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ESG Performance: A Financial Goldmine or a Delusion?

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Abstract

This study aims to explore the effect of ESG performance on corporate financial performance. This study examines if the contradicting results found in previous research could be explained by incorporating a moderating variable of non-financial audit reports into the analysis. A panel data regression analysis was performed using a sample of 228 publicly listed companies (684 observations) in Western Europe. The results showed that ESG performance has a positive effect on corporate financial performance when it is moderated by the presence of a non-financial audit report. This effect can, however, only be observed after one year and with Tobin's Q as the measurement for corporate financial performance. Analyses performed without the moderating variable did not show any significant results.

Keywords: ESG Performance, ROA, Tobin's Q, Corporate Financial Performance, Non-financial assurance

Table of Contents

1.	Introduction	5
1.1	Research Problem	5
1.2	Research Objective	7
1.3	Research Method	7
1.4	Relevance.....	8
1.5	Outline.....	8
2.	Theoretical Background	9
2.1	History of ESG	9
2.2	Environmental, Sociological and Governance Performance	9
2.3	Corporate Financial Performance	10
2.4	ESG and Corporate Financial Performance	11
2.5	Non-Financial Audit Reports	12
2.6	Conceptual Model	14
3.	Research method	15
3.1	Data Collection	15
3.2	Dependent Variable.....	15
3.3	Independent Variable	16
3.4	Moderating Variable.....	17
3.5	Control Variables.....	17
3.6	Data Analysis Method	18
3.8	Alternative analyses	19
4.	Analysis.....	20
4.1	Descriptives.....	20
4.2	Assumptions.....	21
4.2.1	Normality of Residuals	21
4.2.2	Linearity.....	22
4.2.3	Homoscedasticity	22
4.2.4	Correlation of Independent Variables	22
4.3	Hausman Test	23
4.4	Panel Data Regression Analyses	23
4.5	Alternative Analyses	27
4.6	Summary of the results	30

5. Conclusion & Discussion.....	31
References	34
Appendix A	38
Appendix B	39
Appendix C	40
Appendix D	41

1. Introduction

In 2015, the United Nations formulated 17 Sustainable Development Goals (SDGs) with the goal to create *“a shared blueprint for peace and prosperity for people and the planet, now and into the future”* (United Nations, 2016, para. 1). Despite the fact that the blueprint was initially created for countries, many corporations have adopted several of these objectives into their own operations. Although the SDGs are only a few years old, they are part of a bigger movement surrounding sustainability, where corporations are focusing on Environmental, Sociological and Governance (ESG) frameworks. Corporations realize that they are a central part of society and therefore need to act according to the legal and social rules that are put in place. This is contrary to what economists like Milton Friedman used to think where, the main responsibility of business is to increase profits for its shareholders (Schaefer, 2008). History, however, has seen many examples where companies that refused to comply with social rules and norms eventually felt this in their financial performance. An example is de Beers, one of the largest diamond mining and trading companies in the world, which in 2007, was boycotted due to its mining activity in the ancestral homelands of the Kalahari Bushmen. The boycott forced de Beers to sell of its diamond deposit, with an estimated \$2.2 billion- worth of diamonds, in the region for only \$34 million (Solway, 2009). ESG and Corporate Financial Performance (CFP) are thus intertwined. The aim of this study is to examine the effects of ESG performance on corporate financial performance.

1.1 Research Problem

As more corporations realize that the social environment in which they operate significantly influences their business, one of the most critical questions for corporations became how their ESG performance and reporting affects their financial performance. Many researchers (Schröder, 2014) (Clark, Feiner, & Viehs, 215) have tried to answer this question, however these studies focused primarily on how environmental and social initiatives affect the financial performance of corporations (Friede, Busch, & Bassen, 2015). The three aspects that ESG consists of are closely intertwined, and only focusing on one or two aspects may provide a

distorted picture of the effects that ESG may have on financial performance. Only a limited amount of research has been performed that took all three (environmental, social and governance) aspects into account and the research that has been performed found mixed results (Giannopoulos, Fagernes, Elmarzouky, & Hossain, 2022). Some scholars found a negative relation between ESG and financial performance (Zahid, Khan, Anwar, & Maqsood, 2022), while other researchers found a positive relation (Ademi & Klungseth, 2022). In light of these contradictory findings, it is beneficial to reexamine the effect that ESG performance has on financial performance. This study responds to this call by addressing the relation of all three aspects of ESG and financial performance.

In addition to examining the direct effect that ESG performance has on corporate financial performance, this study also aims to explain the contradictory findings of previous research by considering a moderating factor. Reports about ESG performance have become significantly more common (Stolowy & Paugam, 2018). However, the disclosure of ESG information is still on voluntary basis and therefore hampering the development of a standardized reporting format (El-Hage, 2021). The absence of a non-enforceable standardized report format means that corporations are free in terms of what they want to disclose concerning EGS and what not to. Many researchers indicated that this could incentivize corporations to behave in an opportunistic way (Eccles, Krzus, Rogers, & Serafeim, 2012) (Kaplan & Ramanna, 2021). Scholars found that some corporations try to mislead their stakeholders by presenting their ESG performance as more favorable (El-Hage J. , 2021) (Simonsen, 2014). They manage this by selectively choosing what to report and consciously leaving out or manipulating its under-performances. By doing so, corporations create a distorted picture of the actual ESG performance, which could explain why prior research found contradictory results. A way to tackle this problem is by analyzing whether assurance has been provided for the non-financial reports. A non-financial audit ensures stakeholders that the ESG information provided in the non-financial report is accurate and faithfully represented. Incorporating the presence of a non-financial audit report as a moderating variable may provide an indication of the problem of dubious ESG performance and thus provide more reliable insights into the relation of ESG performance and financial performance.

1.2 Research Objective

What can be concluded after analyzing recent literature on ESG performance, is that there is still much unknown about the influences that ESG performance has on a company's financial performance. The reason for this is partly because numerous researchers that analyzed the phenomenon did not take into account all aspects of ESG. Also, not considering the opportunistic behavior of some corporations to improve their reputation by manipulating their ESG performance, could have played a role. Therefore, the objective of this thesis is to explain the contradictory results found in prior research regarding the influence that ESG performance has on corporate financial performance. It will do so by considering all three aspects of ESG performance and incorporate a moderating effect through inclusion of non-financial auditing as a variable. To reach the objective of this thesis, the following research question is formulated:

Does ESG performance influence corporate financial performance when moderated by the presence of a non-financial audit report?

1.3 Research Method

To answer the research question, this study used a quantitative empirical research method with a panel data regression analysis. This research method was chosen because it is well suited to test a relation between one dependent variable and multiple independent variables based on time-series data (Hair, Black, Babin, & Anderson, 2019). The data used in this thesis consist of 228 listed companies located in Western Europe within the period of 2020 to 2022. The dependent variable of this study is corporate financial performance and was measured using the return on assets (ROA) and Tobin's Q. These measurements were selected because they are widely accepted in the field of economics and, combined, can measure the performance of a corporation based on events in the past as well as future tendencies (Castro & Sauaia, 2002) (Bhatti, Awan, & Razaq, 2014). In this study, the overall ESG score and each individual subcomponent were used as the independent variable. To obtain the data about the company's financial and ESG performance, the Refinitiv Eikon database was used. This database is one of the world's largest providers of financial markets data and infrastructure with company data

that covers 99% of the world's market cap (Refinitiv, 2023). Lastly, the presence of a non-financial audit report was used as the moderating variable. This data was gathered by examining each company's annual integrated or sustainability report to determine the presence of a non-financial audit statement.

1.4 Relevance

This study is theoretically and practically relevant to the existing literature not only by adding to the existing literature on sustainability and financial performance, but also by deviating from prior studies in the following ways. Firstly, this study covers all environmental, social, and governance aspects. Until now, most ESG research has focused on only one or two aspects of ESG, whereas the influence of all three ESG aspects has been studied infrequently. Because of that, the findings in this research can offer a more completed picture of the relationship between ESG performance and company financial performance. Secondly, the study examines the intersection of ESG, corporate financial performance and non-financial auditing. No other study has examined these three aspects together in a single analysis. Incorporating this moderating variable in this study may explain why prior research has found mixed results. Thirdly, this research will take a more comprehensive look at the relation by examining the influence of different ESG components, incorporating critical control variables, and using additional analyses. Finally, this study empirically explores this phenomenon in western European, which can be considered pioneers in sustainability practices

1.5 Outline

This thesis is structured into five chapters. The next chapter provides a more extensive overview of the existing literature concerning the ESG performance, corporate financial performance and non-financial audit reports. Chapter 3 presents the used research method, along with how key indicators are operationalized and data is collected. Chapter 4 consists of the analysis of the data using Stata. In the last chapter, a conclusion was drawn based on the results obtained from testing the hypotheses, and limitations along with research proposals for follow-up research are discussed.

