potentially guarantee better returns for shareholders, thus enhancing firm performance. Although ESG practices are beneficial to society, they do not align with the financial goals of shareholders seeking maximum personal gains. This reflects Milton Friedman's (1962) proposition that it is not possible to both save the planet and enrich shareholders simultaneously, a choice must be made between the two.

Hypothesis 1: Companies with higher ESG scores will experience lower financial performance compared to companies with lower ESG scores.

3.1.2 Criticism of Shareholder Theory

Critics of Shareholder theory argue that the emphasis on wealth maximisation can lead to exploitative practices towards employees, customers, and other stakeholders, fostering a culture of short-termism among managers (Danielson et al., 2008). Furthermore, since stock prices can be manipulated in the short term, the pressure to elevate them can lead managers to make decisions that compromise the firm's long-term health.

Fontrodona and Sison (2006) adopt an ethical approach to critique the classical principal-agent theory. According to them an organisation, which is composed of a group of human beings, should not have capitalistic owners because this concept closely resembles the remnants of modern slavery. Rather, all stakeholders are equally important and should be treated as such,

rather than being regarded merely as physical assets owned by business leaders. Fontrodona and Sison (2006) also challenge the notion that owners assume the greatest risk in a corporation, such as being the last to be compensated in the event of bankruptcy. According to them, owners can diversify their assets by investing in other firms, a luxury not afforded to workers. Employees contribute through their own physical labour and cannot easily mitigate risk by diversifying their employment. And if the worker were to work multiple jobs this is not to diversify capital and reduce risk, rather just in order to survive.

3.2 Stakeholder Theory

In response to Shareholder theory, and inline with its critique, Stakeholder theory⁴ was introduced by R. Edward Freeman (1984) in the book ‘Strategic Management: a Stakeholder Approach’. Freeman proposed that for a company to optimise its value, it must take into account the interests of all stakeholders, rather than solely focusing on the owners. The success of a firm is reliant on the strength of the connection between its management and the stakeholders. This includes a wide array of groups such as customers, employees, suppliers, creditors and regulators. These entities are fundamental to a company's structure and failing to prioritise their needs jeopardises the company's prospects for success. Given that various stakeholders possess the consumer-like ability to choose whether to interact with the company or not, firm performance is closely linked to its treatment of these stakeholders (Harrison and Wicks, 2013). Moreover, McWilliams and Siegel (2001) argue that there is a level of CSR investment that maximises profit while also satisfies stakeholder demand for CSR. Firms providing CSR will have higher costs than non-CSR firms, but will be equally profitable due to the firm attributing higher revenues. Meaning in equilibrium, there should be no economic difference. While there is no difference in profitability, CSR activities are good for shareholders due to other factors than just profits, meaning a firm can “do well by doing good” - contributing to shareholders as well as to society as a whole.

The theory is closely linked to legitimacy theory which drives firms to align their goals with obtaining rewards such as investor confidence and customer loyalty, while avoiding adverse outcomes like legal sanctions or social ostracism, which negatively impacts cash flows (Suchman, 1995). He argued that legitimacy cannot be self-assigned, but rather, granted through a social process where stakeholders recognize the firm as trustworthy. This underscores the necessity for

⁴ Also referred to as the “Social Impact Hypothesis” (Preston and O’bannon, 1997) or “Good Management Theory” (Waddock and Graves, 1997)

firms to invest in ESG to obtain legitimacy - superficial efforts are insufficient. Thus, for a firm to be seen as legitimate, it must demonstrate transparency and justify its actions to the community it operates within (Fuente et al., 2017). Investing in ESG practices may not yield immediate financial returns, but over time, a firm can expect enhanced financial performance as a result of improved CSR activities. The paper of Boubaker et al. (2020) reiterates that in addition to the societal advantages, there are also economic benefits for firms that engage in socially-responsible practices. Specifically, CSR incentives can reduce financial distress through a lower cost of equity capital, lower cost of debt and less financial constraints.

3.2.1 Empirical Evidence Supporting Stakeholder Theory

In their study, Kempf and Osthoff (2007) investigate whether investors could increase their returns by adopting a trading strategy that involves buying stocks with high Socially Responsible Investing (SRI) ratings and selling those with low SRI ratings. They focus on stocks from the S&P 500 and DS 400 over the years 1992 to 2004. The researchers formed a portfolio of the highest rated 10% of stocks and another of the lowest rated 10%. Their findings demonstrate that investors could indeed achieve abnormal returns of up to 8.7% annually by applying this long-short strategy. Sassen et al. (2016) adopt a different approach by examining how corporate social performance (CSP) impacts different types of firm risk, namely systematic, idiosyncratic, and total risk. Their analysis reveals that high social performance consistently reduces all three types of risk which could potentially enhance firm value. Similarly, Chollet and Sandwidi (2018) provide evidence supporting the idea that CSR activities can lead to reduced firm risk, as measured by systematic, firm-specific, and total risk proxies. Their research demonstrates that strong social and governance practices within a firm are associated with lower financial risk.

Tzouvanas and Mamatzakis (2021) conducted a study on S&P 500 companies from 2005 to 2018, focusing specifically on environmental stocks and comparing these to non-environmental stocks. The identification of environmental stocks was based on the firms' greenhouse gas emissions within the S&P 500. Their findings indicate that stocks of companies with superior environmental performance showed higher equity valuation, exhibit lower idiosyncratic risk but higher systematic risk. The study suggests that investing in environmental stocks is beneficial, as these stocks not only demonstrate a commitment to reducing greenhouse gas emissions but also offer higher risk-adjusted performance. Consistent with this view, Bauer et al. (2022) compares green and brown portfolios, measuring “greenness” through CO₂ emissions, and finds that in all G7 countries except for Italy, green stocks provided higher returns than brown stocks. Heinkel et

al. (2001) demonstrate how ethical investing that excludes brown companies results in such firms being owned by a smaller pool of investors, as environmentally conscious investors avoid their stocks. This reduction in risk distribution among the remaining investors increases the cost of capital for these polluting companies, which in turn leads to lower stock prices. Should the increased cost of capital surpass the expenses associated with becoming environmentally friendly, then these polluting firms are likely to adopt socially responsible practices as a consequence of exclusionary ethical investment strategies.

Semenova et al. (2010) conducted similar research within the Swedish market, making their study particularly important to ours. Their results suggest that ratings of environmental and social performance complement financial information in explaining stock price fluctuations. Specifically, they observe a positive correlation between high ESG scores and positive stock returns. Similar studies have been made for the governance factor in isolation, see for example Ferrell et al. (2016). The authors find that firms with less agency problems engage more in CSR, and that CSR contributes to higher value, measured by Tobin's Q. Lastly, Verheyden et al. (2016) show that ESG information contributes to better decision making across various investment strategies with the optimal level depending on individual managerial preferences.

Within the substantial body of literature on ESG and firm performance, some researchers have shifted their focus to evaluating the significance of CSR activities during financial crises such as the recent C19 crisis and the GFC in 2008-2009. Given that our second research question involves examining ESG and firm performance during normal and crisis times (pre and post covid), this literature is of importance for this study.

For instance, Lins et al. (2017) examines U.S. stocks during the GFC and concludes that firms with high CSR intensity in their activities, generated superior returns (4-7 %pts), relative to firms with lower social capital scores. This finding implies that the trust established between a firm and its stakeholders through significant investments in social capital, benefits corporations particularly when the general trust in corporations and markets experiences a downturn. Bouslah et al. (2018) study the effect of risk and social performance during the pre-GFC and post-GFC. Results show that the relationship between risk and social performance is significantly different in the crisis period compared to the pre-crisis period. The authors conclude that increase in social performance activities greatly reduced volatility during crisis periods. Albuquerque et al. (2020) report findings closely aligned, but in the context of the C19 market crash. They

demonstrate that stocks characterised by high environmental and social scores exhibited significantly higher returns, reduced return volatility, and greater operating profit margins during the first quarter of 2020. Nofsinger and Varma (2014) compare return alphas between SRI funds and conventional funds in the US during the period from 2000 until 2011. Their analysis reveals that SRI funds surpass their conventional counterparts during times of crisis, mitigating downside risk. However, this advantage comes with a trade-off, as SRI funds tend to underperform during non-crisis periods. Furthermore, Ding et al. (2020) explore how corporate characteristics influenced stock returns during the C19 market downturn, analysing over 6,700 stocks across 61 economies. A key discovery from their research is that companies with a commitment to CSR activities before the pandemic saw better stock performance as the crisis unfolded. Additionally, the connection between CSR and resilience was more pronounced in economies where there's a greater societal emphasis on environmental and social concerns.

Similar to Nofsinger and Varma (2014), Broadstock et al. (2021) show that high ESG-portfolios outperform low-ESG ones and reduce risk during crisis times. However this effect diminishes in normal conditions, highlighting its crucial role during uncertain times. Yahya (2023) shows findings that indicate that sustainability enhances resilience during C19, with positive correlations between firms' environmental and social performance and their revenue, profitability, and valuation. Finally, Engelhardt et al. (2021) find that CSR engagement leads to enhanced stock performance during market volatility, and because of this, managers should invest in implementing a high quality CSR strategy. The results are more pronounced in countries with low trust, weaker regulations and worse disclosure standards.

Overall, research confirms the 'doing well by doing good' hypothesis, which asserts that companies engaging in CSR and ESG activities are likely to succeed in stable times as well as times of crisis. This perspective indicates that ESG efforts are beneficial for both shareholders and the broader society. Whether a manager works with CSR measures for their personal agenda or for the best of the firm is irrelevant, evidence shows that it benefits and improves shareholder value. Hypothesis 2 reflects Freeman's (1986) belief that companies actively contributing to societal good will eventually outperform those that do not.

Hypothesis 2: Companies with higher ESG scores will experience higher financial performance compared to companies with lower ESG scores.

