LUT University

HOW DO RESPONSIBLE ACTIVITIES AFFECT THE FINANCIAL PERFORMANCE OF NORDIC COMPANIES AND VICE VERSA?

This research studies the possible bi-directional link between Corporate Social Responsibility (CSR) and Corporate Financial Performance (CFP) in the most prominent Nordic companies using panel data regressions. CSR and its effect on CFP have become a more popular theme to study, but the results still lack concrete evidence on how strong the relationship is and how each component inside the CSR and CFP affects each other. As the world is facing one of the biggest crises in its history, climate change, studying CSR and especially the environmental part, is more critical now than ever. While several studies have been created regarding the nexus, the academic world is yet to analyze the possible bi-directional link in a more niche context like the Nordic countries.

The study uses Environmental, Social and Governance -scores (ESG-scores) as a measure of CSR and uses three factors to value the CFP of a company; Return on Assets (ROA), Price-to-Book (P/B) and Earnings per share (EPS). The timeline for the study is from 2007 to the end of 2020. In order to study the possible two-way relationship, the CFP variables are being used as dependent variables explained by the CSR variables, and the CSR variables are used as dependent variables explained by the CFP variables. All values are collected from Refinitiv Eikon's database, and the calculations are done in R-studio.

According to the study results, the relationship between CSR and CFP is not complete. However, there are significant and positive links between the individual variables used. The study finds a positive and significant relationship between EPS and the Social -pillar and between EPS and the Governance -pillar. There are also many significant and positive links when the CFP -variables are used as dependent variables: the Environmental -pillar has a positive effect on all CFP -variables, ROA, P/B and EPS. The Social -pillar has a positive effect on the ROA and the EPS of a Nordic company. The results indicate that there is a positive and significant two-way link between EPS and the Social -pillar. The study results suggest that a Nordic company should invest in environmentally friendly projects and in investments that increase their social scoring.

TIIVISTELMÄ

Kuinka vastuullisuus vaikuttaa pohjoismaisten yritysten taloudelliseen suorituskykyyn ja päinvastoin?

Tämä tutkimus tutkii mahdollista kaksisuuntaista suhdetta yrityksen sosiaalisen vastuullisuuden (CSR) ja taloudellisen suorituskyvyn (CFP) välillä pohjoismaiden merkittävimmissä yrityksissä paneelidataregressioita käyttäen. CSR:n ja CFP:n välisen yhteyden tutkiminen on yleistynyt, mutta tulokset yhteyden vahvuudesta tai sen suunnasta ovat vielä epävarmoja. Maailma on kohtaamassa yhden sen historian suurimmista kriiseistä: ilmastonmuutoksen, minkä takia yrityksen vastuullisuuden tutkiminen erityisesti ympäristöystävällisyyden osalta, on tärkeämpää kuin koskaan. Vaikka useat tutkijat ovat tutkineet kyseistä yhteyttä, ei tutkimuksissa ole vielä keskitytty pienempien markkinoiden, kuten pohjoismaiden, yrityksiin. Tutkielmassa käytetään ESG-pisteytystä ja sen pilareita (ympäristö, sosiaalinen vastuu ja hyvät hallintotavat) mittaamaan yrityksen vastuullisuutta. Yrityksen suorituskyvyn mittareina käytetään kokonaispääoman tuottoprosenttia, P/B-lukua sekä osakekohtaista tulosta. Jotta kaksisuuntaista suhdetta voidaan tutkia, käytetään tässä tutkimuksessa sekä vastuullisuuden että yrityksen suorituskyvyn mittareita niin riippuvina kuin riippumattomina muuttujina. Käytetyt arvot niin suorituskyvyn kuin vastuullisuuden kannalta on kerätty Refinitiv Eikon -tietokannasta ja laskelmat on suoritettu R-studiossa. Tutkimuksen tuloksien mukaan vastuullisuuden ja suorituskyvyn välillä ei ole täydellistä yhteyttä, mutta yksittäisten faktoreiden välillä on useita tilastollisesti merkitseviä ja positiivisia suhteita. Tutkimus löytää positiivisen ja merkitsevän yhteyden osakekohtaisen tuoton ja sosiaalisen vastuun välillä, sekä osakekohtaisen tuoton ja hyvien hallintotapojen välillä kun ESG-pisteytystä ja sen pilareita käytetään selittävinä muuttujina. Myös suorituskyvyn mittareiden ja vastuullisuuden välillä löydetään positiivisia yhteyksiä: ympäristö-pilarilla on positiivinen vaikutus jokaiseen suorituskyvyn mittariin ja sosiaali-pilari vaikuttaa tulosten mukaan positiivisesti niin kokonaispääoman tuottoprosenttiin kuin osakekohtaiseen tuottoon. Tulokset indikoivat myös kahdensuuntaisesta yhteydestä sosiaali-pilarin ja osakekohtaisen tuoton välillä. Tuloksien mukaan pohjoismaisen yrityksen kannattaa investoida niin ympäristöystävällisyyden kuin sosiaalisen vastuun kehittämiseen.

ACKNOWLEDGEMENTS

Abbreviations

BLUE   Best Linear Unbiased Estimator

CSR   Corporate Social Responsibility

CSP   Corporate Social Performance

CFP   Corporate Financial Performance

EPS   Earnings Per Share

ESG   Environmental, Social, Governance -scoring

LSDV   Least Squares Dummy Variable

OLS   Ordinary Least Squares

P/B   Price-to-book -ratio

ROA   Return on Assets

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1. INTRODUCTION

Responsible investing, Corporate Social Responsibility (CSR), and Environmental, Social, and Governance -factors, referred to as ESG, are gaining more and more attention among investors and academics. CSR has been a topic of several studies ever since 1970. Still, as the world is facing one of its biggest crises ever with global warming, and as ethical questions such as diversity, gender equality in pay, and child labor, are becoming standard ground rules for investors, the topic can be said to be more popular now than it has ever been. This means that investors are increasingly expecting the companies to take social responsibilities into account. Understandably, the academic world has started to research the nexus between CSR and Corporate Financial Performance (CFP) more to find if choices to invest in the aforementioned examples are cost-effective or not.

The rapid growth of published studies since 2012 can be seen in Figure 1. The search results are the number of publications found on Google Scholar by searching with the following search: "CSR" or "ESG" and "CFP" or "Corporate financial performance." This search gives us all publications of studies with either CSR or ESG and CFP or Corporate Financial Performance in their title. From Figure 1, the rapidly growing trend in the publications can be seen, as the amount has increased from 54 publications in 2012 to 325 released papers in 2021. The growth had accelerated roughly since 2015, when the Paris Agreement was published. According to the United Nations (2022)

"*The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 196 Parties at COP 21 in Paris, on 12 December 2015 and entered into force on 4 November 2016.*"

The agreement aims to limit global warming to under 2 Celsius, preferably to just 1,5 Celsius. The purpose of the agreement can be achieved by reducing greenhouse gas emissions. The Paris Agreement can boost companies' morale by making sustainable innovations as governments are financing those kinds of innovations to meet the agreement's goals. It would mean that increasing the Environmental score would also be more profitable for the companies.
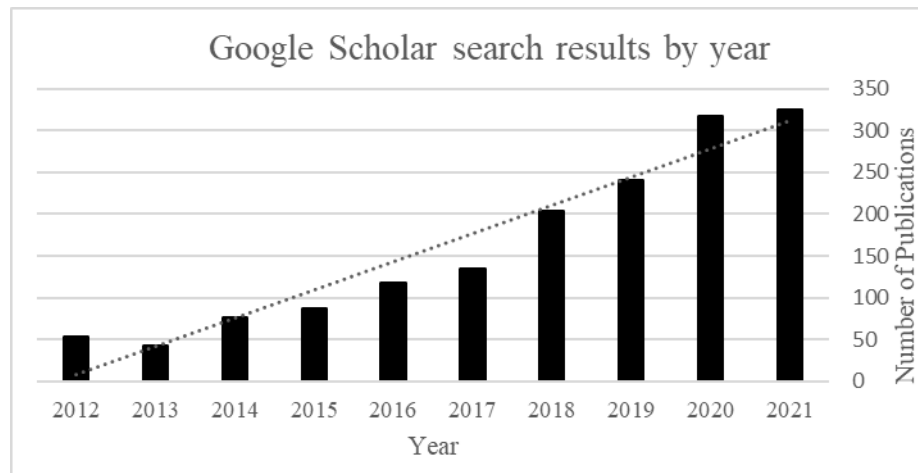
Figure 1 Google Scholar search results for nexus between Corporate Social Responsibility and Corporate Financial Performance from 2012 to 2021

As shown in Figure 1, several studies have been published regarding the nexus of CSR and CFP during the timeline, with the number of publications growing annually. Even before 'ESG' was a well-established term, the relation has been studied. While ESG is being studied a lot, it is good to understand the relationship between CSR and ESG, as often they have a connection in the literature. Corporate Social Responsibility is repeatedly measured with the ESG-metrics. While there are plenty of definitions regarding CSR, one commonly accepted definition of it is

"*Social responsibility of business encompasses the economic, legal, ethical, and discretionary expectations that society has of organizations at a given point in time*" *(Carroll, A. B., 1979).*

Not only the academic world has been interested in the ESG and CSR topics. According to a report "Global Sustainable Investment Review," published by The Global Sustainable Investment Alliance (GSIA) in 2020, global sustainable investments in five major markets: Europe, United States, Canada, Australasia (Combined markets of Australia and Asian countries, excluding Japan) and Japan have had a 55% increase between the years 2016 and 2020. All the markets have had a growth in sustainable investment assets, except for Europe. Europe's growth between the years 2018 and 2020 has decreased by 13 percent. According to the same report, the decrease in the European markets can be explained by significant changes in the way sustainable investments are defined in the EU, meaning that the absolute increase can also be expected to have happened in the European markets as well. In a survey

published in 2011, Klynveld Peat Marwick Goerdeler (KPMG) states that companies around the globe have been showing interest in corporate social responsibilities with a growing matter since the beginning of 2000.

The majority of previous studies in the academic world have been on the CSR and CFP nexus, where the CSR has been measured by one corporate social performance -metric, such as ESG. However, studies regarding each individual ESG-pillar and their effect on the valuation of a company and its financial performance are far rarer. It is expected that there is a difference between each pillar and how they affect the companies' financial performance. For example, the effect of social policies can affect companies' valuation by itself, not just as a part of the ESG-metrics. Bonnefon et al. (2019) argue that investors are ready to pay 0.7 dollars more for a stock of a firm that donates one dollar per share to charity, while corporations with negative social impact are worth $0.9 less per stock. Margolis and Walsh (2003) created a meta-analysis of 127 studies published between 1972 and 2002 regarding the relationship between CSR and CFP. According to the study, 54 studies found a positive relationship, 7 found negative results, and 66 studies had mixed or insignificant results. The results being as mixed as they are gives us a reason to study the topic further. A more recent meta-analysis was constructed by Whelan, Atz, Van Holt, and Clark (2021), where they studied 1000 pieces of research created between 2015 – 2020 and found primarily positive, yet mixed, results between ESG-metrics and financial performance of stocks when Return on Equity (ROE), Return on Investment (ROI) and stock's performance was studied.

Given that the connection between social engagement and corporate financial performance lacks a concrete empirical basis, it makes the whole CSR vulnerable to critique (Schreck, 2011). That is why more research is needed to support decision-making within the companies.

1.1. The research problem and Research Questions

While the results of previous studies lean towards positive outcomes, they are still mixed, and there are many insignificant results. There are many reasons for the problem in finding nexus between CSR and CFP. One of them is that the CFP has a wide range of metrics, including accounting metrics and market-based metrics (Xie, Nozawa, Yagi, Fujii and Managi, 2018).

Another reason could be that the results differ significantly between different countries. According to several studies, a company's country can be determined as one of the control variables, as the nation's characteristics play a significant role in explaining companies' CSR actions (Liang and Renneboog, 2017; Cai, Pan and Statman, 2016). Most of the studies conducted on the topic are created using data from the United States and Europe. Because the results of previous research have been mixed, more niche market research is needed in academic studies. This study will present research on the most significant companies in the Nordic countries. Companies from the main market indexes of Norway (Oslo20), Sweden (OMX Stockholm 30), Denmark (OMX Copenhagen 20), and Finland (OMX Helsinki 20) are selected for the study. None of these markets from developed countries have been reviewed in the previous studies with the same intensity as Europe as a whole or the United States. We can compare the differences between four highly developed countries that share the same western values with this approach. According to Gjølberg (2010), Nordic countries are known for their cooperative and consensual relations between the government, businesses, and human resources and their tradition of involving society in policymaking. The four countries are also similar because they are relatively small, open market economies that are strongly dependent on foreign trade. They all come on top of several international comparisons of competitiveness (Fellman, 2019).

As the results of thousands of studies are yet to find concrete results, more studies are needed to find out why that is the case. In contrast, there are several studies regarding the nexus of CFP – CSR or CSR – CFP. Most of the studies do not take the bidirectional possibility into account. Some papers have studied the two-way nexus, but not in the context of Nordic countries. A further look at articles examining the possible two-way relationship is taken in chapter 2.4.2. The bidirectional link was proposed by Preston and O'Bannon already in 1997 and later by Scherck et al. in 2011. This brings us to the research question of the study:

Research Question
Is there a bidirectional connection between corporate social performance and corporate financial performance in Nordic companies?

This question can be tested by creating two types of regressions: Ones with corporate social performance -factors (ESG scoring) as dependent variables and corporate financial performance -factors with independent variables and another with the other way around.

By creating the two-way regressions, the study can answer if ESG Combined performance, the Environmental performance, the Social performance, or the Governance performance has a one-way or two-way nexus with corporate financial performance factors, such as Return on Assets, Price-to-book -ratio, or Earnings per Share.

Climate change and global warming have been known phenomena in the scientific community for several decades. For example, according to the Finnish institute for health and welfare (THL) (2022), data from long time series prove that the average temperatures in Finland have increased every time of year. The previously mentioned Paris Agreement is an agreement trying to reduce the effects of climate change. Thus, improving the Environmental scoring should be supported by the governments of each country, meaning that investing in environmentally friendly matters could also improve companies' financial performance.

The sub-questions for the study are:

- *Has the Environmental score had a higher effect on the financial performance factors compared to the other two individual pillars?*

- *Which corporate financial performance -factor has the most substantial relationship with the corporate social performance factors?*

The research questions are based on the negative and positive hypotheses suggested by Preston and O'Bannon (1997), which are presented later in chapter 2.3.5. In recent years, the environmentally active funds have gained more foothold in the financing industry, as climate funds have become more mainstream. The climate funds have had positive performances in the recent years, as can be seen in Table 1:

Table 1 Annual returns by selected climate impact funds

Fund	1-year p.a.	3 years p.a.	5 years p.a.
MSCI World Index	11,55%	23,09%	13,46%
Nordea Climate and Environmental Fund	8,98%	31,06%	18,31%
OP – Climate	27,51%	28,35%	13,47%
Green Benefit Global Impact Fund	-13,48%	65,85%	39,08%

Table 1 shows that all selected climate impact funds have outperformed the MSCI World Index in 5 years timescale. This assumes that companies that invest in environmental activities are outperforming average companies' stock returns. Thus, we can expect that also in the Nordic countries, increasing the E score would positively affect the companies' financial performance.

1.2. Framework for the study

This paper examines the link between corporate social performance and corporate financial performance with a standard empirical study framework. The thesis has six chapters and several sub-chapters. First, the study's research questions are presented, and their reasoning is explained. Second, the study reviews the literature review, which looks at CSR, ESG, and CFP. Then previous literature regarding the CSP – CFP nexus is examined, with the chapter ending on previous reviews and meta-analyses and a closer look at the results of bi-variate findings. After the literature review, the data used in the study is explained. The 3. Data - chapter goes through the calculations behind ESG-scores and reasoning behind the selected

CFP -variables, and then the CFP-variables and the control variables are given a closer look. The data chapter also goes through the descriptions of the data used and the cleaning of outliers. The fourth part, the methodology chapter, explains the basics of panel data, which is the data type used in this study. Then the model selection process for panel data analysis is presented, with the results for each variable shown in the chapter. In chapter 4.3., the regression models are explained in a functional form. Chapter 5 goes through the results of the panel data analysis. The paper finishes with a conclusions and discussion -chapter, where the reasoning behind the results, implications of the study and the research limitations are discussed. The final chapter also suggests ideas for future research.

