A Work project presented as part of the requirements for the award of a Master's degree in Business Analytics from the Nova School of Business and Economics.

AN ANALYSIS OF THE IMPACT OF ESG ON CORPORATE FINANCIAL PERFORMANCE IN EUROPE

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17.12.2021

Abstract

ESG investing has experienced extensive growth in the last decade. This paper analyses the impact of ESG on CFP for the years 2015-2020, using a dataset by Refinitiv with 5676 observations in the EU. Using a comprehensive dataset, this paper can confirm that ESG still has a positive impact on CFP, despite its extensive growth and increasing implementation. Furthermore, by analyzing the subcategories of ESG, this paper shows which factors contribute to this positive relationship. Also, the inclusion of COVID-19 data offers unique possibilities to contribute to the existing literature, as the wealth-protective impact of ESG Scores can be evaluated.

Keywords (ESG Score, Corporate Financial Performance, COVID-19, Refinitiv)

This work used infrastructure and resources funded by Fundação para a Ciência e a Tecnologia (UID/ECO/00124/2013, UID/ECO/00124/2019 and Social Sciences DataLab, Project 22209), POR Lisboa (LISBOA-01-0145-FEDER-007722 and Social Sciences DataLab, Project 22209) and POR Norte (Social Sciences DataLab, Project 22209).

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1. Introduction

In the last couple of decades, the discussion about the social responsibility of companies has gained increased focus. Nowadays, many companies are searching for a way to create more than just a profit, to find a purpose and a meaning for society within their product. The shareholder-oriented/ profit-maximizing philosophy of (Friedman 1970) has been reevaluated into a different management style that creates competitive advantages through the active integration of all stakeholders (Porter and van der Linde 1995, Freeman and McVea 2001).

While more companies are shifting from the original theory of shareholder management to an economic approach that creates value for all stakeholders, the topic of ESG has gained increased relevance over the last couple of years. ESG stands for environmental, social, and corporate governance criteria implemented in a company. The quantity and quality of these criteria in each company can be measured by an ESG score. The ESG Score contains different features and weights depending on the scoring method. A high ESG Score can be seen as evidence for a stakeholder-oriented management style, as it reflects the needs of employees, customers, suppliers and other stakeholders. According to Bloomberg, the total amount of assets under management (AUM) by ESG criteria could reach up to $53 trillion by 2025, which would make up for a third of the total global AUM (Bloomberg Intelligence 2021).

In the last decade, it was possible to provide first empiric evidence on the financial impact of stakeholder-oriented management through the improved measurement of ESG. The mainly positive findings on the impact of ESG on CFP have been one of the influential factors for the extensive growth of ESG investing in the last couple of years. But despite all its popularity and the increasing importance of ESG investing, not every investor is convinced of the impact of ESG on financial performance. New laws and a shift in society have influenced ESG scoring. As more companies implement non-financial reporting in their annual report, the impact of ESG potentially shifts and many studies have become outdated. Also, most of the existing

empirical literature does not provide sufficient information to answer the question of causality adequately. Most studies fail to explain the dependency of CFP and ESG in a positive correlation.

An overview of the most recent studies and existing literature about the financial impact of ESG is given in chapter 2. This paper will provide further insights on the uncertainty that is still associated with ESG investments. After that different multilinear regression models will be performed on the impact of ESG and its subcategories, to give new insights about causal relationship between ESG and CFP. Furthermore, by including the year of the COVID-19 pandemic in our dataset, the impact of a high ESG Score on the systematic risk of a company can be evaluated. Finally, this paper aims to provides new information that can facilitate the number of ESG investments in the future, using a dataset of one of the most commonly used rating agencies (Rate the Raters: Investor Survey and Interview Results 2020) and the biggest market for ESG investments, Europe (Sustainability Report 2018).

2. Literature review and hypotheses

2.1 Overview of ESG Scores

An analysis of the ESG framework is necessary to understand the uncertainty of investors and the need for a more recent study on its financial impact. ESG is a highly heterogeneous space as it is still challenging to measure and compare the different factors and weights that contribute to the final ESG Score. For example, how do you compare the water efficiency of a company with employee satisfaction? How can you measure employee satisfaction, and if you find a way, how do you make sure this measurement is based on objective facts? This has been a critical problem in examining the relationship between ESG and financial indices in the past, as several different measurements have been used as a substitute for ESG. In comparison, financial indices are facts that represent a firm's financials and are audited every year for listed companies. Although some companies find ways to manipulate their financial statements, there are transparent and standardized rules on a national level through national laws like the

"Handelsgesetzbuch" in Germany or international laws like the IFRS that make it possible to compare the financials of companies worldwide.

Although many improvements have been made in the last few years, standardized reporting for ESG is still in the early stage of development. Li and Polychronopoulos (2020) find more than 70 different providers of ESG data. These can be divided into three main categories. **Fundamental** ESG Score providers, which can cover a broad spectrum of companies through the analysis of publicly available data (e.g., annual reports, websites and press statements) However, they can also be seen as less detailed as they rely on companies' self-reporting. **Comprehensive** ESG Score providers combine publicly available data with data collected through interviews and surveys, to create additional, more detailed input for their ESG Scores. However, these ESG Score are less transparent, less objective, and often only cover a small set of companies, as they rely on interviews and surveys. **Specific** ESG Score providers only focus on a specific ESG factor, e.g. carbon emissions or diversity. They are specialists in the analysis of these fields, but do not include a complete ESG perspective in their analysis.

4 different rating agencies currently dominate the market, MSCI, Sustainalytics, RepRisk and ISS Governance (Harvard Business School 2021). The most important fundamental ESG Score providers are Refinitiv (previously Thomson Reuters) and Bloomberg Sustainability. It's essential to know about the history of ESG Scores to realize that an ESG Score is not yet distinct and can fluctuate a lot, depending on the rating agency. Dorfleitner finds in his study that although a positive correlation exists between the examined ESG Scores, "the different composition and weighting of the indicators lead to significant distinctions in the final ESG appraisal" (Dorfleitner, Halbritter und Nguyen 2015). According to a BNP Paribas survey of institutional investors, 55% responded that this lack of consistent data is the most significant barrier to greater adoption of ESG (Allen 2017).

