UNIVERSIDADE CATÓLICA PORTUGUESA

CSR and its impact on a company's corporate financial performance

Do firms that engage in CSR activities have better financial performance? A European case study

Maria Margarida Mesquita Fernandes

Católica Porto Business School
2022

UNIVERSIDADE CATÓLICA PORTUGUESA

CSR and its impact on a company's corporate financial performance

Do firms that engage in CSR activities have better financial performance? A European case study.

Trabalho Final na modalidade de Dissertação apresentado à Universidade Católica Portuguesa para obtenção do grau de mestre em Finanças

por

Maria Margarida Mesquita Fernandes

sob orientação de
Professor Paulo Alves

Católica Porto Business School, Universidade Católica Portuguesa
Abril, 2022

Agradecimentos

Este trabalho não teria sido possível de concretizar sem a ajuda de um conjunto significativo de pessoas, a quem gostaria de expressar e remeter o meu mais profundo agradecimento.

Primeiramente, um especial obrigado ao meu orientador, professor Paulo Alves, pela sua máxima disponibilidade e atenção. Um apoio e orientação imprescindível ao longo deste processo.

Ao professor João Novais e professor João Pinto, por todos com conselhos e importantes contribuições que ajudaram melhorar a qualidade deste trabalho.

Ao professor Ricardo Ribeiro, pelo seu apoio e auxílio na orientação na parte metodológica. Este trabalho não teria sido o mesmo sem a sua ajuda.

De seguida, mas não menos importante, agradeço à minha família, pela confiança, pelo apoio incondicional e sobretudo pela paciência nos momentos de maior dificuldade.

Aos meus amigos, pela motivação constante e por terem tornado todo este processo muito mais fácil e agradável.

Por último, deixo o meu agradecimento aos demais professores do mestrado, por toda a partilha de conhecimento ao longo destes dois anos enriquecedores, que conduziram à escolha do tema à realização deste projeto final, encerrando um dos capítulos mais importante da minha formação académica.

Resumo

A presente tese investiga a relação entre o desempenho da responsabilidade social corporativa (RSC) de uma empresa e o seu desempenho financeiro (DF), num contexto Europeu. Três métodos diferentes foram aplicados neste estudo: primeiro, foram utilizados os métodos OLS e efeitos fixos, para examinar este link durante um período de 10 anos (2010-2020) de empresas listadas no índice STOXX Europe 600 (2,681 observações). A variável explicativa (RSC) é avaliada através das pontuações de ESG de cada empresa e das pontuações individuais das três componentes de ESG (Ambiental, Social e Governativa), enquanto que as variáveis explicadas (DF) são medidas pelo Retorno sobre os Ativos (ROA) e pelo rácio Tobin's Q. Os resultados mostram que, quando usamos a pontuação total ESG como variável independente, existe uma relação positiva significativa com o valor da empresa (Tobins'Q), tanto num desfasamento de 1 ano como de 2 anos. No entanto, ao contrário da maior parte dos resultados indicados em estudos anteriores, não há evidências de que RSC tenha qualquer impacto no ROA de uma empresa. Concluindo esta análise com o teste de regressão 2SLS, os resultados mostraram uma ligação positiva mais forte para a variável dependente Tobin's Q, e não apresenta quaisquer alterações na relação com o ROA. Quando fazemos a mesma análise para os componentes individuais de ESG, descobrimos que a performance Governativa é a que tem um impacto mais forte no desempenho financeiro de uma empresa. Estes resultados apoiam parcialmente a visão de que RSC gera valor para a empresa e é uma contribuição fundamental para o DF da mesma.

Palavras-chave: Responsabilidade social corporativa, ESG, pontuações ESG, lucratividade, desempenho financeiro, valor corporativo

Abstract

The present thesis investigates the relationship between a company's corporate social responsibility (CSR) performance and its financial performance (FP), in a European context. Three different methods were used in this study: first, an OLS and fixed-effects approaches were employed to examine this link during a 10-year period (2010-2020) of firms listed on the STOXX Europe 600 index (2,681 firm-year observations). The explanatory variable (CSR) is assessed through firm's total Environmental, Social and Governance (ESG) scores and the individual scores of the three ESG components, while the explained variables (FP) are measured by the Return on Assets (ROA) and Tobin's Q. The results show that, when we use ESG score as the explanatory variable, there is a significant positive relationship with firm value (Tobin's Q), both at 1-year and 2-year lag. However, contrary to prior research on sustainability performance, no evidence is found that CSR performance has an impact on a company's ROA. Concluding the analysis with a 2SLS regression test, the outcomes showed a stronger positive link for the dependent variable Tobin's Q, and did not show any changes in the relationship with ROA. When we do the same investigation for the individual ESG components, we find that Governance performance has the strongest impact on FP. These findings partially support the view that CSR creates value and is a key contribute to a firm's FP.

Keywords: Corporate social responsibility, ESG, ESG scores, profitability, financial performance, firm value

Number of words: 9875

Table of Content

Agradecimentos iv
Resumo vi
Abstract viii
1. Introduction 1
2. Literature Review 6

2.1. Corporate Social Responsibility and Financial Performance 6
2.1.1. Corporate Social Responsibility 7
2.1.2. The relationship between Corporate Social Responsibility and Financial Performance 8
2.1.3. Evolution of the relationship between Corporate Social Responsibility and Financial Performance 12
3. Methodology and Data 16
3.1. Sample selection 16
3.2. Main variables definition 17
3.3. Regression Models 20
3.4. Summary Statistics 22
4. Results 25
5. Conclusion 38
References 43
Appendix 47

List of Tables

Table 1- Summary Statistics 23
Table 2- Estimation Results OLS 1-year lag (Total ESG score)..... 25
Table 3- Estimation Results OLS 1-year lag (Individual ESG score) 28
Table 4-Estimation Results Fixed-Effects 1-year lag (Total ESG score) 29
Table 5- Estimation Results Fixed-Effects 1-year lag (Individual ESG score) 31
Table 6- Estimation Results 2SLS Total ESG score 1-year lag (Total ESG score) 33
Table 7- Estimation Results 2SLS Total ESG score 1-year lag (Individual ESG score)..... 35
Table 8- List of Variables..... 47
Table 9- Summary Statistics 2-year lag 47
Table 10- Estimation Results OLS 2-year lag (Total ESG score)..... 48
Table 11- Estimation Results OLS 2-year lag (Individual ESG score) 49
Table 12- Estimation Results Fixed-Effects 2-year lag (Total ESG score) 50
Table 13- Estimation Results Fixed-Effects 2-year lag (Individual ESG score) 50
Table 14- Estimation Results 2SLS Total ESG score 2-year lag (Total ESG score) 51
Table 15- Estimation Results 2SLS Total ESG score 2-year lag (Individual ESG score)..... 52

1. Introduction

Corporate Social Responsibility (CSR) has captured the interest of businesses, regulators, investors, and other stakeholders. Countries are under more pressure than ever to tackle greenhouse gas emissions and are encouraging firms to do the same. A growing number of institutions and investment funds are urging firms to change their business operations, to broaden their "horizons", and to match their goals to those of their stakeholders, in order to comply with different social responsibility requirements, rather than just making profit.

According to an article in Forbes (Heyward, Chastity, 2020), Social Responsibility means, generally, "a business's obligation to pursue achievable and good long-term goals for its people and the world at large". Also, as reported by a Nielsen poll[1] conducted in 2015, more than half of consumers are prepared to pay more for a product or service if the company promotes sustainability.

The subject of whether CSR adds value to an organization is still a disputed question. The positive view of CSR sees it as a strategic instrument for addressing stakeholder issues, increasing shareholder value (e.g., Dowell et al., 2000; Peters & Mullen, 2009; Flammer, 2015; Fatemi et al., 2015 and Shirasu & Kawakita, 2020) and enhance its market value (e.g., Ahmad et al., 2021). Following this view, other studies also concluded that improved CSR performance is connected with reduced cost of capital, agency costs, with better reputation (e.g., Albinger & Freeman, 2000 and Singh & Misra, 2021), employee's satisfaction (e.g., Edmans, 2012; Nazir & Islam, 2020 and Dalmoro, 2021) and higher valuation (e.g., Landi & Sciarelli, 2019), as well as more access to funding (e.g., Cheng et al., 2014).

[1] https://nielseniq.com/global/en/insights/analysis/2015/the-sustainability-imperative-2/

Even though the majority of the research available shows a positive relationship, certain findings report negative or non-significant results and diverse causal effects (e.g., Friedman, 1970; Greening & Turban, 2000; Barnett & Barnett, 2007; Lioui & Sharma, 2012 and Cho et al., 2019 and Nollet et al., 2016). According to the negative viewpoint, CSR indicates the prevalence of agency problems in a company (e.g., Friedman, 1970), actually produces a negative influence on corporate value, measured by Tobin's Q and ROA (e.g., Lioui & Sharma, 2012) and is associated with costs and penalties, causing competitive disadvantages (e.g., Greening & Turban, 2000 and Barnett & Barnett, 2007). These disparities in outcomes can be most in part explained by different variables used to study the link and by the different factors of CSR, as this management concept can be quantified using a vary range of metrics (Velte, 2017).

Collecting data from the Refinitiv DataStream, the purpose of this thesis is to see how the causal relationship between CSR and financial performance (FP) evolves. More specifically, to examine and comprehend the influence of CSR performance on European companies between 2010 and 2020. This sample includes all the companies on the STOXX's Europe 600 index and a series of regressions will be run to estimate this impact, resulting in 2,681 firm-years observations.