2. Theoretical Background

This chapter aims to provide a comprehensive literature overview of the concepts of ESG performance, corporate financial performance and non-financial audits. It will do so by discussing recent literature by scholars in the field of accounting and economics. The focus will be on the definition of ESG and corporate financial performance, how these concepts are intertwined, and if non-financial audit reports could give a more accurate picture of the relationship between ESG and corporate financial performance. This chapter also states two hypotheses that were tested in this thesis. The hypotheses are visualized in a conceptual model at the end of this chapter.

2.1 History of ESG

The early concept of ESG, which was then called social capital, was developed around the 1970s in the backdrop of major social movements in Europe, the USA and Africa (Richardson, 2009). These social movements, like the boycotts against South Africa's apartheid regime and the civil rights movement, sparked a boom in ethical investments, which made clear that governments and corporations do not operate in isolated silos. Rather than investing in corporations for their own personal (financial) gain, these investors focused on social justice and the moral desire to improve the world (Eccles & Strohle, 2018). This revelation in investment behaviour made corporations realize the necessity to consider all their stakeholders' needs, not just their shareholders.

2.2 Environmental, Sociological and Governance Performance

Fifty years after the emergence of social capital, the concept of ESG has evolved to incorporate much more than only social justice. Nowadays, ESG consists of environmental, sociological, and corporate governance components. Especially in the last decade, the environmental aspect has increasingly become of interest due to the significant effects that climate change has on our planet. The environmental component primarily focuses on how

corporations protect and take actions to minimize their environmental impact. Key performance measurements of this component are the amount of waste produced by a company, the use of natural resources and the amount of CO₂ pollution a company emits (Lee & Suh, 2022). The second component, called sociological, focuses on how corporations should treat the community of people who are directly or indirectly influenced by a company's operations. Key elements for measuring this component are labour standards, human rights, diversity in the workplace, and employee health and safety measurements (Ditlev-Simonsen, 2022). The last component, called corporate governance, evaluates how the management of corporations leads and oversees their organizational control mechanisms. A part of these control mechanisms is about how the management board is structured, what kind of firm policies are set in place, and how employees are compensated. These mechanisms aim to prevent errors, corruption, and fraud from inside the organization. The mainstream performance indicators for measuring the corporate governance of corporations are shareholder rights, organizational structure and transparency in reporting and operations (Ditlev-Simonsen, 2022).

2.3 Corporate Financial Performance

Corporate financial performance is a comprehensive assessment of a company's financial positions in categories such as assets, liabilities, equity, expenses, revenue, and overall profitability. It is measured using numerous business-related formulae that enable stakeholders and academia to compute precise information on a firm's financial and operative effectiveness (Ray & Mitra, 2018). One of the most common ways used by scholars to measure the financial performance of companies is by looking at the Return On Assets (ROA) and Tobin's Q. The ROA is a metric that divides the net income of a company by the total book value of its assets (Warrad, 2015). Tobin's Q, on the other hand, measures "the market value of the firm's debt and equity divided by the replacement cost of a firm's assets" (Hillier, Clacher, Ross, Westerfield, & Jordan, 2017). Other measurements that are often used are sales revenue, return on equity, gross profit margin, current ratio, inventory turnover and leverage ratio.

2.4 ESG and Corporate Financial Performance

A company's financial performance is one of the most analyzed topics in business and economic research. Academia and corporations are keen on determining what makes some corporations outperform others. Among all the studies focusing on the determinants of financial performance, some scholars have analyzed the impact that ESG performance has on corporate financial performance. Prior research found mixed conclusions, which broadly resulted in two different categories of research about how ESG performance affects financial performance.

The first category consists of researchers who found a negative relation between ESG performance and corporate financial performance. An example is Zhu (2009), who analyzed the degree of Corporate Social Responsibility (CSR) of corporations listed on the Shanghai stock exchange and their corporate financial performance. He found that for most companies, the corporate financial performance was lower when companies focused more on CSR. As an explanation for these negative relations, researchers stated that ESG initiatives do not add additional value to the corporation. Firms must focus on maximizing shareholder profits while fulfilling legal responsibilities. Resources that are put aside for ESG initiatives that go beyond what is legally required would result in additional business costs, eventually diminishing a company's financial performance. (Griffin and Mahon, 1997) (Wang & Bansal, 2012).

However, researchers also found a positive relationship between ESG performance and CFP. One of the explanations that these researchers give is that shareholders also consider non-financial performance when making investment decisions. Shareholders are interested in a firm's performance and the risks that their invested capital is exposed to (Gamble & Kelly, 2001). While it is generally known that traditional financial information helps investors evaluate a company's exposure to several types of risk (e.g. market risks, liquidity risks and legal risks), new research found that information concerning ESG performance can help investors with determining the systematic and idiosyncratic risks of a company. An article by Sassen, Hinze & Hardeck (2016) stated that companies with higher ESG performances have significantly lower exposure to systematic and idiosyncratic risks. This makes corporations with better ESG performance more attractive to invest in, resulting in a lower cost of capital for corporations. A somewhat related explanation for a positive relation between ESG performance and CFP is

given by Heyes (1996). His article states that corporations with higher environmental impact (which results in a lower ESG performance) can be charged higher interest rates, which lowers a company's financial performance.

Another explanation for why some scholars found a positive relation between ESG performance and financial performance has to do with the creation of a competitive advantage. Researchers indicate that engaging in ESG Initiatives would boost an organization's ethical identity, which increases stakeholder satisfaction (Mohammad & Wasiuzzaman, 2021). Many customers, for instance, do not mind paying an additional price for a product if the image of a corporation is linked to sustainability. Examples of this are fair trade products like Nespresso, Tony Chocolonely and Ben & Jerries. Corporations could also benefit from other competitive advantages related to ESG initiatives. Research found that ESG initiatives could, for instance, increase employee engagement (Story, Castanheira, & Hartig, 2016). Employees whose personal values align with the ESG activities of the corporation are more committed to the organization. This, in turn, will benefit the corporation by attracting and retaining talented employees. All of these aspects would eventually positively affect the company's financial performance. Based on the preceding theoretical explanations and empirical evidence, a positive relationship is expected between ESG performance and its sub-components on CFP in Western European markets. The following hypothesis is proposed:

H1: Environmental, sociological and governance performance positively influences corporate financial performance.

2.5 Non-Financial Audit Reports

Almost all large and publicly traded corporations around the world are required to disclose their financial statement. Corporations disclose their assets, equity, liabilities, and profits in a report which has a legally required format. The purpose of this statement is to provide stakeholders with a reliable conclusion about the past performances of a corporation and with that enabling them to make precise predictions about the company's further performance (Osadchy, Akhmetshin, Amirova, & Bochkareva, 2018). However, over the last few decades,

stakeholders started to realize that not only financial information is essential to determine the future performances of a company but also non-financial information, such as what kind of impact a corporation has on the environment, how the corporation is treating its employees and other issues that could potentially influence its stakeholders (Arvidsson, 2011). In the years that followed, the pressure to provide its stakeholders with non-financial information grew to a point where if a corporation wants to maintain a good reputation, it must provide some form of non-financial disclosure (Mckinsey, 2022).

Even though many corporations nowadays disclose some form of non-financial information, this is not always beneficial for its stakeholders. Unlike financial information with clear and legally enforced guidelines on how the information should be measured and reported on (IFRS, 2023), non-financial information is missing these enforced standardized formats. Even though standardized frameworks such as the GRI standard, CDSB and SASB framework were developed, none of them are legally required to be used, nor are companies required to audit the information. This means that corporations are still free regarding what kind of information they want to disclose, how it is measured and how they want to report the information to their stakeholders (Monciardini, Mähönen, & Tsagas, 2020). Many scholars have indicated that this could potentially create a problem where corporations are trying to mislead their stakeholders by only reporting on positive results (Khan & Ali, 2023) (Simonsen, 2014) (El-Hage J. , 2021).

The problem that researchers such as Khan & Ali (2023), Simonsen (2014) and El-Hage J. (2021) indicated could be the reason why prior research has found mixed results while looking for a relation between ESG performance and financial performance. Most researchers that investigated this relation used ESG performance scores provided by third parties such as Orbis, Refinitiv or ASSET4 (Velte, 2017) (Friede, Busch, & Bassen, 2015) (Wang & Bansal, 2012). These third parties use metrics obtained from the annual reports/ non-financial reports to calculate the ESG performance of each company. However, if the information is based on the annual/non-financial reports, the scores may be unreliable. This means that some corporations could have a higher or lower ESG performance score than they should have, which could have influenced the results found in prior research.