3.2.2 Criticism of Stakeholder theory

Critics of this theory often complain that the doctrine lacks a theoretical base (Argandoña, 1998). This shortfall might be attributed to its primary grounding in ethical principles or to challenges in measuring the theory's application in real life scenarios (Waddock and Graves, 1997). Others argue in line with Friedman (1962) that stakeholder initiatives result in excessive expenses for companies, as they take on financial burdens that ideally should be the responsibility of individuals or governmental bodies (Aupperle et al., 1985). Additionally, critics include concerns that managers and major shareholders might excessively invest in CSR initiatives primarily for personal gain and to enhance their public image as responsible leaders, ultimately at the expense of the company's value (Barnea and Rubin, 2010).

Preston and O'Bannon (1997) illustrated this phenomenon through the The Managerial Opportunism Hypothesis which reverses the causality of our main variables. The theory suggests that when a company is doing well financially, managers might cut back on costly ESG investments, in order to increase their bonuses as a result of enhanced short-term stock prices. In contrast, during times of poor financial performance, managers may strategically increase ESG spending. This increase acts as a signal to the market, suggesting that the firm's disappointing financial results are a consequence of costly ESG commitments, thus justifying underperformance that deflects from managerial shortfalls. For instance, Shackleton et al. (2022), utilising the MSCI KLD dataset, test how firms' environmental and social (ES) performance evolves in response to stock market outcomes. Their analysis reveals that firms tend to enhance their ES performance following periods of weak stock market returns, notably after the GFC. In this context investing in ESG is merely a tool to hide weak firm performance. If firm performance is good, there is no reason for a firm to invest in ESG.

Similarly, Lys et al. (2015) mentions the Signalling Hypothesis in their paper, which also reverses the causality of the main variables. The authors identify three possible explanations for CSR expenditures, two of which have already been mentioned in this paper. These include: investment reasons (investment hypothesis) and for charity reasons (charity hypothesis). The investment hypothesis suggests that CSR initiatives yield economic benefits for the firm, such as reduced cost of capital or increased returns, as supported by Ng and Rezaee (2015); Pellegrini et al. (2019); Dhaliwal et al. (2014) and Gupta (2018). Conversely, the charity hypothesis proposes that CSR is beneficial for society (McWilliams and Siegel, 2001). Their third hypothesis, the signalling hypothesis, takes a different approach by reversing the causality between firm performance and

CSR. The authors conclude that the strong performance of green firms is not a result of CSR efforts, rather, CSR is a consequence of the firm's strong performance. This way, CSR serves as a signal to the market by management that the firm is poised for continued success. While it might appear that firms excel due to their CSR initiatives, this is only an illusion. Instead, the authors suggest that firms adopt CSR practices only after achieving success, giving the impression that they have always been green when, in reality, they were previously brown. This perspective challenges previous research aligned with Stakeholder theory, particularly studies supporting the investment and charity hypotheses.

In line with the critique of Stakeholder theory, Demers et al. (2021) report that in the US, high ESG companies do not provide any positive explanatory power for stock returns during C19. After accounting for factors such as industry, risk levels, accounting performance, financial position, and investments in intangible assets, their research concludes that ESG factors are not significant in explaining stock returns, neither during the initial market downturn of C19 nor throughout the recovery phase in the latter part of 2020. The authors critique prior research, notably Ding et al. (2021) and Albuquerque et al. (2020), for a potential omitted variable bias effect that falsely attributes positive outcomes to ESG factors. By reanalyzing these studies, Demers et al. (2021) identify that the overlooked inclusion of traditional risk measures and other critical variables, which correlate with both returns and ESG scores, accounts for the alleged positive ESG-performance link.

Moreover, Leite and Cortez (2015) examines French SRI funds, investing in Europe during the crisis and non-crisis periods that occurred from January 2001 to December 2012. Their results show that CSR funds significantly underperform compared to conventional funds during non-crisis times. Their findings indicate that ESG-oriented funds only equaled conventional funds during crises, without outperforming them. Halbritter and Dorfleitner (2015) review earlier studies that found a positive link between ESG scores and financial performance, pointing out that many of these studies relied on data from just one ESG rating agency. To provide a more comprehensive analysis, their study utilises data from three distinct ESG rating providers: ASSET4, Bloomberg, and KLD, due to them being significantly different, not only in their distribution but also in the associated risks. Their findings suggest there is no significant link between ESG ratings and financial performance, challenging the notion of a straightforward positive relationship.

Revelli and Viviani (2015) conducted a meta-analysis, reviewing 85 earlier studies and 190 experiments spanning 20 years. Their research concludes that, on a global scale, it is unclear whether integrating SRI concerns into portfolio management yields higher profits compared to traditional investment strategies. Their research also supports the perspective that investing in CSR does not have a positive or negative impact on risk-adjusted performance. Lastly, the study by Fiskerstrand (2019) that applied similar pricing models, who focused on the Norwegian stock market from 2009 to 2018, indicated that companies with high ESG ratings did not significantly outperform or underperform those with lower ESG ratings.

3.3 Prospect Theory

Prospect Theory, formulated by Kahneman and Tversky in 1979, is a foundational concept in behavioural economics and psychology that addresses the phenomenon of loss aversion. The theory explains how investors typically prioritise avoiding losses over acquiring equivalent gains. For instance, according to the theory, the distress of losing \$500 would outweigh the pleasure of gaining \$500, highlighting the asymmetry in emotional impact between losses and gains (see Figure 2 below). As one can see, the line is more steep on the “losses” side compared to the “gains” side, indicating that “more” value is lost the more one loses, as compared to the increased value when one is gaining.

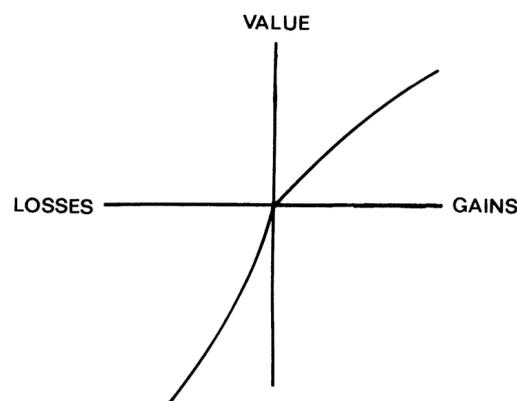


Figure 2. Visualisation of Prospect theory by Kahneman and Tversky (1979).

This behaviour could stem from a natural aversion to losing one's hard-earned money. While gaining additional funds can be satisfying, the prospect of losing money that we already possess is often more challenging to accept mentally. The same applies in a corporate setting, although usually on a bigger scale. While a firm making no profit can still sustain shareholder satisfaction through salaries, dividends, tax contributions, and by offering jobs, significant financial losses introduce the risk of distress and potential default, threatening the firm's survival.

3.3.1 Empirical Evidence Supporting Prospect Theory's Influence on ESG spending in times of Uncertainty

Empirical evidence shows that ESG could act as a downside risk protector, limiting these dangerous scenarios. For instance, Boubaker et al. (2020) show that higher CSR levels in firms lowers the risk of financial distress and thus lower chance of default. Similar research shows that managers might consider ESG efforts as strategic instruments to shield against such risks in periods of instability (Nofsinger and Varma, 2014; Lins et al., 2017; Albuquerque et al., 2020). This alignment with Prospect Theory suggests that in periods of uncertainty, managers use ESG and CSR strategically not to chase extraordinary returns, but to mitigate potential losses. Godfrey et al. (2005) show that CSR serves as a risk management instrument that provides “insurance-like” protection that proves particularly beneficial during times of crisis. This attitude among managers and investors can be linked to Prospect Theory where one would use ESG only to limit future losses, not in order to seek any abnormal returns. Given the risk-averse behaviour explained in the theory, along with empirical evidence suggesting that ESG initiatives help mitigate downward risks which are prevalent in uncertain times, we formulate the third hypothesis.

Hypothesis 3: The relationship between ESG and firm performance varies across different market conditions.

3.3.2 Criticism of Prospect Theory's Influence on ESG spending in times of Uncertainty

As noted, Prospect Theory suggests that managers exhibit aversion to losses, prompting the use of ESG initiatives as a risk mitigation tool, as indicated by existing literature. However, conflicting empirical evidence exists, suggesting that during crises, ESG measures may worsen the situation. For instance, Bauer et al. (2022) observe that during the 2022 energy crisis, triggered by the Russian invasion of Ukraine, brown stocks outperformed green stocks. Buchanan et al. (2018) demonstrate using a difference-in-differences methodology that pre-GFC, firms engaged in CSR activities displayed a higher Tobin's Q compared to non-CSR firms. However, once the crisis began, CSR firms experienced a more significant decline in firm value than their non-CSR counterparts.

4. Data and Descriptive Statistics

This section gives a summary of the dataset and descriptive statistics of the firms included in the study, and the process of excluding some of the observations. The data provided by the statistics clarifies the variations in ESG Scores, financial metrics, industry, and year-specific observations, laying the groundwork for further analysis.

The study centres on large, publicly traded Swedish companies listed on the Nasdaq Nordic Stock Exchange during the period from 2018 to 2022. Specifically targeting these larger firms excludes emerging companies on the "First North Growth Market," allowing for a more comprehensive analysis of ESG reporting among well-established entities and deeper insights into ESG practices within the Swedish market. In addition, due to the unique nature of the financial services industry in terms of financial statements and risk profiles, financial firms have been excluded from the sample, leaving the final dataset with statistics on 187 Swedish firms and a total of 459 observations included in the regression models.