We selected European firms because, as of today, European firms are more active in promoting CSR initiatives to raise awareness. Over the last few years, the European Union (EU) has implemented a combination of mandatory and voluntary requirements to promote CSR and has adopted the United Nations (UN) Guiding Principles on Business and Human Rights (UNGPs) and the United Nations 2030 Agenda for Sustainable Development. The European Commission updated its CSR strategy in 2011, with the aim to harmonize European and worldwide approaches to CSR, allocating the best practices possible by incorporating CSR into education, training, and research. This plan

also enhances self-regulation and co-regulation mechanisms, as well as company disclosure of social and environmental information.[2]

Moreover, according to a Bloomberg's article (Marsh, 2021), Europe "remains by far the most developed and varied Environmental, Social and Governance (ESG) industry, followed by the United States, which holds 8% of global sustainable fund assets." This article was based on research made by Morningstar and it says that Europe accounted for 77% of net inflows into ESG investment products, in the third quarter of 2021, followed by the United States, which accounted for 11%. Morningstar claims that the Sustainable Finance Disclosure Regulation[3] (SFDR), which went into effect in March 2021, has resulted in more ESG funds in Europe.

Despite the various studies related to CSR and FP, further investigation was required. Similar to other studies (Nelling & Webb, 2009; Cheng et al., 2014 and Fernandes, 2019), this one first employs an ordinary least squares (OLS) approach with 1-year and 2-year lagged values for the FP variables (ROA and Tobin's Q). Undeniably, when this basic regression model is used, we detect a link between CSR and FP. After performing this regression, we conducted a Fixed-Effect (FE) regression model and concluded our analysis with a two-stage least square (2SLS) regression. The results from the FE model tell us that ESG score shows a favorable impact on market-based performance (Tobin's Q) and a statistically insignificant relationship with accounting-based FP (ROA). For the individual ESG scores, the two lag periods show that Environmental score is negatively related with FP, Social score has a positive impact and the Governance score has no effect on both Tobin's Q and ROA.

[2] For further information please consult https://ec.europa.eu/growth/industry/sustainability/corporate-social-responsibility-responsible-business-conduct_en

[3] SFDR is intended to help institutional assets owners and retail customers in monitoring and comparing the sustainability features and characteristics of investment. For more information, consult https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/sustainability-related-disclosure-financial-services-sector_en.

When applying the 2SLS regression, the results for the dependent variable linked to profitability (ROA) remain insignificant, but the relationship between CSR and Tobin's Q becomes stronger. As for the individual components, only the Corporate Governance score displays a negative impact towards ROA for the 1-year lag period, with all the other variables showing no relationship at all.

Overall, partial evidence was found that higher levels of CSR performance are associated with better and FP for a firm, and that Governance performance has the strongest influence and impact on FP, in comparison to Environmental and Social performance.

The main motivation of this thesis is to extend empirical research by exploring the relationship between corporate FP and CSR. To raise awareness and support empirical evidence that incorporating a long-term strategy and an effective stakeholder management plan, should result in improved CSR as well as future FP. Hence, the following research question arises: Does corporate social responsibility undermine or strengthen the financial performance of a company?

This thesis has the following structure: It begins with a theoretical framework related to the topic, the CSR–FP relationship and its evolution until today. The next chapter focuses on data and methodology of the empirical analysis, the sample selection, the main variables and the regression models. Finally, the empirical findings will be examined, hopefully adding to the current literature.

2. Literature Review

2.1. Corporate Social Responsibility and Financial Performance

The debate over a firm socially responsible behavior and the role it plays in the value creation process, has grown in importance in management and business ethics studies, as individual and institutional investors want attractive financial returns that are associated with adding value to our community. According to Bloomberg Intelligence (BloombergNEF, 2021), the overall ESG market reached 35 trillion dollars last year and is on course to cross 50 trillion dollars by 2025.[4]

The European Parliament reaffirmed its support for the European Green Deal[5], a package of policy proposals presented in December 2019 to make Europe climate-neutral by 2050 and according to a KPMG (2020) survey[6], 90% or more of the world's largest 250 firms now declare their CSR performance either separately or as part of their annual financial report.

Before exploring this theme, it could be helpful for readers to understand what is CSR and the importance of an ethical and behavioral approach to finance, by highlighting previous studies related to the relationship between CSR and FP, both positive and negative views. This chapter presents and reviews a selection of papers dealing with these approaches. The papers are presented in thematic and chronological order and at the end of this chapter, it will be possible to identify previous trends.

4 https://about.bnef.com/blog/europe-leads-on-esg-policy-but-trend-promising-for-all/
5 For further information please consult https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/delivering-european-green-deal_en
6 See (Impact, 2020) to get full access to the survey.

2.1.1. Corporate Social Responsibility

CSR can be defined as a company's commitment to fair behavior that takes into account the economic, social, and environmental consequences of its work. The concept of CSR arose in America in the late nineteenth century, but due to the two world wars, it did not present a major interest to society until 1950-1960 (Farcane & Bureana, 2015). This term was first used in 1953 by the one that is considered to be the father of modern CSR, the American economist Howard Bowen.

During the eighties, CSR had evolved, as more firms began to incorporate social concerns into their commercial processes while being more receptive to their stakeholders, and in the nineties, we were able to see the beginning of broad acceptance of CSR. Throughout the first years of the 21st century, CSR has become a key strategy for many organizations, with multi-billion-dollar firms adopting this notion into their business processes (Writer, 2019).

From the early two-thousands to today, CSR became critical and had evolved in terms of different approaches to the term (ethical, social pressure), as well as through the development of various CSR strategy models, since climate change and the environment have emerged as a problematic issue. That's when the UN provided the United Nations' Sustainable Development Goals (SDGs), offering organizations a common foundation on which to create CSR initiatives. Also, in an effort to provide a framework for organizations that want to contribute and invest in sustainable development, the EU issued a Green Paper on Corporate Social Responsibility, in 2001, describing CSR as "The voluntary integration of companies' social and ecological concerns into their business activities and their relationships with their stakeholders. Being socially responsible means not only fully satisfying the applicable legal obligations but

also going beyond and investing 'more' in human capital, the environment, and stakeholder relations."[7]

Organizations aim to identify innovative ways to contribute to sustainable development as a mean to enhance not only their reputation and image, but also their performance. As nowadays we are facing a fierce global competition, it is evident that CSR can only be viable if, and as a long as it continues to contribute and add value to firms.

2.1.2. The relationship between Corporate Social Responsibility and Financial Performance

The rise of CSR proposals and practices has made academics look for a link between corporate social performance and corporate FP.

Existing theoretical research on this relationship is ambiguous and uncertain. Some research show a positive link (Dowell et al., 2000; Flammer, 2015; Fatemi et al., 2015; Ahmad et al., 2021 and Gillan et al., 2021) due to a variety of factors such as a decrease in the cost of equity capital (El et al., 2011) or a reduction of capital constraints (Cheng et al., 2014), increases corporate reputation (Singh & Misra, 2021), among many other factors such as enhancing employee well-being (Albinger & Freeman, 2000; Edmans, 2012; Nazir & Islam, 2020 and Ahmed et al., 2020).

For starters, Dowell, Hart and Yeung (2000) investigated whether adopting a single strong corporate environmental standard increases firm value. The authors discovered that firms that follow a stringent global environmental standard have higher market values, as assessed by Tobin's Q. However, there's a gap in this study: the authors were unable to establish any causal correlations in the data between previous changes in environmental standards and present

[7] https://youmatter.world/en/definition/csr-definition/

changes in firm value, or between past changes in firm value and current changes in environmental standards.

Flammer (2015) fills this gap by providing the first empirical evidence that CSR has a causal effect on FP. Unlike other studies related to this topic, this one compared the impact of shareholder-sponsored CSR proposals[8] that pass or fail in annual meetings by a narrow margin of votes, using a regression discontinuity design (RDD). The author concluded that passing close-call CSR proposals increase shareholder value significantly (1,77%). However, as companies improve their social performance, the benefits of a new CSR initiative may diminish.

Additionally, Fatemi, Fooladi and Tehranian (2015) investigated the impact of CSR engagement on firm's value. The authors show that, under certain conditions, CSR expenditures generate value for the company, proving that a firm's commitment to socially responsible investments unequivocally lead to wealth for its shareholders.

Velte (2017) also focuses on the link between environmental, social, and governance performance (ESGP) as a whole, but different from the previous studies mentioned, this one contributes significantly to empirical CSR research as the author also breaks down ESGP into its three components and includes both accounting-based and market-based FP measurements for the first time in a German environment[9]. As reported by the author, ESGP has a positive significant effect on accounting-based performance, return on assets (ROA). However, surprisingly, unlike (Dowell et al., 2000) who found that CSR firms have higher firm value (Tobin's Q), this one found no effect on market-based performance.

8 Close call CSR proposals offer a source of random variation in CSR that can be used to estimate CSR's causal effect on CFP. They are also more likely to address employee satisfaction and the mitigation of environmental hazards. They are more common among companies operating in "stakeholder-sensitive" industries (industries where performance is heavily dependent on relationships with employees and customers).

9 The author chose Germany because since the 2008/2009 financial crisis, German-listed firms have been pushed in a variety of regulatory ways to incorporate CSR components into their management strategy and reporting process. They are particularly engaged in voluntary CSR reporting in accordance with the German Sustainability Code or the Guideline of the Global Reporting Initiative (GRI).

Using the firm's market value and profits per share as market performance indicators, the study made by Ahmad, Mobarek and Roni (2021) came to the same conclusion as the previous studies mentioned, saying that ESG and its individual dimensions have a positive and considerable influence on a firm's financial success, market value and earnings per share.

Focusing now on the studies that analyzes the relationship between CSR and FP by investigating the impact of CSR on the cost of equity capital[10], Landi and Sciarelli (2019) found that companies with higher CSR scores have a lower cost of equity capital, suggesting that firms' cost of equity increases when they participate in two "sin" industries. Cheng, Ioannou and Serafeim (2018) reached the same conclusion, stating that improved access to financing can be connected to lower agency costs, as a result of higher stakeholder commitment, and to reduced informational asymmetry as a result of increased transparency. As so, firms with better CSR performance suffer much-reduced capital constraints[11], influenced by both the social and environmental dimensions of CSR.