A way to solve this problem is by checking if assurances have been provided over the non-financial information. Having a third party (auditor or industry specialist) performing an assurance over the non-financial information provides more credibility to the ESG data (Akisik & Gal, 2014) (Martínez-Ferrero, García-Sánchez, & Ruiz-Barbadi, 2018). Even though the development of non-financial assurances is still at an early stage, many researchers have indicated that a non-financial assurance is essential for society in order to ensure the reliability and credibility of non-financial information, creating an effective way to combated dubious ESG results (Alsaali & Malagueño , 2022) (Lyon & Maxwell, 2011). Considering prior research about the relation between ESG performance and financial performance and the impact that non-financial audit reports could have on ESG scores, the following hypothesis is proposed:

H2: There is a stronger positive relation between ESG performance and corporate financial performance for companies with a non-financial audit report.

2.6 Conceptual Model

Figure 1 shows the conceptual model that visualizes the two hypotheses used in this study. The conceptual model also shows the relationship each of the hypothesizes has towards each other.

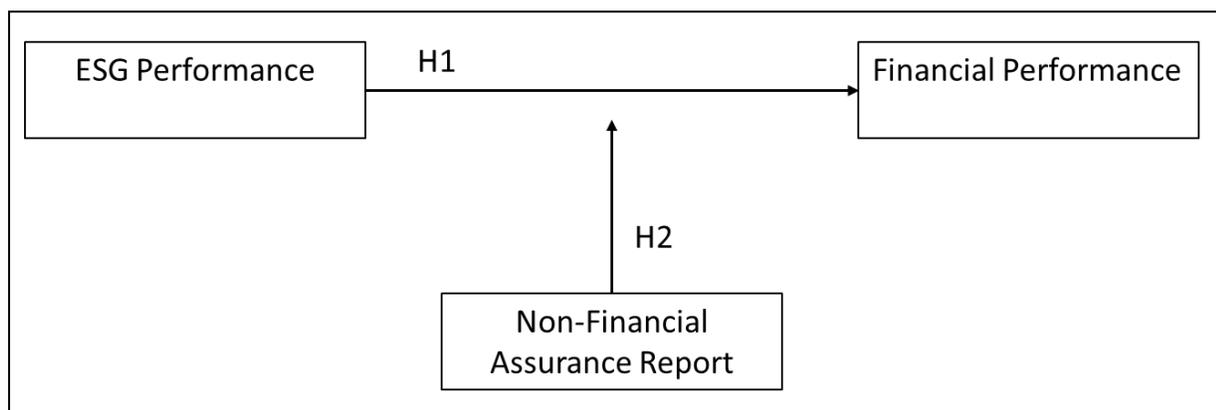


Figure 1, Conceptual model

3. Research method

This chapter will elaborate more on the chosen research method, how the data was collected, which variables were used and how they were measured. Lastly, a description of the alternative analyses is given.

3.1 Data Collection

To answer the research question, data needed to be collected about a company's overall ESG performance, its subcomponents, the existence of a non-financial audit report and the financial performance of these companies. There was no dataset available containing information about all the variables needed to perform the analysis. Therefore, in this thesis, a new dataset was created by collecting data from the Refinitiv database as well as collecting data from annual/sustainability reports. Refinitiv is an American/British-based company that provides financial market data. The database contains financial and business information that covers 99% of the world's market cap (Refinitiv, 2023). The data found on Refinitiv ranges from economic data, deals data, company data, commodities data, and other financial and business information. The Refinitiv database was used to collect data about a company's ESG performance (measured as combined and individual scores), the ROA and Tobin Q and the controlling variables company size (total assets) and leverage ratio. All the data was collected for a period of three years (2022, 2021 and 2020). To obtain data about the existence of a non-financial assurance report, each company's annual report or non-financial report has been analyzed to see if a third-party accountant or industry-specialized expert has provided limited assurance on the non-financial information.

3.2 Dependent Variable

The dependent variable used in this study was corporate financial performance. According to the literature, there are many ways to measure the financial performance of a company, all of which have their benefits and drawbacks. However, one of the most used methods to measure

a company's performance is the return on assets (ROA) (Friede, Busch, & Bassen, 2015). The Return on Assets is a financial ratio that shows how profitable a company is in relation to its total assets. It clearly shows how effectively a company uses its assets to generate profit. The return on assets is calculated as follows:

$$ROA = \frac{EBIT}{Total\ Assets}$$

As already stated, there are multiple ways of measuring a company's financial performance. The ROA uses accounting information to show the financial performance of a corporation. Another way of calculating the financial performance is by looking from a market perspective. Tobin's Q is a KPI that looks at the market value of a company and the replacement cost of its assets. It showcases if the capital market perceives the value of a company to be higher or lower than indicated on its accounting results (Tobin, 1969). In this study, Tobin's Q will be used as an alternative way to measure financial performance, enabling the possibility of verifying the results found with ROA. Tobin's Q is calculated as follows:

$$Tobin's\ Q = \frac{Market\ value\ debt + Equity}{Total\ Assets}$$

Dependent Variable	Metric	Measurement
Corporate Financial Performance	Return on Assets (ROA)	Net income divided by total book value of a company's assets
	Tobin's Q (TBQ)	the market value of the company's debt and equity divided by total assets

Table 1. Dependent Variable

3.3 Independent Variable

The independent variable used in this study is ESG Performance. To obtain the ESG performances score and each sub-score, the Refinitiv database is used. Refinitiv captures and calculates over 180 company-level ESG data points, ratios and analytics. These are grouped into ten categories, forming the three sub-scores and the final ESG score. The ESG sub scores, which

range from 0 to 100, are "a relative sum of the category weights which vary per industry for the 'Environmental' and 'Social' categories. For 'Governance', the weights remain the same across all industries" (refinitiv, 2023). The overall ESG score and each of its sub-scores were collected over the period of 2020 to 2022.

Independ Variable	Metric	Measurement
ESG Performance	Environmental performance	Refinitiv environmental performance score (0 – 100)
	Social Performance	Refinitiv social performance score (0 – 100)
	Governance Performance	Refinitiv governance performance score (0 – 100)
	Combined ESG performance	Refinitiv ESG performance score (0 – 100)

Table 2. Independent Variable

3.4 Moderating Variable

To better understand the relation that ESG performance has on financial performance, this study examined the influences of the moderation variable “non-financial audit report”. The variable looks if a third-party accountant or industry-specialized expert has provided assurance over the non-financial information in the annual or sustainability report. In order to check this, the annual report and sustainability report (years 2022, 2021 and 2020) of each company were checked to see if a statement about limited assurance has been provided or not. A dummy variable has been created where 0 indicates no assurance and 1 indicates limited assurance.

3.5 Control Variables

Several controlling variables have been included in the analysis to improve the model fit and ensure that other variables do not confound the results. These controlling variables are company size and leverage ratio. These controlling variables are proven in prior research to be relevant when analyzing ESG and financial performances (Giannopoulos, Fagernes, Elmarzouky, & Hossain, 2022) (Friede, Busch, & Bassen, 2015) (Velte, 2017). All the controlling variables were collected using the Refinitiv database.

Company size has been taken into account as a controlling variable since large corporations are more exposed to pressure from society to invest and report on ESG activities. Not including the company size would therefore bias the results. Company size has been measured using the total assets reported on the balance sheet. The second controlling variable is the leverage ratio. Leverage ratio is a metric that assesses the ability of a company to pay its debt (Gleißner, Günther, & Walksh, 2022). Prior research stated that the leverage ratio should be controlled for since a ratio above the optimal level is negatively related to financial performance (Ademi & Klungseth, 2022). The leverage ratio is calculated as the total debt divided by the total equity.

<i>Control Variables</i>	
Metric	Measurement
Company size	Total assets
Leverage ratio	Debt to equity ratio

Table 3. Control variables

3.6 Data Analysis Method

In order to analyze if and what the effect of ESG performance is on corporate financial performance, a panel data regression analysis was performed using Stata. A panel regression analysis was chosen since it is the most appropriate statistical test to find a relation between one dependent variable and multiple independent variables based on time-series data. Panel regression analysis is also well suitable for determining the effects of the moderating variable (Hair, Black, Babin, & Anderson, 2019). Before an analysis was carried out, the Hausman test was performed to check if a fixed effects model or a random effects model is most suitable for the analysis. Additionally, several assumptions that need to be fulfilled to run a panel regression analyses, were checked. The assumptions are independence of residuals, random sampling, normal distribution of residuals, and homogeneity of variance-covariance matrices (Field, 2009) (Hair, Black, Babin, & Anderson, 2019).