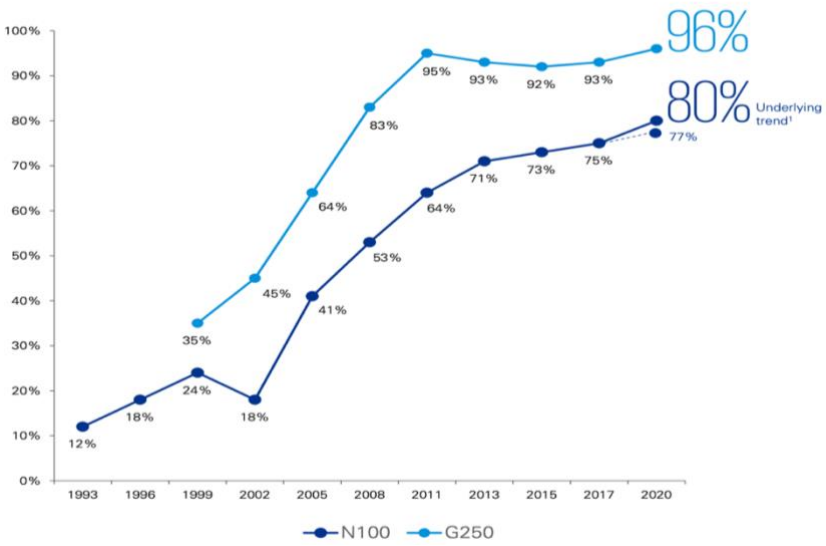

Figure 1 - Growth in global sustainability reporting rates since 1993: N100 and G250, Source: KPMG Sustainability Report 2020 (Threlfall, et al. 2020)

However, this lack of consistent data is starting to decrease. Since the launch of the non-financial reporting standards by the Global Reporting Initiative (GRI), the landscape for ESG investments has developed significantly. Many countries are in the process of establishing standards and rules for non-financial reporting. The European Union has released a directive called the "Non-Financial Reporting Directive (NFRD)" that states that from 2017 onwards, large companies with more than 500 employees must include information related to environmental and social matters in their annual report (European Commission 2020). According to a survey by KPMG, around 80% of the world's largest companies (represented by the N100, a sample of the 100 largest companies of 49 countries) have included a non-financial report by 2020, 63% of which use GRI standards (Threlfall, et al. 2020). A rise of almost 30% points since 2008. Figure 1 provides an overview of the rise in ESG reporting since 1993. This rise in ESG reporting has made it necessary to reevaluate the findings of existing literature.

2.2 Stakeholder vs Shareholder management style

The following chapter will analyze the theoretical frameworks on the impact of ESG factors on CFP. Social responsibility has been the main factor discussed in studies before the first usage of the term ESG in the year 2004 by former UN Secretary-General Kofi Annan. The term ESG

was used to describe the social responsibility of companies that embedded environmental, social or governmental factors. It always included the combination of “good business sense” and “better outcome for society’s”. It was built on studies by economists that believed that ESG could be an influential factor in increasing a company’s profit (Kell 2018). Therefore, the terms corporate social responsibility (CSR) and ESG may be seen as interchangeable in this literature review for the reader's ease. However, technically CSR may in some studies only relate to a subcategory of ESG factors.

As the relevance of ESG becomes more prominent, the literature that examines the impact of ESG on a CFP has grown with it. Several studies have examined the effect of environmental, social, or corporate governance standards on CFP. Some argue that environmental regulations and social responsibility create costs and, by that, lower the competitiveness of companies. Among the economists that support this kind of view is Nobel prize winner Milton Friedman, who states that the “social responsibility of a company is to increase its profit” and therefore employees should focus on creating value for the firm, instead of creating a value for society. According to Friedman, “social responsibilities, they are the social responsibilities of individuals, not of business” (Friedman 1970).

In comparison to Friedman (1970) other studies argue that diversification of the product portfolio and reducing the resources needed to produce a product can lower the costs (Porter and van der Linde 1995). The reduction of costs leads to competitive advantages and the diversification of the product portfolio to a more risk resistant company structure. Porter therefore sees value in environmental regulations, as they will force companies to become more innovative, creating a competitive advantage for these companies in the future. The situation Porter describes can be called a “win-win” situation in which both, the environmental or social concerns as well as the economic growth and prosperity of companies benefit (Palmer, Oates and Portney 1995). The ESG Score has made it possible to explore the empirical impact of

ESG. It has been analyzed by several studies in the past, aiming to provide proof for the debate around stakeholder- vs shareholder management strategy.

2.3 Empiric evidence on the Impact of ESG on Corporate Financial Performance

The cost-cutting and innovative role of ESG is not confirmed in every study and certainly not for every company. While most studies indicate a positive relationship between a high ESG Score and CFP, others have neutral or negative findings. In the following, this paper will provide an overview of the most important empirical literature on the financial impact of ESG Scores.

The most prominent empirical research on the impact of ESG on profit or other financial performance indicators is a meta-study by Friede (2015) which examines more than 2000 empirical studies. Friede finds that in only 10.7% of these studies, ESG has a negative impact on CFP; in 41%, it is neutral, and in 48.2%, the impact is positive. The study empirically proves that the relationship of ESG and financial performance is at least non-negative in more than 90% of the cases and that companies that have a high ESG Score mainly perform better than their peers.

However, the positive findings of Friede cannot be generalized and therefore still need further research and clarification for three main reasons. First, many studies are using proxies for ESG performance such as "environment(al) (performance), social (performance), responsib(le/ility)" instead of using a standardized ESG Score. Therefore, the metrics used to evaluate a company's ESG performance differ among the examined studies. This variability of different ESG metrics is one factor that can lead to mixed results and still is one of the limitations of any study on ESG (Scholtens 2008). Secondly, different financial metrics are used to examine CFP. In a meta-study of 159 papers, Peloza (2009) finds that 36 different metrics are used to determine CFP in the 159 studies he examines. While market-based metrics such as share price or TobinsQ are most commonly used, many studies also focus on accounting-based metrics such as Return-on-Equity (RoE) or Return-on-Assets (RoA). The selection of these metrics can impact the

outcome of the study. Peloza finds that 70% of the studies using accounting-based metrics find a positive relationship between a corporate's social performance and CFP compared to 53% positive findings using market-based metrics (Peloza 2009). Lastly, and more importantly, Friede also fails to explain the causal relationship between ESG and CFP**.** Most studies do not include a cost-effect analysis, explaining if ESG is responsible for increased CFP or CFP leads to higher investments in ESG (Scholtens 2008). The research paper of Peloza even indicates that "the financial performance has more impact on ESG than CSP on financial performance" (Peloza 2009), as market-based measurements have less positive findings than accounting-based measurements of CFP. Peloza states that market-based measurements tend to predict a company's future performance, whereas accounting-based measurements reflect the past. This indicates that good accounting-based metrics lead to higher ESG Scores. However, higher ESG Scores do not necessarily lead to a good prediction of future performance, represented by the market-based metrics.