The limited sample size is primarily due to the availability of comprehensive ESG score reporting, which has become only widely spread in recent years. Expanding the years of the study period further back would not significantly increase the sample size due to the lack of consistent ESG reporting for the sample firms in earlier years. Additionally, to achieve a significant increase in sample size, the dataset would have to be extended several years back, which might contaminate the results with the effects of the global financial crisis on firm performance. The 2008 financial crisis had a prolonged effect on the global economy, with many countries, including Sweden, experiencing long-lasting impact on capital and productivity well into the early and mid 2010s as per the IMF (Chen et al., 2019). Hence, the study period of 2018 to 2022 provides the most relevant and robust dataset for analysing the relationship between ESG Scores and financial performance pre and post covid.

The selection of the years of the study enables an examination of how companies adapted to evolving circumstances, particularly the unprecedented challenges brought about by the C19 pandemic. By analysing data from both stable and uncertain periods, the study can assess the impact of external shocks on firms' ESG performance and financial outcomes. It also allows for insights into whether firms with stronger ESG practices exhibited greater resilience or outperformance during times of economic volatility.

Key variables of interest include Tobin's Q as the dependent variable and ESG scores as the primary independent variable. Tobin's Q is employed to evaluate a firm's market value relative to its replacement cost, serving as a proxy for market sentiment and growth prospects. Additionally, separate scores for environmental, social, and governance pillars are analysed to understand their distinct impacts. The dataset includes various accounting ratios, such as size (log of total sales), leverage ratio, cash-to-total-assets ratio, and return on equity, serving as control variables. These controls enable a robust exploration of the relationship between ESG performance and firm financial metrics.

The ESG-related data, including ESG scores and their individual pillars, are sourced from Refinitiv Eikon, widely recognized in the literature for its decent coverage of sustainability metrics. This platform provides a robust foundation for evaluating the ESG performance of the sampled Swedish companies throughout the study period. In contrast, financial accounting ratios such as return on equity, and leverage ratios are obtained from Bloomberg, a reputable provider of financial data and analytics.

Table 1 presents key statistics for the analysis, showcasing a diverse range of ESG scores spanning from 1.3 to 92.9, with a mean of 50.7, indicating significant variability in sustainability practices among the sampled companies.. The Tobin's Q variable exhibits a range from 0.75 to 18.70, highlighting notable fluctuations in market valuation and investment efficiency across the sample. In terms of debt, companies maintained moderate leverage (mean nearly 21%), with the highest observed leverage reaching 61%, suggesting a level of financial risk within the dataset. Liquidity, as measured by the cash-to-total-assets ratio, displays wide variation from 0.068 to 95.7 (mean 14.9), underscoring differences in cash management effectiveness relative to total assets and providing critical insights into financial health and risk profiles.

Table 2 illustrates industry-specific observations for Swedish firms listed on the Nasdaq Nordic Stock Exchange over the study years, highlighting significant differences across sectors and time. Sectors like Consumer Discretionary and Industrials demonstrate consistent representation throughout the study period, while others such as Energy and Real Estate had a minor representation. The study encompasses observations from industries with varying ESG impacts, as illustrated in Table 3, which presents the distribution of “Green” defined as above median ESG Score observations per industry within the study sample, a methodology similar to that employed by Engelhardt et al. (2021). It is notable that in some industries, green observations outnumber brown ones. For instance, the basic materials sector exhibits more than 80% of observations classified as green, despite being traditionally associated with higher pollution levels.

On the other hand, the healthcare industry illustrates an opposite trend with around 75% of the observations below median ESG score. Understanding these industry-specific variations is crucial for comprehending the impact of different sectors on ESG performance and financial metrics within the Swedish market.

In the upcoming methodology section, we demonstrate the utilisation of Pooled OLS regression with random and fixed effects to examine the relationship between ESG scores and Tobin's Q. Additionally, we employ the difference-in-differences (Diff-in-Diff) approach to explain how and if this relationship changed before and after the occurrence of C19, serving as a proxy for economic uncertainty and its impact on financial metrics. These statistical methods offer robust analytical tools for investigating the interplay between ESG practices and market performance under changing economic conditions.

5. Methodology

This section illustrates the roadmap of the empirical analysis starting with exploring the correlation between different variables, followed by demonstrating the equations used in the regression analysis. It also outlines the different tests, models and robustness checks employed in the study.

5.1 Univariate and Multivariate analysis

The empirical analysis begins with a detailed exploration of the distribution, central tendency, and variability shown by each individual variable as outlined in Section 4. This initial examination is important for gaining insights into the characteristics of the variables before proceeding to more complex multivariate analyses. Following the univariate analysis, we construct a correlation matrix to investigate how the different variables co-move over the study period. This matrix allows us to assess whether the observed relationships among the variables of interest provide a robust foundation for regression analysis, aligning with our hypothesised models.

5.2 Panel Regression

5.2.1 Model Specification

Before proceeding with the pre- and post-COVID analysis, we examine the general relationship between ESG scores and Tobin's Q among the firms in our selected sample. We employ a Pooled ordinary least squares (POLS) regression approach, with Tobin's Q serving as the main dependent variable representing firm performance. The independent variable is the ESG score, capturing overall sustainability performance, along with separate scores for the environmental, social, and governance pillars to assess their impact on Tobin's Q. To ensure the robustness of our explanatory variable, we incorporate several control variables, including accounting ratios and risk proxies as suggested by Demers et al. (2021). Namely, the controls are size (log of total sales) as specified by Engelhardt et al (2021), leverage ratio, cash to total assets ratio and return on equity. Another control variable used for the purpose of the study is Economic Policy Uncertainty Index (EPU), which is used as a proxy for uncertainty along with dummy variables employed later in the difference in differences framework. In Sweden, EPU measures uncertainty based on national newspapers coverage of policy related uncertainty (Armeliu et al., 2016). Furthermore, we control for industry and year effects to enhance the robustness of our analysis by accounting for specific sectoral dynamics and temporal variations that may influence the

relationship between ESG scores and Tobin's Q. This approach isolates the impact of sustainability performance on firm market value, independent of industry-specific and year-specific factors. To address potential heteroskedasticity identified by the White Test, clustered robust standard errors were employed in the regression model. This adjustment helps to ensure the reliability of the regression results by mitigating the impact of possible heteroskedasticity on the estimated coefficients and their standard errors.

$$\begin{aligned}
 \text{Tobin's } Q_{i,t} = & \beta_0 + \beta_1 \text{ESGScore}_{i,t} + \beta_2 \text{Size}_{i,t} + \beta_3 \text{Leverage}_{i,t} \\
 & + \beta_4 \text{CashToTotalAssets}_{i,t} + \beta_5 \text{ROE}_{i,t} + \beta_6 \text{EPU}_{i,t} + \gamma \text{ industry controls} \\
 & + \lambda \text{ yearcontrols} + \epsilon_{i,t} \quad (1)
 \end{aligned}$$

5.2.2 Hausman Test

A Hausman test is conducted to determine the most appropriate model specification—fixed effects or random effects—for explaining the relationship between the variables of interest. This test assesses whether the unobserved individual effects in the random effects model are correlated with the explanatory variable, ESG Score in this case. The results of this test guide our choice of model specification in the subsequent empirical analysis. Both tests were employed and illustrated, but the Hausman test was used to ensure which results are more reliable.

5.2.3 Fixed Effects and Random Effects Models

In our regression analysis, we employ fixed effects to control for unobserved time-invariant heterogeneity across companies. This approach is particularly useful for identifying constant firm-specific characteristics that may influence the relationship between ESG scores and Tobin's Q. Additionally, we utilise a random effects model, which assumes that the individual-specific effects of a firm are not correlated with the explanatory variables. This model enhances efficiency in testing the significance of the coefficients while accounting for unobserved individual-specific effects.

These combined model specifications - fixed effects and random effects - contribute to the robustness of our analysis by controlling for various sources of variation and unobserved heterogeneity within the data.

5.3 Dummy Variables Interaction

Upon examining the relationship between a firm's sustainability scores and Tobin's Q, our objective is to observe any differences in this relationship between stable and uncertain periods. To achieve this, we introduce a dummy variable that distinguishes between pre-C19 (before 2020) and post-C19 periods, thereby controlling for temporal shifts in market dynamics. Additionally, we utilise a green dummy variable that takes a value of 1 if a firm's ESG score surpasses the median score for a given year (t), indicating a "green" company with robust ESG performance. Conversely, it takes a value of 0 for firms below the median score, categorising them as "brown" companies. This variable plays a crucial role in our regressions, shedding light on whether firms with stronger ESG initiatives exhibit significantly enhanced performance relative to their counterparts.

These two dummy variables are interacted in the analysis to assess how the relationship between ESG Scores and Tobin's Q changes before and after the occurrence of the pandemic, specifically concerning firms with varying ESG performance.

5.4 Difference-in-Differences

The differences-in-differences method leverages the variation in sustainability performance across firms and time periods to isolate the effect of uncertainty (C19) on the relationship between sustainability practices and firm performance, a central question addressed in hypothesis (3). The regression model includes the interaction terms between the post covid dummy variables and the green dummy variables as seen in equation (2). The coefficient (β_3) is used to explain whether green firms experience a more pronounced positive effect on firm performance after the pandemic compared to before.

$$\begin{aligned} \text{Tobin's } Q_{i,t} = & \beta_0 + \beta_1 \text{PostCOVID}_{i,t} + \beta_2 \text{Green}_{i,t} + \beta_3 (\text{PostCOVID}_{i,t} \times \text{Green}_{i,t}) \\ & + \beta_4 \text{Size}_{i,t} + \beta_5 \text{Leverage}_{i,t} + \beta_6 \text{CashToTotalAssets}_{i,t} + \beta_7 \text{EPU}_{i,t} + \\ & \gamma \text{ industry controls} + \lambda \text{ year controls} + \epsilon_{i,t} \quad (2) \end{aligned}$$

5.5 Robustness

To ensure the robustness of our regression analysis, we implement several key robustness tests and methods. First, we conduct the White test to detect and address potential heteroskedasticity in the regression results, which could impact the reliability of our estimates. Additionally, we

apply the Hausman test to assess whether fixed effects or random effects were more appropriate for our panel regression, providing insights into the optimal model specification.