3.7 Regression Equation

When performing the panel data regression analyses, four different models were used to test the significance levels of the proposed hypotheses. The first two models analyzed the direct effect of ESG score's on corporate financial performance. The first model used each of the three ESG pillar scores sparely, while the second model used the combined ESG score. The third and fourth model analyzed if non-financial assurances have a moderating effect on the relation between ESG performance and corporate financial performance. Here again, the analysis was split into two models, one with the ESG sub-scores and one with the combined score. All the models were performed twice, once with ROA as the dependent variable and once with Tobin's Q as the dependent variable.

The regression equation for model 1:

$$ROA/ \text{Tobin's } Q = \beta_0 + \beta_1\text{Env} + \beta_2\text{Soc} + \beta_3\text{Gov} + \beta_4\text{Size} + \beta_5\text{size} + \beta_7\text{Lev} + \alpha_i + \varepsilon_i$$

The regression equation for model 2:

$$ROA/ \text{Tobin's } Q = \beta_0 + \beta_1\text{ESG} + \beta_2\text{size} + \beta_3\text{Lev} + \alpha_i + \varepsilon_i$$

The regression equation for model 3:

$$ROA/ \text{Tobin's } Q = \beta_0 + \beta_1\text{Env} + \beta_2\text{Soc} + \beta_3\text{Gov} + \beta_4\text{NFA} + \beta_5\text{Env} * \text{NFA} + \beta_6\text{Soc} * \text{NFA} + \beta_7\text{Gov} * \text{NFA} + \beta_8\text{Size} + \beta_9\text{Lev} + \alpha_i + \varepsilon_i$$

The regression equation for model 4:

$$ROA/ \text{Tobin's } Q = \beta_0 + \beta_1\text{ESG} + \beta_2\text{NFA} + \beta_3\text{ESG} * \text{NFA} + \beta_4\text{Size}_i + \beta_5\text{Lev} + \alpha_i + \varepsilon_i$$

3.8 Alternative analyses

It could be the case that the relation between ESG performance and corporate financial performance cannot be observed immediately but instead has a lag. It can be presumed that investors and other stakeholders will find out about a companies' ESG performance by reading their annual or sustainability reports. If these stakeholders only then start to react to this new information, the result on financial performance will only be shown in the annual report of next year. Therefore, the four regression models previously mentioned were analysed again. However, this time, the overall ESG score and each sub score were lagged for one year.

4. Analysis

This fourth chapter will provide the following. First it will describe the data sample that was collected. Secondly, it will check the assumptions needed to perform a panel data regression analysis. Thirdly, the Hausman test is performed to identify the appropriate panel data regression model. Finally, the results of the panel data regression analysis will be discussed.

4.1 Descriptives

The characteristics of the study population are shown in Table 4. The total study population consisted of 228 companies. The data was collected for a period of three years, from 2020 to 2022, resulting in 684 firm-year observations. The analysis included companies from nine different countries, whereas most companies were located in Sweden (25,4%) and least in Ireland (3,1%). A total number of 179 companies (78,5%) had delivered an audit report. Environmental-, governance-, social- and ESG scores were reported, and all showed an increase between 2020 and 2022.

	Total years N=228 <i>N (%) or Mean (SD)</i>	2020	2021	2022
Audit report				
Yes	179 (78,5%)			
No	49 (21,5%)			
Environmental score	63,93 (22,75)	61,08 (24,59)	64,22 (22,42)	66,49 (20,86)
Governance score	67,45 (18,26)	64,33 (18,96)	68,41 (17,82)	69,62 (17,63)
Social score	70,51 (18,04)	68,90 (18,85)	70,49 (17,96)	72,16 (17,21)
ESG score	63,97 (15,20)	61,87 (16,20)	64,03 (14,77)	66,02 (14,34)
ROA	0,07 (0,05)	0,06 (0,04)	0,08 (0,05)	0,07 (0,05)
Leverage ratio	0,76 (0,77)	0,79 (0,83)	0,72 (0,74)	0,78 (0,75)
Assets	56.424.812.877 (1,73x10 ¹¹)	55.406.975.611 (1,71x10 ¹¹)	57.091.685.580 (1,76x10 ¹¹)	56.775.777.441 (1,72x10 ¹¹)
Tobin Q	1,17 (1,12)	1,21 (1,05)	1,38 (1,38)	0,92 (0,80)

Table 4. Descriptive statistics

4.2 Assumptions

As mentioned in chapter 3, there were several assumptions that needed to be fulfilled in order to perform a panel regression analysis. The following assumptions were tested: normal distribution of the dependent and independent residuals, linearity, homoscedasticity and correlation of independent variables.

4.2.1 Normality of Residuals

An important assumption that needs to be checked to perform a penal data regression analysis is the normality of residuals. It is essential to check if the residuals of the independent and dependent variables are normally distributed. There are two ways to check if the variables are normally distributed; the first is by creating a histogram for all the variable's residuals and seeing if these charts are normally distributed. This way of checking for normality is open to interpretations. Therefore, this thesis used the second technic to test for normality. The second technic calculates the skewness and kurtosis of every variable. The residuals of a variable can be regarded as normally distributed when the value of the skewness and kurtosis are between -3 and +3 (Field, 2009).

The skewness and kurtosis values indicate that all the residuals of the independent variables are normally distributed (see appendix A). For the controlling variables, the skewness and kurtosis for total assets (4.939 & 15.916) and leverage ratio (3.403 & 26.564) are above the +3 threshold. This means that these variables are positively skewed and thus not normally distributed. In order to deal with a positively skewed variable, the data can be transformed by using either a logarithm or a square root function (Field, 2009) (Hair, Black, Babin, & Anderson, 2019). Both transformations were tested (Appendix A), where the logarithm function offered the most promising results. For the dependent variable, both the residuals of ROA (1.607 & 7.256) and Tobin-Q (2.404 & 8.872) were not normally distributed. Also, here these variables were transformed using the logarithm function, resulting in the residuals of the dependent variables falling within the thresholds which are, therefore, normally distributed.

4.2.2 Linearity

The second assumption for a panel regression analysis is linearity. This means that "The outcome variable should, in reality, be linearly related to any predictors" (Hair, Black, Babin, & Anderson, 2019). To test for linearity in the dataset, scatterplots were created to see the relation that the dependent variable has with each independent variable individually and combined. The standardized predicted to residuals line must be around 0 for the data to be linear. The Scatterplot showed that all independent variables have a linear relationship with ROA and Tobin-Q.

4.2.3 Homoscedasticity

In order to assess if the data is homoscedastic, an analysis was performed to see if the variance of the error term is consistent for each of the independent variables (Field, 2009). The most common way to test this is by using the Breusch-pagan test. The results (appendix B) showed that the Breusch-pagan test is significant, meaning that the data shows some form of heteroscedasticity. Heteroscedasticity in the data could significantly influence the validity of the data. In order to combat this and improve the validity of this research, robust standard errors were used in each regression analysis (Hair, Black, Babin, & Anderson, 2019).

4.2.4 Correlation of Independent Variables

To test if there are any correlations between the independent variables, two additional tests were performed. The first test looks if there are no linear relations between the predicting variables. This is checked by looking at the predicting variables' variance inflation factors (VIF) and their tolerance value. The general guidelines are that a VIF score above ten or a tolerance value below 0,1 are a cause of concern for multicollinearity (Field, 2009). As seen in appendix B, all the VIF scores and tolerance values of the independent variables are within the parameters, meaning there is no concern for multicollinearity. The second test that was performed looked if the data set contains autocorrelations. To check this, a correlation matrix was used where one can see if two independent variables are correlated with each other. The scores of the

correlation matrix range from -1 to + 1, where 0 means no correlation and -1 or +1 means a perfect correlation. Correlations higher lower than -0.5 and higher than 0.5 would be a cause for concern. Looking at the correlation matrix (Appendix C), no variable exceeds the threshold, meaning there is no problem concerning autocorrelation.

4.3 Hausman Test

There are two models to choose from when performing a panel data regression analysis. The first model is the fixed effects model. This model presumes that the categorical variables in the model are fixed and thus cannot differ from each other. The random effect model, on the other hand, allows for categorical changes between variables (Hair, Black, Babin, & Anderson, 2019). A Hausman test was performed to test which model was most suitable for the data. The Hausman test assesses "whether or not the unobserved individual effect is correlated with the conditioning regressors in the model" (Hausman & Taylor, 1981). Suppose the null hypothesis of the Hausman test is not rejected. In that case, it provides statistical evidence that the random effects model is most appropriate, while if a significant result is found, it would indicate that the fixed effects are most appropriate. After performing the Hausman test (appendix D), we see that the null hypothesis is rejected ($\chi^2 = 183.56, p=0.000$), meaning that the most appropriate model to use is the fixed effect model.