Furthermore, ESG scoring did not have the standard it has nowadays in Europe. Hoffmann, Dietsche and Hobelsberger (2018) find that the CSR statements of companies, published before 2017, lacked quality and content. This might be one reason why the impact of ESG is still debated, and many investors argue about its impact on financial performance. A more recent study by Velte (2017) analyzes the impact of ESG on the CFP of companies listed on the DAX, the TECDAX and the MDAX in Germany and finds a significant positive relation of ESG on the accounting-based metric RoA, while the market based metric TobinsQ is positive, but not significant. Alareeni and Hamdan (2020) analyze the impact of ESG Scores on the financial performance of SAP 500 companies and are in line with these findings for RoA. They also find significantly positive relations of ESG with RoE and the TobinsQ. Additionally, Velte and Alareeni both split ESG into its subcomponents E (Environmental), S (Social) and G (Governmental). Velte finds positive relations for all subcomponents for RoA, while Alareeni

and Hamdan find that all subcomponents are positive for the TobinsQ, but E and S are significantly negative for operational metrics like RoA and RoE. Whelan et al. aimed to confirm the findings of Friede (2015) in a more recent meta-study, analyzing empirical papers in the years 2015-2020. Their study is consistent with Friede, with 58% positive findings, 13% neutral, 21% mixed and 8% negative. In comparison to Friede, Whelan et al. (2021) differentiated between CFP and investment performance and only included studies with an ESG definition of CSR into their analysis. The first goal of this study is, therefore, to confirm these findings with the most recent dataset of ESG data in Europe, the biggest market for ESG investing. Secondly, this paper aims to provide more information on the drivers of the relationship, by splitting ESG into 10 subcategories. In line with recent research, this paper hypothesizes that:

H1a: *The ESG Score is positively (negatively) related to the financial performance of European companies in the years from 2015-2020*

H1b: *Subcategories of ESG are positively (negatively) related to the financial performance of European companies in the years 2015-2020*

2.4 Impact of ESG on systematic risk

As it is difficult to provide empirical evidence for the question of causality, Oikonomou (2012) presents a different approach in his study. Instead of analyzing the "wealth-enhancing" effect, which he calls the "front-door mechanism", Oikonomou looks at the "wealth protective" effect of CSR, through the "back-door mechanism, by evaluating the effect of "CSP" (corporate social performance) on financial risk. He finds that "CSP affects the ability of a company to cope with adverse systemic economic shocks" because it affects the volatility of stocks and therefore lowers the financial risk of companies. One reason for this is given by Godfrey (2005), who claims that in times of a crisis, firms with high CSR can "can generate positive moral capital among communities and stakeholders" and by that provide "insurance-like protection" to the firm and its assets. This protection will then create a profit for shareholders. Translated, one

could say, that according to Godfrey, the good relationship with stakeholders leads to a higher resistance to unforeseen crises and faster reaction to change. In terms of COVID-19 this was especially important, while companies had to switch from office to home-office and from in-person meetings to virtual ones.

Many studies have investigated this topic by examining the impact of ESG on the stock price during the pandemic. Broadstock provides evidence from China, that "high-ESG portfolios" tend to be more risk resistance and experience higher returns during the pandemic (Broadstock, et al. 2021). Engelhardt, Ekkenga and Posch (2021) confirm this relationship for the European stock market, finding the social score to be the main driver of the results. Contrary, Takahashia and Yamada (2021) find no such relationship for the stock market in Japan. One reason for these different findings may be country specific characteristics that shape the market and therefore lead to different impacts of ESG. Additionally, Folger-Laronde, et al. (2020) find that sustainability cannot be the only factor to predict resilience of worldwide ETF portfolios. Demers, et al. (2021) confirm this finding, and show that by including intangible assets as a control variable, the impact of ESG loses significance. Two central problems can be seen when analyzing the impact of ESG based on fund performance. Firstly, ESG funds are often self-designated and do not always represent companies that act according to ESG standards. (Whelan, et al. 2021) Secondly, funds do not always represent the actual performance of a company but the investors' perspective. (see chapter 3.1)

This is why this study investigates the relationship of ESG with financial metrics. Unlike market-based metrics, operational metrics reflect the actual performance of a company, instead of the investor's perspective. While many studies have focused on the performance of ESG funds, less have examined the effect on operational metrics. Only one study analyses this risk-protection side of ESG based RoA, using a dataset from Korea. Hwang, Kim and Jung (2021) find that companies with a high ESG Score had smaller declines in earnings compared to their

peers. As their dataset is relatively and solely focused on the Korean ESG market, this paper cannot be generalized and needs further investigation. Therefore, as a second hypothesis, this paper analyzes the wealth-protective effect of ESG during the Covid-19 using a dataset of the European ESG market, to confirm/ neglect the finding by Hwang, Kim and Jung.

H2: Companies with high ESG Scores are associated with a smaller (higher) difference in CFP during the COVID-19 pandemic.

3. Methodology

3.1 Estimation of corporate efficiency

As outlined in the literature review, CFP can be evaluated through accounting-based financial ratios or market-based measurements. These fundamentals include the basic qualitative and quantitative information that contributes to a company's financial or economic well-being. Each measurement has advantages and disadvantages, and a combination of both seems to be the current standard to measure CFP. Accounting-based measurements like RoA, RoE, Asset Growth, and Operating Revenue tend to reflect the past. They can be altered through financial executives through accounting rules and therefore not necessarily always reflect the CFP in the observed year (Peloza 2009). Market-based measurements like the stock price, TobinsQ, etc. represent the perceived future company performance from an investor's perspective. Investors invest based on the information provided by the company, current market dynamics, global media and other indicators which create the value investors are willing-to-pay for a company. This value does not necessarily represent the real CFP of a company, as asymmetric information between investors and reality can influence valuations (Scholtens 2008).