The model of the study is illustrated in Figure 2:
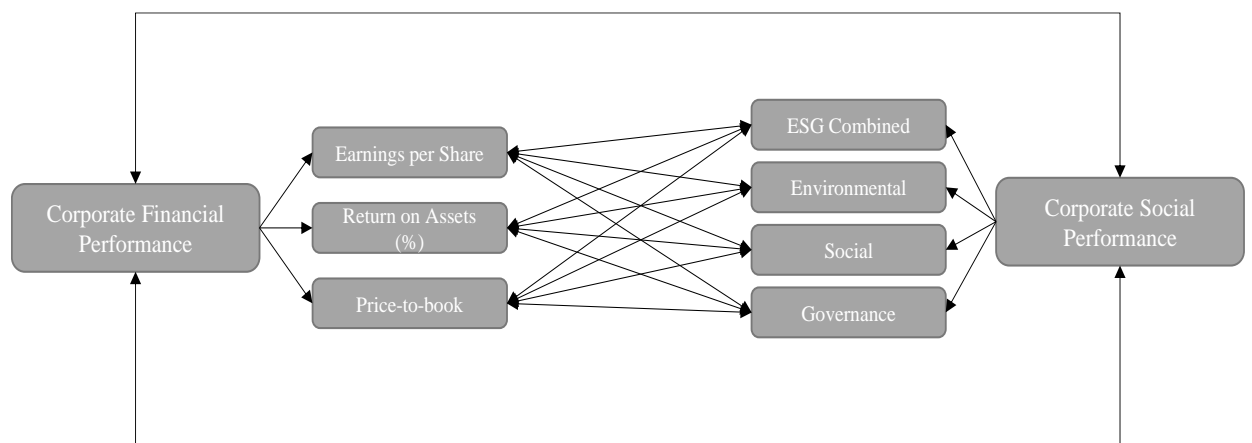
Figure 2 Study's process model

The study aims to find if there is a two-way link between CSP and CFP by using Earnings per Share, Return on Assets, and Price-to-book -factors as indicators for CFP. ESG Combined, Environmental-, Social-, and Governance -pillars are used for indicators of CSP. There are panel data regressions created between all of the individuals. The panel data regressions results lead to the final and complete link between CFP and CSP.

2. LITERATURE REVIEW

In this chapter, the study goes through the best-known definitions of CSR, ESG, CFP, and the nexus between CSR and CFP. In the latter part, previous studies and meta-analyses are looked into.

2.1. Corporate Social Responsibility (CSR)

Since the beginning of usage of the term Corporate Social Responsibility, "CSR," there have been several opinions on what it is and how it should be defined. CSR is frequently associated with sustainable development. The origins of this concept can be traced back to 1987 when the United Nations World Commission on Environment and Development (WCED) published their "Our Common Future" -report. The report is also known as the "Brundtland report" (1987). In the report, the UN commission notes that humanity has the power to make development sustainable, ensuring that it meets current demands without jeopardizing future generations' ability to meet their own. European Commission (2011) defines CSR as "*the responsibility of enterprises for their impacts on society.*" However, the definition is unclear, and some academics think CSR contradicts sustainability rather than the two being equal (see Moon, 2007). Moon (2007) states that CSR is difficult to generalize across companies since they have varying social, environmental, and ethical repercussions for which they may be held liable. For example, a clothing company may have completely different expectations than a company focusing on renewable energy.

The current approach to CSR emphasizes the firm's triple bottom line performance. (Hussain, Rigoni and Orij, 2018). It is commonly acknowledged that the aforementioned WCED's definition incorporates social, environmental, and economic aspects. These three aspects are usually operationalized through a concept created by Elkington (1998), the triple bottom line. The triple bottom line simultaneously evaluates and balances all the three aspects: economic, environmental, and social from a micro-economic standpoint. The triple-bottom-line theory indicates that businesses should not only engage in socially and environmentally responsible activities but also gain financial benefits as a result. (Gimenez, Sierra and Rodon, 2012)

As stated in the introduction, according to Carroll (1979), CSR encompasses the economic, legal, ethical, and discretionary expectations that society has of organizations at a given point in time. In his study, Carroll proposes three critical areas of Corporate Social Performance (CSP) that every company should consider. Firstly, a company's basic notion of social responsibility must address how the company's responsibility extends beyond economic and legal concerns. The second central area proposed by Carroll (1979) is for companies to define the most important social responsibility areas for it. The last and third major area is that a firm should explain how it responds to social responsibility challenges.

According to papers written by Surroca, Tribo and Waddock (2010) and Balabanis, Phillips and Lyall (1998), firms can be seen as socially conscious as a result of their socially responsible investments and so win support from stakeholders. As a result, the main goal of a company's CSR initiatives is to improve its corporate reputation, which leads to increased revenues.

In this study, the CSR value, or corporate social performance (CSP), is determined by the ESG scores of each company. The basics of ESG will be covered in chapter 2.2.

2.2. Environmental, Social, and Governance (ESG)

According to MSCI (2022), Environmental, Social and Governance, abbreviated as 'ESG' and 'ESG-Investing,' is a term that is often used as a synonym for sustainability, (socially) responsible investing, sustainable investing, or mission-related investing. When viewed in a business context, sustainability is about the company's business model, for example, how its products promote sustainable development (Nordea, 2021).

ESG as a whole can be distributed into three categories, or pillars, as illustrated in Figure 3. There is no complete list of ESG examples, and the factors are often intertwined. Classifying an ESG-related issue can be challenging as it may also interlap with other categories. (CFA, 2022)

Environment	Social responsibility	Governance
• Global warming • Circular economy • Carbon risk	• Basic human rights • Human Resources – politics • Safety & Privaty of personal information	• Corruption & Bridery • Aggressive tax planning • Board independence
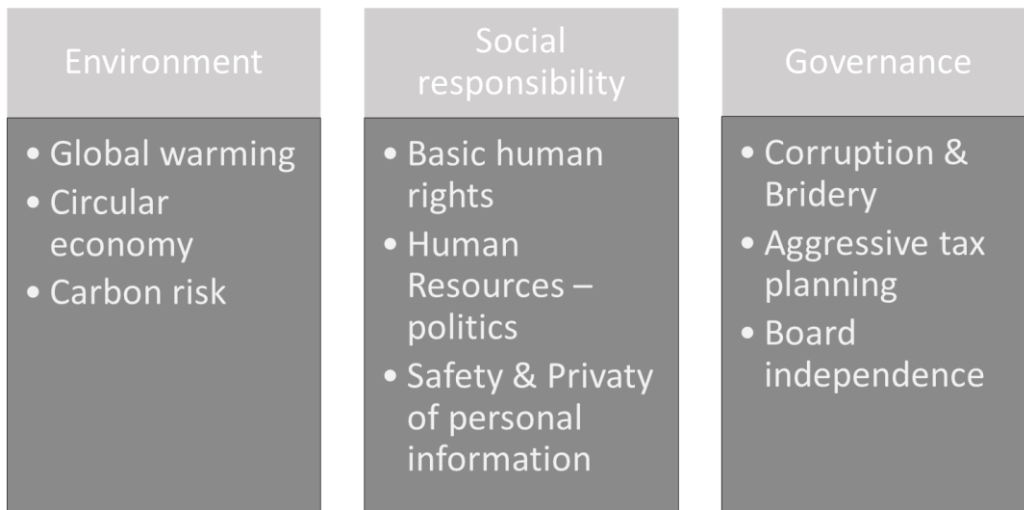
Figure 3 ESG Pillars (based on Finsif, 2019; Nordea, 2022)

While the ESG-factors are often measurable, it can be challenging to estimate their monetary value (CFA, 2022). Investors and academics both use third-party companies who valuate the ESG scores for companies. There are several definitions regarding ESG ratings. In this research, ESG ratings are defined as

"The evaluations of a company based on a comparative assessment of their quality, standard or performance on [ESG] issues" (Petroy and Wong, 2020)

In this study, the ESG scores are achieved from Refinitiv's database. The ESG scores are used to value the corporate social performance to calculate numeric values for it and eventually to see if there is causality between the Corporate Financial Performance and the CSP. According to a survey constructed by Petroy and Wong (2020), in which they interviewed large institutional investors, Thomas Reuters Refinitiv is one of the more popular sources of ESG-score data, and investors prefer it for its raw data. More info on the scores and the calculations beyond them can be read from chapter 3.1.

2.3. Theoretical Corporate Social Responsibility and Financial Performance nexus

As CSP itself started to gain more ground in the academic world, its effect on the CFP needed to be studied. Already in the 1970s, several studies were published regarding the link between the two (Margolis and Walsh, 2003). Later, the number of studies have increased, and studying the nexus is more popular than ever, as represented in the introduction chapter. The number of publications has been steadily growing ever since the 1970s to the year 2021.

As mentioned earlier in the study, the many reasons for the problem of finding nexus between CSP and CFP are that CFP has such a wide range of metrics. For example, accounting-based metrics have been studied by Ferrell, Liang and Renneboog (2016) in a study that used accounting-based metrics to calculate the CSP-CFP nexus. In the same year, 2016, Fatemi, Glaum and Kaiser used marketing-based metrics such as share price and market value as a dependent variables and the effect of companies' ESG scores on these metrics.

Wahba (2007) discussed the possible link between environmental responsibility and market value in an Egyptian context. In the research, Wahba found a significant and positive connection between the firm's Tobin's Q -ratio and companies' environmental responsibility. Similar results regarding the nexus between CSP and CFP were found in several studies, such as Orlitzky, Schmidt, and Rynes (2003) and later by Guenster, Bauer, Derwall, and Koedijk (2011). Orlitzky et al. (2003) imply that while stock market investors decide the firms' value based on their view of the firms' stocks' future and past returns, the accounting-based measures are still giving better information regarding the CFP.

According to previous studies, Schreck (2011) argues that four central principles have evolved from the studies and previous literature on the business case for CSR, as shown in Figure 4.
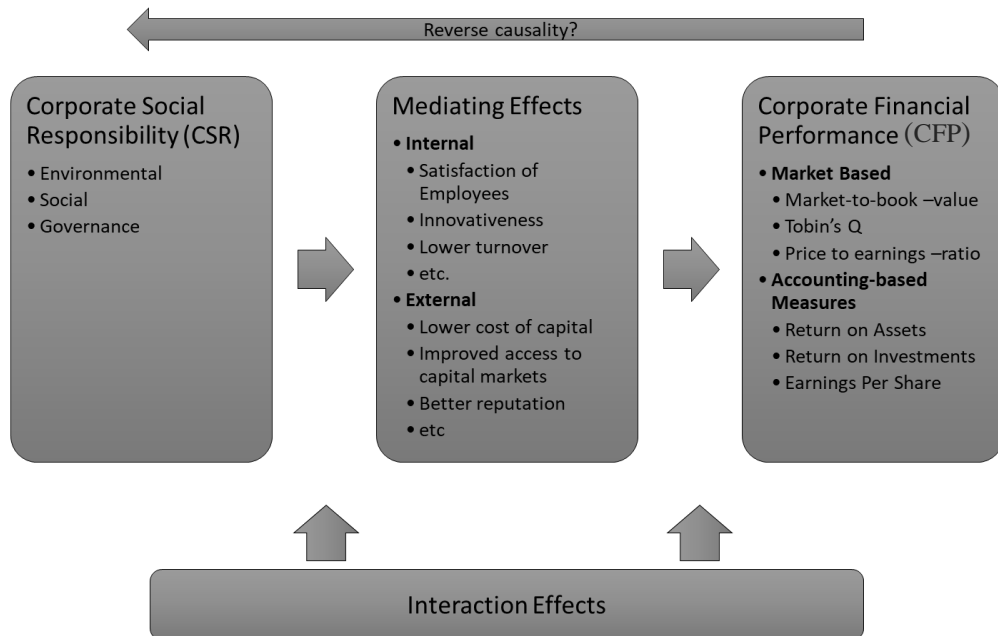
Figure 4 Framework for Nexus between CSR (ESG) and CFP analysis (after Schreck, 2011)

Figure 4 shows the expected relations between CSR, Mediating effects, and CFP. As discussed in chapter 2.2, in this study, CSP is measured with companies' ESG scores, and the data for the ESG scores are gathered from Eikon Refinitiv. When interpreting the results of this study, it is vital to realize that, according to Schreck (2011), there is no reason to expect a direct relationship between CSR and CFP, but rather that CSR affects the mediators, which then affect the CFP. The mediators can be either internal or external, and their goal in the framework is to help understand the reasons why the expected nexus exists. The possible reverse causality in the framework is based on Waddock and Graves (1997, p. 307), where they state that the social performance of a company is not only a predictor but also a consequence of the firm's financial performance. This study is focused on the direct relationship between CSR, calculated with ESG, and CFP.

In 2015 Clark, Feiner, and Viehs published a review that researched previous literature regarding sustainability and financial performance nexus. According to their study, the cost of capital would be lower for companies with high sustainability performance.

In 1997 Preston and O'Bannon (1997) discussed CSP and CFP controversy, where they also questioned if the nexus is straight or if the causality is more mixed. They ask the same question as Schreck asked (2011) two decades later: does the CSP influence CFP, is it the other way around, or is there synergy between the two, where both performances influence each other, as pictured in Figure 5:

Figure 5 CFP-CSR nexus suggested by Preston and O'Bannon (1997)

Preston and O'Bannon (1997) suggest that there are six causal and directional hypotheses to view the relationship: Social impact, Trade-Off, Available Funds, Managerial Opportunism, and Positive or negative synergies. These synergies are supposed to be positive, negative, or neutral. This model has been the theoretical framework used in later studies that aim to find the link between CSR and CFP, for example, Cardebat and Sirven in 2010 and Skare and Golja in 2013. The study goes through the aforementioned hypotheses in a more detailed fashion in the following sub-sections 2.3.1 – 2.3.5.

2.3.1. Social Impact

Makni, Francoeur and Bellavance (2009) argue that the social impact hypothesis is based on a stakeholder theory, which Freeman first introduced in 1984. Stakeholder theory is based on the thought that companies should take all their stakeholders into a discussion in their

processes. Freeman (1984) suggests that meeting the needs of stakeholders would eventually lead to positive CFP. On the other hand, not meeting the needs and not taking the stakeholders into account can negatively affect the financial performance of a company (Preston et al., 1997). There have been studies that implicate that the social impact hypothesis is true: for example, Orlitzky et al. (2003), as well as the meta-analysis constructed by Margolis and Walsh (2003), found 54 percent pointing towards a positive nexus between corporate social impact and corporate financial performance. However, Ullmann (1985) comes to a conclusion that firms would face a trade-off between shareholder and stakeholder interest, implying a negative link between the social responsibility and the company's financial performance.

An excellent real-life example from the near history which implies this hypothesis is true is the scandal of Volkswagen group in 2016, where the United States Environmental Protection Agency gave a legal notice for violation of the Clean Air Act to the German company. The scandal directly affected Volkswagen's market share, brand image, internal and external stakeholders' trust, and supply chain operations. On top of the bad reputation that led to the crash of its market value, the company received around an 18 billion dollars fine and had to recall millions of affected cars to get fixed. (Szumilo, 2017) These punishments and recalls can safely be said to have affected the company's financial performance for several years to come.

2.3.2. Trade-Off

The Trade-Off hypothesis, created by Preston and O'Bannon (1997), expects a reverse correlation between levels of social performance, meaning that a lower level of social performance would lead to higher levels of CFP. According to the trade-off theory, firms expect to make money and focus on wealth maximization, argues Pava and Krausz (1996). The argument is in line with The Friedman's Doctrine, where Friedman (1970) states that companies are not responsible for social responsibility but instead that their shareholders are. By following this theory, firms are not required to pursue social responsibility or environmental protection and may pursue profit maximization in any way they see fit (Behl, Kumari, Makhija and Sharma, 2021).