CSR requires companies to take into account the interests of stakeholders other than shareholders, such as employees, consumers, and the overall community. For instance, meeting social duties not only helps firms to demonstrate higher moral or ethical standards, due to their performance in terms of quality goods and services, but it has also been proved to generate many sorts of competitive advantage (Albinger & Freeman, 2000; Edmans, 2012; Nazir & Islam, 2020 and Ahmed et al., 2020). These pros and benefits include higher FP, a better reputation, more engaged staff, and the capacity to attract desirable people (Albinger & Freeman, 2000). In other words, a company that has a solid reputation for treating its employees properly will be able to implicitly offer

10 The cost of capital may be a method via which capital markets motivate corporations to become more socially responsible.
11 Capital constraints are market frictions that can prohibit a company from funding all intended (i.e., net present value-positive) investments.

pleasant working conditions, helping and improving recruitment (Edmans, 2012), demonstrating that CSR is not a supplementary tool, but rather an indispensable one that provides genuine and long-term employee well-being (Nazir & Islam, 2020 and Ahmed et al., 2020).

In brief, these studies add to the literature, stating that a firm's reputation, values, and overall performance success are highly connected to management perceptions of CSR and social actions (Singh & Misra, 2021).

Other authors have concluded that there's a negative link between CSR and FP (Friedman, 1970; Greening & Turban, 2000; Barnett & Barnett, 2007; Lioui & Sharma, 2012 and Cho et al., 2019). According to this unfavorable viewpoint, CSR indicates the prevalence of agency issues in a company and CSR investment reduces opportunities to exploit resources to maximize profit (Friedman, 1970), because CSR activities incur higher costs, increases the conflict of interest (Greening & Turban, 2000) among stakeholders (Barnett & Barnett, 2007), which causes competitive disadvantages and produces a negative influence on the corporate value measured by Tobin's Q and also ROA (Lioui & Sharma, 2012 and Cho et al., 2019). Finally, some academics claim that there is no correlation between CSR and FP (Nollet et al., 2016 and Velte, 2017).

Overall, Gillan, Koch and Starks (2021) conducted a study that proposes a review of ESG and CSR research in corporate finance. In the article, the authors explain that although a firm's ESG/CSR profile and activities are strongly related to a firm's market, leadership, performance, and value, there are still conflicting hypotheses and results that are unresolved, leading to unanswered questions and a need for additional research.

2.1.3. Evolution of the relationship between Corporate Social Responsibility and Financial Performance

The literature and studies done over these years, trying to define CSR and its relationship with FP, have not always been conducted in the same way. CSR has traditionally been thought of as a strategic "process", with empirical research being largely focused on the immediate or short-term effects of CSR on FP, by employing cross-sectional[12] data.

Throughout the years, many authors started arguing that the CSR-FP link should be studied in the long run and most recent research has studied this relationship between a more broadly defined, employing time series data to empirically examine the cumulative effects of CSR on future firm FP. (Dierickx & Cool, 1989) imply that companies cannot benefit as much from rapidly collected knowledge as they can from the knowledge that is accumulated slowly and progressively.

Waddock and Graves (1997), with a one-year time lag, found positive relationships between CSR and several measures of firm performance. Yet, they argue that there is still much to learn about the relationship between CSP and FP, particularly in terms of "whether or not the relationships hold consistently over time", proposing that time lags longer than one-year should be examined.

Peters & Mullen also did a study in 2009, examining the theory that improved CSR performance leads to improved firm FP over time. Their findings show that the time-based, cumulative effects of CSR on firm FP are positive and strengthen over time. Their findings back up the premise that long-term CSR benefits a company's stockholders as well as other stakeholders. Nelling & Webb (2009) used traditional regression analysis (OLS models) on their study and found that

[12] Empirical cross-sectional studies analyze the effects of various aspects of CSR on firm FP, such as pollution abatement, cost of capital, or firm reputation, which have generated inconsistent and contradictory results, as we have seen in the previous subchapter.

the two variables appear to be linked, which is consistent with previous research. However, using a time series fixed effects (FE) approach, the authors discovered that the relationship between CSR and FP is far weaker than previously thought, no longer implying a robust link between CSR and FP.

By analyzing how a company can strategically participate in CSR to maximize its benefits, Tang, Hull and Rothenberg (2012) reached a similar conclusion to the Peters & Mullen's research (2009). Once again, based on longitudinal data, the findings concluded that companies profit more and have higher FP when they adopt a CSR engagement approach that is gradually and consistently.

Rivera, Muñoz, and Moneva's research (2017) debates on whether organizations who were strategically consistent in terms of CSR before the financial crisis maintained such consistency throughout that tumultuous macroeconomic situation and if this consistent approach to CSR has a good association with FP. Their findings show an overall improvement in CSR strategy consistency among firms and also revealed a positive link between CSR strategy consistency and FP.

From what we have seen so far, the conclusion these authors reached is that, generally, achieving CSR objectives requires long-term commitment. Since CSR efforts are founded on trust, companies must commit to meeting stakeholder interests over a long period of time. Wiener (1982) described organizational commitment as the demands a company needs to perform in a way that satisfies its aims and interests. The deeper the commitment, the more likely the individual is to be directed in his acts. He also stated that the extent to which commitment has a positive or negative influence is mostly determined by the nature of the organization's goals and expectations.

As demonstrated here, short-term periods overturn the concept of CSR, as a long-term firm investment and introduce ambiguity in the results based on the year chosen, limiting this relationship analysis. In order to address Waddock &

Graves's concern, this study examines the relationship between CSR and European firm's FP, employing not only a 1-year, but also a 2-year time lag.

3. Methodology and Data

3.1. Sample selection

Our main goal is to examine if CSR activities have a positive impact com a company's FP, conducting a study on 600 European firms listed in the Stoxx Europe 600 Index, as a sample. The Stoxx Europe 600 Index is a subset of the Stoxx Global 1800 Index and is produced from STOXX's Europe Total Market Index. It consists of 600 components representing all types of firms (large, mid, and small-capitalization firms) from 17 European countries (Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland, and United Kingdom).

I decided to use European companies because of the increased laws and regulations regarding sustainable financing and reporting that have been implemented in recent years. Similar to Velte (2017), it was decided to omit all financial services companies, since they have specific and precise regulatory requirements and a unique capital structure. It's also important to mention that due to a lack of (non-financial) information, there were fewer firm-year observations.

The CSR data and firm-level financial data come from Refinitiv Eikon DataStream, which is considered to be one of the world's largest providers of financial markets data and has also one of the industry's most comprehensive ESG databases, containing more than 80% of global market capitalization, across more than 450 different ESG measures. A trustworthy database that is commonly employed in the academic field and has been used in previous studies such as Cheng (2014), Velte (2017), and Ahmad et al., (2021). Following the collection of the above-mentioned data and eliminating observations with missing CSR and

financial information, the final sample consists of 2,6811 firm-year observations from the period 2010-2020 and is summarized in Table 1.

3.2. Main variables definition

3.2.2. Dependent variables

The dependent variables used in the regressions described below are accounting and market-based measures of FP, return on assets (ROA) and Tobin's Q, respectively. ROA is a very well-known accounting-based variable, measuring the company's profitability in proportion to its total assets. Because accounting-based variables are frequently changed by earnings management decisions, market-based items are required and are also included in many empirical research studies (Boubakri et al., 2016 and Velte, 2017).

Tobin's Q expresses the market value of a company divided by its assets' replacement cost. As seen in other studies like (D'Orville et al., 2007; Velte, 2017 and Ahmad et al., 2021) and since it is very difficult to estimate the replacement costs of a company's assets, it is used the ratio market to book as a proxy for firm value, comparing the market value of a firm to their corresponding book values. Although it is not the most common definition, it is the most realistic way to estimate this market-based measure.

3.2.3. Independent variables

Regarding CSR data, this study considers the total ESG score of a firm and the individual scores of the three pillars that comprise the ESG score (Environmental, Social and Governance), in order to observe its overall and individual impact. ESG scores are based on publicly available data and reflect the company's ESG performance, commitment, and effectiveness. The Environmental performance score is calculated using parameters such as resource use, emissions, and environmental innovation. The Social performance score is calculated based on four categories: community, human rights, product

responsibility and workforce. Finally, the Governance performance score is measured along with three main categories such as CSR strategy, management and shareholders (Thomas & Grimes, 2020).

The ESG score is a relative sum of the category weights for the environmental and social categories, which vary by industry. The weights for governance stay the same across all industries. The ESG scores are measured from 0 to 100, with 100 being the highest possible score a company can achieve[13].

To assess the influence of CSR on FP, since CSR will not result in immediate improvements in FP, a one-year and two-year lagged variable of ROA and Tobin's Q was employed (Unit & Area 2014; Velte 2017 and Ahmad et al., 2021), starting from 2010 to 2020.

3.2.4. Control variables

As other factors have been shown to influence the CSR–CFP link, we also took into account the following control variables in the regression model. We use firm size (SIZE), research and development ratio (R&D), leverage (LEV), cash flows from operating activities (CF) and firm risk (RISK).

Firm size is a significant factor that influences the value and performance of a firm. Larger companies may have a higher incentive to participate in CSR efforts and activities as they are more likely to be vulnerable to external pressures (Cho et al., 2019). They may also be better equipped to handle complex, fast CSR engagement strategies since they are more experienced and familiar with diverse operations (Tang & Rothenberg, 2012). To account for the impacts of firm size, this variable is measured by the natural logarithm of total assets in our model.

R&D is a valuable tool for growing and improving a company's business. R&D investment has the potential to improve the organization's capacity to separate itself from rivals, undermining the need to engage in CSR as a

13 More detailed descriptions are available at https://www.refinitiv.com/pt/sustainable-finance/esg-scores

differentiator (Tang & Rothenberg, 2012). Because R&D is significantly connected with CSR, it is expected that CSR has the greatest and most visible impact on business performance in low-innovation enterprises (Hull & Covin, 2010). This control variable is calculated by the R&D to sales ratio (dividing R&D expenditures by sales). When research and development expenditure is missing, R&D expenses are set to zero. Leverage is calculated by dividing total debts by the market value of equity (which is equal to common share outstanding times stock price) and CF is measured by the cash flows from operating activities divided by total assets. In addition, another factor that must be considered to avoid biasing the results is risk. Because the firm's risk has a large impact on firm performance, the Debt/Assets ratio is also employed as a control variable (RISK).