Following other studies that measure the impact of ESG on CFP, this paper uses Return-on-Assets as an accounting-based measurement for operational performance and the TobinsQ as a market-based measurement. (Velte 2017, Alareeni, and Hamdan 2020, Choi 2009) The TobinsQ is defined as the ratio between a company's physical asset's market value and its replacement value. Following current literature, this paper uses a ratio between the market value

of a company's equity and liabilities and its corresponding book value as the replacement values of a company's assets are difficult to calculate (Choi 2009).

3.2 Control Variables

Several variables are included as control variables, as they might influence the dependent variable. Control variables are used in regression models, to increase to internal validity of the model, by limiting the influence of external factors. By that, a causal relationship between the variable of interest, in this study ESG, and the dependent variable can be examined (Bhandari 2021). Following recent literature on the impact of ESG on financial ratios, this paper will include the natural logarithm of the number of employees, total assets, asset turnover and financial leverage as control variables. The next chapter will explain the reasoning behind the selection of control variables.

The most frequently used control variables in other studies are Research & Development expenditures (R&D), any kind of firm size measurement (measured by total assets or the number of employees) and total dept (e.g. through the debt ratio). According to Lee, Sin and Lee (2016), R&D costs can influence a "firm's commitment, capability and performance". However, I do not include Research & Development expenditure as a control variable, because recent research has found negative (Lee, Sin and Lee 2016) or positive but insignificant relationships (Velte 2017) for R&D on financial ratios. Contrary, Drempetic, Klein and Zwergel (2020) find that firm size is positively related to the ESG Score using a dataset from Refinitiv for the period 2004-2015. The study uses several proxies for firms' size (e.g. market capitalization, no. of employees, total assets & revenue), all of which had a positive and significant effect on the ESG Score. Choi (2009) also states that firm size gives a company competitive advantage through scale effect and economies of scope, making it a plausible control variable. Several other studies also include measurement of the firm size as a control variable (Velte 2017, Alareeni and Hamdan 2020, Lee, Sin, and Lee 2016). Additionally, Waddock and Graves find indicators that financial leverage is associated with higher CFP.

(Waddock and Graves 1997) Other than that, the model controls for the country, the economic sector and the year as fixed effects. The economic sector will be analyzed through the GICS Sector Name, determined by MSCI, making the sector independent of Refinitiv's scoring methodology. Fixed effects are variables that are constant across several observations. As I cannot assume a constant relationship of the fixed effects over all observations, this paper will use a random-effects model, contrary to a fixed-effects model. Table 1 shows the description of each variable and its abbreviation.

3.3 Regression model

The effects of ESG are often long-term and not directly translatable to the corresponding financial indicators of a company in the same year. Therefore, it is difficult to examine the impact of ESG on CFP without looking at the long-term effects of ESG. "There is a broad consensus in the conceptual literature that many financial gains from improved social performance accrue in the long run." (Cox 2004) This is confirmed by a paper from Chatterji, Levine and Toffel (2007), examining the long-term effect of several CSR themes. A time lag of one year in t-1, is included in the model to explore the long-term effect on the financial ratios. A multilinear regression is used to examine the effects of the independent variables on CFP. There is broad consent in the existing literature about using a multilinear regression model as the model approach. Furthermore, a company is not always consistent in its ESG implementation and can perform well in one category while scoring poorly in another (McGuire, Dow and Argheyd 2003). To consider all dimensions, I will also split the ESGC Score into its 10 sub-components, examining the reasons for the relationship. Combined with the two financial indicators, this results in four different model specifications. These model specifications will be again split into its subcomponents to show the effect of the independent variable, the control variables, and the fixed effects. The final model can be written as:

$$CFP_t = \beta_0 + \beta_1 ESG_{i,t-1} + \beta_2 Emp_{i,t} + \beta_3 TA_{i,t} + \beta_4 FL_{i,t} + \beta_5 AT_{i,t} + \beta_6 ES_{i,t} + \beta_7 CN_{i,t} + \beta_8 Y_{i,t} + \epsilon_{i,t}$$

ESG is any kind of ESG related variable, depending on the model specification and CFP being RoA or TobinsQ.

Key variables	Definition/ Description
Return-on-Assets (RoA) in %	Measured as the ratio of net profit to total assets, adjusted by the mean
TobinsQ	Measured as total market value divided by the book value of equity and liabilities
ESGC Score	ESG Score measured by Refinitiv for each company, discounted by the controversies in global media
Resource Use Score	Measures a company's performance and capacity to reduce the use of materials, energy, or water, and to find more eco-efficient solutions by improving supply chain management
Emissions Score	Measures a company's commitment and effectiveness towards reducing environmental emission in the production and operational processes.
Environmental Innovation Score	Measures a company's capacity to reduce the environmental costs and burdens for its customers, through innovation
Workforce Score	Measures a company's effectiveness towards job satisfaction, healthy and safe workplace, maintaining diversity and equal opportunities, and development opportunities for its workforce
Human Rights Score	Measures a company's effectiveness towards respecting the fundamental human rights conventions
Community Score	Measures the company's commitment towards being a good citizen, protecting public health and respecting business ethics
Product Responsibility Score	Measures a company's capacity to produce quality goods and services integrating the customer's health and safety, integrity and data privacy
Management Score	Measures a company's commitment and effectiveness towards following best practice corporate governance practices
Shareholders Score	Measures a company's effectiveness towards equal treatment of shareholders and the use of anti-takeover devices
CSR Strategy Score	Measures a company's practices to communicate that it integrates the economic (financial), social and environmental dimensions into its day-to-day decision-making processes
Employees (Emp)	Natural logarithm of the number of employees
Total Assets (TA)	log(Total Assets)
Financial Leverage (FL)	Total Debt divided by Total Assets
Asset Turnover (AT)	Total Revenue divided by Total Assets
Economic Sector (ES)	Determined GICS Sector Name, by MSCI
Country (CN)	Determined by Refinitiv as "Country of Headquarters"
Year (Y)	Year of observation
Treatment Group (TR)	Dummy variable for observations before and after the first economic effects of COVID-19 (0,1)