Moreover, we include various control variables in our regressions to enhance the explanatory power of the independent variable, ESG scores, in explaining changes in Tobin's Q. These control variables help to mitigate potential confounding factors and ensure the validity of our findings.

Furthermore, we employ fixed and random effects models in our panel regression to account for unobserved heterogeneity across firms. This approach allows us to control for individual-specific effects that could influence the relationship between ESG scores and Tobin's Q, thereby improving the robustness and reliability of our analysis.

Finally, we conduct a regression analysis for equation (1) using an alternative dependent variable to Tobin's Q, namely "profitability." This variable is defined as the operating income before depreciation divided by total assets. A similar method for proxying profitability is used by Engelhart et al. (2021). We used this variable to explore whether our results would still hold with other performance variables besides Tobin's Q.

6. Empirical results

This section provides the empirical findings of the study focusing on the relationship between ESG scores and financial performance, mainly proxied by Tobin's Q. It also shows the influence of the control variables employed. The analysis includes the results of multivariate analysis, pooled OLS regressions and difference-in-differences approach which is later built upon to derive conclusions about the relationship between ESG practices and firm performance.

6.1 Multivariate Analysis

The pairwise correlation matrix offers valuable insights into the relationships among the key variables examined in this study. Table 4 presents the results of variable interactions and co-variations across the study period, revealing important patterns in how these variables relate to each other. Of particular interest is the correlation between ESG scores and Tobin's Q, which demonstrates a negative association of -0.241. This inverse relationship serves as a compelling rationale for conducting a pooled OLS regression to empirically test the extent to which ESG scores influence movements in Tobin's Q. The negative correlation implies that as ESG performance increases, market valuation (Tobin's Q) tends to decrease, suggesting potential complexities in investor perceptions of ESG practices and their impact on firm value.

Similarly, the individual pillar scores within the ESG framework exhibit distinct relationships with Tobin's Q. Specifically, the environmental pillar score displays a significant negative correlation of -0.302 with Tobin's Q, indicating that firms with stronger environmental performance may experience lower market valuation. The social pillar score shows a negative correlation of -0.227 with Tobin's Q, highlighting the potential influence of social responsibility initiatives on market valuation. Although the governance pillar score exhibits a relatively minor negative correlation of -0.093 with Tobin's Q, it suggests the presence of a relationship between governance practices and market perceptions, although less pronounced compared to environmental and social factors.

In examining the control variables, we identify notable relationships with Tobin's Q which shed light on financial performance dynamics within Swedish firms. Specifically, leverage demonstrates a significant negative correlation of -0.337 with Tobin's Q, indicating that companies with higher leverage ratios tend to exhibit lower financial performance. This association underscores the inherent risk associated with elevated debt levels, which may negatively impact market valuation and investor confidence.

Furthermore, the negative correlation of -0.307 between firm size and Tobin's Q suggests that larger firms experience relatively lower financial performance. This pattern challenges conventional assumptions about the advantages of scale and underscores the nuanced relationship between firm size and market valuation.

Conversely, certain control variables display positive associations with Tobin's Q. For instance, the positive correlation (0.497) between cash-to-total-assets ratio and Tobin's Q suggests that firms with higher liquidity levels tend to exhibit stronger financial performance. This finding might suggest that effective cash management improves market valuation due to financial stability.

Similarly, return on equity demonstrates a modest positive correlation (0.079) with Tobin's Q, highlighting the influence of profitability metrics on market outcomes. This relationship suggests a minimal effect of this variable on Tobin's Q.

In summary, the observed correlations among control variables provide important insights into the drivers of financial performance and market valuation among Swedish publicly traded companies. The negative associations with leverage and firm size challenge traditional assumptions about financial metrics, emphasising the role of risk management and operational efficiency in shaping investor perceptions. Meanwhile, the positive relationships with liquidity and return on equity metrics underscore the importance of sound financial practices in enhancing market competitiveness and investor appeal.

By integrating these insights into our regression analysis, we aim to disentangle the complex interactions between control variables and market valuation, providing better understanding of the determinants of firm performance within the Swedish market context.

6.2 Pooled OLS Regressions

Before conducting our regression analysis using Pooled OLS models, a White test is used to test for the presence of heteroskedasticity in the regression residuals. As observed in Table 5, the obtained p-value indicates strong evidence to reject the null hypothesis of homoscedasticity, suggesting the need for robust standard errors to ensure the reliability of the regression results.

Following that, five different OLS regression models test the relationship between the variables of interest, under various controls as shown in Table 6. These models test against hypothesis 1.

Models (1-4) examine the effect of ESG overall score and its separate pillars on financial performance as provided in equation (1). Model (1), the baseline regression model with overall ESG score, reveals a negative correlation between ESG Scores and Tobin's Q, with 1.73% decrease in Tobin's Q with each unit of score increase in ESG significant to the 10% level. The results from this model establish an initial conclusion about the relationship between the overall score and Tobin's Q during the period of the study while controlling for accounting and risk ratios.

Models 2, 3 and 4 examine the coefficients of the separate pillar scores (E, S, and G) as the dependent variable with the same controls as equation 1. This process is undergone to check whether one or more of the scores have the most major effect on Tobin's Q. Statistical significance is observed only in Model (2), where the coefficient of environmental pillar score (E) exhibits a negative relationship, revealing a 1.23% decrease in Tobin's Q ratio for each unit increase in E score. This suggests a dominant contribution of environmental practices to the possibly negative relationship of the overall score compared to the social and governance pillars.

As a robustness check, model 5 employs the alternative variable for financial performance "profitability" as the dependent variable. Similar to the results provided by Tobin's Q, a negative, highly statistically significant relationship is found between that variable and ESG score. However, the correlation coefficient is economically insignificant, demonstrating a minimal effect of ESG scores on financial performance when using this variable as a proxy.

To further ensure the robustness of the Pooled OLS regression models, fixed and random effect models are employed. As an initial step, a Hausman test is conducted to check which of the two models would be most appropriate for the dataset studied. Table 7 reveals a p-value of 0, showing that the main hypothesis of random effects does not hold. This suggests the reliability of the fixed effects results model for our study. Table 8 shows that the significance observed in the standard robust models does not hold when both fixed and random effects are used on the firms during our study period, suggesting an insignificant effect of the main independent variable ESG Scores on Tobin's Q, and a higher explanatory effect for the financial control variables in the model. Hence, we fail to find evidence to support the existence of an effect for ESG scores on financial performance as hypothesised through the stakeholder and shareholder theories

6.3 Difference in Differences

Building upon the insights provided from the previous section, we now look at the results of the more complex difference in differences framework to explore the effects of sustainability practices. This approach uses equation (2) to test for the third hypothesis. Table 9 shows the utilisation of dummy variables “Green”, “post_covid” and the interaction between them to explain the changes in relationship between ESG Scores and Tobin’s Q over time and across distinct groups of firms.

6.3.1 Performance Pre vs Post

The variable “post_covid”, which represents the period after 2020 to reflect the influence of C19 pandemic’s uncertainty on financial performance, reports an insignificant correlation coefficient, which shows that there is no significant difference between companies’ performance before and after C19, despite the uncertainty it caused.

6.3.2 Performance of Green vs Brown Companies

The “green” dummy variable shows the difference between the performance of the companies that have an above median ESG score compared to their below median counterparts. The results in model (1) indicate that on average green companies have a lower Tobin’s Q by 0.845 units, significant to the 10% level, which aligns with the results of the Pooled OLS regression in Table 9. However, with the addition of industry and year controls, we observe that the results become statistically insignificant, suggesting that there is no difference in performance between green and brown companies.

6.3.3 Performance of the interaction (Green After Covid)

The interaction term “post_covid###Green” in Table 9 shows the combined effect of being a “Green” firm after the COVID-19 period. Both models 1 and 2 show a positive correlation coefficient for this interaction, however, this relationship is insignificant. This lack of significance suggests that we fail to find evidence to support hypothesis 3; there is no difference between the relationship of ESG practices in times of uncertainty compared to stable times. On the other hand, the control variables show statistical significance to the 1% level in both models, suggesting their high explanatory power over Tobin’s Q unlike the ESG practises measures we employed as the main independent variables. The next section focuses on connecting these empirical results with existing literature and theoretical frameworks. By integrating both, we seek

to provide a deep understanding of the dynamics by which ESG practices influence financial performance and market valuation.

7. Analysis

This section analyses the implications of the empirical results of the study and how they relate to previous empirical findings and the theoretical frameworks. Furthermore, it sheds light on the limitations of the study, directions for improvement and possible paths for future research.

7.1 Discussion

The research question presented in section 1.3 outlines the purpose of our study, which is to explore the effect of ESG scores on firm performance in a Swedish context, and to examine whether different market conditions influence these variables.

In our initial findings, we uncover a noteworthy correlation between ESG scores and Tobin's Q in our pooled OLS regressions, significant to the 10% level with industry and year controls factored in. The perception of ESG initiatives as costly is common, and a significant body of research suggests that excessive investment in these initiatives by managers can diminish firm performance. This perspective is closely aligned with the views of Milton Friedman and Shareholder theory, as well as prior empirical evidence (Lioui and Sharma, 2012; Di Giuli and Kostovetsky, 2014; Leite and Cortez, 2015). We observe papers that conclude the opposite relationship in line with Stakeholder theory often use less concentrated and bigger samples. For instance, Engelhart et al (2021) sample consists of 16 different European countries and Bauer et al. (2022) sample includes the G7 countries. As Engelhardt et al., (2021) argues, ESG tends to be value enhancing in nations with low trust, heightened security concerns, and less strict disclosure standards. This arises from the fact that firms with such initiatives distinguish themselves from their peers by investing in better risk procedures or eliminating corrupt management boards. As a result, the costs associated with ESG are seen as justified by the positive outcomes they yield. In contexts like Sweden, where standards notably exceed international benchmarks, we observe a negative correlation where the incremental costs of implementing ESG initiatives outweigh the resulting benefits. This is not to say that the G7 countries or Europe in general have bad ESG standards. Rather, it underscores the extraordinarily high ESG standard of Sweden and its neighbouring countries, mainly due to the cultural factors in the "Nordic Model" explained by Andersen et al. (2007).