2.3.3. Available Funds

Available funds, also known as the slack resources hypothesis, expect that the better the financial performance is, the better the social performance should be. (Preston and O'Bannon, 1997) This would make sense as companies with better resources, or higher income should have more resources to focus on innovations and decisions outside of their primary business activities. Organizations with more resources can be expected to have more freedom to spend on anything they regard beneficial to their goal, including socially responsible investments. This hypothesis is also in line with studies (see Xie et al., 2018; Mahoney and Roberts, 2007; Waddock and Graves, 1997; Ullman, 1985), which used the company's size as a control variable for studying the CSR-CFP nexus. This study also employs the company's size as a control variable based on the available fund's assumption.

2.3.4. Managerial opportunism

Corporate executives may pursue their own private goals to the prejudice of shareholders and other stakeholders, as per the managerial opportunism hypothesis (Makni et al., 2009; Williamson, 1985). Preston and O'Bannon (1997) state that managerial opportunism occurs when managers want to "cash in" by reducing CSR-based decisions to improve their own private gains. This problem also goes vice versa when managers may try to compensate for and appear to justify the poor financial performance of the company by participating in social projects. The hypothesis by Preston and O'Bannon (1997) expects those lower levels of CFP to lead to higher levels of CSR and vice versa. This hypothesis is in disagreement with the social impact -hypothesis, which is based on the stakeholder theory, as discussed in chapter 2.3.1.

2.3.5. Positive and Negative Synergies

As discussed previously in chapter 2.3, there is a likelihood that CFP and CSR are synergetic, as shown in Figure 5. Alternatively, at the very least, the time pattern of their interaction, whether positive or negative, cannot be discerned from accessible statistical data. These two hypotheses are included as additional hypotheses: "*There is positive synergy between CFP and CSR*" and "*There is negative synergy between CFP and CSR.*" These hypotheses are originated from the study of Preston and O'Bannon (1997). These are hypotheses that are

also taken into consideration in this study, although they are not being used as direct hypotheses.

The positive synergy can be said to be a connection between the social impact hypothesis and the slack resources hypothesis, as it supposes that favorable CSR would lead to a higher amount of available funds, as per the social impact hypothesis, which then would be reallocated to the different stakeholders, as per the available funds' hypothesis. (Makni et al., 2009)

This hypothesis argues that if the company's market value and financial performance have a statistically significant connection, the bigger the company, the more it should be investing in CSR inventions. This study aims to use company size as one of its control variables, meaning that the positive synergy -hypothesis is considered in this research.

2.4. Previous Studies

As discussed earlier, it is safe to say that even if the majority of previous studies' results have been positive, they are still somewhat mixed. According to Lankoski (2000), previous empirical research on the firm-level relationship between environmental and economic performance has found a range of results, including a positive association, a negative relationship, no relationship, and an inverted U-shaped relationship. Several papers earlier have found a negative connection between ESG and CFP. For example, Brammer, Chris and Stephen (2005) argued that companies' stocks with higher CSP scoring tend to underperform the market, while the lower-scoring stocks would give excess returns in contrast to the markets. In a study created by Benabou and Tirole (2010), they argue that rather than creating value, investing in social performance can be problematic as managers can decide to invest in socially responsible investments in order to look better by themselves, leading to insufficient usage of resources.

López, Garcia and Rodriguez (2007) studied the short-term correlation between CSR and CFP and found out that when a new CSR strategy is introduced and put in use by a company, it affects firms' performance negatively. Nevertheless, they also found that long-term correlation might be positive. Cardebat and Sirven (2010) discussed CSP's effect on CFP by analyzing reports from Corporate Register and measured CFP by the expected return on

capital assets. According to their findings, the nexus between CSR and CFP was found to be negative, the results being significant as well.

There are several studies finding negative, mixed, or insignificant results in the CSR-CFP nexus. However, the closer to the year 2022 we go, the more the studies tend to lean towards a positive relationship. This result can be interpreted from meta-analysis and reviews that have been conducted ever since 1978. A closer look at the reviews and meta-analyses is taken in chapter 2.4.1.

2.4.1. Reviews and meta-analyses

Aldag and Bartol, in 1978, can be said to have conducted the first review of previous studies regarding the CSR-CFP -link when they published their study *'Empirical studies of corporate social performance and policy: A survey of problems and results.'* In their research, Aldag and Bartol (1978) reviewed ten previously published studies and found that according to previous studies, it is unclear whether there is a nexus between CFP and CSR. The uncertain or mixed results found by Aldag and Bartol (1978) were accompanied by a review constructed by Wood and Jones in 1995. Wood and Jones investigated 34 different articles regarding the CSR-CFP nexus, which contained studies on several themes, such as Governance, corporate reputation, community and charity, responsiveness studies, et cetera. They suggest that the link between CSR and CFP is still vague. However, their results indicate that using market metrics with a market-based theory is a fit that establishes a clear CSP-CFP relationship. (Wood and Jones, 1995)

Since the beginning of the 21st century, there have been several reviews or meta-analyses that have investigated previously published articles regarding the CFP-CSR nexus. The majority of the published papers have come to positive conclusions, indicating that later studies have been able to find positive nexus between CSR and CFP more constantly. These studies and their results can be seen in Table 2:

Table 2 Reviews and meta-analysis from previously published studies 2003 – 2021

Creators	Year of the review	Number of studies reviewed	Conclusions on CSR-CFP nexus
Orlitzky, M., Schmidt, F. L. & Rynes, S. L.	2003	52	Positive connection
Margolis, J.D. & Walsh, J.P.	2003	127	Unclear or mixed
Allouche, J. Laroche, P.	2005	82	Positive connection
Margolis, J.D., Elfenbein H. A. & Walsh, J.P.	2007	167	Positive connection
Van Beurden, P. & Gössling, T.	2008	34	Positive connection
Goyal, P., Rahman, Z. & Kazmi, A. A.	2013	101	Unclear or mixed
Dixon-Fowler, H.R., Slater, D.J., Johnson, J.L., Ellstrand, A.E. & Romi, A.M.	2013	71	Positive connection
Lu, W., Chau, K. W., Wang, H. & Pan, W.	2014	84	Unclear or slightly positive
Friede G., Busch T & Bassen A.	2015	2200	Positive connection
Wang, Q., Dou, J. & Jia, S.	2016	42	Positive connection
Huang, K., Sim, N. & Zhao, H.	2020	437	Positive connection
Velte, P.	2021	54	Positive connection

As illustrated in Table 2, most of the meta-analyses created in the 21st century find positive connections between CSR and CFP. It is also notable that none of the publications find a mostly negative effect on the nexus but unclear or mixed connection at worst.

Orlitzky et al. published a meta-analysis regarding the CSR-CFP nexus in 2003. This study is recognized as one of the milestone research in the field of corporate social performance and corporate financial performance. In their meta-analysis, they analyzed 52 studies, and their findings suggest that corporate social responsibility and environmental responsibility both most likely will affect a corporate's financial performance positively. They do, however, note that the results are highly dependent on the measures used. According to their study, the social performance of a company seems to be highly correlated with accounting-based measures and correlated with market-based measures to a lesser extent. They come to a conclusion that has four outcomes:

1) Throughout the studies they have gone through, there is a positive correlation between CSP and CFP,

2) The nexus seems to be bidirectional and simultaneous,

3) important mediator of the relationship seems to be reputation,

4) Stakeholder mismatching, sampling error, and measurement error can account for anywhere from 15% to 100% of the difference in CSP–CFP correlations between studies.

In more ways than one, corporate virtue in the shape of social and, to a lesser extent, environmental responsibility is rewarding. (Orlitzky et al., 2003)

Unlike the majority of reviews or meta-analyses published in the 21st century, Margolis and Walsh (2003) find uncertain or mixed results in their study. They published their review of 127 studies, of which 109 considered CSP as an independent variable in the prediction of CFP. Of the 109 studies, 54 found a positive link between CSP and CFP, and only seven found a negative nexus. Studies that used CSP as a dependent variable and tried to predict CSP by CFP, 16 out of 22 articles found a positive relationship. They argue that a closer look at previously created studies opens as many questions as it answers. The CSP-CFP link, as per Margolis and Walsh (2003), might be more illusory than earlier studies suggest. They go through 127 studies, over twice the number of studies Orlitzky et al. (2003) went through in their research, and whilst finding primarily positive results, they claim that the results raise several questions; thus, the result can be said to be mixed or uncertain.

Instead of a meta-analysis created, for example, by Orliztky et al. (2003) or vote-count -based review constructed by Margolis and Walsh (2003), Lu et al. (2014) reviewed 84 articles published between 2002 and 2011 and utilized a statistical analysis that took the stated nexus as well as the sample sizes used in each empirical study into account. The result of their research was reasonably straightforward: the majority of the studies they reviewed confirmed a positive causal link between CSR and CFP. However, a large set of publications reported insignificant causality between the two topics. They conclude that the CSR-CFP connection is still an avenue of investigation that remains unsettled. Lu et al. (2014) also

note that recent studies have started to take more specified backgrounds into account, such as industry or a country of a company, and it is needed in future studies.

Friede et al. (2015) released their study regarding 2200 empirical studies of the CSP-CFP - nexus. This study is one of the more complete analyses in the field of sustainable performance studies. Nearly 90% of the 2200 studies found a significant and positive link between CSP and CFP. The writers do not only find a positive link, but they also prove that the positive nexus is stable over time.

In 2021, Velte published a literature review focusing on quantitative meta-analyses in which he relies on the assumption that there is a positive relationship between CSR and CFP. He suggests that there are other financial consequences than just financial performance. Velte (2021) argues that the valuation of a firm during the latest decade is dependent not only on financial performance but also on environmental and social strategies. He discusses about the risks that greenwashing policy and information overload create. According to Velte, it is questionable whether CSR-focused enterprises will have better (non)-financial results in the future. Furthermore, in terms of a company's (non-financial) implications, both CSR and environmental success contribute to improved financial performance. (Velte, 2021)

2.4.2. The bidirectional link between CSP and CFP

Whereas most papers discuss the relationship between CSP and CFP, most ignore the possible bidirectional link. However, some papers are published regarding the two-way nexus, and a closer look at a few of them is gone through in this chapter.

In 2015, Nakamura studied the bidirectional relationship between investments in different CSR themes and a company's economic performance. The study examined three types of CSR investments: environmental, labor, and social. Nakamura's results are against the 1st sub-question of this study, as he finds that investments in environmental matters reduce economic performance. Nakamura's results also suggest that investments in labor-related themes do not significantly affect a firm's economic performance. The labor investments can be seen as a part of the social -pillar used in this study. A workforce is considered inside the social -pillar in the ESG-scoring, as shown in Figure 3 and in Figure 6. Nakamura also examined the relationship between social investments and CFP, finding a positive and

significant effect. According to Nakamura, the higher the company's financial performance is, the more they invest in social topics and the less they invest in environmental topics.

Bidirectional causality theory got backing from Pätäri, Arminen, Tuppura, and Jantunen (2016) when the academics researched the CSR-CFP -link by using ratings from KLD by dividing them into two variables, "strengths" and "concerns." In the aforementioned study, they tried to find a link between these variables and Return on Assets (ROA) and market capitalization, finding somewhat mixed results but still evidence of a bidirectional causality.

Hichri and Ltifi (2021) created research regarding the bidirectional link in a Swedish context, finding a positive nexus between CSR and CFP as well as CFP and CSR, meaning that the loop, in a Swedish context, is positive. The results of their study are attractive within the context of this paper, as this study also takes Swedish companies into account.

3. Data

In the 3rd chapter, this study goes through the data used in the research, where it is obtained, and how it is handled in the study. The first part of the study focuses on CSR valuation through ESG-scoring, which leads to the CSP of a company, which means that social responsibility measured with ESG leads to a company's social (responsibility) performance. The second part concentrates on the financial performance variables. Lastly, the chapter goes through the panel data model, which is the model applied in the study.

3.1. Environmental, Social, and Governance scores

The companies' ESG scores and scores from each pillar of the ESG are obtained from Refinitiv Eikon. Refinitiv's ESG scores are based on publicly available and auditable data. Their ESG scores quantify a company's relative ESG performance, commitment, and effectiveness across ten primary themes, such as human rights and emissions, transparently and objectively. Refinitiv uses over 630 company-level measures in order to calculate the ESG score. (Refinitiv, 2022)

With a history extending back to 2002, Refinitiv has one of the most extensive ESG datasets globally, spanning over 80% of the global market value and even more than 500 different ESG criteria. The ten main themes covered can be seen in Figure 6. As shown in Figure 6, the main themes and ESG pillars are in consensus with the theoretical frameworks discussed in chapter 2.2.

Environmental
• Resource use
• Emissions
• Innovation

Social
• Workforce
• Human rights
• Community
• Product responsibility

Governance
• Management
• Shareholders
• CSR strategy
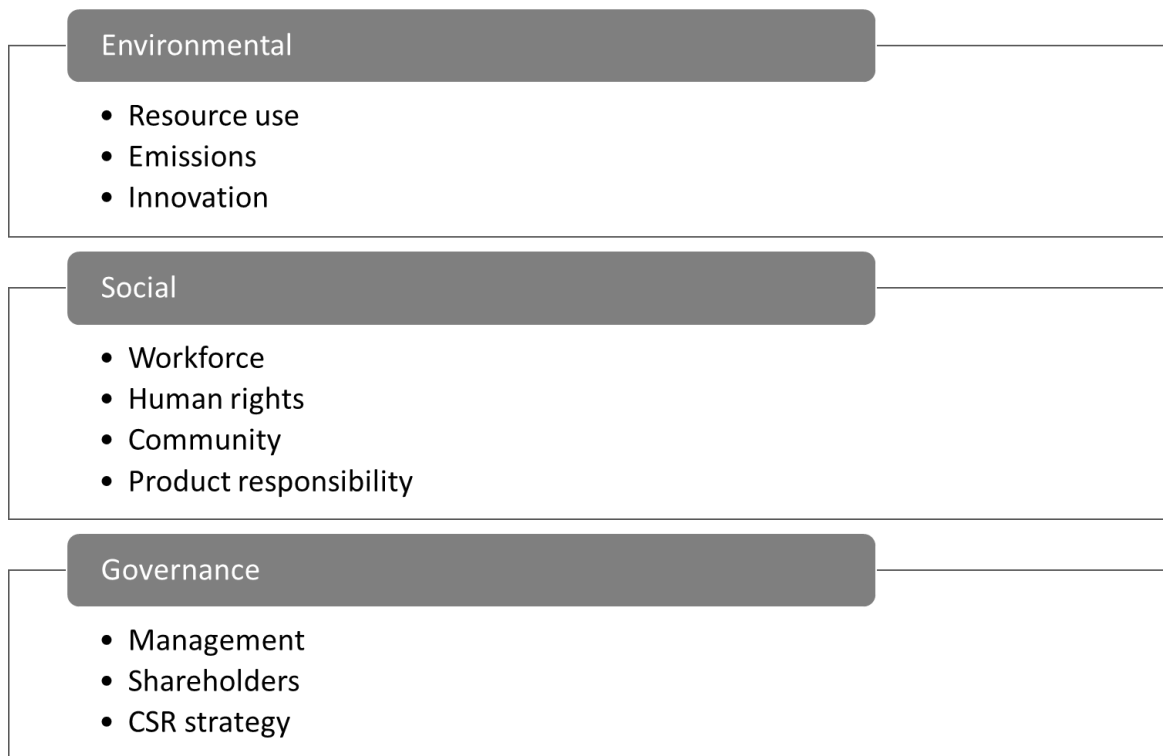
Figure 6 10 themes located under each ESG pillar (based on Refinitiv, 2021)

The ratings are available for over 11 000 companies worldwide, with over 2 100 companies from Europe, the time series starting from the year 2002. The data is updated weekly; however, each company's scoring is updated annually (Refinitiv, 2021)

This study aims to find a bidirectional correlation between CSR and CFP by using the ESG scoring as a scoring method for CSR. This scoring will be updated annually based on the scores of each company at the beginning of each year. Refinitiv has converted the percentile scores to grades distributed in the following way: Companies with scores between 0 to 25 receive a grade of 'D.' The grade 'D' denotes low relative ESG performance and a lack of transparency in publicly reporting significant ESG data. Companies scoring in the second-lowest quartile (over 25 but under or exactly 50) are given a grade of 'C,' which indicates that relative ESG performance is satisfactory and there is a moderate level of transparency. Higher quartiles, 'B' and 'A' are given to the companies with the best ESG scoring. 'B' indicates a good relative ESG performance and that transparency in public reporting of significant ESG data is above average. The best-in-class 'A' (75 to 100) grade refers to companies with excellent relative ESG performance and high transparency in publicly reporting material ESG data. (Refinitiv, 2021)

For this study, the individual Environmental, Social, and Governance pillars are selected to represent the CSP of a company. On top of this, an ESG Combined -score is also used to measure the total CSP of a company. ESG Combined -score is a combined score of the individual ESG -pillars and an ESG Controversial -score. ESG Controversial -score takes global media sources into account and calculates a score with respect to the media sources. As the ESG Controversial score can have a zero effect on the ESG Combined score at best, the Combined score can not be higher than the ESG-score. (Refinitiv, 2021)

3.2. Corporate Financial Performance

In order to measure the possible link between CSR and CFP, there are three measures used to determine the CFP of each company. The three variables used are accounting-based, market-based, and a variable mix of both variables. Accounting-based metrics, often ROA, as an indicator for financial performance have been used in several studies before (see Deephouse and Ourso, 1997; Waddock and Graves, 1997; Berrone, Surroca and Tribo, 2007; Melo, 2012; Ferrell et al., 2016), whereas marketing-based indicators have been employed as a financial performance indicator on various occasions as well (see Berrone et al., 2007; Bird, Hall, Momente and Reggiani, 2007; Fatemi et al., 2016; Melo, 2012; Wahba, 2007). The studies regarding market-based indicators have used several variables to determine the financial performance, such as market-to-book, Tobin's Q, or market value-added.