Table 1: Variable descriptions, Source: Eikon Datastream ESG Glossary; Author

3.4 Difference-in-Differences (DID)

To examine the wealth-protective effect of ESG during the Covid-19 pandemic, this paper will use the Difference-in-Differences method, following the study by Hwang, Kim and Jung

(2021). Additional to the regression model described in 3.3. Regression Model, the DID model includes the coefficient of ESG and TR to examine the incremental impact of ESG on the RoA during the COVID-19 pandemic. This coefficient can then be used to analyze if companies with a higher ESG Score performed better than their those with a low ESG Score during the pandemic.

$$RoA_t = \beta_0 + \beta_1 ESG_{i,t-1} + \beta_2 TR_t + \beta_3 ESG_{i,t-1} \times TR_t + \beta_3 Emp_{i,t} + \beta_4 TA_{i,t} + \beta_5 FL_{i,t} + \beta_6 AT_{i,t} + \beta_7 ES_{i,t} + \beta_8 CN_{i,t} + \beta_9 Y_{i,t} + \epsilon_{i,t}$$

4. Data

4.1 Refinitiv Scoring methodology

Thomson Reuters (Refinitiv) database used in this analysis, provides a comprehensive ESG Score for more than 9,000 companies worldwide, covering 70% of global market cap, with ESG data dating back to 2002. Refinitiv uses algorithms and human interference to analyze more than 500 different ESG metrics, which combined, create an objective ESG Score. Each company is evaluated on the relative performance and materiality of the ESG factors in its industry using a point-based system from 0-100. In this way Refinitiv stays objective as the relative performance to the competitors, determined through its related TRBC Industry level, defines the ESG Score of a company. Also, the weight of each metric is based on the materiality for the specific industry. This way, there is a normalized distribution of ESG scores among each industry. This makes the ESG Score independent of the company's industry and allows comparison among companies of different industries. (Refinitiv 2021)

Refinitiv uses subcategories to calculate each of the three dimensions of ESG. The **ES (Environmental Score)** is based on the Resource Use Score, the Emissions Score, and the Environmental Innovation Score. The **SS (Social Score)** is based on the Workforce Score, the Human Rights Score, the Community Score and the Product Responsibility Score. The **GS (Governmental Score)** is based on the Management Score, the Shareholders Score and the CSR Strategy Score. All of these subcategories themselves have several metrics that are used

to calculate them and are also measured as relative performance to industry peers. Using these subcategories and metrics can give further insights into which ESG factors are responsible for a high or low ESG scoring or potential impacts of ESG, in this case, on a company's financial performance. (Refinitiv 2021)

Additional to this ESG Score based on non-financial information reported through the company, Refinitiv provides an ESGC Controversies Score (ESGC Score). The ESGC Score includes global media by discounting the ESG Score based on negative stories and controversies of a company. Through this adjustment, the ESGC Score can differentiate between the released statements of a company and actual ESG performance based on media stories. It therefore can work as a first measurement of the truthfulness of non-financial reports. Besides the ESG Score, Refinitiv provides extensive financial information on publicly listed companies, including all control- and dependent variables.

The data download is performed using the Eikon API provided by Refinitiv. An overview of the codes used to pull the data using the Eikon API can be found in the appendix. The list of RIC, used by Refinitiv as a unique identifier for each company and needed to pull the financial data, is downloaded through a filter in the Refinitiv Screener application.

4.2 Descriptive analysis and Sample Selection

Table 2 provides a view of the sample selection and distribution among the economic sectors, the years and the countries. Refinitiv states that it reports the ESG Score of 2100+ companies in Europe. Using the filter on countries in the European Union and an existing ESGC score for the financial year 2020, I received the RIC of 2212 companies. The effect of the new European law on non-financial reporting, coming into effect in 2017, can be clearly seen, as the number of missing values decreases, over the time period. Of the 2212 companies with an ESG Score for the financial year 2020, there are 529 companies without any ESG Score for the financial year 2019. This is the primary explanation for the number of missing observations in this sample. These companies either did not exist before 2020, were not considered in the ESG

scoring by Refinitiv, or were private companies and therefore not bound to any public reports that Refinitiv can analyze. The NaN values for financial data are relatively low. After deleting NaN values, companies without financial data, and deleting outliers, my sample consists of 5676 observations in the time period from 2015-2019. The outliers are calculated using the standard format suggested by common research (Towards Data Science 2018), which states that outliers should be deleted if their distance to the mean is greater than three standard deviations.

Panel A: Sample Selection						
Selection Criteria					**Number**	
Number of public companies in EU with ESG Score for the financial year 2020 filtered from Refinitiv					2212	
Number of observations with ESG Score					6066	
Delete observations with missing financial data					5857	
Delete observations with 0 Employees | Revenue					5828	
Delete Outliers for RoA & TobinsQ					5676	
Panel B: Distribution by year						
Year		2016	2017	2018	2019	2020
Number		851	891	1007	1390	1533
Panel C: Distribution by Country						
Country	UK	Germany	France	Swiss	Sweden	Other
Number	1555	608	542	468	449	2050
Panel D: Distribution by Economic Sector						
GICS Sector Name	**Number**		**GICS Sector Name**		**Number**	
Industrials	1293		Consumer Staples		347	
Financials	896		Real Estate		336	
Consumer Discretionary	706		Communication Services		333	
Materials	498		Utilities		256	
Health Care	434		Energy		209	
Information Technology	364					

Table 2: Sample Selection and Distribution

102 companies have no data on the number of employees. The NaN values for the number of employees are filled by the median, as the observations are still relevant for this study. Companies with 0 employees are not included in the analysis as these companies cannot implement any social or governance-related criteria. The same applies to companies without any revenue, as they cannot generate a profit.

Table 3 gives an overview of the descriptive statistics for the main variables. The mean RoA is 4.026, meaning companies in this sample obtain a Net Profit of around 4% of their Total Assets on average. The TobinsQ indicates that the market value of companies in this sample is on average 2.8x as high as the book value of the company's equity and liabilities.