4.4 Panel Data Regression Analyses

A panel data regression analysis was used to test the two-hypothesis formulated in chapter two. Models 1 & 2 were used to test the first hypothesis, which stated that that ESG performance has a positive relation with corporate financial performance. Models 3 & 4 were used for the second hypothesis which state that there is a stronger positive relation between ESG performance and corporate financial performance for companies that have a non-financial audit report. All the models were performed twice, once with ROA as the dependent variable and once with Tobin's Q as the dependent variable.

Table 5 shows an overview of the result with robust error terms for models 1A and 2A. Both models used data from 228 companies on a three-year basis (2020–2022), making the total number of observations 684. Looking closely at model 1A, the overall fit is 0.1893 with ROA as the dependent variable and 0.1404 with Tobin's Q as the dependent variable. This means that the variances in the independent variable can explain 18.93% (14.04%) of the variances in ROA (Tobin's Q) (Field, 2009). All the controlling variables were found to have a significant ($P < 0.01$) effect on ROA and Tobin's Q. The controlling variable "leverage ratio" has a negative coefficient, meaning that a higher leverage ratio will result in a lower ROA or Tobin's Q. This conforms previously found results by Ademi & Klungseth (2022). The second controlling variable, the size of a company (measured by total assets), has a positive coefficient when ROA was used as the dependent variable. The explanation for this is that larger corporations are better able to use their assets in order to turn it into profits. However, a negative coefficient was found when Tobin's Q was used as the dependent variable, which was not expected. Looking at the independent variables, only social score was found to have a significant result, but only when Tobin's Q was the dependent variable ($p < 0.05$). The negative coefficient indicates that a higher social score would negatively affect Tobin's Q, which contradicts hypothesis 1. Looking at model 2A, which shows ESG performance as a combined score, the overall model fit is 0.1407 for ROA, which is lower than model 1A and 0.2048 for Tobin's Q, which is higher than model 1A. Just like model 1A, all the controlling variables were found to be significant ($P < 0.01$) with the same positive/negative relations. No significant results were found for the independent variable (ESG score), which does not align with hypothesis 1.

Table 5 – Panel data regression with error terms

Dependent variable	Model 1A		Model 2A	
	ROA	Tobin's Q	ROA	Tobin's Q
Log-Assets	.2405317 (0.000)*	-.7572572 (0.007)*	.2456834 (0.000)*	-.8149229 (0.003)*
Log-Leverage	-.3721608 (0.000)*	-.6623191 (0.000)*	-.369736 (0.000)*	-.6478781 (0.000)*
Environmental score	.0000614 (0.905)	-.0002877 (0.736)		
Social score	-.0006626 (0.261)	-.0033293 (0.026)*		
Governance score	.0005922 (0.107)	-.006066 (0.568)		
ESG score			-.0001971 (0.565)	-.0015014 (0.066)
Constant	-2.036114 (0.000)*	8.873873 (0.001)*	-2.077619 (0.000)*	9.240542 (0.001)*
Nr. of observation:	<i>684</i>	<i>684</i>	<i>684</i>	<i>684</i>
F-value	<i>14.60</i> <i>(0.000)</i>	<i>15.80</i> <i>(0.000)</i>	<i>21.60</i> <i>(0.000)</i>	<i>22.97</i> <i>(0.000)</i>
Rho	<i>.957405</i>	<i>.944999</i>	<i>.958310</i>	<i>.945500</i>
R-squared	<i>0.1893</i>	<i>0.1404</i>	<i>0.1407</i>	<i>0.2048</i>

*Significant at 5%

Table 6 provides the results of the panel data regression analyses of models 3A and 4A. As in models 1A and 2A, the analyses used 684 data points from 228 companies. All the controlling variables used in models 3 and 4 are found to be significant ($p < 0.01$) with the same positive/negative relation as in model 1A. Taking a closer look at model 3A, we see that including the interaction effects decreases the model's overall fit from .01893 to 0.1349 when ROA was used as the dependent variable. Meanwhile, the overall fit increases from 0.1404 to 0.1908 when Tobin's Q was used. For the independent variables, social score was found to have a significant effect ($P < 0.01$). However, only for Tobin's Q, The interaction effects used in model 3A showed no significant results, which does not align with hypothesis 2.

The overall fit of model 4A is similar when compared to model 2A. For ROA, the model fit slightly increases from 0.1407 to 0.1421, while for Tobin's Q, there is a decrease from 0.2048 to 0.2028. The independent variables and the interaction effects did not show any significant effect, which is also not in line with hypothesis 2.

Table 6 – Panel data regression with error terms

Independent variable	Model 3A		Model 4A	
	ROA	Tobin's Q	ROA	Tobin's Q
Log-Assets	.2416393 (0.000)*	-.7643857 (0.008)*	.2473471 (0.000)*	-.8100354 (0.004)*
Log-Leverage	-.3752493 (0.000)*	-.6585188 (0.000)*	-.3694746 (0.000)*	-.6471102 (0.000)*
Environmental score	-.0009113 (0.313)	-.0004772 (0.774)		
Social score	.0000173 (.985)	-.0048196 (0.006)*		
Governance score	.0002262 (.0725)	.0012514 (0.601)		
ESG score			-.0006765 (0.563)	-.0029095 (0.245)
Env*Audit	.0015168 (0.136)	.000128 (0.953)		
Soc*Audit	-.0010188 (0.401)	.0026662 (0.329)		
Gov*Audit	.0005393 (0.488)	-.0025455 (0.336)		
ESG*Audit			.0005732 (0.635)	.0016839 (0.514)
Constant	-1.98259 (0.000)*	8.924345 (0.001)*	-2.092952 (0.000)*	9.195499 (0.001)*
Nr. of observation:	<i>684</i>	<i>684</i>	<i>684</i>	<i>684</i>
F-value	<i>9.48</i> <i>(0.000)</i>	<i>10.57</i> <i>(0.000)</i>	<i>16.33</i> <i>(0.000)</i>	<i>17.70</i> <i>(0.000)</i>
Rho	<i>.957374</i>	<i>.944399</i>	<i>.960022</i>	<i>.94375</i>
R-squared	<i>0.1349</i>	<i>0.1908</i>	<i>0.1421</i>	<i>0.2028</i>

*Significant at 5%

4.5 Alternative Analyses

As indicated in chapter three, it could be the case that the relation between ESG performance and corporate financial performance can only be observed when a lag of one year has been taken into account. The reason for this is that, presumably, most stakeholders learn about the ESG performance of a company in the annual report/ sustainability report. Therefore, their reactions based on this newly acquired information can only be observed in the financial information of next year's annual report. In order to check if this is true, all the regression models are repeated, with the only difference being that the overall ESG score and each sub-score is lagged with one year.

Table 7 shows the results of models 1B & 2B, where the ESG scores are lagged for one year. Taking a closer look at model 1B, the overall model fit for the model with ROA as the dependent variable was reduced by more than 10 % (0.0820) compared to model 1A. For the analysis with Tobin's Q as the dependent variable, we see that the overall fit improved from 0.1404 to 0.1749. Looking at the controlling and independent variables for model 1B with ROA as the dependent variable, only the controlling variable leverage ratio showed a significant result ($P < 0.00$). For Tobin's Q, the controlling variable "total assets" ($P < 0.00$) and the independent variable "governance score" showed a significant ($P, 0.01$) result. All other independent variables showed no significance, which does not conform to hypothesis 1. For model 2B, both analyses showed a reduction of the overall fit compared to model 2A. For the analyses with ROA, the overall fit recuses from 0.1421 to 0.0645, and for Tobin's Q there was a reduction from 0.2028 to 0.1831. Looking at the controlling variables, the leverage ratio was found to have a significant result with both ROA and Tobin's Q as the dependent variable. Total assets were only significant for the analyses with Tobin's Q. For both analyses, no significant relation was found for the independent variable "ESG score", which does not align with hypothesis 1.