To avoid one-sidedness and to analyze business performance from many angles (Melo, 2012), three separate CFP measurements are used in this study. The three variables used are Return on Assets (ROA), Price-to-book, and (growth in) earnings per share (EPS). According to Ferrell et al. (2016), a typical approach to evaluating a firm's financial performance is to assess the change of executive compensation to the change of CFP. This can be done by evaluating the changes in the ROA of a company. According to Berrone et al. (2007), market-based indicators are good at measuring expected future changes, and thus a market-based indicator should also be taken into consideration. In this study, the market-based indicator is the market-to-book or price-to-book variable. EPS is a valuable indicator of a company's management performance. It incorporates changes in earnings and new shares in the company, thus showing how much money a company earns for its shareholders. Profitability and company shares are used to calculate a company's earnings per share. As a

result, a company's earnings per share is critical in determining its market value and market price. (Ahmad, Mobarek, Roni & Tan, 2021)

3.3. Variables

Several variables are being used to find possible bidirectional causality between the CSP and the CSR. In order to research probable bidirectional causality, all of the variables, CFP and CSP, have to be used as dependent and independent variables. Furthermore, the models also utilize the control variables to account for impacts other than the influence of independent variables on the dependent variables. The regression model and coefficients for the variables of interest will be more reliable as a result. To limit the effect of the outliers, a winsorization method is performed, as did Ferrell et al. (2016). The 98th percentile replaces observations above the 98th percentile, and the 2nd percentile replaces observations below the 2nd percentile for each variable. For each dependent variable calculation, independent variables are lagged by one year (T-1). This is done in order to ensure that the models can capture the nexus between dependent and independent variables.

3.3.1. Price-to-book (P/B)

Price-to-book -ratio, also referred to as the Market-to-book -ratio, is calculated by dividing the market price of a share of common stock by its book value or shareholders' equity per share (Bodie, Kane and Marcus, 2014: 652). The book value is roughly the part of the company that would be left for shareholders if all assets were to be sold and all the company's debts would be paid. (Haugen, 1995) The market-to-book (P/B) values for each company are gathered from Refinitiv's database, and it is calculated as follows:

$$\frac{P}{B} = \frac{Market\ Price\ per\ Share}{Book\ value\ per\ share} \qquad (1)$$

3.3.2. Return on Assets % (ROA)

Accounting based metric in this study is ROA, which has been used several times before, as mentioned earlier. ROA is a profitability indicator that indicates how successfully a company develops value in terms of assets, and it is a commonly used metric to measure profitability. (Jencova, Petruska and Lukacova, 2021).

The ROA of each company has been collected from Refinitiv Eikon, which calculates the Return of Assets in the following way:

$$Return\ on\ assets\ \% = \frac{Net\ Income}{Total\ Assets} * 100 \qquad (2)$$

3.3.3. Earnings Per Share (EPS)

A mix of the market- and accounting-based indicators is used to get a broader view of the CFP-CSR link. Because it represents changes in earnings and new shares of the company, EPS illustrates how much money a company earns for its shareholders. Profitability and company shares are used to calculate a company's earnings per share. As a result, a company's earnings per share is critical in determining its market worth and market price. The EPS values for each company have been gathered from Refinitiv Eikon, and it is calculated as follows:

$$Earnings\ Per\ Share\ (EPS) = \frac{net\ income}{outstanding\ common\ shares} \qquad (3)$$

3.3.4. Control variables

Each company's total revenue is used as a control variable in this study, as it is a good indicator of its size. According to Lu et al. (2014), the size of a company is one of the five most frequently used control variables in explaining the CSP-CFP relationship. The size can

be considered an essential factor when it comes to social responsibility, as companies with more revenue have more income to invest in social responsibility and social performance. The total revenue data is gathered from quarterly data and then annualized by adding each quarter together to achieve the yearly revenues. As Nordic companies have different currencies depending on the country they operate in, and because this study standardizes the monetary values to USD, using quarterly data creates more accurate standardization as the average forex rate is taken four times a year instead of just one time a year when using yearly data. The size is also measured by the average amount of employees for each company. The average number of employees is a good indicator of the size, and the data is gathered from Refinitiv's database.

3.4. Descriptions and Data Cleaning

The data collected for the study is from 2007 to 2020 from the most prominent companies in Nordic countries, including Norway, Sweden, Denmark, and Finland. The companies used in the study are gathered from OMX Oslo 20, OMX Helsinki 20, OMX Stockholm 30, and OMX Copenhagen 20. The companies with less than eight years of data available are removed from the study. After cleaning the NA-values, 71 companies and a total of 966 observations are left to study. This method leaves us with an unbalanced panel data model, where different entities have different amounts of data points. The list of companies per country can be found in appendix 1.

Below in Table 3, the descriptive statistics from the data can be seen. The descriptive statistics are gathered from the data after the winsorization. Winsorization causes a reduction of the minimum and maximum values, and it lowers the standard deviation. The Median will remain the same after winsorization, as no data points are removed from the data.

Table 3 Descriptive statistics after winsorization, N = 966

Variable	SD	Min	Median	Mean	Max

ROA (%)	9,46	-8,56	6,24	8,42	41,56
P/B	2,79	0,470	2,140	3,15	14,52
EPS (%)	13,19	-10,58	4,15	8,07	73,00
ESG Combined	17,78	13,42	61,60	59,00	88,53
Environmental	25,22	0,00	71,61	63,34	94,48
Social	20,86	1,61	69,03	64,49	93,58
Governance	21,75	13,03	59,53	57,10	93,68
Total Sales	11075615	244775	7181763	10326948	52625430
Employees	27700,38	157	15386	24811	119599

As one can see, the minimum number of total sales is much lower than the maximum value, and the same holds for the number of employees. The standard deviation is also high, meaning that there is much variance in the control variables, ensuring that size variables can be examined without any bias. From the CSP variables, Environmental has the lowest value with a minimum value of 0 and the highest value with the max value being 94,48. ESG Combined -variable, which is a mix of all Environmental, Social, and Governance variables with a controversial score in it as well, has the lowest standard deviation out of all CSP variables. ESG Combined -variable also has the highest minimum (13,42) value but the lowest maximum value (88,53). Notably, the price-to-book ratio has a low standard deviation of 2,79, nearly three times lower than the second-lowest CFP variable, Return on Assets.

All of the CSP scores have increased constantly during the studied timeline, as shown in Figure 7.
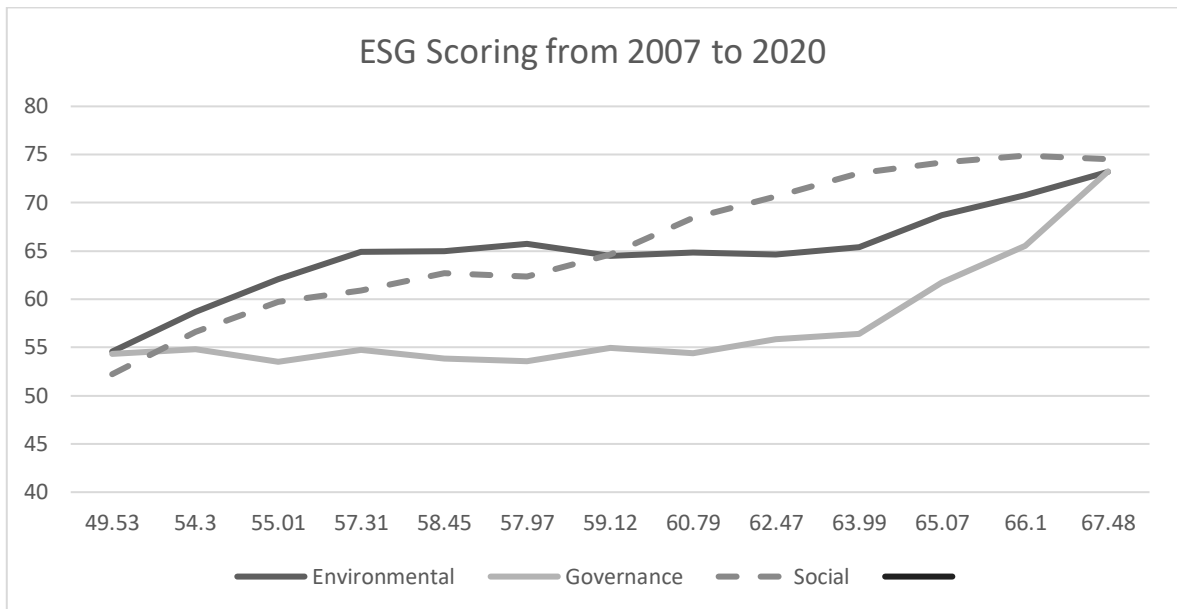
Figure 7 Average ESG -scores of the Nordic companies from 2007 to 2020

The figure shows a timeline and the movement of the ESG-scores during the timespan reviewed in this study. The scores have increased steadily over time, with the average of individual scores starting from 45-51 points and ending at 73-74 points in 2020. The Social score has had the most increase, as it increased from 45,6 points in 2007 to 74,52 points in 2020. The Environmental score had a rapid growth between the years 2007 and 2011. For years 2011 and 2015, the growth was nearly non-existent, but it increased again in 2017 and has not stopped since.

Table 4 Pearson Correlation Matrix, CFP-values lagged

Coefficient	ROA(T-1)	PB(T-1)	EPS(T-1)	SALES(T-1)	EMPLOYEES(T-1)
ESG Combined	0,035	0,008	0,003	0,261***	0,314***
E Score	-0,080**	-0,164***	0,056*	-0,183***	0,032
G Score	-0,109***	-0,164***	-0,004	0,370***	0,294***
S Score	0,121***	0,095***	0,056	0,297***	0,360***

Note: Significance levels p-value *** <0,01; **<0,05; *<0,1; respectively

Table 5 Pearson Correlation Matrix CSP-values lagged

Coefficient	ESG(T-1)	E(T-1)	G(T-1)	S(T-1)	SALES(T-1)	EMPLOYEES(T-1)
ROA	0,041	-0,067**	-0,116***	0,125***	-0,174***	-0,019
PB	0,037	-0,029	-0,159***	0,114***	-0,162***	0,041
EPS	0,025	-0,023	-0,011	0,071**	0,051	0,071**

Note: Significance levels p-value *** <0,01; **<0,05; *<0,1; respectively

In Table 4 and Table 5, the Pearson Correlation Matrix for the whole data can be seen. Table 4 represents the correlation matrix from variables where the financial performance - indicators are lagged. Table 5 shows the correlations with social performance -indicators being lagged. The ESG Combined coefficient does not seem to have a statistically significant correlation between any of the lagged CFP-values. However, both, Return on Assets and Price-to-Book variables have robust and significant correlations with all of the individual pillars of the ESG.

Interestingly, only the lagged Social -score seems to have a significant and positive correlation between the financial performance variables. This is an interesting result as especially the environmental score is expected to boost companies' financial performance according to the data from environmentally active funds shown in Table 1. However, it is essential to understand that the correlation matrix does not consider individual effects, meaning that it does not take the unique features of panel data into account. For the correlation matrixes, only the full CSP-data and full CFP-data are put together, and correlations are looked at. It does not consider individual or time effects.

A Wooldridge test is conducted for all dependent variables to test for possible autocorrelation within the panel data. According to the test results, all of the scrutinized

variables do have autocorrelation, which must be considered. In this study, the autocorrelation is taken into account by using clustered standard errors. The clustered standard errors are presented in parentheses of each model later on in the paper. Results of the Woolridge test are assembled in Table 6 and Table 7.

Table 6 Wooldridge test results for CFP-variables as dependent variables

Wooldridge test	Obtained chi-squared and p-value
Return On Assets	ChiSq = 52,527; P-value = 0,000***
Market-To-Book	ChiSq = 383,26; P-value < 0,000***
Earnings Per Share	ChiSq = 144,51; P-value < 0,000***

Note: Significance levels p-value *** <0,01; **<0,05; *<0,1 respectively.
H_0: There is no serial correlation or autocorrelation in the error term

The null hypothesis of the Wooldridge test is that there is no serial correlation or autocorrelation in the error term. The null hypotheses are rejected for each variable, meaning that there is autocorrelation. Like CFP variables as dependent variables also CSP variables as dependent variables do have autocorrelation, which has to be taken into account by using clustered standard errors. Results of the Wooldridge test for CSP variables can be found in Table 7.

Table 7 The Woolridge test for CSP-variables as dependent variables

Woolridge test	Obtained chi-squared and p-value
ESG Combined	ChiSq = 175,93; P-value < 0,000
Environmental	ChiSq = 255,41; P-value < 0,000
Social	ChiSq = 341,84; P-value < 0,000
Governance	ChiSq = 262,42; P-value < 0,000

Note: Significance levels p-value *** <0,01; **<0,05; *<0,1 respectively.

H_0: There is no serial correlation or autocorrelation in the error term

An Augmented Dickey-Fuller -test was constructed for each variable to test for possible unit roots in the variables. The null hypothesis H_0 in an Augmented Dickey-Fuller -test is that there is a unit root in the variables; thus, the variables are not stationary. The test results for each variable can be interpreted in Table 8:

Table 8 Augmented Dickey-Fuller Test

Variables	Dickey-Fuller	p-value
ESG Combined	-6,727	<0,01***
Environmental	-6,6185	<0,01***
Social	-6,376	<0,01***
Governance	-7,1117	<0,01***
ROA	-7,1508	<0,01***
P/B	-8,5091	<0,01***
EPS	-11,283	<0,01***
Sales	-6,1789	<0,01***
Employees	-7,3495	<0,01***

Note: Significance levels p-value *** <0,01; **<0,05; *<0,1 respectively.

H_0: there is a unit root in the variables

As the test results suggest, the p-value of the tests are <0,01 for each of the variables, meaning that the H_0 of the test is rejected for every variable with a 1% significance level; thus, there is no time-dependent structure. There is no unit root that needs to be considered when going further with the analytics.

4. Methodology

This chapter starts by going through the panel data model that is used in the study and then focuses on the model selection process and the selected models. The data is cleaned from outliers using the winsorization method, and then a Pearson correlation matrix is constructed. After the steps mentioned above, possible autocorrelation is tested using a Wooldridge test. The unit root is tested by using the Augmented Dickey-Fuller test for each dependent variable. The tests are conducted in the R-studio, with the packages sandwich, plm, haven and magrittr.