Furthermore, one additional variable is used to assess a company's profitability and to track a company's performance. Earnings per share (EPS) is a frequently used indicator for measuring corporate value since it shows how much money a firm produces for each share of stock it owns. Generally, the higher a company's EPS is, the more profitable it is thought to be. Therefore, the variable EPS was measured by dividing a company's net profit by the number of common shares outstanding. This variable will take value 1 whenever a company increases its profitability, and the value of zero if a company reduces its profitability (dummyEPS).

Companies from a variety of industries are included in the sample, and ROA can be influenced by a company's and industry's growth rate, as well as by the volatility and unpredictability of that rate. A high-growth company can compensate for a lack of organizational slack, allowing firms to engage in numerous CSR dimensions more easily. On the other hand, firms with volatile growth rates may need to conserve resources in anticipation of future shortages and therefore, devote fewer ones to CSR efforts (Tang & Rothenberg, 2012). For

this reason, this model controls for firm-fixed effects to help control for invariant and omitted firm-related factors.

For this study, I hypothesize a positive impact of CSR activities on FP, both on accounting-based and market-based variables. In other words, firms that engage and have a superior CSR performance will have a higher FP.

3.3. Regression Models

With a panel data approach, in order to test this thesis hypothesis empirically (that CSR is positively linked to FP) it was used a 1-year for FP (2011 data) and 2010 CSR performance data and control variables. In order to deepen this analysis, a 2-year lagged variables were also estimated for Tobin's Q and ROA and the overall and individual ESG scores. In this study, four regression models will be employed and all these panel regression models were performed by first using the OLS method followed by a FE approach, to verify the analysis made by Nelling & Webb's study (that the link between CSR and FP is weaker when using FE approach, compared to the OLS regression method). The regression models estimate, individually, *ROA* and *Tobin's Q* against the firm's Total ESG score (*ESGscore*) and its individual scores of its components (*EnvironmentalScore*, *SocialScore* and *GovernanceScore*), seperatly. Control variables are also included to control for the reasons already mentioned in the Control Variables section of this study.

The first regression model of this study is the following:

$$Tobin'sQ_{i.t} = \beta_0 + \beta_1\ ESGscore_{i.t-1} + \beta_2\ Control_{i.t} + \varepsilon_{i.t} \text{ (eq. 1)}$$

$$ROA_{i.t} = \beta_0 + \beta_1\ ESGscore_{i.t-1} + \beta_2\ Control_{i.t} + \varepsilon_{i.t} \text{ (eq. 2)}$$

Where $Tobin'sQ_{it,}$ denotes the ratio of the market value of a company divided by its total assets (to examine if a firm is relatively over-or undervalued) of firm *i* in year *t*, ROA_{it} denotes how profitable firm *i* is in comparison to its total assets

in year *t*, $ESGscore_{it}$ measures the ESG performance, commitment, and effectiveness, from 0 to 100, of firm *i* in year *t*, $Control_{it}$ denotes the vector of control variables (cash flow from operating activities, leverage, size, r&d ratio, beta, debt of firm *i* in year *t*, and a dummy variable that takes the value of 1 if firm *i* maintains or increases it profitability in year *t*, and takes the value of 0, otherwise), and ε_{it} denotes the error term associated to firm *i* in year *t*.

The second regression models will be used to estimate the three components of ESG against the dependent variables:

$$Tobin'sQ_{i.t} = \beta_0 + \beta_1\ EnvirnmentalScore_{i.t-1} + \beta_2\ SocialScore_{i.t-1} + \beta_3\ GovernanceScore_{i.t-1} + \beta_4\ Control_{i.t} + \varepsilon_{i.t} \text{ (eq. 3)}$$

$$ROA_{i.t} = \beta_0 + \beta_1\ EnvirnmentalScore_{i.t-1} + \beta_2\ SocialScore_{i.t-1} + \beta_3\ GovernanceScore_{i.t-1} + \beta_4\ Control_{i.t} + \varepsilon_{i.t} \text{ (eq. 4)}$$

Where $Tobin'sQ_{it}$, ROA_{it}, $ESGscore_{it,}$ and $Control_{it}$ have the same interpretation as above, $EnvironmentalScore_{it}$ measures the environmental performance, commitment, and effectiveness, from 0 to 100, of firm *i* in year *t*, $SocialScore_{it}$ weights for the social performance, from 0 to 100, of firm *i* in year *t*, $GovernanceScore_{it}$ measures the governance performance and commitment of firm *i* in year *t* and ε_{it} denotes the error term associated to firm *i* in year *t*.

This third and the fourth regressions are going to the conducted in the same way as the previous two, but for a 2-year financial performance (2012 data) and 2010 CSR performance data, in order to examine this relationship over a longer time period. These regressions also include the control variables.

Third regression:

$$Tobin'sQ_{i.t} = \beta_0 + \beta_1\ ESGscore_{i.t-2} + \beta_2\ Control_{i.t} + \varepsilon_{i.t} \text{ (eq. 5)}$$

$$ROA_{i.t} = \beta_0 + \beta_1\ ESGscore_{i.t-2} + \beta_2\ Control_{i.t} + \varepsilon_{i.t} \text{ (eq. 6)}$$

Fourth regression:

$$Tobin'sQ_{i.t} = \beta_0 + \beta_1\ EnvirnmentalScore_{i.t-2} + \beta_2\ SocialScore_{i.t-2} + \beta_3\ GovernanceScore_{i.t-2} + \beta_4\ Control_{i.t} + \varepsilon_{i.t}$$ (eq. 7)

$$ROA_{i.t} = \beta_0 + \beta_1\ EnvirnmentalScore_{i.t-2} + \beta_2\ SocialScore_{i.t-2} + \beta_3\ GovernanceScore_{i.t-2} + \beta_4\ Control_{i.t} + \varepsilon_{i.t}$$ (eq. 8)

In addition, after the OLS method has been conducted, firm fixed-effects will be added to the model to reinforce the results. To conclude this analysis, a 2SLS regression was also employed for robustness. This method is an extension of the OLS and it uses instrumental variables (IV) that are uncorrelated with the error term. In other words, it's an alternative estimation method of the same theoretical model and it can report the endogeneity problem.

These regressions will show the sort of link between CSR and FP as well as the magnitude of its influence, whether positive, negative, mix, or whether there is no association at all.

3.4. Summary Statistics

The table of descriptive statistics of all the variables is provided in Table 1. It presents the mean, median, standard deviation, minimum value and maximum value. The cleaned data covers 2,681 observations, a total of 355 firms from 9 different industries and 32 different sectors during a 10-year period. Information and definition of all the variables are presented in Appendix (Table 8). Table 1 is showed as the following:

Table 1- Summary Statistics

Variables	Mean	Median	Std. Dev.	Min	Max
Tobin's Q	1.305	0.909	1.341	0.000	14.618
ROA	0.057	0.051	0.078	-0.490	0.710
ESG Score	65.240	68.090	16.918	2.650	94.520
Environmental Score	64.564	68.070	21.797	0.000	99.190
Social Score	69.242	73.300	19.579	2.770	98.470
Governance Score	59.912	62.770	21.489	4.170	98.560
Cash flow from Operating Activities	0.108	0.098	0.074	-0.415	0.618
Leverage	0.451	0.247	0.647	0.001	11.985
Size (log)	15.899	15.727	1.520	10.394	19.789
R&D Ratio	5.083	1.870	41.153	0.000	1773.900
Risk	0.265	0.242	0.171	0.001	3.351
Earnings per Share (Dummy)	0.625	1.000	0.484	0.000	1.000

Note: The statistics presented are computed across 2,681 observations from 2010 to 2020.

A median firm in the data has a market value lower than the value of its total assets (by a ratio of 0.909%), profitability of 0.051% in proportion to its total assets, an ESG score of 68.090 and a score of its individual components, Environmental, Social and Governance, of 68.070, 73.300 and 62.770, respectively. From the table we can also see that it has cash flow from operating activities lower than the value of its total assets (0.098%), a debt-to-equity ratio of 0.242, has around 6,763,155 thousand of USD in total assets, invests 1.870% of these assets in R&D, has an unsystematic risk of 0.242 and the firm has increased its profitability and efficiency compared to the previous year.

With a two-year lag period, the results didn't change much, as we can see in Table 9 (Appendix), except for the ESG variables. The data seems to suggest that the median firm has also increased its profitability compared to the previous year, has an ESG score of 64.840, an Environmental score of 65.805, a Social Score of 70.420 and a Governance score of 59.000.

4. Results

Table 3 displays the empirical results of the OLS regressions. Assessing the t-statistics for regressions equations (1), (2), (5), (6), with ROA and Tobin's Q as the explained variables and ESG score as the explanatory/independent variable. Equation models (3), (4), (7) and (8) include the three pillars of ESG (Environmental score, Social score and Governance score) as the independent variables. SIZE, CF, LEV, R&D and RISK are set as the control variables, including a dummy variable (dummyEPS).

Table 2- Estimation Results OLS 1-year lag (Total ESG score)

	OLS			
Variables	**Tobin's Q (1)**	**Tobin's Q (2)**	**ROA (3)**	**ROA (4)**
ESG Score	-0.013 ***	0.007 ***	-0.001 ***	0.001
	(0.001)	(0.001)	(0.000)	(0.000)
Cashflow from Operating Activities		10.702 ***		0.671 ***
		(0.652)		(0.033)
Leverage		-0.160 ***		-0.003 *
		(0.038)		(0.006)
Size		-0.272 ***		-0.003 **
		(0.019)		(0.001)
R&D Ratio		0.004 ***		-0.001 ***
		(0.001)		(0.000)
Risk		-0.325 *		-0.030 **
		(0.182)		(0.013)
Earnings per Share Dummy		-0.024		0.037 ***
		(0.039)		(0.003)
Firm fixed-effects	no	no	no	no
R-squared	3.050	54.860	0.640	59.430
Overall F-test	80.200 ***	150.590 ***	17.640 ***	383.580 ***

Note: All specifications include a constant term and are based on 2,681 observations. Standard-errors in parenthesis. *** denotes p-value <0.01, ** denote p-value <0.05, and * denote p-values < 0.10.