Alternate explanations for the negative relationship, apart from Stakeholder theory, could stem from the The Managerial Opportunism Hypothesis that was described in Section 3.2.2. The theory explains that following weak stock performance, firms invest in ESG as a way of

“blaming” bad performance on costly ESG incentives. According to this theory, high ESG companies deliver worse financial performance, which is what we observe. However, we recognize that this result is only significant at the 10% level, which suggests we should interpret these findings with caution. Additionally, not controlling for Fixed and Random effects in this model made the results appear more favourable.

Moreover, in the POLS regression, we further emphasise the significant influence of the environmental pillar score (E) on the negative relationship between ESG and firm performance. Specifically, our analysis reveals a noteworthy negative correlation of -0.302 between the environmental pillar score and Tobin's Q, which suggests companies demonstrating superior environmental performance may experience a reduction in market valuation, consistent with the observations of Pastor et al. (2021). They conclude that green stocks outperformed brown stocks during the studied period but project lower returns for green firms in the future, aligning with our own findings. Pastor et al. (2021) attribute this phenomenon to green firms outperforming brown firms only in times of *environmental* uncertainty. Given that our study encompasses a timeframe marked by the C19 pandemic, a *health* crisis, such environmental uncertainty is notably absent, which could explain the lack of observed relationship.

Upon incorporating fixed effects and random effects in the regression models, the previously identified inverse relationship becomes statistically insignificant. These results are similar to the meta-analysis by Revelli and Viviani (2015), as well as the study of Fiskerstrand (2019) which show that ESG did not have an impact on various performance metrics. By integrating methodological refinements advocated by Demers et al. (2021), such as comprehensive variable controls, our study enhances the precision of its analysis, contributing to a deeper understanding of how ESG practices influence financial outcomes, diverging from previous propositions by researchers such as Ding et al. (2021), Albuquerque et al. (2020), and Semenova et al. (2010). Consequently, we lack support for both the first and second hypotheses, indicating that ESG scores have no significant impact on firm performance. This outcome does not align with either Stakeholder or Shareholder theory, as both anticipate differing effects on firm performance based on CSR measures. However, one could argue that our results still align with the tenets of Stakeholder theory, as suggested by the charity arguments discussed by McWilliams and Siegel (2001). According to their viewpoint, while high ESG firms incur higher expenses, they also generate higher revenues, ultimately maintaining similar profit margins as low ESG firms, thus supporting our findings. While the profit margin may remain consistent, high ESG firms contribute to society, for example by offering better working conditions or contributing

positively to the environment. Shareholder theory is only superior if ESG leads to worse firm performance. The charity hypothesis proposes that financial performance of green firms does not necessarily have to exceed that of brown firms, simply maintaining the same level of firm performance is already considered good since it signifies one firm contributing positively to society while the other does not.

Furthermore, Demers et al. (2021) assert that ESG did not function as a risk mitigator during the initial shock of the Covid-19 pandemic or throughout 2020, a conclusion supported by researchers such as Broadstock et al. (2021) and Yahya (2023). Similarly, our analysis reveals an insignificant relationship between financial performance before and after the onset of C19, serving as a primary proxy for uncertainty. Moreover, we find no significant relationship in the performance of green and brown companies during periods of uncertainty compared to stable times, consistent with the findings of Leite and Cortez (2015). This lack of evidence for the impact of sustainability practices on financial performance across varying market conditions leads us to reject our third hypothesis. Drawing from prospect theory, explaining managers' tendency to minimise risk, multiple studies including those by Nofsinger and Varma (2014), Lins et al. (2017), Albuquerque et al. (2020), Ding et al. (2021) argue that ESG practises aid firms during crises. Ding et al. (2021) note that more ESG friendly firms prior to C19 saw better returns during C19, and that this relationship was more pronounced in countries noted for their good environmental and societal concerns, which Sweden is. Our results dismiss this outcome, as we see no difference in performance between high ESG and low ESG firms in a high trust setting. We align with Demers et al. (2021) in critiquing these studies for their susceptibility to omitted variable bias. The same goes for Semenova et al. (2010), whose focus is on the Swedish market, showing a positive relationship between the variables. We conclude that their paper is lacking robustness due to only controlling for firm age and sales growth, omitting other important controls that our study includes.

One potential shortcoming that might influence our results regarding our third hypothesis is the definition of post-C19 uncertainty. Unlike Demers et al. (2021) and Engelhardt et al. (2021) who solely focus on the C19 shock, we extend this uncertainty period until 2022. We support the notion of prolonged uncertainty by noting that Sweden had significantly more deaths than its neighbours (Kamerlin and Kasson, 2020). Additionally, the Swedish economy was impacted during the years of 2020-2022 (Angelov and Waldenström, 2023), which we define as our post-C19 period. However, since Sweden did not implement a general lockdown (Ludvigsson, 2020), one could argue that C19 in Sweden, was more of a health crisis than a financial one, due

to the fact that businesses continued to operate. This could weaken the justification for considering 2020-2022 as a period of significant economic uncertainty. In other words, the reason we do not see a difference between our pre-C19 and post-C19 period could have been due to the fact that these periods were too similar and that uncertainty was not present.

7.2 Limitations and Future Research

While the study provides insights on the relationship between ESG and firm performance, there are several limitations that should be acknowledged. The main limitation of the study is the aforementioned lack of comprehensive reporting on ESG metrics in Sweden during the period of the study, which leads to a relatively small sample size of 459 observations. As reporting improves in the future and data becomes more accessible on these metrics, researchers can benefit from that to conduct studies with better insights in the future. Another concern regarding the ESG data is the difference in definitions of its metrics across different platforms. Bloomberg, Refinitiv Eikon and MSCI use different scales to measure the quality of environmental, social and governance pillars. Halbritter and Dorfleitner (2015) addresses this issue by highlighting the diverse interpretations used across studies in the literature, which can lead to inconsistent results and interpretations of the relationship between the variables of interest in this study. Therefore, it is important to acknowledge this factor in the analysis, and to identify the need of a universal scale to provide comparable results.

In addition, a limitation to the study is the possible presence of reverse causality between ESG scores and firm performance, as the Managerial Opportunism Hypothesis and the Signalling hypothesis suggest. In other words, Tobin's Q might affect ESG scores rather than vice versa. The presence of such a relationship can heavily influence the interpretation of our provided results, which makes it a good direction for future research to explore.

Another factor to consider in future research are the separate pillar scores. The regression models from this study reveals a possible relationship between the environmental pillar score "E" and Tobin's Q. However, it is not investigated in depth to draw a solid conclusion, as it is not the main research question of the study. Conducting further analysis on this factor through a full study, with more controls and different statistical methods can provide more valuable insights into whether or not it is the most important factor to consider among the ESG pillars when it comes to financial performance. Finally, future research can explore the effects of ESG

on Tobin's Q in separate industries, which is not possible in this study due to the uneven representation of sectors in our dataset because of data limitations.

7.3 Conclusion

In conclusion, this study provides a comprehensive analysis of the relationship between ESG factors and firm performance in Swedish listed companies, with a specific focus on comparing periods of stability compared to uncertainty, proxied by the C19 crisis. The study incorporates refined control variables as recommended by recent critiques in the literature to enhance the robustness of the results. The empirical results reveal insights into the influence of ESG scores on Tobin's Q, our main dependent variable. Initially, we find a negative relationship in Pooled OLS regressions, driven mainly by the environmental pillar score. However, as we apply random and effect controls, the inverse relationship becomes insignificant. This finding matches results of Demers et al. (2021) and suggests the importance of considering financial and risk related factors compared to ESG practices. The second part of the study explores the effect of ESG practices on firm performance pre and post the onset of COVID-19 pandemic. Contrary to the hypothesis provided based on Prospect theory, we find no significant relationship between financial performance and ESG score during the periods of uncertainty compared to times of relative stability.

Overall, the research contributes to the existing literature by testing against the mixed opinions in previous studies in the context of the Swedish market. This is beneficial for policymakers, investors and researchers in the realm of sustainable finance to make informed decisions about ESG investing and its effects (if any) on financial performance.

Appendix

Table 1: Summary Statistics of Key Variables

This table provides summary statistics of the main variables in the study. Financial data is extracted from Bloomberg Terminal and ESG related scores are pulled from Refinitive Thomson Reuters.

Variable	Obs	Mean	Std. Dev.	Min	Max
ESG Score	459	50.723	20.055	1.322	92.869
Tobin's Q	459	2.634	2.832	.747	18.698
EnvPillar Score	459	42.993	27.664	0	94.438
SocialPillar Score	459	54.749	23.253	.712	94.354
GovPillar Score	459	51.171	22.511	1.455	96.34
Return on Equity	459	13.455	21.55	-113.606	69.332
Leverage	459	.222	.139	0	.609
Cash to total assets	459	11.109	14.886	.068	95.746
Size	459	20.141	2.19	8.933	24.47
profitability	403	.109	.132	-.672	1.42

All continuous variables in the table were winsorized at the 1st and 99th percentiles.

Table 2: Summary Statistics by Industry

This table provides the number of observations per industry for each year included in the study period.