4.1. Panel Data

Panel data is being used as a data model to study the possible nexus between CFP and CSP for several companies in many different years. Panel data has been characterized by Baltagi (2021) as a collection of observations spanning multiple time periods on a cross-section of companies, countries, firms, et cetera. Panel data is also referred to as "longitudinal data" in literature, and according to Hill et al. (2012), it contains data on specific micro-units that are tracked throughout time. The most crucial feature of panel data is that it tracks each micro-unit through time (Hill et al., 2012). Panel data is a mix of time-series and cross-sectional data, and it lowers the likelihood of temporal mistakes in the data when generalizing the findings. (Bell et al., 2018) Many researchers, practitioners, and students have been interested in panel data modeling as more longitudinal data become available. These longitudinal data contain more significant variability and allow for more exploration than cross-sectional or time-series data alone. (Kennedy, 2008) The data of this study has been constructed into panel data, where companies are the entities of which behavior is observed across the years 2007 and 2020.

Hsiao (2003) discusses the benefits of using panel data, and he states that there are several of them. Firstly, as neither time-series nor cross-section studies control heterogeneity which may lead to biased results, panel data's benefit is that by using longitudinal data, we are able to control individual heterogeneity. Secondly, longitudinal data reduce collinearity among the variables. It gives more degrees of freedom and more informative data with more variability. These points lead to higher efficiency. The third advantage is that compared to

cross-sectional or time-series data, the dynamics of adjustment are better studied with panel data. Some effects simply are not detectable in cross-section or time-series data, and panel data are better for identifying and measuring them. However, there are also several limitations to panel data, says Baltagi (2021, 9-11). Baltagi lists limitations such as "Design and data collection problems," "Distortions of measurement errors," and several selectivity problems. Short time dimension and cross-section dependence are also listed as possible limitations of panel data.

Several models can be used to estimate variables with panel data.

1) The Pooled OLS model

2) The Fixed effects model

3) The Random-effects model

This study will consider all of the models mentioned above, and the theory behind them will be discussed in the following chapters, 4.1.1, 4.1.2 and 4.1.3.

4.1.1. The Pooled OLS model

In the pooled ordinary least squares model, each individual's data are merely pooled together, assuming no individual heterogeneity. The coefficients are assumed to be constant as well. The equation for the model with two explanatory values is as follows (Hill et al., 2012, 540):

$$y_{it} = \beta_1 + \beta_2 x_{2it} + \beta_3 x_{3it} + e_{it} \tag{4}$$

Here, y_{it} is a response variable, i refers to the ith individual, t refers to time, β's are the coefficients, x's are different dependent variables, and e refers to an error term. The critical aspect of equation (4) is to notice that none of the coefficients have i or t subscripts because they are assumed as constant in the model. Thus they do not allow for individual heterogeneity. The least-squares estimator used for the pooled model is called pooled least

squares. If the estimator is used, the data is simply pooled together, and the equation in discussion is estimated by using least squares. (Hill et al., 2012, 540-542) According to Greene (2008, 11-19), OLS (Ordinary Least Squares) consists of five assumptions: Linearity, Exogeneity, Homoskedasticity and non-autocorrelation, non-stochastic, and no multicollinearity. If all of these assumptions are fulfilled, the OLS can be used. However, as mentioned before, the pooled OLS does not take panel data's features into account, thus giving misleading results for the study.

4.1.2. The Fixed Effects Model

The fixed-effects model is an extended model of the forementioned pooled effect model. It relaxes the assumption that all individual variables have the same coefficients. The model's equation can be written as:

$$y_{it} = \beta_{1i} + \beta_{2i}x_{2it} + \beta_{3i}x_{3it} + e_{it} \tag{5}$$

The model is almost equal to the pooled OLS model, with the difference of i subscript, which has been added to all of the coefficients. The model is not suitable for short and wide data, but as the coefficients have their own values depending on the i, it can be said to be a proper panel data model. There are two independent variables in equation (5), similar to equation (4). This model assumes that individual heterogeneity is captured by the intercept. The model can be estimated by two estimators; the least squares dummy variable estimator or the fixed effect estimator. (Hill et al., 2012, 543 – 549) The weakness of the fixed effect model is that it can not estimate variables that are constant over time, such as gender, education, et cetera. The fixed-effect model can usually eliminate heterogeneity of the data, meaning that endogeneity problems are eliminated by it.

4.1.3. The Random Effects Model

The random effect model implies that heterogeneity is unrelated to any regressor, and then it calculates group-specific error variance. As a result, μ_i is a component of the composite

error term or an individual-specific random heterogeneity. Thus, the random effect model is also often known as an error component model. The function model of the random effects model is following:

$$y_{it} = \bar{\beta}_1 + \beta_2 x_{2it} + \beta_3 x_{3it} + (e_{it} + u_i) \qquad (6)$$

Here, $\bar{\beta}_1$ is the intercept parameter, e_{it} is the regression random error and u_i refers to a random individual effect. (Hill et al., 2012, 551-552)

According to Koop (2008), the random effect model expects that the model under consideration is part of a bigger population. Unlike the fixed effect model, the random effect model splits the constant error term into two parts: individual effect and the average effect of a whole population. Finally, the differences between the fixed-effects model and the random-effects model are illustrated in Table 9. (Park, 2011)

Table 9 The Fixed Effects and The Random Effects models comparison

	FIXED EFFECTS MODEL	RANDOM EFFECTS MODEL
Function	$y_{it} = \beta_{1i} + \beta_{2i} x_{2it} + \beta_{3i} x_{3it} + e_{it}$	$y_{it} = \bar{\beta}_1 + \beta_2 x_{2it} + \beta_3 x_{3it} + (e_{it} + u_i)$
Assumption	-	Individual effects not correlated with regressors
Intercepts	Varies across groups or time	Constant
Error variances	Constant	Randomly distributed
Slopes	Constant	Constant
Estimation	Least Squares Dummy Variable, within effect estimator	Generalized Least Squares, Feasible Generalized Least Squares
Hypothesis test	F-test	Breusch-Pagan LM test

4.2. Model selection process

The selection process between the pooled OLS model, the fixed effects model, and the random effects model can be viewed in Figure 8.
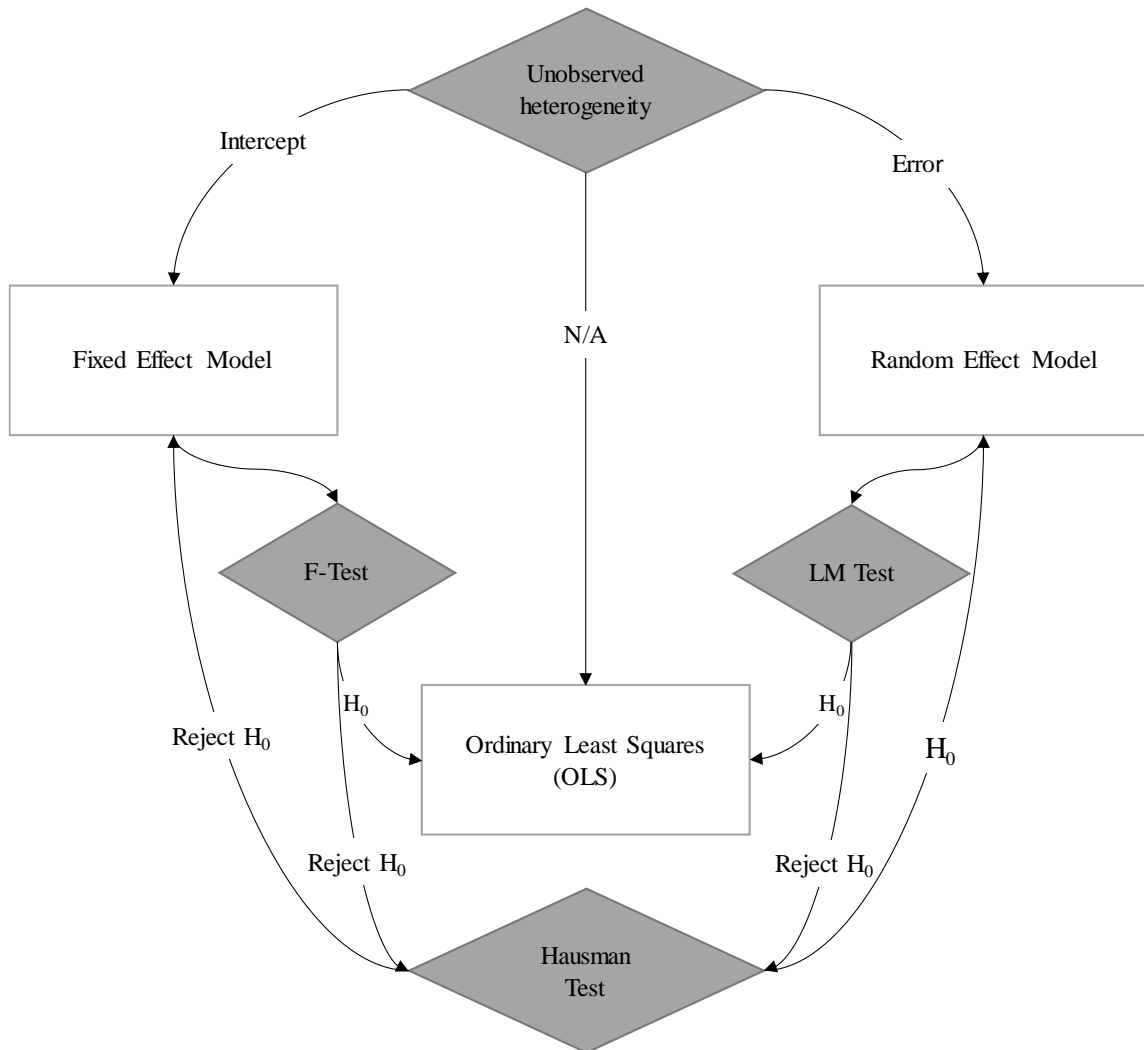
Figure 8 Panel Data selection process (Based on Park, 2011)

In this study, the model selection process is the following: At first, the fixed effects, the random effects, and the pooled OLS- models are calculated in R-studio, using the plm (2022) package. After saving the results of each model, F-test for individual effects and a Breusch-Pagan Lagrange Multiplier test are conducted by using the values obtained by using the three

models as mentioned earlier. Suppose the hypotheses (H_0) of both tests, the F-test and Breusch Pagan Lagrange Multiplier test, are accepted. In that case, the pooled OLS model should be used instead of the fixed effect model or the random effect model, meaning that the pooled OLS -model's values should be used. If the LM test suggests that the random effect model should be used, or the F-test indicates that the fixed effect model should be used, the proposed model is used. However, if both hypotheses of the tests are rejected, a Hausman test must be conducted. If the Hausman test's H_0 is rejected, the fixed effect - model is being used, and if the H_0 is accepted, we should go with the random-effects model. Hausman test is interpreted with a 5% significance level. The Hausman test analyses whether the individual effects are correlated with other regressors in the model or not. If they are, the random effect model will violate the Gauss-Markov assumption, meaning that the random effect model would not be the Best Linear Unbiased Estimate (BLUE). Hence, if the H_0 of the Hausman test is rejected, the fixed effect model should be favored. (Park, 2011)

Previous literature suggests that the fixed effect -model is used more often than the random effects model. The hypotheses of the F-test, LM-test and Hausman test are listed in the following Table 10:

Table 10 The Null hypotheses of model selection tests

Test	Null hypotheses (H_0)
F-test	All regression coefficients are equal to zero
LM-test	Heteroscedasticity is not present (the residuals are distributed with equal variance)
Hausman-test	The error components μ_i are not correlated with the regressors

The tests for CFP-variables as dependent variables suggest fixed effect models be used with all of the variables, as can be interpreted from Table 11:

Table 11 Test results for CFP-variables as dependent variables

	Return on Assets	Market-to-book	Earnings per Share
F-test	P-value < 0,000	P-value < 0,000	P-value < 0,000
LM-test	P-value < 0,000	P-value < 0,000	P-value < 0,000
Hausman test	P-value = 0,000	P-value < 0,000	P-value = 0,041
Model suggested	**Fixed effects**	**Fixed effects**	**Fixed effects**

The tests for CSP variables as response values suggest a random effects model for the ESG Combined variable and fixed effects for all individual pillars, environmental, social, and Governance -variables, as illustrated in Table 12.

Table 12 Test results for CSP-variables as dependent variables

	ESG Combined	Environmental	Social	Governance
F-test	P-value < 0,000	P-value < 0,000	P-value < 0,000	P-value < 0,000
LM-test	P-value < 0,000	P-value < 0,000	P-value < 0,000	P-value < 0,000
Hausman test	P-value = 0,067	P-value < 0,000	P-value < 0,000	P-value = 0,004
Model suggested	**Random effects**	**Fixed effects**	**Fixed effects**	**Fixed effects**

As illustrated in Table 11 and Table 12, the selected models for each dependent variable are as follows: ROA, PB (Market-to-book), EPS, Environmental, Social and Governance -variables are estimated using the fixed-effects -model. ESG Combined -variable is estimated by using the random-effects -model.

4.3. Models

The regression models and their functional forms must be constructed to use the panel data models presented earlier in the study. As the study aims to find a possible bidirectional nexus

between the CSP and CFP, two functions and their sub-functions are being used. At first, the function of CSP explained by CFP factors is as follows:

$$CSP_{iT} = \alpha + B_1 * ROA_{i(T-1)} + B_2 * \frac{P}{B_{i(T-1)}} + B_3 * EPS_{i(T-1)} + B_4 * SIZE_{i(T-1)} + \varepsilon_{it} \quad (7)$$

Where CSP_T = Corporate Social Performance during time T (ESG Combined, Environmental, Social or Governance scores)

ROA_{T-1} = lagged Return on Assets with one year lag

$\frac{P}{B_{i(T-1)}}$ = lagged Price-to-book ratio with one year lag

$EPS_{i(T-1)}$ = lagged Earnings Per Share with one year lag

$SIZE_{i(T-1)}$ = Control variables, total revenues, and the number of employees with one year lag

α = the intercept

ε_{it} = The error term

To test if the nexus between CSP and CFP is bidirectional and it's not just a one-way relationship, the test has to be constructed the other way around as well:

$$CFP_{iT} = \alpha + \beta_1 * ESG_{i(T-1)} + \beta_2 * E_{i(T-1)} + \beta_3 * G_{i(T-1)} + \beta_4 * S_{i(T-1)} \\ + \beta_5 * SIZE_{i(T-1)} + \varepsilon_{it} \quad (8)$$

The CFP refers to corporate financial performance, such as ROA, P/B, or EPS. E is the Environmental score, G is the Governance score, S is the Social score, and ESG refers to ESG Combined -score. Likewise, with formula (7), the explanatory variables are lagged by one year to see how they affect the financial performance scoring. Seven panel data regressions are constructed using these two formulas (7) and (8). The specific formulas can be found in appendix 2.

5. Results

Chapter 5 goes through the results of the panel data analysis constructed in previous chapters. Firstly, the CSP – CFP -nexus is taken a look at, and in the 2nd part, the CFP – CSP nexus is analyzed. The results are combined in the 3rd and final parts of the chapter, and the research questions are also answered in the last part.

5.1. Corporate Social Performance – Corporate Financial Performance nexus

As discussed earlier in chapter 4.2, each of the individual ESG pillars is evaluated using the fixed effects model. In contrast, the ESG Combined -score must be assessed using the random effects model, as the Hausman test null hypothesis is accepted with a 5% significance level. Hausman test p-value for ESG Combined is 6,73%, meaning that with a 5% significance level, the model can be said to be BLUE.

The results of the random effect model for ESG Combined are listed in Table 13:

Table 13 The ESG Combined regression.