First, for specifications (1) and (3), it was decided to include only ESG score as the explanatory variable to see if the control variables, while in the error, are biasing the results or not. From Table 2, the results suggest that this independent variable has an impact on FP in the sense that when the ESG score on a firm increases, its FP decreases, both on accounting-based and market-based variables. Since both p-values are zero, smaller than the 10% significance level, the null hypothesis that the beta is zero is rejected, meaning that CSR activities have, in this case, a statistically negative impact on Tobin's Q and ROA (-0.013 and -0.001, respectively).

The overall F-test (80.200 for Tobin's Q and 17.640 for ROA), tests the hypothesis that all betas, except the constant, are zero. Because it's smaller than the significance level, the hypothesis that all the betas are zeros is also rejected.

Regarding specifications (2) and (4), the control variables are now included. If these variables, while they were in the error, were correlated with the ESG score, the estimate presented in our regression model would be biased and wrong, meaning that there was an endogeneity problem before. So, when we "take the variables out of the error", we are correcting these biased results. As we can see, the ESG score coefficient went from a negative to a positive one, both on Tobin's Q and ROA. Therefore, these control variables, while in the error, were biasing the results.

Model (2), where Tobin's Q is used as the dependent variable, all the variables are statistically significant at the 10% level, meaning once again that CSR activities have an impact on Tobin's Q, but now it's a positive one. Despite a small positive correlation, it supports the existing literature, which states that a good CSR performance is associated with higher firm value.

Finally, for specification (4), when using ROA as the explained variable, the control variables are all statistically significant at the 10% level. Table 2 suggests

a statistically insignificant relationship between ROA and CSR performance, which means that FP seems to be unaffected as firms invest and become more active in CSR activities.

As for the control variables, most of them display the expected signs. While unsystematic risk, measured by the Debt per Assets ratio, and leverage affects the dependent variables negatively, cash flow from operating activities displays a positive relationship with FP. R&D appears to be positively connected with firm value, as expected, but has a negative impact with ROA. Size, represented by the logarithm of total assets, showed a result contrary to what was expected, a statistically negative link with both Tobin's Q and ROA.

Table 10 (appendix) shows us similar results but for the 2-year lag period between our dependent and independent variables. Although slightly smaller, we find that incorporating CSR activities continues to have a significant positive impact on Tobin's Q (0.005), at a 10% significance level, and still has no impact on the accounting-based measure, ROA. For the remaining variables, comparing to the 1-year time lag, in specification (2) we can spot a significant increase in the negative relationship between risk and Tobin's Q (from -0.325 to -2.105), and it went from a significant to an insignificant relationship. There was also a decrease in a firm's cashflows, leverage and an increase in a company's size, with all of them continuing to have a significant relationship. As for model (4), there was an increase in the link between a firm's cashflow and ROA and a decrease in firm's risk. Leverage became statistically insignificant with the firm's profitability measure.

In order to test if there is a multicollinearity issue, based on the correlation of some of the variables, the variance inflation factors (VIF) was calculated. In general, if the VIF is above 10, this means that the variables are highly correlated with one another and serious multicollinearity issues may arise. Since no VIF in

this data surpassed 1.75, with a VIF mean of 1.35, multicollinearity is very unlikely to be influencing the regression findings.

Table 3- Estimation Results OLS 1-year lag (Individual ESG score)

	OLS			
Variables	**Tobin's Q (5)**	**Tobin's Q (6)**	**ROA (7)**	**ROA (8)**
Environmental Score	-0.018 ***	-0.004 ***	-0.001 ***	-0.001 *
	(0.001)	(0.001)	(0.000)	(0.000)
Social Score	0.009 ***	0.009 ***	0.001 ***	0.001 **
	(0.002)	(0.001)	(0.000)	(0.000)
Governance Score	-0.004 ***	0.001	-0.001 ***	0.001 *
	(0.001)	(0.001)	(0.000)	(0.001)
Cashflow from operating activities		10.608 ***		0.671 ***
		(0.648)		(0.033)
Leverage		-0.150 ***		-0.003 *
		(0.037)		(0.006)
Size		-0.260 ***		-0.003 **
		(0.018)		(0.001)
R&D Ratio		0.004 ***		-0.001 ***
		(0.001)		(0.000)
Risk		-0.361 ***		-0.030 **
		(0.183)		(0.013)
Earnings per Share Dummy		-0.027		0.037 ***
		(0.039)		(0.003)
Firm fixed-effects	no	no	no	no
R-squared	7.090	55.380	2.070	59.510
Overall F-test	57.510 ***	121.950 ***	20.160 ***	302.390 ***

Note: All specifications include a constant term and are based on 2,681 observations. Standard-errors in parenthesis. *** denotes p-value <0.01, ** denote p-value <0.05, and * denote p-values < 0.10.

Table 3 reports the results of equations (3) and (4). Environmental score has a negative significant impact, both on Tobin's Q and ROA and we see that Social score is significant and positively related with Tobin's Q (0.009) and ROA (0.001) at 1% level. On the other hand, contrary to what was expected, Governance score

has a very small, but positive statistically significant effect on ROA and has no impact at all on the market-based measure. All the control variables, except for the dummy in specification (6), are statistically significant at 10% significance level and the results don't vary much, comparing to the findings obtained in Table 1.

In Table 11, for the 2-year lag period, the major difference we can spot is concerning the Governance score, that went from a positive and statistically significant link at 10% level with ROA, in specification (8), to an insignificant and negative impact. The same happened with leverage and risk, in specification (6).

For the next steps, firm fixed-effects will be added to the regression model, as it is shown in Table 4, covering the findings of estimating the regression equations (5) and (6):

Table 4-Estimation Results Fixed-Effects 1-year lag (Total ESG score)

Fixed-Effects				
Variables	**Tobin's Q (9)**		**ROA (10)**	
ESG Score	0.006	***	-0.001	*
	(0.001)		(0.000)	
Cashflow from Operating Activities	6.279	***	0.543	***
	(0.284)		(0.023)	
Leverage	-0.143	***	0.004	**
	(0.023)		(0.002)	
Size	-0.033		-0.018	***
	(0.040)		(0.003)	
R&D Ratio	-0.002	***	0.001	
	(0.001)		(0.000)	
Risk	0.586	***	-0.031	***
	(0.095)		(0.008)	
Earnings per Share Dummy	-0.078	**	0.054	***
	(0.032)		(0.003)	
Firm Dummies	yes		yes	
R-squared	88.600		77.620	
Overall F-test	50.070	***	22.350	***

Note: All specifications include a constant term and are based on 2,681 observations. Standard-errors in parenthesis. *** denotes p-value <0.01, ** denote p-value <0.05, and * denote p-values < 0.10

Firm fixed-effects means estimating an equation that adds dummy variables, in this case, one for each firm. These dummy variables are going to capture everything characteristic of each firm. As so, they are taken out of the error and two things can happen: either the estimate changes, or it doesn't. In this case, having Tobin's Q as the dependent variable, it doesn't change anything at all (comparing to Table 2), as it still shows a very small but significant estimate (0.006), which means that these dummies were not biasing the estimates.

However, when the dependent variable is switched to ROA, it shows a completely different outcome. Contrary to what was examined in the OLS model, now we reject the hypothesis of the betas being zero, which means that CSR performance has an impact on return on assets at 10% significance level, moving from a positive to a negative impact. This means that these firm dummies were, in fact, biasing the estimates. That's why it's important to control for as much as possible.

Although small, the results from specification (9) demonstrate a positive significant link between CSR performance and FP, focusing on the market-based variable and validating the results from the OLS method. In contrast, specification (10) seems to suggest that CSR activities is significant and negatively related to ROA.

When estimating the results for a longer lagged period (Table 12), they became a little different comparing to Table 10 when we used the OLS approach. While in the Tobin's Q case we can still conclude that CSR performance has a positive impact on a firm's FP, when we include these firm dummies on specification (10), we still don't reject the hypothesis of the betas being zero. Since the estimate doesn't have any star (because the p-value is higher than the 10% significance

level), we can reach the conclusion that firm performance seems to be unaffected as firms become active in CSR. Additionally, ESG scores went from having an insignificant positive relationship with ROA in the OLS method, to a negative one. Comparing the results between the 1-year lag variable and the 2-year lag, we see that there is a slightly decrease in the coefficients of the control variables, except for dummy variable and the independent variable ESG score.

Table 5- Estimation Results Fixed-Effects 1-year lag (Individual ESG score)

Fixed-Effects				
Variables	**Tobin's Q (11)**		**ROA (12)**	
Environmental Score	-0.001		-0.001	*
	(0.001)		(0.000)	
Social Score	0.008	***	0.001	
	(0.001)		(0.000)	
Governance Score	-0.002	*	-0.001	
	(0.001)		(0.000)	
Cashflow from Operating Activities	6.172	***	0.540	***
	(0.283)		(0.023)	
Leverage	-0.140	***	0.004	**
	(0.023)		(0.002)	
Size	-0.064		-0.019	***
	(0.040)		(0.003)	
R&D Ratio	-0.002	***	0.001	
	(0.001)		(0.000)	
Risk	0.569	***	-0.032	***
	(0.095)		(0.008)	
Earnings per Share Dummy	-0.076	***	0.054	***
	(0.032)		(0.023)	
Firm Dummies	yes		yes	
R-squared	88.770		77.630	
Overall F-test	50.620	***	22.220	***

Note: All specifications include a constant term and are based on 2,681 observations. Standard-errors in parenthesis. *** denotes p-value <0.01, ** denote p-value <0.05, and * denote p-values < 0.10

The outcomes of the individual components of ESG are very different between the OLS and the FE approach. Environmental score has now a negative but insignificant impact on Tobin's Q and its results remain unchanged for the explained variable ROA. Social score went from being statistically significant in both specifications to being statistically insignificant related to the accounting-based measure, ROA and Governance Score variable is now statistically significant at the 10% level in specification (11) and not significant in equation (12), exactly the inverse of the results obtained by OLS method. As for the control variables, in specification (11), are all significant at 1% significance level except for size, which now is insignificant related to the market-value measure. There was also a big change in the R&D ratio coefficient, having now a negative impact on Tobin's Q. As for model (12), it is worth highlighting the variable leverage that now has a positive significant impact on ROA, at 5% significance level, and R&D ratio that became statistically insignificant.