Variable	N	Mean	Std. Dev.	25th	Median	75th
RoA	5676	4.026	6.914	0.736	3.573	7.125
TobinsQ	5676	2.801	2.898	1.050	1.814	3.417
ESGC Score	5676	52.331	19.098	39.223	52.963	66.764
Resource Use Score	5676	55.510	31.729	29.688	60.335	83.811
Emissions Score	5676	55.805	30.520	32.397	59.994	82.490
Env. Innovation Score	5676	34.215	33.301	0.000	29.979	62.876
Workforce Score	5676	71.022	22.944	57.786	76.185	89.521
Human Rights Score	5676	50.319	34.442	16.118	55.755	81.975
Community Score	5676	52.733	31.002	23.755	55.274	81.843
Product Responsibility Score	5676	56.599	30.805	32.218	60.894	84.150
Management Score	5676	52.401	28.386	28.366	53.311	76.790
Shareholders Score	5676	51.465	28.655	27.135	52.250	76.042
CSR Strategy Score	5676	47.909	30.686	20.667	49.383	75.000
log(Total Assets)	5676	3.117	0.087	3.056	3.113	3.176
Asset Turnover	5676	0.673	0.573	0.251	0.584	0.921
Financial Leverage	5676	0.601	0.207	0.469	0.606	0.747
log(Employees)	5676	2.149	0.247	2.056	2.183	2.308

Table 3: Descriptive Analysis

The mean of the ESGC Score and its subcategories is around 48-57 points for most factors. As explained in chapter 4.1, this is caused by Refinitiv's scoring method, which evaluates a company's performance against its peers. Because the scores are compared worldwide, there may be small differences. The Environmental Innovation Score seems to be explicitly low, while the Workforce Score is high for this European data set, compared to the worldwide industry peers.

Table 4 provides an overview of the correlations between the variables. This paper is using the Pearson correlation, because the model is based on a linear relationship. The correlation of RoA and TobinsQ is positive. As are the correlations between the subcategories of ESG. However,

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
RoA (1)	1.0																
TobinsQ (2)	0.415	1.0															
ESGC (3)	-0.005	-0.012	1.0														
Resource Use (4)	-0.01	-0.052	0.759	1.0													
Emissions (5)	-0.009	-0.066	0.73	0.78	1.0												
Env. Innovation (6)	-0.036	-0.089	0.524	0.492	0.444	1.0											
Workforce (7)	0.011	0.002	0.705	0.638	0.675	0.334	1.0										
Human Rights (8)	-0.007	0.014	0.64	0.597	0.527	0.358	0.472	1.0									
Community (9)	-0.026	-0.019	0.667	0.56	0.507	0.389	0.483	0.517	1.0								
Product Responsibility (10)	-0.022	0.02	0.55	0.457	0.437	0.308	0.453	0.372	0.377	1.0							
Management (11)	-0.04	-0.016	0.584	0.306	0.308	0.215	0.318	0.257	0.33	0.199	1.0						
Shareholders (12)	-0.016	0.016	0.235	0.094	0.069	0.069	0.097	0.102	0.108	0.08	0.187	1.0					
CSR Strategy (13)	-0.022	-0.088	0.649	0.622	0.638	0.397	0.542	0.488	0.481	0.341	0.387	0.114	1.0				
log(Total Assets) (14)	-0.124	-0.275	0.387	0.437	0.437	0.386	0.314	0.31	0.377	0.206	0.276	0.027	0.398	1.0			
Asset Turnover (15)	0.237	0.289	-0.017	-0.013	-0.027	-0.056	-0.042	0.068	-0.02	0.049	-0.052	0.033	-0.021	-0.336	1.0		
Financial Leverage (17)	-0.325	-0.044	0.167	0.195	0.198	0.187	0.149	0.111	0.126	0.113	0.14	0.06	0.177	0.43	-0.042	1.0	
log(Employees) (18)	-0.011	0.016	0.395	0.416	0.397	0.306	0.306	0.394	0.397	0.332	0.25	0.059	0.36	0.464	0.237	0.365	1.0

the governmental categories, especially the Shareholders Score and the Management Score have lower correlations to the other subcategories, being on average below 0.5 for the management and below 0.2 for the Shareholders Score. The correlation of the ESG subcategories and the financial ratios is mostly negative, except for some categories that are positively correlated to the TobinsQ (Workforce-, Human Rights-, Product Responsibility- and Shareholders Score).

5. Results and Discussions

In the following, I will discuss the findings of the different model specifications. Table 5 shows that the relationship of the ESGC Score on RoA is positive and highly significant on an α-level of 0.001%. This result is in line with the findings of other studies examining the impact of ESG on financial ratios and can confirm that the relationship still exists despite the extensive growth of ESG investment in recent years. According to the results, every increase of ESGC by 1 increases the RoA by 0.0197 percent points. Furthermore, through the implementation of fixed effects, the relationship becomes stronger and even more significant, making the relationship robust over countries, industries, and years.

Dependent Variable	RoA	RoA	RoA	RoA
ESGC Score	0.0056*	0.0160***	0.0185***	0.0197***
No. of Employees	0.0741**	1.0544*	0.5131	1.2169*
Financial Leverage	-12.2454***	-14.3521***	-13.9411***	-13.7214***
Total Assets	9.0140***	5.5021***	4.4699**	1.9301
Asset Turnover	3.1277***	3.8025***	3.6543***	3.5227***
Economic Sector	No	Yes	Yes	Yes
Year	No	No	Yes	Yes
Country	No	No	No	Yes
Observations	5676	5676	5676	5676
R^2	0.166	0.200	0.215	0.218

p<0.001***, p<0.01**, p<0.05*, calculated using a F-statistics test in Statsmodels

Table 5: OLS Regression on RoA, with ESGC as main independent variable

Table 6 shows the regression based on the subcomponents of ESG to give further insights on the drivers of this positive relationship. One can observe that the Workforce Score has a positive and significant relationship with RoA. A possible explanation for this is that employees work more efficiently in a safe and supporting environment. Another reason might be that equal job opportunities and fairness are drivers of motivation and productivity within a company. This is in line with research, indicating that gender diversity has a positive and significant impact on "economic gains" (Campbell and Mínguez-Vera 2008).