Variable	Estimate	Std. Error	z-value	Pr(>|z|)
(Intercept)	56,74	1,983 (2,855)	28,607	<0,000***
ROA(T-1)	-0,044	0,081 (0,145)	-0,541	0,588
PB(T-1)	0,156	0,234 (0,373)	0,666	0,505
EPS(T-1)	0,063	0,057 (0,066)	1,108	0,268
Employees(T-1)	0,000	0,000 (0,000)	3,385	0,001***
Sales(T-1)	-0,012	0,009 (0,195)	-1,417	0,157
R-Squared	0,0175	0,0175	0,0175	0,0175
p-value	0,011**			

Note: The clustered standard errors are presented in parentheses. Significance levels p-value *** <0,01; **<0,05; *<0,1 respectively

As shown in Table 13, none of the independent variables statistically affect the ESG Combined score. The results are in line with the Pearson Correlation matrix presented earlier. Only the control variable number of employees has a statistically significant and positive effect on the ESG Combined score. The R-squared for the model is low, with only 1,75% of the changes in ESG Combined can be explained with the selected variables. The test, however, is statistically significant with a 5% significance level as the p-value is 0,011.

Next, the individual pillars were estimated using the fixed effect model, as suggested by the F-test, LM-test, and Hausman test. First, the Environmental score was tested, with the results shown in Table 14:

Table 14 Environmental-score regression.

Variable	Estimate	Std. Error	t-value	Pr(|>t|)
(Intercept)	65,527	6,156	10,645	0,000***
ROA(T-1)	0,007	0,083 (0,113)	0,08	0,936
PB(T-1)	0,017	0,231 (0,431)	0,072	0,943
EPS(T-1)	0,007	0,057 (0,684)	0,121	0,904
Employees(T-1)	0,000	0,000 (0,001)	2,178	0,030**
Sales(T-1)	-0,016	0,001 (0,008)	-1,634	0,103
R-Squared	0,824	0,824	0,824	0,824
p-value	<0,001***			

Note: The clustered standard errors are presented in parentheses. Significance levels p-value *** <0,01; **<0,05; *<0,1 respectively

The environmental score's regression results are similar to the ESG Combined score, with no significant effects found with any CFP variables. This is an unexpected result, as the sub-research question expected the Environmental score to have the most substantial relationship with the company's financial performance. The fixed effect model is estimated with the least squares dummy variable regression (LSDV). Only the regression results of the original CFP -variables are presented in the results. Full results can be seen in appendix 3. Using the LSDV -regression, the R-Squared is high with the result of 0,82. With the p-value being <0,001,

we can say that the model is significant with a 1% significance level. There is no nexus between the Environmental score and the CFP-variables.

The fixed effect -model regression for the Social -score can be reflected in Table 15:

Table 15 Social-score regression.

Variable	Estimate	Std. Error	t-value	Pr(|>t|)
(Intercept)	40,17	6,664	6,028	2,5e-09***
ROA(T-1)	0,077	0,09 (0,165)	-0,856	0,392
PB(T-1)	0,328	0,25 (0,611)	1,311	0,19
EPS(T-1)	0,207	0,062 (0,115)	3,332	0,001***
Employees(T-1)	0,000	0,000 (0,000)	4,858	0,000***
Sales(T-1)	-0,05	0,014 (0,019)	-4,75	0,000***
R-Squared	0,698	0,698	0,698	0,698
p-value	<0,000***			

Note: The clustered standard errors are presented in parentheses. Significance levels p-value *** <0,01; **<0,05; *<0,1 respectively.

As the results show, the Social score has a nexus with not only the control variables but also with the earnings per share variable. The relationship is significant, with a significance level of 1%. The earnings per share have a positive effect on the social score of the firm. The R-squared of the model is 0,698, which can be said to be relatively high. The p-value being <0,000 means that the model is significant with a 1% significance level.

The third individual pillar measuring the CSP of a company is Governance. For the Governance -pillar, the fixed effect method was used by the LSDV estimator. According to the model, EPS positively affects Governance with a 10% significance level. The precise results can be found in Table 16. Like both of the other individual pillars, the Governance -score has a relatively high R-squared, 0,62. The model is also significant with a 1% significance level, with a p-value of <0,000.

Table 16 Governance-score regression.

Variable	Estimate	Std. Error	t-value	Pr(|>t|)
(Intercept)	35,00	7,72	4,53	<0,000***
ROA(T-1)	-0,119	0,104 (0,165)	-1,145	0,253
PB(T-1)	0,378	0,289 (0,611)	1,305	0,192
EPS(T-1)	0,136	0,072 (0,115)	1,893	0,059*
Employees(T-1)	0,000	0,000 (0,000)	1,145	0,253
Sales(T-1)	-0,006	0,012 (0,019)	-0,468	0,640
R-Squared	0,62	0,62	0,62	0,62
p-value	<0,000***			

Note: The clustered standard errors are presented in parentheses. Significance levels p-value *** <0,01; **<0,05; *<0,1 respectively.

From the results illustrated in Table 14, Table 15, and Table 16, the following summary can be made:

1) An increase in EPS positively affects the Social -pillar score.

2) An increase in EPS positively affects the Governance -pillar score.
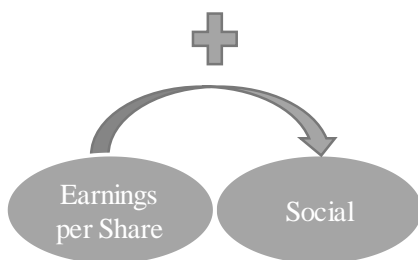
Figure 10 EPS – Social -pillar nexus
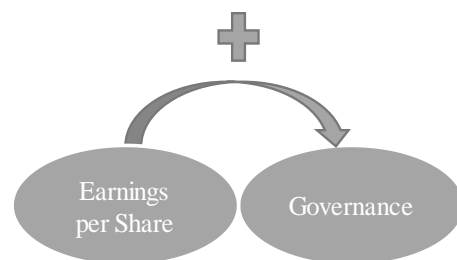
Figure 9 EPS – Governance -pillar nexus

The results indicate that from the CFP -variables, Earnings per Share have the strongest link with the CSP -variables. This result answers the 2nd sub-question of the study:

- *Which corporate financial performance -variable has the most substantial relationship with the corporate social performance factors?*

As no other variable had a significant relationship with the CSP -variables, it can be safely assumed that the earnings per share -variable has the most robust relationship with the corporate social performance factors. The results are in line with the Nakamura (2015) study. He suggested that the higher the economic performance, the more companies tend to invest in social matters and the less they invest in environmental topics. There is no significant link between CFP and the Environmental -pillar.

5.2. Corporate Financial Performance – Corporate Social Performance

For CFP -variables as dependent variables, the fixed effect model was used for all of them, as illustrated earlier in chapter 4.2. The same method of lagged values was used for CFP-CSP -link, meaning that ESG Combined, Environmental, Social, and Governance -scores were lagged by one year to see how their changes affect the CFP variables.

First, Return on Assets as a dependent variable was regressed using the LSDV estimating method for the fixed effect model. The results are, as evident in Table 17:

Table 17 Return on Assets regression.

Variable	Estimate	Std. Error	t-value	Pr(|>t|)
(Intercept)	14,812	3,27	4,53	0,000***
ESG Combined (T-1)	-0,030	0,026 (0,169)	-1,125	0,261
Environmental (T-1)	0,035	0,021 (0,023)	1,66	0,097*
Social (T-1)	0,036	0,021 (0,026)	1,67	0,095*
Governance(T-1)	-0,014	0,016 (0,02)	-0,874	0,382
Employees(T-1)	-0,000	0,000 (0,000)	-5,518	0,000***
Sales(T-1)	0,0109	0,005 (0,00000)	2,345	0,019**
R-Squared	0,65	0,65	0,65	0,65
p-value	0,000***			

Note: The clustered standard errors are presented in parentheses. Significance levels p-value *** <0,01; **<0,05; *<0,1 respectively.

The results suggest that the Social and Governance pillars positively affect ROA with a 10% significance level. The model is significant with a 1% significance level as its p-value is 0,000. The R-Squared is 0,65, meaning that the ESG -factors and the control variables explain the changes in ROA reasonably well. Full results of the LSDV -regressions can be found in Appendix 4.

Next, the market-to-book -ratio, also known as the price-to-book -ratio, as a dependent variable was tested. For the PB-variable, fixed effects with the LSDV -estimator were also used. According to the test results, an increase in the Environmental score has a positive effect on the PB ratio of a company. The model is significant with a 1% significance level. The p-value of the model is less than 0,001. With an R-squared value of 0,67, the independent variables explain PB's changes rather well. The detailed results can be noted in Table 18:

Table 18 Price-to-book regression.

Variable	Estimate	Std. Error	t-value	Pr(|>t|)
(Intercept)	-0,711	0,938	-0,758	0,449
ESG Combined (T-1)	0,006	0,008 (0,005)	0,741	0,459
Environmental (T-1)	0,013	0,006 (0,009)	2,224	0,026**
Social (T-1)	0,007	0,006 (0,01)	1,088	0,277
Governance (T-1)	-0,005	0,005 (0,009)	-1,07	0,285
Employees (T-1)	-0,000	0,000 (0,000)	0,179	0,858
Sales(T-1)	0,000	0,001 (0,000)	0,270	0,787
R-Squared	0,669	0,669	0,669	0,669
p-value	0,000***			

Note: The clustered standard errors are presented in parantheses. Significance levels p-value *** <0,01; **<0,05; *<0,1 respectively.

The third CFP -variable accounted for was Earnings Per Share. The results can be seen in Table 19:

Table 19 Earnings Per Share regression.

Variable	Estimate	Std. Error	t-value	Pr(|>t|)
(Intercept)	37,071	5,433	6,823	0,000***
ESG Combined (T-1)	-0,050	0,0437 (0,021)	-1,15	0,249
Environmental (T-1)	0,0564	0,0346 (0,034)	1,629	0,100*
Social (T-1)	0,144	0,0355 (0,055)	4,055	0,000***
Governance (T-1)	-0,001	0,027 (0,056)	-0,043	0,967
Employees(T-1)	-0,000	0,000 (0,000)	-0,864	0,389
Sales(T-1)	1,906	0,005 (0,000)	2,467	0,014**
R-Squared	0,55	0,55	0,55	0,55
p-value	0,000***			

Note: The clustered standard errors are presented in parentheses. Significance levels p-value *** <0,01; **<0,05; *<0,1 respectively.

The Environmental and the Social -pillar scores positively affect the Earnings per share -variable. The connection with the Social -pillar is significant with a 1% significance level, and with the Environmental pillar it is significant with a 10% significance level as per the results. The model is significant with a 1% significance rate, and R-Squared is relatively high with this model: 0,55.

To recap the results of chapter 5.2; the results can be summarized in the following way:

1) An increase in the Environmental score positively affects the ROA variable, as shown in Figure 11.

2) An increase in the Social score positively affects the ROA variable, as illustrated in Figure 12.

3) As shown in Figure 13, an increase in the Environmental score positively affects the EPS variable.

4) As observable in Figure 14, an increase in the Environmental score positively affects the PB variable.

5) An increase in the Social score positively affects the EPS variable, as visualized in Figure 15.
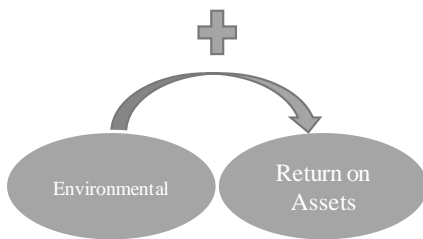
Figure 11 Environmental – ROA -nexus
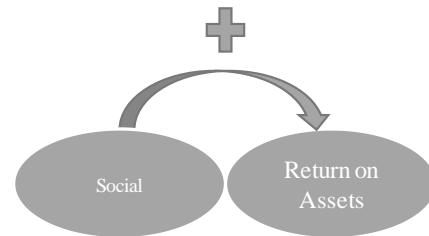
Figure 12 Social – ROA -nexus
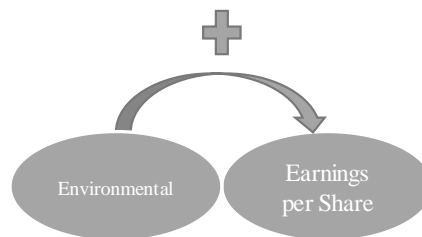
Figure 13 Environmental – EPS - nexus
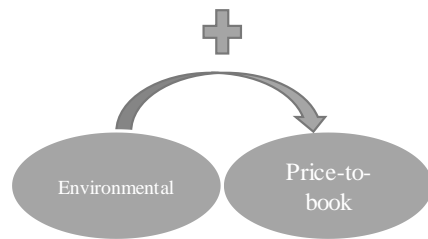
Figure 14 Environmental - Price-to-book -nexus
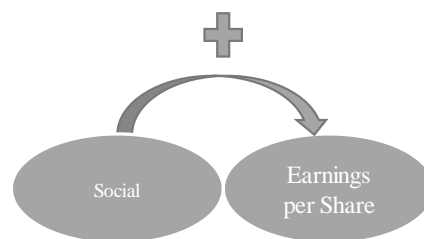
Figure 15 Social – EPS -nexus

With the results of this chapter, the 1st sub-question of the study can be answered. The question is:

- *"Has the Environmental score had a higher effect on the financial performance factors compared to the other two individual pillars?"*

As the results show, an increase in environmental score positively affects all of the CFP variables used in this study. Therefore, the Environmental score has had a broader impact on the CFP variables than the other ESG-pillars, as the Governance score does not directly impact the CFP of a company, and the Social pillar only affects two out of three CFP variables. It is still debatable whether the impact of the Environmental score on financial performance factors has been higher than the impact of the Social -pillar. The Social -pillar's effect on EPS was 0,095 units per increase of 1 ESG-score, whereas the impact of the Environmental pillar was 0,064. The Social -pillar (0,037) also has a higher impact on the ROA -variable than the Environmental -pillar (0,035), but the difference was relatively small. The Environmental -pillar had a significant and positive relationship with the Price-to-book -variable, whereas The Social -pillar's relationship was not significant. The effect of the Environmental -pillar was not only more significant but also more substantial than the Social -pillar's effect on the PB -variable. The data suggests that in the Nordic countries, from 2007 to 2020, the Environmental -pillar score has had the highest effect on the CFP-factors out of the three individual pillars.

5.3. The bidirectional nexus between CFP and CSR

The study's research question is if there is a two-way link between corporate financial performance and corporate social responsibility. Chapters 5.1 and 5.2 went through the individual nexuses. The results from chapters 5.1 and 5.2 have to be connected to answer the main research question of the study:

"Is there a bidirectional connection between corporate social performance and corporate financial performance in Nordic companies?

According to the panel data analysis conducted in this paper, the results suggest that the Social -variable has a bidirectional connection with the Earnings per share -variable. The link is favorable in both ways, meaning that an increase in the Social -score increases the EPS of a company, and increase in the EPS of a company has a positive effect on the Social -score of a company. The result can be illustrated in the following way:
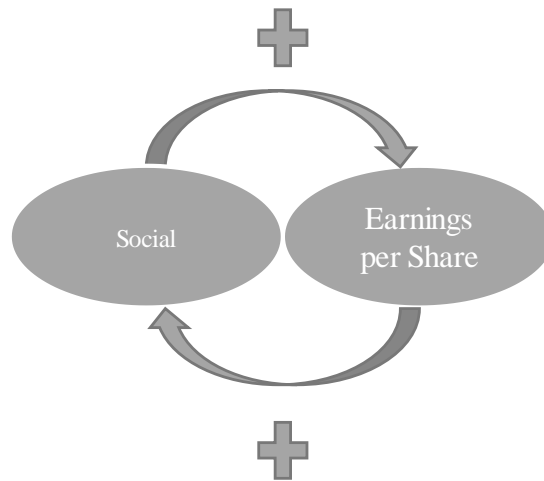
Figure 16 The bidirectional connection between the Social - and Earnings per share - variables.

6. Conclusions and Discussion

The study results and the research limitations are discussed in this chapter, and further research topics are proposed. The chapter begins with a discussion of the results and how they line with previous literature. In the second part of the chapter, study limitations are briefly discussed. The chapter ends with further research topic suggestions.