Between the 1-year lag and the 2-year lag results (Table 13), the findings are also distinct. Environmental score is significant and negatively related with Tobin's Q at 5% significance level and at 1% significance level, with ROA. Social score is positively significant at 1% significance level for both specifications and Governance performance has absolutely no impact on FP.

To conclude our analysis, in order to address the endogeneity problem, 2SLS regression is used for robustness, capturing the ESG score. This 2SLS regression findings are shown in Table 6. In this table, the IV is the averaged industrial ESG score. For the individual pillars of ESG, in Table 13, it was used the averaged environmental score, the averaged social score and the averaged corporate governance score as IVs.

From the results, it's visible that CSR has a stronger positive impact on the market-based variable, Tobin's Q. This means that the ESG score was slightly

endogenous, biasing the estimates. However, for ROA, despite now having a positive coefficient, CSR activities continue to have no impact on this FP measure. The coefficients estimates form all specifications didn't change much from the FE approach to the 2SLS regression model but they all became statistically significant at 1% significance level with the dependent variable Tobin's Q, except for the dummy.

Table 6- Estimation Results 2SLS Total ESG score 1-year lag (Total ESG score)

	2SLS			
Variables	**Tobin's Q (13)**		**ROA (14)**	
ESG Score	0.023	***	0.001	
	(0.003)		(0.000)	
Cashflow from Operating Activities	6.192	***	0.542	***
	(0.274)		(0.022)	
Leverage	-0.150	***	0.004	**
	(0.022)		(0.002)	
Size	-0.228	***	-0.021	***
	(0.046)		(0.004)	
R&D Ratio	-0.002	***	0.001	
	(0.001)		(0.000)	
Risk	0.468	***	-0.033	***
	(0.093)		(0.007)	
Earnings per Share Dummy	-0.074	**	0.054	***
	(0.031)		(0.002)	
Firm Dummies	yes		yes	
Instrument Relevance	580.319	***	580.319	****

Note: All specifications include a constant term and are based on 2,681 observations. Standard-errors in parenthesis. *** denotes p-value <0.01, ** denote p-value <0.05, and * denote p-values < 0.10

When the IV is used, the measurements of fit are different from OLS and fixed-effects. The R-squared and the F-test are not used anymore, and are replaced by "Instrument Relevance" (IR), which tells us if the instruments are correlated with the endogenous variable (ESG score). As we can see, the IR for Tobin's Q and

ROA is 580.319 and because the p-value < 10%, this concludes that the instrument is not correlated with the independent variable, which means that it is a good instrument.

The results in Table 6 support the positive view of CSR. In particular, these findings show that firms that engage in CSR activities have a higher firm value than firms that do not participate in those kinds of activities, and that this positive relation is robust to considering endogeneity concerns. However, in accordance to the negative view of CSR, the conclusion taken from this complete analysis is that firms that participate in CSR activities weakens its firm performance and produces a negative influence on its corporate value, measured by ROA.

For the 2-year lag variables, in Table 15, the changes in the coefficients are very similar to those that happened with the 1-year lag, when we switch from the FE approach to the 2SLS. The link between the independent variable ESG score and Tobin' Q became stronger (from 0.006 to 0.321) and although the coefficients from the control variables didn't change much, they are all statistically significant at 1% significance level, except for the dummy. Regarding specification (14), we can definitely say that ESG score is insignificant (but now positively) related to ROA, which means that firm's profitability seems to be unaffected as firms invest more in CSR activities.

Table 7 shows us that the three pillars of ESG score have no impact on a company's FP, except for the Governance score that has negative impact (-0.088) on Tobin's Q. For the remaining variables, we find that the signs of the coefficients are in line with those made in specification (11), but the majority of them lost its significance at 1% significance level. When examining the same equation for the 2-year lag variables (Table 15), we find that no independent variable is significantly related to firm performance, both for market-based and accounting-based measures.

Taking the results from the robustness test, we can conclude from this extensive analysis that firms that engage in activities, for both 1-year and 2-year time lag, have better FP when estimated by the Tobin's Q ratio. Meaning that, when financial performance on a given company in a given year increases (decreases), with the increase (decrease) of its ESG score (0.023%). Surprisingly, there is no significant effect of CSR performance on accounting-based measure, ROA.

Table 7- Estimation Results 2SLS Total ESG score 1-year lag (Individual ESG score)

2SLS				
Variables	**Tobin's Q (15)**		**ROA (16)**	
Environmental Score	0.246		0.005	
	(0.168)		(0.005)	
Social Score	-0.050		-0.001	
	(0.055)		(0.002)	
Governance Score	-0.088	*	-0.002	
	(0.053)		(0.000)	
Cashflow from Operating Activities	5.629	***	0.529	***
	(1.210)		(0.033)	
Leverage	-0.236	**	0.002	
	(0.114)		(0.003)	
Size	-0.833	**	-0.034	***
	(0.473)		(0.013)	
R&D Ratio	-0.001		0.001	
	(0.002)		(0.000)	
Risk	0.789	*	-0.026	**
	(0.436)		(0.012)	
Earnings per Share Dummy	-0.127		0.053	***
	(0.134)		(0.004)	
Firm Dummies	yes		yes	
Instrument Relevance (EScore)	56.728	***	56.728	***
Instrument Relevance (SScore)	224.910	***	224.910	***
Instrument Relevance (GScore)	66.327	***	66.327	***

Note: All specifications include a constant term and are based on 2,681 observations. Standard-errors in parenthesis. *** denotes p-value <0.01, ** denote p-value <0.05, and * denote p-values < 0.10

As for the three individual components of ESG, our findings clearly point out that, for 1-year time lag, the Corporate Governance score is negatively related with firm value. However, we can conclude that there is no significant relationship between the other two components (environmental and social scores) for both lag periods.

5. Conclusion

In recent years, a considerable number of studies have been conducted to investigate the relationship between CSR and FP, in which the majority of them have discovered that the two traits are inextricably linked. Individual and institutional investors throughout the world seek attractive financial returns while also making a beneficial contribution to communities and the environment.

This study investigates this relationship, with 1-year and 2-year time periods, and aims to add new valuable findings to the field, especially in the European setting. As so, companies from the STOXX's Europe 600 Index were chosen, both active and not active firms. Financial performance was computed by using accounting-based (ROA) and market-based (Tobin's Q) measures and we used ESG scores as a measure of CSR, resulting in a sample of 355 firms from a 10-year period (2010-2020), giving a total of 2,681 observations.

In order to enrich this thesis, three different methods were employed. First, all the regression equations were examined by using an OLS regression analysis, as in most of the previous studies mentioned. Contrary to the study made by Nelling & Webb (2009), this research concludes that when we apply a FE approach, the results for the overall ESG score do not change anything concerning Tobin's Q (as it continues to have a small but positive statistically impact). As for ROA, for 1-year time lag, introducing firm fixed-effects didn't change the results as well. For the 2-year lag, the coefficients changed substantially, since this ROA switched from having a statistical negative correlation with CSR performance, to an insignificant one. Regarding the ESG individual components, moving from an OLS to a FE approach strengthened the results for the 2-year lag as most of the coefficients went from an insignificant, to a significant relationship with FP. For 1-year lag, Environmental performance

remains with a negative significant relationship with FP, Social performance with a positive significant link, and Governance score shows no impact at all with the dependent variables.

To check for the robustness of this analysis, a 2SLS regression was conducted, introducing IVs to the model. As opposed to Velte's (2017) findings, this study concludes that, for both lagged periods, the overall CSR performance has a positive impact on firm value (Tobin's Q), meaning that firms that place a strong emphasis on social responsibility values accomplish higher firm value. However, the coefficients from this method show no impact on the ROA for firms of European countries. As for the individual components of ESG, the results came out completely different and inconsistent with the previous methods. When implementing the 2SLS regression model, none of the individual pillars has a significant impact on FP, for both market and accounting-based performance, with the exception of the Corporate Governance performance. For the 1-year lag period, this variable exhibited a negative relationship with ROA.

Although the results from the three regression models came out marginally different, for the overall ESG score, they follow the same direction in the sense that Tobin's Q continues to be significant and positively related with CSR performance, and ROA confirms to have no significant relationship with our independent variable. For the Environmental, Social and the Governance scores separately, the results went from being statistically significant with the OLS and FE methods, to statistically insignificant when applying the 2SLS approach (with the exception of the Governance score at 1-year time lag).

Since we are working with lagged variables, it was decided to include as the final results, the analysis from the 2SLS. In the presence of unobserved heterogeneity, OLS ignores the data's panel structure and gives biased coefficient estimate for the lagged dependent variables (Bond, 2002). As for the FE approach, when it comes to exogenous variables, this method is frequently the

most accurate, but it is also not particularly accurate when we use lagged dependent variable (Flannery & Watson, 2013). As so, this study concludes that firms that engage in CSR activities have better FP, when assessed by Tobin's Q, but are unaffected to firm's profitability (ROA). Further analysis points out that, compared to Environmental and Social performance for one-year lag, Governance performance has the strongest influence and impact of FP.