Industry Name	Year					Total
	2018	2019	2020	2021	2022	
Basic Materials	7	7	6	9	12	41
Consumer Discretionary	9	11	21	25	35	101
Consumer Staples	1	1	4	6	6	18
Energy	0	0	0	1	3	4
Health Care	4	4	10	18	34	70
Industrials	18	19	29	41	58	165
Real Estate	1	1	1	2	2	7
Technology	2	2	5	7	17	33
Telecommunications	3	2	3	4	8	20
Total	45	47	79	113	175	459

Table 3: Green Observations per Industry

This table shows the percentage of above median ESG (Green) observations compared to their below median counterparts (Brown) for the observations across the study period.

Industry Name	Brown %	Green %
Basic Materials	18.6	81.4
Consumer Discretionary	40	60
Consumer Staples	21.1	78.9
Energy	100	0
Health Care	74.4	25.3
Industrials	55.6	44.4
Real Estate	36.8	63.2
Technology	78.9	21.1
Telecommunications	30	70

Table 4: Pairwise Correlations

The table illustrates the multivariate relationship between the variables of interest in the study including dependent variables (Tobin's Q and profitability), independent variables (ESG Scores, Environmental Pillar, Social Pillar and Governance Pillar Scores) and the controls employed.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) tobin_q_ratio	1.000										
(2) ESGScore	-0.241	1.000									
(3) EnvPillarScore	-0.302	0.868	1.000								
(4) SocialPillarScore	-0.227	0.892	0.764	1.000							
(5) GovPillarScore	-0.093	0.666	0.370	0.355	1.000						
(6) Leverage	-0.337	0.067	0.099	0.085	0.034	1.000					
(7) Size	-0.307	0.597	0.605	0.645	0.223	0.317	1.000				
(8) Return On Equity	0.079	0.106	0.166	0.122	-0.017	0.065	0.325	1.000			
(9) Cash to total assets	0.497	-0.207	-0.301	-0.236	0.006	-0.460	-0.418	-0.312	1.000		
(10) EPU	0.039	-0.073	-0.123	-0.133	0.090	-0.051	-0.203	-0.106	0.070	1.000	
(11) profitability	0.172	0.101	0.112	0.115	0.066	0.058	0.290	0.757	-0.126	-0.072	1.000

Table 5: White's Test

The test is used to determine the presence of heteroskedasticity between the variables of the study.

H0: Homoscedasticity

H1: Unrestricted heteroskedasticity

chi2(60) = 292.50

Prob > chi2 = 0.0000

Cameron & Trivedi's decomposition of IM-test

Source	chi2	df	P-value
Heteroskedasticity	292.500	60	0.000
Skewness	60.960	10	0.000
Kurtosis	4.050	1	0.044
Total	357.520	71	0.0000

Table 6: Regression 1 - Pooled OLS

The table illustrates the results of the regression of equation (1), with Tobin's Q as the main dependent variable in equations (1-4) and profitability being (net operating income before depreciation/total assets) for model 5. The independent variable in models (1-4) is alternated between the overall ESG Score in model 1, followed by Environmental, Social and Governance Scores respectively.

VARIABLES	(1) ESG	(2) E	(3) S	(4) G	(5) Alternative variable
tobin_q_ratio	tobin_q_ratio	tobin_q_ratio	tobin_q_ratio	tobin_q_ratio	profitability
ESGScore	-0.0173*				-0.00103***
	-0.01				-0.000274
EnvironmentalPillar Score		-0.0123*			
		-0.00639			
GovernancePillar Score			-0.00874		
			-0.00708		
SocialPillar Score				-0.00644	
				-0.00737	
Leverage	-2.665**	-3.027***	-2.763***	-2.852***	0.00534
	-1.159	-0.986	-0.938	-0.935	-0.0376
Size	-0.167	-0.254**	-0.335***	-0.315***	0.0162***
	-0.113	-0.0982	-0.081	-0.1	-0.00442
Return On Equity	0.0494***	0.0450***	0.0457***	0.0457***	0.00380***
	-0.0115	-0.0109	-0.011	-0.0109	-0.000569
Cash to total assets	0.0849***	0.0938***	0.0956***	0.0943***	-0.000285
	-0.0257	-0.0243	-0.0247	-0.0245	-0.000498
EPU	0.0041	-0.000903	0.00181	-0.0013	0.000328
	-0.0153	-0.0148	-0.0156	-0.0148	-0.000478
Year Controls	Yes	No	No	No	Yes
Industry Controls	Yes	No	No	No	Yes
Constant	4.112	7.596**	8.766***	8.645***	-0.192*
	-3.268	-3.014	-2.929	-3.026	-0.112
Observations	459	459	459	459	403
R-squared	0.408	0.362	0.359	0.357	0.635

Robust standard errors in parentheses

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

Table 7: Hausman Test

The results of this test are used to determine whether fixed or random effects are more reliable in regards to the sample of the dataset.

Hausman (1978) specification test

	Coef.
Chi-square test value	35.917
P-value	0

Table 8: Regression 2 - Fixed and Random Effects

The table shows the results between ESG Score and Tobin's Q ratio employing random and fixed effect methods in order to ensure the robustness of the results provided from Pooled OLS regressions.

	(1) Random Effects	(2) Fixed Effects
ESGScore	-0.00421	-0.0037
	-0.012	-0.0115
Leverage	-2.243**	-1.424
	-0.876	-1.028
Size	-0.266**	-0.0647
	-0.124	-0.748
Return on Equity	0.0206**	0.00478
	-0.00868	-0.00651
Cash to total assets	0.0589**	0.00999
	-0.0242	-0.0368
EPU	0.00937	0.0128
	-0.0119	-0.0114
Constant	6.774**	2.991
	-3.244	-15.88
Observations	459	459
R-squared		0.014
Number of firmid	187	187

Robust standard errors in parentheses

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

Table 9: Regression 3 - Diff-in-Diff

The table shows the models employed using equation (2). The models interact the dummy variables post covid and green to show the performance of above median ESG companies after the covid. Model (2) has the addition of year and industry controls compared to model (1).

VARIABLES	(1)	(2)
	Base	Industry & Year
	tobin_q_ratio	tobin_q_ratio
1.post_covid	-0.208	-0.231
	-0.494	-0.631
1.Green	-0.845*	-0.492
	-0.504	-0.514
1.post_covid#1.Green	0.581	0.222
	-0.571	-0.553
Leverage	-2.963***	-2.471**
	-0.957	-1.201
Size	-0.320***	-0.251***
	-0.089	-0.0953
Return on Equity	0.0462***	0.0508***
	-0.0111	-0.0118
Cash to total assets	0.0937***	0.0839***
	-0.0242	-0.0255
EPU	-0.000599	0.00194
	-0.0151	-0.0151
Constant	8.691***	5.439*
	-3.042	-3.172
Observations	459	459
R-squared	0.36	0.404
Robust standard errors in parentheses		
*** p<0.01, ** p<0.05, * p<0.1		

References

Albuquerque, R., Koskinen, Y., Yang, S. and Zhang, C., 2020. Resiliency of environmental and social stocks: An analysis of the exogenous COVID-19 market crash. *The Review of Corporate Finance Studies*, 9(3), pp.593-621.

Available online: <https://doi.org/10.1093/rcfs/cfaa011>

Altig, D., Baker, S., Barrero, J.M., Bloom, N., Bunn, P., Chen, S., Davis, S.J., Leather, J., Meyer, B., Mihaylov, E. and Mizen, P., 2020. Economic uncertainty before and during the COVID-19 pandemic. *Journal of public economics*, 191, p.104274.

Available online: <https://doi.org/10.1016/j.jpubeco.2020.104274>

Andersen, T.M., Holmström, B., Honkapohja, S., Korkman, S., Tson, S.H. and Vartiainen, J., 2007. The Nordic Model. Embracing globalization and sharing risks. ETLA B.

Available online: <https://www.etla.fi/wp-content/uploads/2012/09/B232.pdf>

Angelov, N. and Waldenström, D., 2023. The Economic Effects of COVID-19 in Sweden: A Report on Income, Taxes, Distribution, and Government Support Policies.

Available online: <http://dx.doi.org/10.2139/ssrn.4506333>

Argandoña, A., 1998. The stakeholder theory and the common good. *Journal of business ethics*, 17, pp.1093-1102.

Available online: <https://doi.org/10.1023/A:1006075517423>

Armeliu, H., Hull, I. and Köhler, H.S., 2017. The timing of uncertainty shocks in a small open economy. *Economics Letters*, 155, pp.31-34.

Available online: <https://doi.org/10.1016/j.econlet.2017.03.016>

Ashraf, B.N., 2020. Economic impact of government interventions during the COVID-19 pandemic: International evidence from financial markets. *Journal of behavioural and experimental finance*, 27, p.100371.

Available online: <https://doi.org/10.1016/j.jbef.2020.100371>

Ashraf, B.N., 2021. Stock markets' reaction to Covid-19: Moderating role of national culture. *Finance Research Letters*, 41, p.101857.

Available online: <https://doi.org/10.1016/j.frl.2020.101857>

Aupperle, K.E., Carroll, A.B. and Hatfield, J.D., 1985. An empirical examination of the relationship between corporate social responsibility and profitability. *Academy of management Journal*, 28(2), pp.446-463.

Available online: <https://doi.org/10.5465/256210>

Baker, S.R., Bloom, N., Davis, S.J., Kost, K., Sammon, M. and Viratyosin, T., 2020. The unprecedented stock market reaction to COVID-19. *The review of asset pricing studies*, 10(4),

pp.742-758.

Available online: <https://doi.org/10.1093/rapstu/raaa008>

Barnea, A. and Rubin, A., 2010. Corporate social responsibility as a conflict between shareholders. *Journal of business ethics*, 97, pp.71-86.

Available online: <https://doi.org/10.1007/s10551-010-0496-z>

Bauer, M.D., Huber, D., Rudebusch, G.D. and Wilms, O., 2022. Where is the carbon premium? Global performance of green and brown stocks. *Journal of Climate Finance*, 1, p.100006.