This thesis' goal was to find further evidence regarding the possible bidirectional, two-way relationship between corporate social responsibility and corporate financial performance. Corporate social responsibility was valued by ESG-scoring gathered from Refinitiv Eikon - database. This leads to corporate social performance, which then was valued against the corporate financial performance -variables ROA, PB and EPS. The study used panel data analysis and regressions to examine the possible causality between CSP and CFP. As shown in chapter 2.4, the link has been studied since the 1970s. To my knowledge, this study is the first to evaluate the nexus between previously mentioned CSP and CFP variables in the broad Nordic countries' scope using the Refinitiv Eikon's ESG-scoring. With climate change and other challenges in sustainability, the discussion regarding responsibility is needed more than ever to help decision-making within companies.

6.1. Results and contribution of the study

The results of the study are in line with the majority of previous studies, as this study also finds a positive relationship between CSR and CFP. Whereas several studies have found a positive link between CSR and CFP, the results of this study are a bit different. The study does not find a significant link between CSP measured by ESG Combined -score and CFP. This could be because of the controversies score, which has not been widely used in previous studies. Even if the ESG Combined score has developed in the same direction as all of the individual pillars, it is not just a balanced average of the three. However, it also takes the controversial news released of a company into account. This might make it less liable, and thus the study is unable to find a connection between the ESG Combined score and the company's financial performance. As Fatemi et al. (2018) indicated, the ESG strengths do increase a firm's value. However, ESG concerns decrease it, meaning that a score that takes ESG strengths and concerns into account could be insignificant as the controversies score

has an opposite effect on the valuation of a company compared to the overall movement of the three individual pillars.

The study, however, finds several partial and two-way links between the CSP and CSR variables. Preston and O'Bannon (1997) suggested that the nexus would be a circle where corporate social responsibility affects corporate financial performance and corporate financial performance affects corporate social responsibility, as presented in Figure 5. Within the context of the most prominent Nordic companies, this theory can be said to be at least partially true. According to the results of this research, the social -pillar from ESG -pillars has a positive and bidirectional nexus between the earnings per share -variable, which was used to measure the financial performance of companies. The results are not entirely in line with previous studies, but partially so. It contributes more insight to the question presented by Schreck (2011); there would indeed be a reverse causality between CSP and CFP, meaning that the question also asked in Figure 4 is answered partly. The results align with the results received by Hichri and Ltifi (2021), who studied the bidirectional nexus in a Swedish context. Since the Nordic Countries are seen as similar economies, as presented by Gjølberg (2010) in chapter 1.1., the broader scope is a natural expansion of the results of Hichri and Ltifi (2021). The results are also partially in line with previously presented studies created by Pätäri et al. (2016) and Orlitzky (2003).

Additionally, to the presented bidirectional link of social -pillar and earnings per share -variable, the study found positive links between the variables of CSP and CSR. The Governance -pillar as a dependent variable has a positive and significant link with the EPS -variable, meaning that an increase in the EPS -variable has a positive effect on the governance -scoring of a company. The results suggest that financial performance -variables as dependent variables have a more vital relationship with the social performance than the other way around. Thus, according to the study results, a company's social performance has a strong and positive relationship with the company's financial performance. As presented in Figure 11, Figure 12, Figure 13, Figure 14, and Figure 15, there is a positive connection between every CFP and Environmental -pillar, meaning that an increase in the Environmental -score has a positive effect on the financial performance of a company. The strong link between the Environmental -pillar and CFP -variables is in line with Velte's (2021) suggestion, where he states that environmental success eventually contributes to the financial performance of a company.

The Social -pillar has a positive link with ROA and EPS. Considering the Social -pillar and the Environmental -pillar results, these results contribute a more detailed look to the previous literature. The majority of the previous literature, such as the reviews and meta-analyses conducted by Friede et al. (2015) and Dixon-Flower et al. (2013), suggest an increase in a company's CSP increases the FP of a company. The results of this study partially agree with this suggestion. However, this study proposes a more detailed relationship. According to the results of this study, the increase in overall ESG does not have a positive effect on CFP. However, an increase in individual pillars (social and environmental) does so. These results propose that more specific research on the ESG-scoring is still needed within the CFP-CSP literature.

The one-way link between the ROA of a company and the Environmental and the Social pillar was positive and significant. The increase in the Environmental and the Social -scores also increases the company's return on assets. In this study, ROA was determined as the ratio between net income and total assets of a company. Therefore, the ROA could increase if a company can increase the net income without increasing the total assets or reduce the total assets without reducing the net income. Investing in environmental matters, such as circular economy or reducing carbon emissions, positively affects the ROA. It is expected that investments in such matters do not reduce the company's total assets, meaning that the increase in ROA can be expected to be caused by an increase in net income. The results indicated by this study mean that investing in environmental or social matters would make companies more efficient, as they are likely to earn more income with smaller investments. Investing in the previously mentioned matters would make a company more attractive also for investors, meaning that the Trade-off theory suggested by Preston and O'Bannon (1997) would not be consistent with the results of this study. The results align with Ferrell et al. (2015) results. As Ferrell et al. (2015) suggest, investing in social responsibility can be consistent with the core value of capitalism; it can generate more returns for investors by making the company more efficient, as the results between ROA and CSP suggest.

The environmental -pillar positively affects all of the used CFP -variables, ROA, P/B and EPS. It indicates that an increase in the environmental scoring increases the CFP of a company as a whole. Fatemi et al. (2018) had the same kind of results. Their results suggest that the environmental strengths increase firm value, but the weaknesses also decrease it. It is in line with the results of this study, as they also suggest that the relationship between the

social or governance scores and financial performance is not that strong. Contrary, this study finds a positive relationship between the Social -pillar and the Earnings per share variable and between the social -pillar and the return on assets, unlike Fatemi et al. (2018), who suggested that strengths in the social -pillar do not have an impact on firms valuation. If an increase in the Social -pillar increases the ROA and price-to-book -ratio, it can be expected to increase firms' valuation eventually. Likewise to Fatemi et al. (2018), this study does not find a significant link between changes in the governance -pillar and CFP. However, Fatemi et al. (2018) did find a negative link between weak governance performance and the valuation of a company. The results of this study can not support that result.

The bidirectional nexus between the Social -pillar and earnings per share represented in Figure 16 aligns with Preston and O'Bannon's (1997) suggestion of a bidirectional relationship between the CSP and CFP. This result also partly answers the question of Schreck (2011), who asked if the nexus is indeed bidirectional instead of a one-way relationship. Based on the results of this study, it can be said that there has been a partial but still bidirectional link between CSP and CFP in Nordic companies in the 21st century. Thus, the answer to the research question is positive; there is a partial bidirectional connection between corporate social performance and corporate financial performance in Nordic companies. The results are partly in line with Hichri and Ltifi's (2021) results, where they find a positive two-way nexus between CSR and CFP. However, this study does not find a complete nexus between CSR and CFP, just a partial one, unlike Hichri and Ltifi found in the Swedish context. The result partially agrees with the study constructed by Pätäri et al. (2016), where they also found at least a partial bidirectional nexus between CSP and CFP.

The results regarding the nexus between the environmental pillar and the CFP -variables suggest that a Nordic company should aim to increase its environmental score and keep it high once it has increased. A drop in the score could decrease all of the tested CFP -variables, meaning that the company's value would decrease too. Environmentally friendly investments seem to increase the efficiency of a company and increase its profits in relation to its market price as well as its assets. This means that looking from a market-based or accounting-based point of view, investment in such matters pays back and should be highly profitable in Nordic companies. In the sense of the environmental crisis we are in, the results are promising as the results of this study can boost the morale of companies on investing in environmentally friendly projects. However, they are also problematic from the

greenwashing perspective, as the profitability of scoring high on the Environmental -score could make managers make decisions that would increase the Environmental -score of a company without actually aiming to become more environmentally friendly. This is possible because of the lack of regulations on the ESG-reporting.

As the study suggests, investments in Social or Environmental matters increase the earnings per share of a Nordic company, eventually most likely leading to an increase in the share price. If the EPS increases, investors should see that a company creates more profits per share, meaning the share price becomes more valuable. Investing in social matters, such as workforce or human rights, can create a positive loop for a company because an increase in the EPS also seems to affect a Nordic company's social score positively. This is likely because a company with higher profits can invest more in social matters, which then encourages a talented workforce to join the company, which helps the company increase its earnings (per share). Thus, according to the results of this study, a Nordic company should consider investing in the social and environmentally friendly projects, but there is no need to push for governance investments beyond necessary practices.

6.2. Study limitations

The study's limitations are within the ESG-data, which all Nordic companies have not regularly reported. This leads to a situation where many companies have to be removed from the sample. The ESG-reporting has been the poorest in Norway, where seven companies had to be removed from the sample to sustain robust results. In Denmark, six companies had to be removed. 19 of the 20 OMX Helsinki 20 -companies were selected from Finnish companies for the study. Stockholm's index, OMX Stockholm 30, is the biggest index of the four. From the Stockholm sample size, 25 companies were selected for the study. This limits the sample size, thus leading to fewer data points in the study. Another limitation of the study is the currencies. As Nordic companies have different currencies in every country, the average exchange rates have to be used in order to standardize the results. For this study, an average of quarterly data has been used to achieve annual fixed rates for each country. However, this may have a slight effect on the final results.

Another problem with the ESG-reporting is the limitations of its regulation, leaving a possibility for 'greenwashing' (Yu, Luu and Chen, 2020). Greenwashing is defined by Yu et al. (2020) as an attempt to hide a company's less-than-stellar overall ESG performance by publishing enormous amounts of ESG data to deceive its stakeholders. By greenwashing, companies can achieve higher ESG-scores and thus make their CSP look better than it actually is, making the data less trustable. This should always be kept in mind when reading articles that use ESG-scoring as a measure for CSP. When interpreting the study results, one also must keep in mind that ESG-scoring may be differently important for different companies and industries, as Moon (2007) presented. This study does not consider industries, meaning that the results are merely average effects for average Nordic companies.

6.3. Future research suggestions

In the future, the nexus between CFP and ESG-scoring or the individual pillars of ESG could be researched by taking the industry into account, as discussed in the previous chapter. It would also be interesting to aim future research toward the reasoning behind the proven bidirectional link. The research could focus on why there is a link and how strong it is rather than whether it is a link. It is pretty well proven that the link exists, but its reasoning is yet to be discussed in large quantities from an academic perspective. Future research could focus on the mediating effects and how strong the relationship between CSR and the aforementioned mediating effect is. The mediating effects were suggested by Schreck (2011) and are illustrated in Figure 4 of this study.

Another reasonable suggestion for future research will be to see if the CFP-CSP -link differs between different parts of the world. It has been proved earlier that a country of a company affects the ESG-scoring and the CFP-CSP -link. The difference between Nordic countries, other Western countries, or even emerging countries are not studied throughout, so the results regarding differences in these different continents would be more than interesting.

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Appendices

Appendix 1: Selected companies by countries

Denmark	Finland	Norway	Sweden
14	19	13	25
A P MOLLER MAERSK A	CARGOTEC CORP	DNO ASA	ABB LTD
CARLSBERG A/S	ELISA CORP	EQUINOR ASA	ALFA LAVAL AB
COLOPLAST A/S	FORTUM OYJ	FRONTLINE LTD	ASSA ABLOY AB
DANSKE BANK A/S	HUHTAMAKI OYJ	MOWI ASA	ASTRAZENECA PLC
DEMANT A/S	KESKO OYJ	NORSK HYDRO ASA	ATLAS COPCO
DSV A/S	KONE CORPORATION	ORKLA	BOLIDEN AB
GENMAB A/S	KONECRANES	SCHIBSTED ASA	ELECTROLUX AB
GN STORE NORD A/S	METSO OUTOTEC	STOREBRAND ASA -	ERICSSON
			GETINGE AB
NOVO NORDISK A/S	NESTE OYJ	SUBSEA 7 S.A	HENNES & MARUITZ AB
NOVOZYMES A/S	NOKIA OYJ	TELENOR GROUP	HEXAGON AB
PANDORA	NORDEA BANK ABP	TOMRA SYSTEMS ASA	INVESTOR AB
ROCKWOOL INT'L A/S	NOKIAN TYRES PLC	TGS A	KINNEVIK
TRYG A/S	ORION O	YARA INTERNATIO	SANDVIK AB
VESTAS WIND SYSTEMS	OUTOKUMPU OYJ		SKANDINAVISKA ENSKILDA BANKEN AB
	SAMPO PLC		SKANSKA AB
	STORA ENSO OYJ		SKF AB
	TIETOEVRY		SVENSKA CELLULOSA
	UPM-KYMMENE OYJ		SVENSKA HANDELSBANKEN AB
	WARTSILA OYJ		SWEDBANK AB
			SWEDISH MATCH AB
			TELE2 AB
			TELIA COMPANY AB
			Volvo AB
			SSAB SVENSKT STAL AB

Appendix 2: Full Regression models for each of the dependent variables

$$ESG\ Combined_{iT} = \alpha + B_1 * ROA_{i(T-1)} + B_2 * \frac{P}{B_{i(T-1)}} + B_3 * EPS_{i(T-1)} + B_4 * SIZE_{i(T-1)} + \varepsilon_{it}$$

$$Environmental_{iT} = \alpha + B_1 * ROA_{i(T-1)} + B_2 * \frac{P}{B_{i(T-1)}} + B_3 * EPS_{i(T-1)} + B_4 * SIZE_{i(T-1)} + \varepsilon_{it}$$

$$Social_{iT} = \alpha + B_1 * ROA_{i(T-1)} + B_2 * \frac{P}{B_{i(T-1)}} + B_3 * EPS_{i(T-1)} + B_4 * SIZE_{i(T-1)} + \varepsilon_{it}$$

$$Governance_{iT} = \alpha + B_1 * ROA_{i(T-1)} + B_2 * \frac{P}{B_{i(T-1)}} + B_3 * EPS_{i(T-1)} + B_4 * SIZE_{i(T-1)} + \varepsilon_{it}$$

$$Earnings\ per\ Share_{iT} = \alpha + \beta_1 * ESG_{i(T-1)} + \beta_2 * E_{i(T-1)} + \beta_3 * G_{i(T-1)} + \beta_4 * S_{i(T-1)} + \beta_5 * SIZE_{i(T-1)} + \varepsilon_{it}$$

$$Price-to-book_{iT} = \alpha + \beta_1 * ESG_{i(T-1)} + \beta_2 * E_{i(T-1)} + \beta_3 * G_{i(T-1)} + \beta_4 * S_{i(T-1)} + \beta_5 * SIZE_{i(T-1)} + \varepsilon_{it}$$

$$Return\ on\ Assets\ (\%) = \alpha + \beta_1 * ESG_{i(T-1)} + \beta_2 * E_{i(T-1)} + \beta_3 * G_{i(T-1)} + \beta_4 * S_{i(T-1)} + \beta_5 * SIZE_{i(T-1)} + \varepsilon_{it}$$

Appendix 3: Full regression results for Least Squares Dummy Variable (LSDV) regressions
CSP -variables as dependent variables