This research contributes to the existing literature on the link between CSR and a firm's FP. From an academic standpoint, this study adds to the literature in the following ways: in comparison to previous studies, a more extensive time series of CSR data was made, examining not only the overall ESG score but also its individual components. The application of proper and different statistical methodologies helped providing more insights into this relationship, and a longer lag time period of the apra variables was also incorporated, in addition to the basic 1-year lag. From a business aspect, it emphasizes the importance and relevance of integrating CSR to make companies sustainable, not only socially and environmentally, but also financially. It is important to highlight, though, that these findings do not prove the direction of the relationship between CSR and FP, but they support that CSR (even with a small positive or no relationship at all with FP) needs to be taken into account and is beneficial for stakeholders. To improve long-term financial success through CSR activities, not only shareholder power with excellent corporate governance is needed and should be considered, but also their influence with the willingness to put the company's best interests (environmental, social, governmental, and economic ones) ahead of its own.

Much needs to be discovered regarding the link between CSP and FP. For example, it would be interesting to see if this relationship holds consistently over a longer time frame, examining delays other than the one-year and two-year time period, as employed in the current study. Another limitation in this research is

that CSR is a much broader term that covers a wide range of issues. As so, other independent variables could be introduced to better identify how companies perform in terms of CSR. Moreover, future research can complement this analysis by investigating this relationship between firms that already have a high ESG score and firms that have a worst CSR performance. As we are working with a combination fixed effects and lagged variables, this analysis could also be conducted using other econometric techniques, such as the generalized method of moment (GMM), long differencing (LD) or the least squares dummy variable correction (LSDVC).

References

Ahmad, N., Mobarek, A., & Roni, N. N. (2021). Revisiting the impact of ESG on financial performance of FTSE350 UK firms: Static and dynamic panel data analysis. *Cogent Business and Management*, *8*(1). https://doi.org/10.1080/23311975.2021.1900500

Ahmed, M., Zehou, S., Raza, S. A., Qureshi, M. A., & Yousufi, S. Q. (2020). Impact of CSR and environmental triggers on employee green behavior: The mediating effect of employee well-being. *Corporate Social Responsibility and Environmental Management*, *27*(5), 2225–2239. https://doi.org/10.1002/csr.1960

Albinger, H. S., & Freeman, S. J. (2000). *Corporate Social Performance and Attractiveness as an Employer to Different Job Seeking Populations*.

Barnett, M. L., & Barnett, M. L. (2007). *Social Responsibility Published by : Academy of Management STAKEHOLDER INFLUENCE CAPACITY AND THE VARIABILITY OF FINANCIAL RETURNS TO CORPORATE SOCIAL RESPONSIBILITY*. *32*(3), 794–816.

Bond, S. R. (2002). *Dynamic panel data models : a guide to micro data methods and practice*. *February*, 141–162.

Boubakri, N., El, S., Wang, H., Guedhami, O., & Kwok, C. C. Y. (2016). Cross-listing and corporate social responsibility. *Journal of Corporate Finance*, *41*, 123–138. https://doi.org/10.1016/j.jcorpfin.2016.08.008

Buchanan, B., Xuying, C., & Chen, C. (2018). Corporate social responsibility , fi rm value , and in fl uential institutional ownership. *Journal of Corporate Finance*, *52*(July), 73–95. https://doi.org/10.1016/j.jcorpfin.2018.07.004

Carroll, A. B. (2008). A History of Corporate Social Responsibility: Concepts and Practices. *The Oxford Handbook of Corporate Social Responsibility*, *February*, 1–20. https://doi.org/10.1093/oxfordhb/9780199211593.003.0002

Cheng, B., Ioannou, I., & Serafeim, G. (2014). *CORPORATE SOCIAL RESPONSIBILITY AND ACCESS TO FINANCE*. *23*(May 2011), 1–23. https://doi.org/10.1002/smj

Cho, S. J., Chung, C. Y., & Young, J. (2019). *Study on the Relationship between CSR and Financial Performance*. 1–26. https://doi.org/10.3390/su11020343

D'Orville, H., H. Kent Baker, Nofsinger, J. R., Yoshimori, M., Yu, M., Zhao, R., Liang, H., Renneboog, L., Bayar, S., Ogunmokun, G., Tripolitano, D., Rose, J., Donaldson, T., Preston, L. E., Yoshimori, M., Haigh, M., Hazelton, J., Bollen, N. P. B., Lewis, A., … Cai, Q. (2007). The Economic Virtues of SRI and CSR The Economic Virtues of SRI and CSR. In *Journal of Financial Economics* (Vol. 14, Issue 2). https://doi.org/10.1016/j.procs.2019.12.045%0Ahttps://doi.org/10.1016/j.jfineco.2020.11.001%0Ahttps://scholarship.law.wm.edu/cgi/viewcontent.cgi?arti

cle=1794&context=wmelpr%0Ahttp://www.jstor.org/stable/258191.%0Ahttp://hupress.harvard.edu/catalog/JENTHF

Dalmoro, M. (2021). *Antecedents and consequences of corporate social responsibility : a*. *1972*. https://doi.org/10.1108/JSOCM-08-2020-0157

Dierickx, I., & Cool, K. (1989). Asset Stock Accumulation and Sustainability of Competitive Advantage. *Management*, *35*(12), 1504–1511.

Dowell, G., Hart, S., & Yeung, B. (2000). Do Corporate Global Environmental Standards Create or Destroy Market Value? In *Source: Management Science* (Vol. 46, Issue 8). https://about.jstor.org/terms

Edmans, A. (2012). The link between job satisfaction and firm value, with implications for corporate social responsibility. *Academy of Management Perspectives*, *26*(4), 1–19. https://doi.org/10.5465/amp.2012.0046

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

Farcane, N., & Bureana, E. (2015). "History Of 'corporate Social Responsibility' Concept ". *Annales Universitatis Apulensis Series Oeconomica*, *2*(17), 31–48. https://doi.org/10.29302/oeconomica.2015.17.2.3

Fatemi, A., Fooladi, I., & Tehranian, H. (2015). Valuation effects of corporate social responsibility q. *JOURNAL OF BANKING FINANCE*, *59*, 182–192. https://doi.org/10.1016/j.jbankfin.2015.04.028

Fernandes, P. (2019). *The impact of Corporate Social Responsibility on the performance of European firms*.

Flammer, C. (2015). Does corporate social responsibility lead to superior financial performance? A regression discontinuity approach. *Management Science*, *61*(11), 2549–2568. https://doi.org/10.1287/mnsc.2014.2038

Flannery, M. J., & Watson, K. (2013). Estimating dynamic panel models in corporate fi nance. *Journal of Corporate Finance*, *19*, 1–19. https://doi.org/10.1016/j.jcorpfin.2012.09.004

Friedman, M. (1970). *A Friedman doctrine-- The Social Responsibility Of Business Is to Increase Its*. *1*, 1–11.

Gillan, S. L., Koch, A., & Starks, L. T. (2021). Firms and social responsibility: A review of ESG and CSR research in corporate finance. *Journal of Corporate Finance*, *66*. https://doi.org/10.1016/j.jcorpfin.2021.101889

Greening, D. W., & Turban, D. B. (2000). *Corporate Social Performance as a Competitive Advantage in Attracting a Quality Workforce*.

Hull, C. E., & Covin, J. G. (2010). *Learning Capability, Technological Parity, and Innovation Mode Use*. 97–114.

Impact, K. (2020). *The time has come*. *December*, 0–62.

Landi, G., & Sciarelli, M. (2019). Towards a more ethical market: the impact of ESG rating on corporate financial performance. *Social Responsibility Journal*, *15*(1), 11–27. https://doi.org/10.1108/SRJ-11-2017-0254

Lioui, A., & Sharma, Z. (2012). Environmental corporate social responsibility and fi nancial performance : Disentangling direct and indirect effects. *Ecological Economics*, *78*, 100–111. https://doi.org/10.1016/j.ecolecon.2012.04.004

Nazir, O., & Islam, J. U. (2020). Effect of CSR activities on meaningfulness, compassion, and employee engagement: A sense-making theoretical approach. *International Journal of Hospitality Management*, *90*. https://doi.org/10.1016/j.ijhm.2020.102630

Nelling, E., & Webb, E. (2009). Corporate social responsibility and financial performance: The "virtuous circle" revisited. *Review of Quantitative Finance and Accounting*, *32*(2), 197–209. https://doi.org/10.1007/s11156-008-0090-y

Nollet, J., Filis, G., & Mitrokostas, E. (2016). Corporate social responsibility and fi nancial performance : A non-linear and disaggregated approach. *Economic Modelling*, *52*, 400–407. https://doi.org/10.1016/j.econmod.2015.09.019

Peters, R., & Mullen, M. R. (2009). Some Evidence of the Cumulative Effects of Corporate Social Responsibility on Financial Performance. *The Journal of Global Business Issues*, *3*(1), 1–15. http://search.ebscohost.com.vortex3.uco.edu:2050/login.aspx?direct=true&db=bth&AN=36917631

Rivera, J. M., & Moneva, J. M. (2017). *Revisiting the Relationship Between Corporate Stakeholder Commitment and Social and Financial Performance*. *494*(January), 482–494. https://doi.org/10.1002/sd.1664

Shirasu, Y., & Kawakita, H. (2020). Long-term financial performance of corporate social responsibility. *Global Finance Journal*, *50*(November 2019), 100532. https://doi.org/10.1016/j.gfj.2020.100532

Singh, K., & Misra, M. (2021). Linking Corporate Social Responsibility (CSR) and Organizational Performance: the moderating effect of corporate reputation. *European Research on Management and Business Economics*, *27*(1). https://doi.org/10.1016/j.iedeen.2020.100139

Tang, Z., & Rothenberg, S. (2012). *How Corporate Social Responsibility Engagement Strategy Moderates the CSR – Financial Zhi Tang , Clyde Eiríkur Hull and Sandra Rothenberg*. *November*. https://doi.org/10.1111/j.1467-6486.2012.01068.x

Thomas, W. J., & Grimes, R. (2020). Environmental, social and governance scores from Refinitiv. *Refinitiv*, *February*. https://doi.org/10.5040/9781526509536.chapter-012

Velte, P. (2017). *Does ESG performance have an impact on fi nancial performance ? Evidence from Germany*. *80*(2), 169–178. https://doi.org/10.1108/JGR-11-2016-0029