Available online: <https://doi.org/10.1016/j.jclimf.2023.100006>

Berle, E.C., He, W., Ødegaard, B.A. 2023. The Expected Returns of ESG Excluded Stocks. Shocks to Firms Costs of Capital? Evidence From the World's Largest Fund. SSRN

Available online: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4095395

Billio, M., Costola, M., Hristova, I., Latino, C. and Pelizzon, L., 2021. Inside the ESG ratings:(Dis) agreement and performance. *Corporate Social Responsibility and Environmental Management*, 28(5), pp.1426-1445.

Available online: <https://doi.org/10.1002/csr.2177>

Boubaker, S., Cellier, A., Manita, R. and Saeed, A., 2020. Does corporate social responsibility reduce financial distress risk?. *Economic Modelling*, 91, pp.835-851.

Available online: <https://doi.org/10.1016/j.econmod.2020.05.012>

Bouslah, K., Kryzanowski, L. and M'zali, B., 2018. Social performance and firm risk: Impact of the financial crisis. *Journal of Business Ethics*, 149, pp.643-669.

Available online: <https://doi.org/10.1007/s10551-016-3017-x>

Bowen, H.R., 2013. *Social responsibilities of the businessman*. University of Iowa Press.

Broadstock, D.C., Chan, K., Cheng, L.T. and Wang, X., 2021. The role of ESG performance during times of financial crisis: Evidence from COVID-19 in China. *Finance research letters*, 38, p.101716.

Available online: <https://doi.org/10.1016/j.frl.2020.101716>

Buchanan, B., Cao, C.X. and Chen, C., 2018. Corporate social responsibility, firm value, and influential institutional ownership. *Journal of Corporate Finance*, 52, pp.73-95.

Available online: <https://doi.org/10.1016/j.jcorpfin.2018.07.004>

Carroll, A.B., 1999. Corporate social responsibility: Evolution of a definitional construct. *Business & society*, 38(3), pp.268-295.

Available online: <https://doi.org/10.1177/0007650399038003>

Carroll, A.B., 2015. Corporate social responsibility. *Organizational dynamics*, 44(2), pp.87-96.

Available online: <https://doi.org/10.1016/j.orgdyn.2015.02.002>

Chen, W., Mrkaic, M., & Nabar, M. S. (2019). The global economic recovery 10 years after the 2008 financial crisis. International Monetary Fund.

Available online: <https://www.imf.org/en/Publications/WP/Issues/2019/04/26/The-Global-Economic-Recovery-10-Years-After-the-2008-Financial-Crisis-46711>

Chollet, P. and Sandwidi, B.W., 2018. CSR engagement and financial risk: A virtuous circle? International evidence. *Global Finance Journal*, 38, pp.65-81.

Available online: <https://doi.org/10.1016/j.gfj.2018.03.004>

Danielson, M.G., Heck, J.L. and Shaffer, D., 2008. Shareholder theory-how opponents and proponents both get it wrong.

Available online: <http://dx.doi.org/10.2139/ssrn.1309066>

Delevingne, L., Gründler, A., Kane, S. and Koller, T., 2020. The ESG premium: New perspectives on value and performance. *Insights on Sustainability*.

Available online: <https://www.mckinsey.com/capabilities/sustainability/our-insights/the-esg-premium-new-perspectives-on-value-and-performance>

Demers, E., Hendrikse, J., Joos, P. and Lev, B., 2021. ESG did not immunize stocks during the COVID-19 crisis, but investments in intangible assets did. *Journal of business finance & accounting*, 48(3-4), pp.433-462.

Available online: <http://dx.doi.org/10.2139/ssrn.3675920>

Dhaliwal, D., Li, O.Z., Tsang, A. and Yang, Y.G., 2014. Corporate social responsibility disclosure and the cost of equity capital: The roles of stakeholder orientation and financial transparency. *Journal of accounting and public policy*, 33(4), pp.328-355.

Available online: <https://doi.org/10.1016/j.jaccpubpol.2014.04.006>

Di Giuli, A. and Kostovetsky, L., 2014. Are red or blue companies more likely to go green? Politics and corporate social responsibility. *Journal of financial economics*, 111(1), pp.158-180.

Available online: <https://doi.org/10.1016/j.jfineco.2013.10.002>

Ding, W., Levine, R., Lin, C. and Xie, W., 2021. Corporate immunity to the COVID-19 pandemic. *Journal of financial economics*, 141(2), pp.802-830.

Available online: <https://doi.org/10.1016/j.jfineco.2021.03.005>

Dorfleitner, G., Halbritter, G. and Nguyen, M., 2015. Measuring the level and risk of corporate responsibility—An empirical comparison of different ESG rating approaches. *Journal of Asset Management*, 16, pp.450-466.

Available online: [10.1016/j.rfe.2015.03.004](https://doi.org/10.1016/j.rfe.2015.03.004)

Dyck, A., Lins, K.V., Roth, L. and Wagner, H.F., 2019. Do institutional investors drive corporate social responsibility? International evidence. *Journal of financial economics*, 131(3), pp.693-714.
Available online: <https://doi.org/10.1016/j.jfineco.2018.08.013>

Engelhardt, N., Ekkenga, J. and Posch, P., 2021. ESG ratings and stock performance during the COVID-19 crisis. *Sustainability*, 13(13), p.7133.
Available online: <https://doi.org/10.3390/su13137133>

Erdem, O., 2020. Freedom and stock market performance during Covid-19 outbreak. *Finance Research Letters*, 36, p.101671.
Available online: <https://doi.org/10.1016/j.frl.2020.101671>

Ferrell, A., Liang, H. and Renneboog, L., 2016. Socially responsible firms. *Journal of financial economics*, 122(3), pp.585-606.
Available online: <https://doi.org/10.1016/j.jfineco.2015.12.003>

Fiskerstrand, S.R., Fjeldavli, S., Leirvik, T., Antoniuk, Y. and Nenadić, O., 2020. Sustainable investments in the Norwegian stock market. *Journal of Sustainable Finance & Investment*, 10(3), pp.294-310.
Available online: <https://doi.org/10.1080/20430795.2019.1677441>

Fontrodona, J. and Sison, A.J.G., 2006. The nature of the firm, agency theory and shareholder theory: A critique from philosophical anthropology. *Journal of business ethics*, 66, pp.33-42.
Available online: <https://doi.org/10.1007/s10551-006-9052-2>

Freeman, R. E., 1984. *Strategic Management: a Stakeholder Approach*. Pitman.

Friedman, M., 1962. *Capitalism and freedom*. Friedman. University of Chicago.

Friedman, M., 1970. A Friedman doctrine: The social responsibility of business is to increase its profits. *The New York Times*, 13(1970), p.17.
Available online: <https://www.nytimes.com/1970/09/13/archives/a-friedman-doctrine-the-social-responsibility-of-business-is-to.html>

Friedman, M., 2007. The social responsibility of business is to increase its profits. In *Corporate ethics and corporate governance* (pp. 173-178). Berlin, Heidelberg: Springer Berlin Heidelberg.
Available online: https://doi.org/10.1007/978-3-540-70818-6_14

Fuadah, L.L., Mukhtaruddin, M., Andriana, I. and Arisman, A., 2022. The ownership structure, and the environmental, social, and governance (ESG) disclosure, firm value and firm performance: The audit committee as moderating variable. *Economies*, 10(12), p.314.
Available online: <https://doi.org/10.3390/economies10120314>

Fuente, J.A., García-Sánchez, I.M. and Lozano, M.B., 2017. The role of the board of directors in the adoption of GRI guidelines for the disclosure of CSR information. *Journal of Cleaner Production*, 141, pp.737-750.

Available online: <https://doi.org/10.1016/j.jclepro.2016.09.155>

Gentry, R.J. and Shen, W., 2010. The relationship between accounting and market measures of firm financial performance: How strong is it?. *Journal of managerial issues*, pp.514-530.

Available online: <https://www.jstor.org/stable/25822528>

Gillan, S.L., Koch, A. and Starks, L.T., 2021. Firms and social responsibility: A review of ESG and CSR research in corporate finance. *Journal of Corporate Finance*, 66, p.101889.

Available online: <https://doi.org/10.1016/j.jcorpfin.2021.101889>

Godfrey, P.C., 2005. The relationship between corporate philanthropy and shareholder wealth: A risk management perspective. *Academy of management review*, 30(4), pp.777-798.

Available online: <https://doi.org/10.2307/20159168>

Governance & Accountability Institute, 2020. Flash Report: 86% of S&P 500 Index© Companies Publish Sustainability / Responsibility Reports in 2020.

Available

online:

<https://ga-institute.com/storage/press-releases/article/flash-report-86-of-sp-500-indexR-companies-publish-sustainability-responsibility-reports-in-20.html>

Gupta, K., 2018. Environmental sustainability and implied cost of equity: International evidence. *Journal of Business Ethics*, 147(2), pp.343-365.

Available online: <https://doi.org/10.1007/s10551-015-2971-z>

Halbritter, G. and Dorfleitner, G., 2015. The wages of social responsibility—where are they? A critical review of ESG investing. *Review of Financial Economics*, 26, pp.25-35.

Available online: <https://doi.org/10.1016/j.rfe.2015.03.004>

Harrison, J.S. and Freeman, R.E., 1999. Stakeholders, social responsibility, and performance: Empirical evidence and theoretical perspectives. *Academy of management Journal*, 42(5), pp.479-485.

Available online: <https://doi.org/10.2307/256971>

Harrison, J.S. and Wicks, A.C., 2013. Stakeholder theory, value, and firm performance. *Business ethics quarterly*, 23(1), pp.97-124.

Available online: <https://doi.org/10.5840/beq20132314>

Heinkel, R., Kraus, A. and Zechner, J., 2001. The effect of green investment on corporate behavior. *Journal of financial and quantitative analysis*, 36(4), pp.431-449.