Dependent Variable	RoA	RoA	RoA	RoA
Resource Use	0.0045	0.0121*	0.0109**	0.0113*
Emissions	0.0024	0.0059	0.0070	0.0082
Env. Innovation	0.0009	-0.0035	-0.0034	-0.0031
Workforce	0.0235***	0.0184***	0.0130**	0.0185***
Human Rights	-0.0086**	-0.0063	-0.0018	-0.0022
Community	-0.0080*	-0.0035	-0.0044	-0.0062
Product Responsibility	-0.0088**	-0.0061	-0.0048	-0.0052
Management	-0.0029	-0.0041	-0.0026	-0.0029
Shareholders	-0.0005	-0.0005	-0.0012	-0.0011
CSR Strategy	-0.0029	-0.0025	0.0004	-0.0004
No. of Employees	0.6199	0.9922	0.4301	1.2633*
Financial Leverage	-12.4887***	-14.4567***	-14.0435***	-13.8199***
Total Assets	9.3928***	5.7233***	4.2539**	1.1579
Asset Turnover	3.1735***	3.7847***	3.6397***	3.4601***
Economic Sector	No	Yes	Yes	Yes
Year	No	No	Yes	Yes
Country	No	No	No	Yes
Observations	5676	5676	5676	5676
R^2	0. 171	0. 205	0. 218	0. 223

p<0.001***, p<0.01**, p<0.05*, calculated using a F-statistics test in Statsmodels

Table 6: OLS Regression on RoA, ESGC split into subcategories

Another key finding is that the Resource Use Score positively affects RoA, significant using an α-level of 0.05. This confirms part of the first theoretical framework by Porter and van der Linde (1995) and shows that companies can decrease costs through better usage of their resources and increase their RoA. However, according to Porter, environmental innovation will drive this reduction of resources needed to produce a product. Since the Environmental

Innovation Score is insignificant, there is no evidence in this data for this effect. The lack of significance might be due to the short time lag of only one year used in this study. It is plausible that Environmental Innovation takes more time to affect financial ratios significantly. The limitations of this study and possible reasons for the small number of significant relationships will be further evaluated in the conclusion.

Table 7 shows the relationship of ESGC Score with the TobinsQ. The ESGC Score is positively related to the TobinsQ with a value of 0.0147 percentage points increase in TobinsQ for every one point increase in the ESGC Score. This is contractionary to the study by Velte (2017), who found no such significant relationship. The main reason might be the bigger sample and broader perspective of this study, analyzing the whole European market instead of only looking at the firms listed in the main German indices. The positive relation on the TobinsQ as a market-based measurement also indicates, that the ESGC Score influences future CFP, as market-based measurements tend to reflect the future performance of a firm (Peloza 2009).

Dependent Variable	TobinsQ	TobinsQ	TobinsQ	TobinsQ
ESGC Score	0.0107***	0.0134***	0.0134***	0.0147***
No. of Employees	0.7299***	-0.5164*	-0.5020*	0.0338
Financial Leverage	0.7854***	1.1322***	1.1177***	1.3143***
Total Assets	-9.8165***	-6.9375***	-6.8781***	-8.4884***
Asset Turnover	0.9018***	0.9741***	0.9884***	0.8595***
Economic Sector	No	Yes	Yes	Yes
Year	No	No	Yes	Yes
Country	No	No	No	Yes
Observations	5676	5676	5676	5676
R^2	0. 130	0. 194	0. 197	0. 210

p<0.001***, p<0.01**, p<0.05*, calculated using a F-statistics test in Statsmodels

Table 7: OLS Regression on TobinsQ, ESG as main independent variable

Table 8 shows an overview of the subcategories of the ESGC Score to identify which ESG factors contribute to the positive relationship. The Workforce Score is consistently positively related to the TobinsQ, with an 0.0095 percentage point increase in TobinsQ for every 1 point increase in Workforce Score. Research indicates that investors tend to value diversity, equality

and employee satisfactions in their valuation of companies, which is in line with my finding (Campbell and Mínguez-Vera 2008).

Dependent Variable	TobinsQ	TobinsQ	TobinsQ	TobinsQ
Resource Use	0.0006	0.0030	0.0029	0.0042*
Emissions	-0.0030	0.0012	0.0008	0.0022
Env. Innovation	-0.0025	-0.007	-0.0008	-0.0005
Workforce	0.0103***	0.0053*	0.0060**	0.0095***
Human Rights	0.0041**	0.0024	0.0025	0.0020
Community	0.0039*	0.0022	0.0022	0.0014
Product Responsibility	0.0013	-0.0012	-0.0012	-0.0011
Management	0.0042**	0.0037**	0.0035*	0.0027
Shareholders	-0.0002	-0.0006	-0.0007	-0.0008
CSR Strategy	-0.0079***	-0.0035*	-0.0036*	-0.0059***
No. of Employees	0.6285**	-0.5646*	-0.5485*	0.0098
Financial Leverage	0.8322***	1.1367***	1.1242***	1.3049***
Total Assets	-9.2691***	-7.1561***	-7.0596***	-8.7161***
Asset Turnover	0.9267***	0.9765***	0.9913***	0.8498***
Economic Sector	No	Yes	Yes	Yes
Year	No	No	Yes	Yes
Country	No	No	No	Yes
Observations	5676	5676	5676	5676
R^2	0. 139	0. 195	0. 198	0. 213

p<0.001***, p<0.01**, p<0.05*, calculated using a F-statistics test in Statsmodels

Table 8: OLS Regression on TobinsQ, ESGC split into subcategories

Interestingly, an increase in CSR Strategy Score has a negative impact on the TobinsQ. The CSR Strategy Score represents whether a company officially supports sustainable and social initiatives like the SDG Goals (Sustainable Development Goals) or the UNPRI (United Nations Principles of Responsible Investing). The negative relationship indicates that companies reporting on these matters have a lower TobinsQ. A possible explanation for this is that investors see the persuasion of SDG goals negatively because SDG goals are not based on increasing financial performance, but solely based on increasing social wealth fare. Zhan and Santos-Paulino (2021) find that SDG investments have been struggling to reach their target in recent years, underlining the hypothesis that investments in SDG Goals are not favoured by investors. In comparison to the existing research on impact of ESG on CFP and risk, there is no

study on the financial impact of SDG goals. Therefore, they likely to be associated with social and sustainable matters and not valued by investors financially, or even negatively conjugated. This shows the importance of differentiation between ESG investing and other socially responsible investment methods. As the CSR Strategy does not have a significant negative impact on the accounting-based metric RoA, one can guess that this negative relation is purely based on the investor's perspective.