Table 7 – Panel data regression with error terms

Dependent variable	Model 1B		Model 2B	
	ROA	Tobin's Q	ROA	Tobin's Q
Log-Assets	.1018086 (0.225)	-2.016228 (0.000)*	0.87757 (0.293)	-2.171046 (0.000)*
Log-Leverage	-.3369737 (0.000)*	-.450901 (0.076)	-.3447349 (0.000)*	-.52990759 (0.044)*
Environmental score (N-1)	.0003097 (0.670)	-.0005112 (0.747)		
Social score (N-1)	-.0021763 (0.076)	-.0024521 (0.265)		
Governance score (N-1)	-.0000387 (0.934)	-.0042974 (0.004)*		
ESG score (N-1)			.0000894 (0.807)	-.0008708 (0.438)
Constant	-.5371574 (0.503)	21.44419 (0.000)*	-.5372963 (0.507)	22.55539 (0.000)*
Nr. of observation:	456	456	456	456
F-value	4.90 (0.000)	17.33 (0.000)	6.45 (0.000)	21.95 (0.000)
Rho	.887782	.990603	.879864	.991033
R-squared	0.0820	0.1749	0.0645	0.1831

*Significant at 5%

Table 7 shows the results of models 3B & 4B, where the ESG scores are lagged for one year. Compared to model 3A, model 3B showed no improvement concerning the model's overall fit for both ROA (0.0032) and Tobin's Q (0.1750). In model 3B, the same controlling variables were found to be significant as in model 1B. Model 3B showed no significant interaction effect meaning that the interaction effect of an audit report could not explain the variance of the dependent variable ROA and Tobin's Q, which is not in line with hypothesis 2. For model 4B, only the leverage ratio was found to be significant when using ROA as the dependent variable. However, when Tobin's Q was used as the dependent variable, we see that the ESG score ($p < 0.001$), as well as the interaction effect ($P < 0.000$), has a significant effect on financial performance. The coefficient of the ESG score is negative, meaning that the higher the ESG score, the lower Tobin's Q is. For the interaction effect, however, there is a positive effect.

This means that for companies with an audit report, a higher ESG score is associated with a higher Tobin's Q. The results found in model 4B thus partly support hypothesis 2.

Table 8 – Panel data regression with error terms

Independent variable	Model 3B		Model 4B	
	ROA	Tobin's Q	ROA	Tobin's Q
Log-Assets	.0899401 (0.304)	-2.047116 (0.000)*	.0885265 (0.290)	-2.159631 (0.000)*
Log-Leverage	-.3406954 (0.000)*	-.4430772 (0.082)	-.3420121 (0.000)*	-.4886872 (0.060)
Environmental score (N-1)	-.0005743 (0.436)	-.0011656 (0.574)		
Social score (N-1)	-.0003174 (0.716)	-.0059678 (0.044)*		
Governance score (N-1)	.0003266 (0.714)	-.0036331 (0.174)		
ESG score (N-1)			-.0005227 (0.581)	-.0099515 (0.000)*
Env*Audit (N-1)	.001555 (0.244)	.0011084 (0.733)		
Soc*Audit (N-1)	-.0031506 (0.103)	.0057994 (0.163)		
Gov*Audit (N-1)	-.0003987 (0.697)	-.0009051 (0.776)		
ESG*Audit (N-1)			.0006845 (0.503)	.0101533 (0.001)*
Constant	-.3197751 (0.705)	21.70945 (0.000)*	-.5418127 (0.505)	22.48839 (0.000)*
Nr. of observation:	<i>456</i>	<i>456</i>	<i>456</i>	<i>456</i>
F-value	<i>3.24</i> <i>(0.002)</i>	<i>12.74</i> <i>(0.000)</i>	<i>5.17</i> <i>(0.001)</i>	<i>23.68</i> <i>(0.000)</i>
Rho	<i>.902780</i>	<i>.990224</i>	<i>.887694</i>	<i>.990576</i>
R-squared	<i>0.0032</i>	<i>0.1750</i>	<i>0.0710</i>	<i>0.1750</i>

*Significant at 5%

4.6 Summary of the results

A panel data regression analysis was performed in Stata to test the two hypotheses formulated in chapter two. Before the analyses were run, several assumptions were checked to see if the data were suitable for the panel data regression analyses. The two controlling variables and the dependent variables were transformed using a logarithm function. This was done to ensure that the data has normality of the residuals. The data also contained some signs of heteroscedasticity. Therefore, robust error terms were used to ensure the reliability of the results.

To test the first hypothesis, models 1 & 2 were used to look if there is a direct effect of ESG performance on corporate financial performance. The results of regression models 1A & 2A indicate that a significant result can be found, however, only for the ESG sub-score of “Social”. The overall ESG score and all other sub-scores are not significantly related to corporate financial performance. Analysing models 1B & 2B, where ESG performance is lagged by one year, found that only the sub-score of governance is significant. The overall ESG score and all other sub-scores do not have a significant relation. Overall, the results of models 1 & 2 do not align with hypothesis 1. Therefore, hypothesis 1 cannot be accepted.

Regression models 3 & 4 were used to test the second hypothesis. These models analysed the effect of the moderating variable non-financial audit report. The results of models 3A, 3B & 4A showed no significant results concerning the moderating effect of audit report. Only the ESG sub-score of “Social” had a significant result. The overall ESG score and all other sub-scores are not found to be significant. However, looking at model 4B, the analyses showed that if ESG performance is lagged by one year, the moderating effect has a significant positive effect. This means companies with a non-financial audit report show a higher Tobin’s Q when their ESG score improves. The result found in model 4B aligns with hypothesis 2; however, since the other models are not, hypothesis 2 can only be partly accepted.

5. Conclusion & Discussion

This study aims to explain the contradicting results found in prior research regarding the influence that ESG performance has on corporate financial performance. Prior research that looked into the relationship between ESG performance and corporate financial performance has found mixed results, some indicating that there is a positive relation (Sassen et al., 2016) (Ademi & Klungseth, 2022), while others indicate a negative or no relation (Zhu, 2009) (Wang & Bansal, 2012). A possible reason for these conflicting results could be the fact that not all aspects of ESG performance were considered (Friede, Busch, & Bassen, 2015) or that the ESG performance data has not been audited and, therefore, could potentially be unreliable (Martínez-Ferrero et al., 2018). This thesis tries to explain the contradicting results by incorporating these aspects into the analyses. Therefore, the research question of this thesis is as follows: *Does ESG performance influence corporate financial performance when moderated by the presence of a non-financial audit report?*

To answer the research question above, two hypotheses were tested using several panel data regression analyses in Stata. The first hypothesis looked if a direct relationship could be found when the moderating variable of non-financial audit reports was not included. The results showed that hypothesis 1 cannot be accepted. The normal and the alternative analyses showed no significant positive relation between ESG performance (measured as overall and individual sub-scores) and corporate financial performance. The second hypothesis analyzed if a positive moderating effect of non-financial audit report exists on the relation between ESG performance and corporate financial performance. The results showed that when financial performance is lagged for one year, the overall ESG score is significant, and a significant positive moderating effect can be found. This is only true when Tobin's Q was used as the dependent variable. No significant effect was found when ROA was used as the dependent variable. Hypothesis 2 can thus be partly accepted.

Overall, it can be concluded that ESG performance has a positive effect on corporate financial performance when it is moderated by the presence of a non-financial audit report. This effect can, however, only be observed after one year, and with Tobin's Q as the measurement for corporate financial performance. Additionally, no significant results were found without the moderating variable. This further supports the idea that a non-financial audit ensures the reliability of the ESG performance, which provides a better estimation of the relation between ESG performance and Corporate financial performance. These findings are in line with previous research of Akisik & Gal (2014).

Several limitations of this research need to be discussed to provide a holistic view of the results found in this study. First, the dataset used to perform the panel data regression analyses included corporate financial performance data from 2020 to 2022. During this period, the world faced a worldwide corona pandemic, which either positively or negatively affected the financial performances of all companies used in this dataset. This research was not able to control for the effects of the pandemic. This means that the results found in this research could have been influenced by the significant impact that the pandemic had on these corporations. A way to avoid this was to use a different timeframe. However, this would have resulted in less datapoints since non-financial assurance only started to flourish around ten years ago. Therefore, few companies have used non-financial assurance (Alsahali & Malagueño, 2022). Future research could use the financial data of corporations after the pandemic to ensure that the results found in this research are robust.

The second limitation of this study has to do with the sample size. Due to the tight deadline for completing this research, only 684 data points from 228 companies were included in the analyses. This was even lower for the one-year lagged analyses, which included only 456 data points. Ideally, a larger timeframe was used to increase the number of data points and improve the generalizability of the results.

The last limitation of this research concerns the metrics used to measure corporate financial performance and ESG performance. As already indicated, there are many ways of assessing a company's financial performance. Even though this study used two of the most

common ways, it could be the case that some crucial insight into financial performance is missed by not having used additional metrics. This is especially true for ESG performance, where many researchers are still debating on the best approach to quantify corporations' non-financial performance (Chatterji & Levine, 2005).

The results of this thesis contributed to the academic field of accounting & control by analyzing the effect that ESG performance has on corporate financial performance when the moderating variable of audit report is considered. However, additional research is needed to ensure the robustness of these results and to find other controlling/moderating effects that significantly influence this relationship. As discussed above, future research could check the robustness of these results by increasing the amount of datapoints. Future research could incorporate more countries into the analyses and widen the time span of the analyses. Additionally, future research could further enhance our understanding of the relationship between ESG performance and corporate financial performance by including other moderating and controlling variables that might have a significant impact. Researchers, for example, indicated that variables like country development index, ESG investment strategy, national culture and industry sensitivity could also potentially have a significant influence and, therefore, would be interesting to investigate further (Zhou, Liu, & Luo, 2022) (Naeem, Cankaya, & Bildik, 2022) (Shin, Moon, & Kang, 2023).