Available online: <https://doi.org/10.2307/2676219>

Hirigoyen, G. and Poulain-Rehm, T., 2014. Relationships between corporate social responsibility and financial performance: what is the causality?. Available at SSRN 2531631.
Available online: <http://dx.doi.org/10.2139/ssrn.2531631>

Hofmann, E., Töyli, J. and Solakivi, T., 2022. Working capital behavior of firms during an economic downturn: an analysis of the financial crisis era. *International Journal of Financial Studies*, 10(3), p.55.
Available online: <https://doi.org/10.3390/ijfs10030055>

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

Hoskisson, R.E., Johnson, R.A. and Moesel, D.D., 1994. Corporate divestiture intensity in restructuring firms: Effects of governance, strategy, and performance. *Academy of Management journal*, 37(5), pp.1207-1251.
Available online: <https://doi.org/10.2307/256671>

HSBC, 2024. What is ESG? (The Environmental Factors) [Series 2 of 4].
Available online: <https://www.businessgo.hsbc.com/en/article/what-is-the-e-in-esg->

Jensen, M.C., 1986. Agency costs of free cash flow, corporate finance, and takeovers. *The American economic review*, 76(2), pp.323-329.
Available online: <http://dx.doi.org/10.2139/ssrn.99580>

Jensen, M.C., 1988. Takeovers: Their causes and consequences. *Journal of economic perspectives*, 2(1), pp.21-48.
Available online: <http://www.jstor.org/stable/1942738>. Accessed 22 May 2024.

Kahneman, D. and Tversky, A., 1979. Prospect theory: An analysis of decision under risk. *Econometrica*, 47(2), pp.363-391.
Available online: <https://doi.org/10.1017/CBO9780511609220.014>

Kamerlin, S.C. and Kasson, P.M., 2020. Managing coronavirus disease 2019 spread with voluntary public health measures: Sweden as a case study for pandemic control. *Clinical Infectious Diseases*, 71(12), pp.3174-3181.
Available online: <https://doi.org/10.1093/cid/ciaa864>

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

KPMG, 2023. Greenwashing, greenhushing and greenwishing: Don't fall victim to these ESG reporting traps.
Available online:

<https://kpmg.com/us/en/media/news/greenwashing-esg-traps-2023.html#:~:text=Greenwashing%20is%20a%20practice%20used,and%20can%20have%20significant%20repercussions.>

Leite, P. and Cortez, M.C., 2015. Performance of European socially responsible funds during market crises: Evidence from France. *International review of financial analysis*, 40, pp.132-141. Available online: <https://doi.org/10.1016/j.irfa.2015.05.012>

Lins, K.V., Servaes, H. and Tamayo, A., 2017. Social capital, trust, and firm performance: The value of corporate social responsibility during the financial crisis. *the Journal of Finance*, 72(4), pp.1785-1824. Available online: <https://doi.org/10.1111/jofi.12505>

Lioui, A. and Sharma, Z., 2012. Environmental corporate social responsibility and financial performance: Disentangling direct and indirect effects. *Ecological Economics*, 78, pp.100-111. Available online: <https://doi.org/10.1016/j.ecolecon.2012.04.004>

Ludvigsson, J.F., 2020. The first eight months of Sweden's COVID-19 strategy and the key actions and actors that were involved. *Acta Paediatrica*, 109(12), pp.2459-2471. Available online: <https://doi.org/10.1111/apa.15582>

Lys, T., Naughton, J.P. and Wang, C., 2015. Signaling through corporate accountability reporting. *Journal of accounting and economics*, 60(1), pp.56-72. Available online: <https://doi.org/10.1016/j.jacceco.2015.03.001>

Marsat, S. and Williams, B., 2011, May. CSR and market valuation: International evidence. In *International Conference of the French Finance Association (AFFI)*. Available online: <http://dx.doi.org/10.2139/ssrn.1833581>

McWilliams, A. and Siegel, D., 2001. Corporate social responsibility: A theory of the firm perspective. *Academy of management review*, 26(1), pp.117-127. Available online: <https://doi.org/10.2307/259398>

Ng, A.C. and Rezaee, Z., 2015. Business sustainability performance and cost of equity capital. *Journal of Corporate Finance*, 34, pp.128-149. Available online: <https://doi.org/10.1016/j.jcorpfin.2015.08.003>

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

Pástor, L., Stambaugh, R.F. and Taylor, L.A., 2022. Dissecting green returns. *Journal of Financial Economics*, 146(2), pp.403-424. Available online: <http://dx.doi.org/10.2139/ssrn.3864502>

Pellegrini, C.B., Caruso, R. and Mehmeti, N., 2019. The impact of ESG scores on cost of equity and firm's profitability. *New Challenges in Corporate Governance, Theory and Practice*, 3, pp.38-40.

Available online: <https://pdfs.semanticscholar.org/949f/7bf2346865c84b65534e46641f41ab828dfd.pdf>

Polman, P., 2020. The coronavirus pandemic may be a turning point for responsible business. *Fortune*.

Available online: <https://fortune.com/2020/04/14/coronavirus-responsible-business-leadership-covid-19/>

Preston, L.E. and O'bannon, D.P., 1997. The corporate social-financial performance relationship: A typology and analysis. *Business & Society*, 36(4), pp.419-429.

Available online: <https://doi.org/10.1177/000765039703600406>

Refinitiv, 2022. ENVIRONMENTAL, SOCIAL AND GOVERNANCE SCORES FROM REFINITIV

Available online: https://www.lseg.com/content/dam/marketing/en_us/documents/methodology/refinitiv-esg-scores-methodology.pdf

European Commission, 2023. REPORT ON THE QUALITY OF LIFE IN EUROPEAN CITIES. Available online:

https://ec.europa.eu/regional_policy/sources/reports/qol2023/2023_quality_life_european_cities_en.pdf

Revelli, C. and Viviani, J.L., 2015. Financial performance of socially responsible investing (SRI): what have we learned? A meta-analysis. *Business Ethics: A European Review*, 24(2), pp.158-185.

Available online: <https://doi.org/10.1111/beer.12076>

Richard, P.J., Devinney, T.M., Yip, G.S. and Johnson, G., 2009. Measuring organizational performance: Towards methodological best practice. *Journal of management*, 35(3), pp.718-804.

Available online: <http://dx.doi.org/10.2139/ssrn.814285>

ROBECO The Investment Engineers, 2023. Country Sustainability Report – December 2023 Sweden and Finland tie for the top.

Available online: <https://www.robeco.com/files/docm/docu-robeco-si-country-sustainability-report.pdf>

Sachs, J.D., Lafortune, G., Fuller, G. and Drumm, E., 2023. Sustainable development report 2023: implementing the SDG stimulus.

Available online: <https://policycommons.net/artifacts/4445283/2023-sustainable-development-report/5242513/>

Sassen, R., Hinze, A.K. and Hardeck, I., 2016. Impact of ESG factors on firm risk in Europe. *Journal of business economics*, 86, pp.867-904.

Available online: <https://doi.org/10.1007/s11573-016-0819-3>

Schoff, C., 2024. The Evolution of Corporate Social Responsibility. *Ecolytics*.

Available

online:

<https://www.ecolytics.io/blog/evolution-of-csr#:~:text=The%20term%20%E2%80%9CCorporate%20Social%20Responsibility,a%20tangible%20impact%20on%20society>

Semenova, N., Hassel, L.G. and Nilsson, H., 2010. The Value Relevance of Environmental and Social Performance: Evidence from Swedish SIX 300 Companies. *Liiketaloudellinen Aikakauskirja*, (3).

Available online: http://njb.fi/wp-content/uploads/2015/05/lta_2010_03_a2.pdf

Shackleton, M., Yan, J. and Yao, Y., 2022. What drives a firm's ES performance? Evidence from stock returns. *Journal of banking & finance*, 136, p.106304.

Available online: <https://doi.org/10.1016/j.jbankfin.2021.106304>

Suchman, M.C., 1995. Managing legitimacy: Strategic and institutional approaches. *Academy of management review*, 20(3), pp.571-610.

Available online: <https://doi.org/10.2307/258788>

Tzouvanas, P. and Mamatzakis, E.C., 2021. Does it pay to invest in environmental stocks?. *International review of financial analysis*, 77, p.101812.

Available online: <https://doi.org/10.1016/j.irfa.2021.101812>

UNDP, 2024. What are the Sustainable Development Goals?

Available online: <https://www.undp.org/sustainable-development-goals>

Verheyden, T., Eccles, R.G. and Feiner, A., 2016. ESG for all? The impact of ESG screening on return, risk, and diversification. *Journal of Applied Corporate Finance*, 28(2), pp.47-55.

Available online: <https://doi.org/10.1111/jacf.12174>

Waddock, S.A. and Graves, S.B., 1997. The corporate social performance–financial performance link. *Strategic management journal*, 18(4), pp.303-319.

Available online:

[https://doi.org/10.1002/\(SICI\)1097-0266\(199704\)18:4<303::AID-SMJ869>3.0.CO;2-G](https://doi.org/10.1002/(SICI)1097-0266(199704)18:4<303::AID-SMJ869>3.0.CO;2-G)

Who cares wins : connecting financial markets to a changing world (English). Washington, D.C. : World Bank Group.

Available

online:

<https://documents1.worldbank.org/curated/en/280911488968799581/pdf/113237-WP-WhoCaresWins-2004.pdf>

World Health Organization. WHO COVID-19 dashboard. 2024.

Available online: <https://data.who.int/dashboards/covid19/deaths?n=o>

Yahya, H., 2023. The role of ESG performance in firms' resilience during the COVID-19 pandemic: Evidence from Nordic firms. *Global Finance Journal*, 58, p.100905.

Available online: <https://doi.org/10.1016/j.gfj.2023.100905>