These findings provide additional evidence that the ESG Score and some of its subcategories have a positive influence on CFP. However, the regression does not explain the question of causality, and therefore gives no evidence, if investments in ESG will result in higher financial ratios. By performing a Difference-in-Difference, this paper explores the wealth protective effect of ESG examined by Hwang, Kim and Jung (2021) in their study. Table 9 shows that companies had a significantly lower RoA after the Covid-19 pandemic, as the treatment variable is significant and negative. The positive coefficient for the interaction term of $ESGC_{t-1}$ and Treatment[T.1] potentially indicates that companies with a higher ESGC score performed better than their peers. However, this result is not statically significant and therefore cannot be confirmed. The low significance in comparison to the study by Hwang, Kim and Jung can be explained with country specific characteristics and the usage of a different ESG Scoring provider.

Dependent Variable	RoA
ESGC Score	0.0207***
Treatment	-1.0031***
Treatment[T.1]:ESGC Score	0.0014
No. of Employees	0.1154
Financial Leverage	-13.6023***
Total Assets	0.1003***
Asset Turnover	3.5621***
Economic Sector	Yes
Year	Yes
Country	Yes
Observations	5676
R^2	0. 217

p<0.001***, p<0.01**, p<0.05*, calculated using a F-statistics test in Statsmodels

Table 9: OLS Regression on TobinsQ, ESGC split into subcategories

6. Conclusion and Policy Implication

Analyzing the impact of the ESGC Score on RoA and TobinsQ this paper finds a positive and significant relationship for both metrics. Through the implementation of accounting-based and market-based measurement ratios, this study confirms that ESGC impacts the perspective of future performance by investors, as well as actual performance measured by financial ratios. The time lag of one year indicates a relationship caused by the ESGC Score and therefore provides first evidence on the question of causality.

Furthermore, by splitting the ESGC Score into its subcategories, this study shows first-time empirical evidence on the relationship of the subcategories on financial metrics and explains the relevant factors for the positive relationship. This paper identifies positive relationships for the Workforce Score and the Resource Use Score on RoA. Additionally, this paper finds that the CSR Strategy Score is negatively associated with the TobinsQ, while being insignificant for the RoA.

This paper gives potential reasons for the relationships that can be examined in further research. A possible explanation for the positive relationship with the Workforce Score is the impact of employee satisfaction and diversity on corporate efficiency. The negative coefficient for the CSR Strategy Score on TobinsQ can be explained by different signaling of ESG Scores compared to SDG Goals and UNPRI. Investors might tend to see CSR Strategies as something negative, as there are no studies investigating the financial impact, and decrease their valuation of companies that support those initiatives. Further research needs to be done, to examine the real effect of supporting sustainable initiatives on operational metrics. By finding a positive relation for the Resource Score this paper can support part of the theoretical framework by Porter (1995). This gives first empiric evidence on the argument, that companies can improve their operational performance by saving money on resources. However, further research needs to investigate, if companies that invest in saving resources through innovation will benefit from

it financially, as the Environmental Innovation Score is insignificant for this model, and therefore cannot support this hypothesis.

Although being in line with the research on the impact of ESG on financial ratios, this paper cannot confirm the wealth protective effect of ESG. Reasons for this can be found in the usage of a different ESG Score provider, as well as country specific characteristics. Further research is needed, to investigate the wealth-protective effect of ESG, as many studies have solely focused on the influence of the stock price during the Covid-19 pandemic.

Other limitations of this study can mainly be found in the small number of explained residuals (R2-value) and the heterogenous space for ESG investing. Although being in line with other studies, the low R-Squared value is one indicator of the difficulty of showing the relationship of ESG factors on CFP. This small relationship might be one factor why most of the subcategories are insignificant. Additionally, every ESG Scoring provider has unique weights, metrics and calculations and can therefore have significantly different scores for the same company in a specific year. The usage of different ESG Score providers can result in different findings, resulting in an ongoing debate on the causality and validity of the positive impact.

Finally, this study finds new evidence on the positive relationship of ESG and its subcategories on financial metrics. Using the most recent data of the biggest market for ESG investing worldwide, these findings show that the positive relationship is still up-to-date and can facilitate for ESG investing in the next years. Especially investments in effective Resource Use and Workforce seem to pay off financially and can be used as a reference for the strategic management of companies. Furthermore, this paper explores first methods to explain the causal relationship between ESG and CFP. As this causal relationship is difficult to prove, further research is needed to find more evidence on the drivers of the relationship of ESG and CFP.

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Appendix

Refinitiv Eikon API Codes	
Variable	Eikon API Code
ESG Combined Score	TR.TRESGCScore
Resource Use Score	TR.TRESGRESOURCEUSESCORE
Emissions Score	TRESGEMISSIONSSCORE
Environmental Innovation Score	TR.TRESGINNOVATIONSCORE
Workforce Score	TR.TRESGWORKFORCESCORE
Human Rights Score	TR.TRESGHUMANRIGHTSSCORE
Community Score	TR.TRESGCOMMUNITYSCORE
Product Responsibility Score	TR.TRESGPRODUCTRESPONSIBILITYSCORE
Management Score	TR.TRESGMANAGEMENTSCORE
Shareholders Score	TR.TRESGSHAREHOLDERSSCORE
CSR Strategy Score	TR.TRESGCSRSTRATEGYSCORE
Return on Assets (RoA)	TR.RETURNAVGTOTASSETSPCT
Return on Equity (RoE)	TR.RETURNAVGCOMEQPCT
Market Value	TR.F.MKTCAP
Book Value	TR.F.TOTSHHOLDEQ
Revenue	TR.F.REVGOODSSRVC
Total Assets	TR.F.TOTASSETS
Total Debt	TR.F.TOTLIAB

Table 10: Overview of Eikon API Codes