References

- Chatterji, A., & Levine, D. (2005). Breaking Down The Wall Of Codes: Evaluating Non-Financial Performance Measurement. *UC Berkeley: Center for Responsible Business*.
- Ademi, B., & Klungseth, N. (2022). Does it pay to deliver superior ESG performance? Evidence from US S&P 500 companies. *Journal of Global Responsibility, 14*(4), 421- 449.
- Akisik, O., & Gal, G. (2014). Financial Performance and Reviews of Corporate Social Responsibility Reports. *Journal of Management Control, 3-4*.
- Alsahali, K., & Malagueño , R. (2022). An empirical study of sustainability reporting assurance: current trends and new insights. *Journal of Accounting & Organizational Change, 18*(5), 617-642.
- Arvidsson, S. (2011). Disclosure of non-financial information in the annual report: a management-team perspective. *Journal of Intellectual Capital, 12*(2), 277-300.
- Baron, D. (2008). Managerial contracting and corporate social responsibility. *J Public Econ, 92*, 268-288.
- Bhatti, M., Awan, H., & Razaq, z. (2014). The key performance indicators (KPIs) and their impact on overall organizational performance. *Quality & Quantity, 48*, 3127-3143.
- Bleijenbergh, I. (2016). *Kwalitatief onderzoek in organisaties*. Nijmegen: Boom Lemma.
- Castro, F., & Sauaia, A. (2002). Is the Tobin's Q a good indicator of a company's performance. *Developments in Business Simulation and Experiential Learning: Proceedings of the Annual ABSEL conference, 29*.
- Clark, G., Feiner, A., & Viehs, M. (215). From the Stockholder to the Stakeholder: How Sustainability Can Drive Financial Outperformance. doi:10.2139/ssrn.2508281
- Ditlev-Simonsen, C. (2022). Sustainability and Finance: Environment, Social, and Governance (ESG). In C. Ditlev-Simonsen, *A Guide to Sustainable Corporate Responsibility: From Theory to Action* (pp. 189-193). Oslo: Palgrave Macmillan.
- Eccles, R., & Stroehle, J. (2018, 07 12). Title: Exploring Social Origins in the Construction of ESG Measures. Retrieved from <https://ssrn.com/abstract=3212685>
- Eccles, R., Krzus, M., Rogers, J., & Serafeim, G. (2012). The Need for Sector-Specific Materiality and Sustainability Reporting Standards. *Journal of Applied Corporate Finance, 24*, 65-71.
- EI-Hage, J. (2021). *Fixing ESG: Ar Fixing ESG: Are Mandat e Mandatory ESG Discosur y ESG Disclosures the Solution to Misleading Ratings?* FORDHAM J. CORP. & FIN.
- EI-Hage, J. (2021). Fixing esg: are mandatory esg disclosures the solution to misleading esg ratings? *Fordham Journal of Corporate and Financial Law, 26*(2), 359-390.
- Field, A. (2009). *Discovering statistics using IBM SPSS statistics*. London: SAGE.

- Friede, G., Busch, T., & Bassen, A. (2015). ESG and financial performance: aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment*, 5(4), 210-233.
- Gamble, A., & Kelly, G. (2001). Shareholder value and the stakeholder debate in the UK. *Corporate Governance - Governance*, 9(2), 110-117.
- García-Sánchez, I., & Noguera-Gámez, L. (2017). Integrated information and the cost of capital. *International Business Review*, 26(5), 959-975.
- Giannopoulos, G., Fagernes, R., Elmarzouky, M., & Hossain, K. (2022). The ESG Disclosure and the Financial Performance of Norwegian Listed Firms. *Journal of Risk and Financial Management*, 15(6).
- Gleißner, W., Günther, T., & Walksh, C. (2022). Financial sustainability: measurement and empirical evidence. *Journal of Business Economics*, 92, 467-516.
- Hair, J., Black, W., Babin, B., & Anderson, R. (2019). *Multivariate data analysis*. Andover: Cengage.
- Hausman, J., & Taylor, W. (1981). Panel data and unobservable individual effects. *Econometrica*, 49(6).
- Hillier, D., Clacher, L., Ross, S., Westerfield, R., & Jordan, B. (2017). *Fundamentals of corporate finance*. London: McGraw-Hill Education.
- IFRS. (2023). *Conceptual Framework for Financial Reporting*. London: IFRS Foundation.
- Kaplan, R. S., & Ramanna, K. (2021). How to Fix ESG Reporting. *Harvard Business School Accounting & Management*.
- Khan, M., & Ali, M. (2023). Regulations on Non-Financial Disclosure in Corporate Reporting: A Thematic Review. *Sustainability*, 15(3), 2793.
- Lee, M., & Suh, I. (2022). Understanding the effects of Environment, Social, and Governance conduct on financial performance: Arguments for a process and integrated modelling approach. *Sustainable Technology and Entrepreneurship*, 1(1). Retrieved from <https://doi.org/10.1016/j.stae.2022.100004>.
- Lyon, T., & Maxwell, J. (2011). Greenwash: corporate environmental disclosure under threat of audit. *Journal of Economics and Management Strategy*, 20(1), 3-41.
- Martínez-Ferrero, J., García-Sánchez, I.-M., & Ruiz-Barbadi, E. (2018). The quality of sustainability assurance reports: The expertise and experience of assurance providers as determinants. *Business Strategy and the Environment*, 27(8), 1181-1196.
- Mckinsey. (2022, aug 1). *Does ESG Really matter- and why?* Retrieved from <https://www.mckinsey.com/>: <https://www.mckinsey.com/capabilities/sustainability/our-insights/does-esg-really-matter-and-why#/>
- Mohammad, W., & Wasiuzzaman, S. (2021). Environmental, Social and Governance (ESG) disclosure, competitive advantage and performance of firms in Malaysia. *Cleaner Environmental Systems*, 2.

- Monciardini, D., Mähönen, J., & Tsagas, G. (2020). Rethinking Non-Financial Reporting: A Blueprint for Structural Regulatory Changes. *Accounting, Economics, and Law: A Convivium*, 10(2).
- Naeem, N., Cankaya, S., & Bildik, R. (2022). Does ESG performance affect the financial performance of environmentally sensitive industries? A comparison between emerging and developed markets. *Borsa Istanbul Review*, 22, 128-140.
- Osadchy, E., Akhmetshin, E., Amirova, E., & Bochkareva, T. (2018). Financial Statements of a Company as an Information Base for Decision-Making in a Transforming Economy. *European Research Studies Journal*, 21(2), 339-350.
- Ray, K., & Mitra, S. (2018). Firm's Financial Performance and Sustainability Efforts: Application of Classifier Models. *Global Business Review*, 19(3), 722-736.
- Refinitiv. (2023, 03 08). *company-data*. Retrieved from refinitiv.com: <https://www.refinitiv.com/en/financial-data/company-data>
- refinitiv. (2023, 05 4). *esg-scores*. Retrieved from refinitiv.com: <https://www.refinitiv.com/en/sustainable-finance/esg-scores>
- Richardson, B. J. (2009). Keeping Ethical Investment Ethical: Regulatory Issues for Investing for Sustainability. *Journal of Business Ethics*, 87, 555-572. doi:10.1007/s10551-008-9958-y
- Sassen, R., Hinze, A.-K., & Hardeck, I. (2016). Impact of ESG factors on firm risk in Europe. *Journal of Business Economics*, 86, 867-904.
- Schaefer, B. P. (2008). Shareholders and Social Responsibility. *Journal of Business Ethics*, 81, 297-312.
- Schröder, M. (2014). Financial Effects of Corporate Social Responsibility: A Literature Review. *Journal of Sustainable Finance & Investment*, 4(4), 337-350. doi:10.1080/20430795.2014.971096
- Shin, J., Moon, J., & Kang, J. (2023). Where does ESG pay? The role of national culture in moderating the relationship between ESG performance and financial performance. *International Business Review*, 32.
- Simonsen, C. (2014). Are Non-Financial (CSR) Reports Trustworthy? A Study of The Extent to Which Non-Financial Reports Reflect the Media' Perception of The Company's Behaviour. *Issues in Social and Environmental Accounting*, 8(2), 116-133.
- Solway, J. (2009). Human Rights and NGO 'Wrongs': Conflict Diamonds, Culture Wars and the 'Bushman Question'. *Africa: Journal of the International African Institute*, 79(3), 321-346.
- Sonnerfeldt, A., & Aggestam Pontoppidan, C. (2020). The Challenges of Assurance on Non-financial Reporting. *Accounting, Economics, and Law: A Convivium*, 10(2).
- Stolowy, H., & Paugam, L. (2018). The expansion of non-financial reporting: an exploratory study. *Accounting and Business Research*, 48(5), 525-548. doi:10.1080/00014788.2018.1470141