Waddock, S. A., & Graves, S. B. (1997). The corporate social performance-financial performance link. *International Journal of Contemporary Hospitality Management*, *30*(7), 2586–2602. https://doi.org/10.1108/IJCHM-04-2017-0195

Wiener, Y. (1982). Commitment in Organizations: A Normative View. *Academy of Management Review*, *7*(3), 418–428. https://doi.org/10.5465/amr.1982.4285349

Appendix

Table 8- List of Variables

Variables	Abbreviation	Description
Tobin's Q	Tobin's Q	Tobin's Q
Return on Assets	ROA	Ratio of Net Income per Total Assets
ESG Score	ESGscore	Total ESG score, for each firm *i* at time *t*
Environmental Score	EScore	Individual ESG score: Environmental score, for each firm i at time t
Social Score	SScore	Individual ESG score: Social score, for each firm i at time t
Governance Score	GScore	Individual ESG score: Governance score, for each firm i at time t
Size	SIZE	Size, as the logarithm of total assets, for each firm *i* at time *t*
R&D to Sales Ratio	R&D	R&D expenditures divided by sales, for each firm i at time t
Leverage	LEV	Debt-to-Equity ratio, for each firm i at time t
Cash Flow from Operating Activities	CF	Cash flow from Operating Activities divided by total assets, for each firm i at time t
Firm Risk	RISK	Ratio of total debt per total assets, as the systematic risk, for each firm i at time t
Dummy Earnings per Share	dummyEPS	Dummy variable that measures profitability, for each firm i at time t
ε		The error term

Note: List of variables. This table presents all the dependent, independent and control variables used in this thesis

Table 9- Summary Statistics 2-year lag

Variables	Mean	Median	Std. Dev.	Min	Max
Tobin's Q	1.273	0.895	1.259	0.000	12.947
ROA	0.055	0.049	0.076	-0.490	0.710
ESG Score	62.687	64.840	17.849	2.650	94.520
Environmental Score	62.835	65.805	22.651	0.051	98.760
Social Score	66.276	70.420	20.936	2.770	98.470
Governance Score	56.840	59.000	21.911	4.170	98.640

Cash flow from Operating Activities	0.105	0.097	0.710	-0.415	0.612
Leverage	0.467	0.248	0.729	0.001	11.985
Size (log)	15.970	15.785	1.494	11.083	19.979
R&D Ratio	4.372	1.890	24.212	0.000	1014.92
Risk	0.269	0.244	0.173	0.001	3.351
Earnings per Share (Dummy)	0.628	1.000	0.483	0.000	1.000

Note: The statistics presented are computed across 2,306 observations from 2010 to 2020.

Table 10- Estimation Results OLS 2-year lag (Total ESG score)

	OLS			
Variables	**Tobin's Q (1)**	**Tobin's Q (2)**	**ROA (3)**	**ROA (4)**
ESG Score	-0.011 ***	0.005 ***	-0.001 ***	0.001
	(0.001)	(0.001)	(0.000)	(0.000)
Cashflow from Operating		10.446 ***		0.685 ***
Activities		(0.623)		(0.030)
Leverage		-0.173 ***		-0.003
		(0.037)		(0.006)
Size		-0.237 ***		-0.003 **
		(0.017)		(0.002)
R&D Ratio		0.004 ***		-0.001 ***
		(0.001)		(0.000)
Risk		-2.105		-0.027 *
		(0.182)		(0.014)
Earnings per		-0.009		0.037 ***
Share Dummy		(0.038)		(0.003)
Firm fixed-effects	no	no	no	no
R-squared	2.540	54.340	0.540	59. 510
Overall F-test	63.580 ***	142.020 ***	12.690 ***	376.570 ***

Note: All specifications include a constant term and are based on 2,306 observations. Standard-errors in parenthesis. *** denotes p-value <0.01, ** denote p-value <0.05, and * denote p-values < 0.10.

Table 11- Estimation Results OLS 2-year lag (Individual ESG score)

	OLS			
Variables	**Tobin's Q (5)**	**Tobin's Q (6)**	**ROA (7)**	**ROA (8)**
Environmental Score	-0.016 ***	-0.003 ***	-0.001 ***	-0.001 **
	(0.001)	(0.001)	(0.000)	(0.000)
Social Score	0.009 ***	0.008 ***	0.001 ***	0.001 **
	(0.002)	(0.001)	(0.000)	(0.000)
Governance Score	-0.004 ***	0.001	-0.001 ***	-0.001
	(0.001)	(0.001)	(0.000)	(0.001)
Cashflow from operating activities		10.336 ***		0.682 ***
		(0.607)		(0.030)
Leverage		-0.168 ***		-0.003
		(0.036)		(0.006)
Size		-0.228 ***		-0.003 *
		(0.017)		(0.002)
R&D Ratio		0.008 ***		-0.001 ***
		(0.003)		(0.000)
Risk		-0.218		-0.027 *
		(0.183)		(0.015)
Earnings per Share Dummy		0.003		0.037 ***
		(0.038)		(0.003)
Firm fixed-effects	no	no	no	no
R-squared	6.240	54.90	2.280	59.640
Overall F-test	49.320 ***	125.430 ***	17.890 ***	311.920 ***

Note: All specifications include a constant term and are based on 2,306 observations. Standard-errors in parenthesis. *** denotes p-value <0.01, ** denote p-value <0.05, and * denote p-values < 0.10.

Table 12- Estimation Results Fixed-Effects 2-year lag (Total ESG score)

Fixed-Effects				
Variables	**Tobin's Q (9)**		**ROA (10)**	
ESG Score	0.006	***	-0.001	
	(0.001)		(0.000)	
Cashflow from Operating Activities	4.367	***	0.499	***
	(0.349)		(0.031)	
Leverage	-0.171	***	0.001	
	(0.023)		(0.002)	
Size	-0.013		-0.032	***
	(0.044)		(0.004)	
R&D Ratio	-0.015	**	-0.002	***
	(0.044)		(0.001)	
Risk	0.689	***	-0.023	***
	(0.096)		(0.008)	
Earnings per Share Dummy	-0.025		0.050	***
	(0.032)		(0.003)	
Firm Dummies	yes		yes	
R-squared	88.970		72.850	
Overall F-test	47.760	***	19.660	***

Note: All specifications include a constant term and are based on 2,306 observations. Standard-errors in parenthesis. *** denotes p-value <0.01, ** denote p-value <0.05, and * denote p-values < 0.10.

Table 13- Estimation Results Fixed-Effects 2-year lag (Individual ESG score)

Fixed-Effects				
Variables	**Tobin's Q (11)**		**ROA (12)**	
Environmental Score	-0.003	**	-0.001	***
	(0.001)		(0.000)	
Social Score	0.008	***	0.001	***
	(0.001)		(0.000)	
Governance Score	-0.001		-0.001	
	(0.001)		(0.000)	
Cashflow from Operating Activities	4.358	***	0.499	***
	(0.346)		(0.030)	
Leverage	-0.170	***	0.002	
	(0.022)		(0.002)	

Size	-0.038		-0.032	***
	(0.044)		(0.004)	
R&D Ratio	-0.016	**	-0.002	***
	(0.007)		(0.001)	
Risk	0.704	***	-0.022	***
	(0.096)		(0.008)	
Earnings per Share Dummy	-0.032		0.050	***
	(0.032)		(0.030)	
Firm Dummies	yes		yes	
R-squared	89.140		77.130	
Overall F-test	48.270	***	19.830	***

Note: All specifications include a constant term and are based on 2,306 observations. Standard-errors in parenthesis. *** denotes p-value <0.01, ** denote p-value <0.05, and * denote p-values < 0.10.

Table 14- Estimation Results 2SLS Total ESG score 2-year lag (Total ESG score)

	2SLS			
Variables	**Tobin's Q (13**		**ROA (14)**	
ESG Score	0.023	***	0.001	
	(0.003)		(0.000)	
Cashflow from Operating Activities	4.274	***	0.497	***
	(0.620)		(0.049)	
Leverage	-0.168	***	0.002	
	(0.031)		(0.005)	
Size	-0.197	***	-0.036	***
	(0.57)		(0.0048)	
R&D Ratio	-0.021	***	-0.002	
	(0.016)		(0.001)	
Risk	0.538	***	-0.027	
	(0.251)		(0.021)	
Earnings per Share Dummy	-0.017		0.051	***
	(0.029)		(0.004)	
Firm Dummies	yes		yes	
Instrument Relevance	370.456	***	507.232	****

Note: All specifications include a constant term and are based on 2,306 observations. Standard-errors in parenthesis. *** denotes p-value <0.01, ** denote p-value <0.05, and * denote p-values < 0.10.

Table 15- Estimation Results 2SLS Total ESG score 2-year lag (Individual ESG score)

2SLS				
Variables	**Tobin's Q (15)**		**ROA (16)**	
Environmental Score	0.321		0.001	
	(0.197)		(0.003)	
Social Score	-0.110		0.001	
	(0.073)		(0.001)	
Governance Score	-0.048		-0.001	
	(0.058)		(0.001)	
Cashflow from Operating Activities	2.733		0.487	***
	(2.493)		(0.052)	
Leverage	-0.387	*	-0.001	
	(0.201)		(0.005)	
Size	-0.833	*	-0.039	***
	(0.510)		(0.010)	
R&D Ratio	0.021		-0.002	***
	(0.044)		(0.002)	
Risk	0.008		-0.024	
	(0.854)		(0.023)	
Earnings per Share Dummy	-0.177		0.051	***
	(0.197)		(0.005)	
Firm Dummies	yes		yes	
Instrument Relevance (EScore)	39.834	***	39.834	***
Instrument Relevance (SScore)	157.575	***	157.575	***
Instrument Relevance (GScore)	27.023	***	27.023	***

Note: All specifications include a constant term and are based on 2,306 observations. Standard-errors in parenthesis. *** denotes p-value <0.01, ** denote p-value <0.05, and * denote p-values < 0.10.