- Story, J., Castanheira, F., & Hartig, S. (2016). Corporate social responsibility and organizational attractiveness: implications for talent management. *Social Responsibility Journal*, 12(3), 484-505.
- Tobin, J. (1969). A general equilibrium approach to monetary theory. *Journal of money credit and banking*, 1(1), 15-29.
- United Nations. (2016). *SDG Goals*. Retrieved from UN.org: <https://sdgs.un.org/goals>
- Velte, P. (2017). Does ESG performance have an impact on financial performance? Evidence from Germany. *Journal of Global Responsibility*, 8(2), 169-178.
- Wang, T., & Bansal, P. (2012). Social responsibility in new ventures: profiting from a long-term orientation. *Strategic management Journal*, 33(10), 1135-1153.
- Warrad, L. (2015). Return on Asset and Return on Equity Effects of Net Operating Cycle: Jordanian Study. *Research Journal of Finance and Accounting*, 6(14), 89-95.
- Zahid, R., Khan, M., Anwar, W., & Maqsood, U. (2022). The role of audit quality in the ESG-corporate financial performance nexus: Empirical evidence from Western European companies. *Borsa Istanbul Review*, 22(2), 200-212.
- Zhou, G., Liu, L., & Luo, S. (2022). Sustainable development, ESG performance and company market value: Mediating effect of financial performance. *Business Strategy and the Environment*, 31, 3371-3387.
- Zhu, Y. (2009). Empirical test on the relationship between corporate social responsibility and financial performance. *Stat. Decis.*, 7, 35-137.

Appendix A

Normality of Residuals

	N	Mean	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Enviornmental_score	684	63,9297	-,528	,093	-,564	,187
Governance_Score	684	67,4512	-,553	,093	-,349	,187
Social_score	684	70,5149	-,667	,093	-,219	,187
ESG_score	684	63,9748	-,213	,093	-,644	,187
ROA	684	,0703658	1,607	,093	7,256	,187
Sqrt_ROA	684	,2480993	,054	,093	,355	,187
Log_ROA	684	9,8474	,573	,093	-,073	,187
Leverage_ratio	684	,7617580	3,403	,093	15,916	,187
Sqrt_Leverage	684	,7978114	1,344	,093	3,531	,187
Log_Leverage	684	,2191015	1,409	,093	3,122	,187
Assets	684	56424812877,45	4,939	,093	26,564	,187
Sqrt_Assets	684	142469,5426437	2,982	,093	9,789	,187
Log_Assets	684	9,8473908	,573	,093	-,073	,187
Tobin_Q	684	1,1685598	2,404	,093	8,872	,187
Sqrt_Tobin	684	,9776765	,754	,093	1,104	,187
Log_Tobin	684	-,1333	-1,035	,093	1,510	,187
Interaction_Envoirement	684	2,1479	-,655	,093	,287	,187
Interaction_Social	684	56,9748	-,740	,093	-,933	,187
Interaction_Governance	684	55,5488	-,763	,093	-,853	,187
Interaction_ESG	684	51,5648	-,759	,093	-,768	,187
Valid N (listwise)	684					

Appendix B

Breusch-Pagan Test for Heteroskedasticity

Chi-square	df	Sig.
56,278	1	<.001

a. Dependent variable: Log_ROA

b. Tests the null hypothesis that the variance of the errors does not depend on the values of the independent variables.

c. Predicted values from design: Intercept + Environmental_score + Governance_Score + Social_score + Interaction_Environment + Interaction_Social + Interaction_Governance + Log_Leverage + Log_Assets + id

Variance Inflation Factor test

	VIF	Tolerance
Constant		
Enviornmental_Score	2.710	0.369
Governance_Score	1.639	0.610
Social_score	2.762	0.362
ESG_score	3.410	0.293
Log_Assets	1.883	0.531
Log_Leverage	1.046	0.956
Interaction_ESG	1.643	0.609

Appendix C

Correlations Matrix (ROA)

		Coefficient Correlations ^a							
Model		Interaction_ES G	Log_Leverage	Log_Assets	Governance_S core	Social_score	Enviornmental _score	ESG_score	
1	Correlations	Interaction_ESG	1,000	,024	-,166	-,180	-,004	,021	-,308
		Log_Leverage	,024	1,000	-,168	,069	,055	-,006	,006
		Log_Assets	-,166	-,168	1,000	-,304	-,206	-,465	,389
		Governance_Score	-,180	,069	-,304	1,000	,079	,150	-,377
		Social_score	-,004	,055	-,206	,079	1,000	-,288	-,478
		Enviornmental_score	,021	-,006	-,465	,150	-,288	1,000	-,358
		ESG_score	-,308	,006	,389	-,377	-,478	-,358	1,000
	Covariances	Interaction_ESG	3,350E-7	1,381E-6	-2,136E-6	-9,924E-8	-3,080E-9	1,169E-8	-2,942E-7
		Log_Leverage	1,381E-6	,010	,000	6,430E-6	6,787E-6	-5,729E-7	1,050E-6
		Log_Assets	-2,136E-6	,000	,000	-6,437E-6	-5,736E-6	-1,016E-5	1,425E-5
		Governance_Score	-9,924E-8	6,430E-6	-6,437E-6	9,039E-7	9,413E-8	1,403E-7	-5,901E-7
		Social_score	-3,080E-9	6,787E-6	-5,736E-6	9,413E-8	1,560E-6	-3,524E-7	-9,838E-7
		Enviornmental_score	1,169E-8	-5,729E-7	-1,016E-5	1,403E-7	-3,524E-7	9,631E-7	-5,796E-7
		ESG_score	-2,942E-7	1,050E-6	1,425E-5	-5,901E-7	-9,838E-7	-5,796E-7	2,715E-6

a. Dependent Variable: Log_ROA

Correlations Matrix (Tobin's Q)

		Coefficient Correlations ^a							
Model		Interaction_ES G	Log_Leverage	Log_Assets	Governance_S core	Social_score	Enviornmental _score	ESG_score	
1	Correlations	Interaction_ESG	1,000	,024	-,166	-,180	-,004	,021	-,308
		Log_Leverage	,024	1,000	-,168	,069	,055	-,006	,006
		Log_Assets	-,166	-,168	1,000	-,304	-,206	-,465	,389
		Governance_Score	-,180	,069	-,304	1,000	,079	,150	-,377
		Social_score	-,004	,055	-,206	,079	1,000	-,288	-,478
		Enviornmental_score	,021	-,006	-,465	,150	-,288	1,000	-,358
		ESG_score	-,308	,006	,389	-,377	-,478	-,358	1,000
	Covariances	Interaction_ESG	3,622E-7	1,493E-6	-2,310E-6	-1,073E-7	-3,330E-9	1,265E-8	-3,181E-7
		Log_Leverage	1,493E-6	,011	,000	6,953E-6	7,339E-6	-6,195E-7	1,136E-6
		Log_Assets	-2,310E-6	,000	,001	-6,961E-6	-6,202E-6	-1,099E-5	1,540E-5
		Governance_Score	-1,073E-7	6,953E-6	-6,961E-6	9,774E-7	1,018E-7	1,518E-7	-6,381E-7
		Social_score	-3,330E-9	7,339E-6	-6,202E-6	1,018E-7	1,687E-6	-3,811E-7	-1,064E-6
		Enviornmental_score	1,265E-8	-6,195E-7	-1,099E-5	1,518E-7	-3,811E-7	1,041E-6	-6,267E-7
		ESG_score	-3,181E-7	1,136E-6	1,540E-5	-6,381E-7	-1,064E-6	-6,267E-7	2,936E-6

a. Dependent Variable: Log_Tobin

Appendix D

Hausman test: Fixed vs. Random Effects Model

	Coefficients		(b-B) Difference	Sqrt (diag(V_b-V_B)) Std. Err.
	(b) Fixed	(B) Random		
Environmental score	.0000614	.0003537	-.0002923	.0003215
Governance score	.0005922	.000265	.0003272	.00023
Social score	-.0006626	.0001718	-.0008345	.0004511
Log_assets	.2405317	-.0455439	.2860756	.043437
Log_leverage	-.3721608	-.1298917	-.2422691	.0350905

b = consistent under H0 and Ha; obtained from xtreg.

B = inconsistent under Ha, efficient under H0; obtained from xtreg.

Chi2 (5)	=	73.16
Prob > Chi 2	=	0.000*