Environmental

Variable	Estimate	Std. Error	t-value	Pr(>|t|)	Significance-level
(Intercept)	65,527	6,156	10,645	< 0,000	***
roa_lag	0,007	0,083	0,080	0,936	
pb_lag	0,017	0,231	0,072	0,943	
eps_lag	0,007	0,057	0,121	0,904	
employees_lag	0,000	0,000	2,178	0,030	*
sales_lag	-0,016	0,010	-1,634	0,103	
factor(company)ABB LTD	17,807	5,685	3,132	0,002	**
factor(company)ALFA LAVAL AB	9,715	6,341	1,532	0,126	
factor(company)ASSA ABLOY AB	6,772	5,761	1,176	0,240	
factor(company)ASTRAZENECA PLC	20,509	5,179	3,960	0,000	***
factor(company)ATLAS COPCO	10,917	6,486	1,683	0,093	.
factor(company)BOLIDEN AB	19,518	6,524	2,992	0,003	**
factor(company)CARGOTEC CORP	3,039	6,448	0,471	0,638	
factor(company)CARLSBERG A/S	-11,458	5,410	-2,118	0,034	*
factor(company)COLOPLAST A/S	-5,453	7,065	-0,772	0,440	
factor(company)DANSKE BANK A/S	19,463	5,891	3,304	0,001	***
factor(company)DEMANT A/S	-45,717	6,830	-6,694	0,000	***
factor(company)DNO ASA	-50,948	6,842	-7,446	0,000	***
factor(company)DSV A/S	-15,992	5,853	-2,732	0,006	**
factor(company)ELECTROLUX AB	10,669	5,232	2,039	0,042	*
factor(company)ELISA CORP	-14,077	6,788	-2,074	0,038	*
factor(company)EQUINOR ASA	24,799	8,216	3,018	0,003	**
factor(company)ERICSSON	3,858	4,969	0,776	0,438	
factor(company)FORTUM OYJ	15,606	6,464	2,414	0,016	*
factor(company)FRONTLINE LTD	-60,821	6,783	-8,967	< 0,000	***
factor(company)GENMAB A/S	-36,376	7,019	-5,183	0,000	***
factor(company)GETINGE AB	-14,989	6,389	-2,346	0,019	*
factor(company)GN STORE NORD A/S	-45,850	6,699	-6,844	0,000	***
factor(company)HENNES & MAURITZ AB	16,000	5,799	2,759	0,006	**
factor(company)HEXAGON AB	-37,073	6,413	-5,781	0,000	***
factor(company)HUHTAMAKI OYJ	-10,522	6,786	-1,551	0,121	
factor(company)INVESTOR AB	-55,339	6,396	-8,652	< 0,000	***
factor(company)KESKO OYJ	18,959	5,977	3,172	0,002	**
factor(company)KINNEVIK	-30,875	6,683	-4,620	0,000	***
factor(company)KONE CORPORATION	-7,775	5,955	-1,306	0,192	
factor(company)KONECRANES	-0,785	6,485	-0,121	0,904	
factor(company)METSO OUTOTEC	17,664	6,862	2,574	0,010	*

factor(company)MOWI ASA	-19,205	6,477	-2,965	0,003	**
factor(company)NESTE OYJ	8,091	6,572	1,231	0,219	
factor(company)NOKIA OYJ	12,257	4,843	2,531	0,012	*
factor(company)NOKIAN TYRES PLC	-7,344	6,797	-1,081	0,280	
factor(company)NORDEA BANK ABP	11,960	5,601	2,135	0,033	*
factor(company)NORSK HYDRO ASA	15,800	5,984	2,640	0,008	**
factor(company)NOVO NORDISK A/S	-3,244	6,801	-0,477	0,634	
factor(company)NOVOZYMES A/S	14,248	6,825	2,088	0,037	*
factor(company)ORION O	-6,122	7,059	-0,867	0,386	
factor(company)ORKLA	18,238	6,074	3,003	0,003	**
factor(company)OUTOKUMPU OYJ	-5,945	6,563	-0,906	0,365	
factor(company)PANDORA	-34,314	6,621	-5,183	0,000	***
factor(company)ROCKWOOL INT'L A/S	8,487	6,466	1,313	0,190	
factor(company)SAMPO PLC	-9,439	6,499	-1,453	0,147	
factor(company)SANDVIK AB	-0,021	5,551	-0,004	0,997	
factor(company)SCHIBSTED ASA	-32,690	6,618	-4,940	0,000	***
factor(company)SKANDINAVISKA ENSK	22,305	6,070	3,675	0,000	***
factor(company)SKANSKA AB	19,060	5,186	3,675	0,000	***
factor(company)SKF AB	11,985	5,568	2,152	0,032	*
factor(company)SSAB SVENSKT STAL AB	12,560	6,337	1,982	0,048	*
factor(company)STORA ENSO OYJ	19,486	5,840	3,337	0,001	***
factor(company)STOREBRAND ASA -	8,624	6,643	1,298	0,195	
factor(company)SUBSEA 7 S.A	-27,001	6,505	-4,151	0,000	***
factor(company)SV. HANDELSBANKEN AB	11,322	6,294	1,799	0,072	.
factor(company)SVENSKA CELLULOSA	17,569	5,671	3,098	0,002	**
factor(company)SWEDBANK AB	17,629	6,081	2,899	0,004	**
factor(company)SWEDISH MATCH AB	3,931	6,970	0,564	0,573	
factor(company)TELE2 AB	-27,381	6,557	-4,176	0,000	***
factor(company)TELENOR GROUP	-0,887	5,693	-0,156	0,876	
factor(company)TELIA COMPANY AB	-2,671	5,874	-0,455	0,649	
factor(company)TGS A	-42,500	6,789	-6,261	0,000	***
factor(company)TIETOEV	5,469	6,211	0,881	0,379	
factor(company)TOMRA SYSTEMS ASA	3,002	6,651	0,451	0,652	
factor(company)TRYG A/S	-19,448	6,674	-2,914	0,004	**
factor(company)UPM-KYMMENE OYJ	15,046	6,027	2,497	0,013	*
factor(company)VESTAS WIND SYSTEMS	6,422	6,119	1,050	0,294	
factor(company)VOLVO AB	19,434	4,623	4,204	0,000	***
factor(company)WARTSILA OYJ	17,478	6,288	2,780	0,006	**
factor(company)YARA INTERNATIO	-10,638	6,187	-1,719	0,086	.

Social

Variable	Estimate	Std. Error	t-value	Pr(>|t|)	Significance-level
(Intercept)	40,171	6,664	6,028	0,000	***
roa_lag	-0,077	0,090	-0,856	0,392	
pb_lag	0,328	0,250	1,311	0,190	
eps_lag	0,207	0,062	3,332	0,001	***
employees_lag	0,000	0,000	4,858	0,000	***
sales_lag	-0,050	0,010	-4,750	0,000	***
factor(company)ABB LTD	24,095	6,155	3,915	0,000	***
factor(company)ALFA LAVAL AB	24,857	6,865	3,621	0,000	***
factor(company)ASSA ABLOY AB	18,694	6,237	2,997	0,003	**
factor(company)ASTRAZENECA PLC	40,970	5,607	7,307	0,000	***
factor(company)ATLAS COPCO	41,558	7,021	5,919	0,000	***
factor(company)BOLIDEN AB	36,866	7,063	5,219	0,000	***
factor(company)CARGOTEC CORP	16,075	6,980	2,303	0,022	*
factor(company)CARLSBERG A/S	15,789	5,857	2,696	0,007	**
factor(company)COLOPLAST A/S	32,707	7,649	4,276	0,000	***
factor(company)DANSKE BANK A/S	25,701	6,378	4,030	0,000	***
factor(company)DEMANT A/S	-0,793	7,394	-0,107	0,915	
factor(company)DNO ASA	-24,814	7,407	-3,350	0,001	***
factor(company)DSV A/S	2,723	6,337	0,430	0,668	
factor(company)ELECTROLUX AB	22,974	5,665	4,056	0,000	***
factor(company)ELISA CORP	1,738	7,349	0,236	0,813	
factor(company)EQUINOR ASA	66,948	8,895	7,527	0,000	***
factor(company)ERICSSON	14,502	5,380	2,696	0,007	**
factor(company)FORTUM OYJ	16,855	6,998	2,409	0,016	*
factor(company)FRONTLINE LTD	-27,327	7,343	-3,722	0,000	***
factor(company)GENMAB A/S	-3,601	7,599	-0,474	0,636	
factor(company)GETINGE AB	9,732	6,917	1,407	0,160	
factor(company)GN STORE NORD A/S	12,670	7,253	1,747	0,081	.
factor(company)HENNES & MAURITZ AB	17,855	6,278	2,844	0,005	**
factor(company)HEXAGON AB	9,586	6,943	1,381	0,168	
factor(company)HUHTAMAKI OYJ	13,390	7,347	1,823	0,069	.
factor(company)INVESTOR AB	10,794	6,925	1,559	0,119	
factor(company)KESKO OYJ	39,066	6,470	6,038	0,000	***
factor(company)KINNEVIK	26,330	7,236	3,639	0,000	***
factor(company)KONE CORPORATION	11,024	6,447	1,710	0,088	.
factor(company)KONECRANES	3,816	7,020	0,544	0,587	
factor(company)METSO OUTOTEC	33,972	7,429	4,573	0,000	***
factor(company)MOWI ASA	35,700	7,012	5,091	0,000	***
factor(company)NESTE OYJ	37,899	7,115	5,327	0,000	***
factor(company)NOKIA OYJ	30,603	5,243	5,837	0,000	***
factor(company)NOKIAN TYRES PLC	-1,358	7,358	-0,185	0,854	

factor(company)NORDEA BANK ABP	17,116	6,064	2,823	0,005	**
factor(company)NORSK HYDRO ASA	51,589	6,479	7,963	0,000	***
factor(company)NOVO NORDISK A/S	30,961	7,363	4,205	0,000	***
factor(company)NOVOZYMES A/S	33,108	7,389	4,481	0,000	***
factor(company)ORION O	27,037	7,642	3,538	0,000	***
factor(company)ORKLA	35,891	6,575	5,458	0,000	***
factor(company)OUTOKUMPU OYJ	26,354	7,105	3,709	0,000	***
factor(company)PANDORA	14,275	7,168	1,991	0,047	*
factor(company)ROCKWOOL INT'L A/S	8,159	7,000	1,166	0,244	
factor(company)SAMPO PLC	-12,813	7,036	-1,821	0,069	.
factor(company)SANDVIK AB	22,810	6,010	3,795	0,000	***
factor(company)SCHIBSTED ASA	1,042	7,165	0,145	0,884	
factor(company)SKANDINAVISKA ENSK	28,214	6,572	4,293	0,000	***
factor(company)SKANSKA AB	20,369	5,615	3,628	0,000	***
factor(company)SKF AB	35,253	6,029	5,848	0,000	***
factor(company)SSAB SVENSKT STAL AB	28,804	6,861	4,198	0,000	***
factor(company)STORA ENSO OYJ	37,326	6,323	5,903	0,000	***
factor(company)STOREBRAND ASA -	27,403	7,192	3,810	0,000	***
factor(company)SUBSEA 7 S.A	-2,114	7,042	-0,300	0,764	
factor(company)SV. HANDELSBANKEN AB	20,391	6,814	2,993	0,003	**
factor(company)SVENSKA CELLULOSA	37,303	6,140	6,076	0,000	***
factor(company)SWEDBANK AB	22,527	6,584	3,422	0,001	***
factor(company)SWEDISH MATCH AB	34,699	7,546	4,598	0,000	***
factor(company)TELE2 AB	24,574	7,099	3,462	0,001	***
factor(company)TELENOR GROUP	23,310	6,164	3,782	0,000	***
factor(company)TELIA COMPANY AB	39,659	6,359	6,237	0,000	***
factor(company)TGS A	7,145	7,349	0,972	0,331	
factor(company)TIETOEV	38,790	6,725	5,769	0,000	***
factor(company)TOMRA SYSTEMS ASA	33,493	7,201	4,651	0,000	***
factor(company)TRYG A/S	8,475	7,225	1,173	0,241	
factor(company)UPM-KYMMENE OYJ	27,548	6,525	4,222	0,000	***
factor(company)VESTAS WIND SYSTEMS	23,535	6,624	3,553	0,000	***
factor(company)VOLVO AB	33,065	5,005	6,606	0,000	***
factor(company)WARTSILA OYJ	30,995	6,807	4,553	0,000	***
factor(company)YARA INTERNATIO	39,573	6,699	5,908	0,000	***

Governance

Variables	Estimate	Std. Error	t-value	Pr(>|t|)	Significance-levels
(Intercept)	34,998	7,717	4,535	0,000	***
roa_lag	-0,119	0,104	-1,145	0,253	
pb_lag	0,378	0,290	1,305	0,192	
eps_lag	0,136	0,072	1,893	0,059	.
employees_lag	0,000	0,000	1,145	0,253	
sales_lag	-0,006	0,012	-0,468	0,640	
factor(company)ABB LTD	42,684	7,127	5,989	0,000	***
factor(company)ALFA LAVAL AB	30,447	7,949	3,830	0,000	***
factor(company)ASSA ABLOY AB	28,771	7,222	3,984	0,000	***
factor(company)ASTRAZENECA PLC	51,934	6,493	7,999	0,000	***
factor(company)ATLAS COPCO	28,121	8,130	3,459	0,001	***
factor(company)BOLIDEN AB	17,881	8,179	2,186	0,029	*
factor(company)CARGOTEC CORP	2,547	8,083	0,315	0,753	
factor(company)CARLSBERG A/S	29,382	6,782	4,332	0,000	***
factor(company)COLOPLAST A/S	-7,149	8,857	-0,807	0,420	
factor(company)DANSKE BANK A/S	39,572	7,385	5,359	0,000	***
factor(company)DEMANT A/S	-22,413	8,562	-2,618	0,009	**
factor(company)DNO ASA	-7,063	8,577	-0,823	0,410	
factor(company)DSV A/S	12,485	7,338	1,702	0,089	.
factor(company)ELECTROLUX AB	35,617	6,559	5,430	0,000	***
factor(company)ELISA CORP	12,647	8,510	1,486	0,138	
factor(company)EQUINOR ASA	46,370	10,299	4,502	0,000	***
factor(company)ERICSSON	38,001	6,229	6,101	0,000	***
factor(company)FORTUM OYJ	35,097	8,103	4,331	0,000	***
factor(company)FRONTLINE LTD	-5,735	8,503	-0,675	0,500	
factor(company)GENMAB A/S	34,742	8,799	3,949	0,000	***
factor(company)GETINGE AB	4,604	8,009	0,575	0,566	
factor(company)GN STORE NORD A/S	18,263	8,398	2,175	0,030	*
factor(company)HENNES & MAURITZ AB	5,452	7,270	0,750	0,453	
factor(company)HEXAGON AB	-4,425	8,039	-0,550	0,582	
factor(company)HUHTAMAKI OYJ	32,014	8,507	3,763	0,000	***
factor(company)INVESTOR AB	29,543	8,018	3,685	0,000	***
factor(company)KESKO OYJ	13,381	7,492	1,786	0,074	.
factor(company)KINNEVIK	27,807	8,378	3,319	0,001	***
factor(company)KONE CORPORATION	-22,800	7,465	-3,054	0,002	**
factor(company)KONECRANES	6,731	8,129	0,828	0,408	
factor(company)METSO OUTOTEC	10,031	8,602	1,166	0,244	
factor(company)MOWI ASA	16,615	8,119	2,046	0,041	*
factor(company)NESTE OYJ	33,080	8,239	4,015	0,000	***
factor(company)NOKIA OYJ	47,441	6,071	7,815	0,000	***
factor(company)NOKIAN TYRES PLC	-6,861	8,520	-0,805	0,421	

factor(company)NORDEA BANK ABP	37,871	7,021	5,394	0,000	***
factor(company)NORSK HYDRO ASA	42,512	7,502	5,667	0,000	***
factor(company)NOVO NORDISK A/S	19,604	8,526	2,300	0,022	*
factor(company)NOVOZYMES A/S	20,657	8,555	2,415	0,016	*
factor(company)ORION O	1,915	8,849	0,216	0,829	
factor(company)ORKLA	19,399	7,614	2,548	0,011	*
factor(company)OUTOKUMPU OYJ	-0,902	8,227	-0,110	0,913	
factor(company)PANDORA	10,798	8,300	1,301	0,194	
factor(company)ROCKWOOL INT'L A/S	-13,127	8,105	-1,620	0,106	
factor(company)SAMPO PLC	-4,976	8,147	-0,611	0,541	
factor(company)SANDVIK AB	20,430	6,959	2,936	0,003	**
factor(company)SCHIBSTED ASA	0,580	8,296	0,070	0,944	
factor(company)SKANDINAVISKA ENSK	28,504	7,610	3,746	0,000	***
factor(company)SKANSKA AB	25,504	6,501	3,923	0,000	***
factor(company)SKF AB	11,078	6,981	1,587	0,113	
factor(company)SSAB SVENSKT STAL AB	3,0957	7,944	0,390	0,697	
factor(company)STORA ENSO OYJ	31,803	7,321	4,344	0,000	***
factor(company)STOREBRAND ASA -	21,523	8,328	2,585	0,010	**
factor(company)SUBSEA 7 S.A	22,254	8,154	2,729	0,006	**
factor(company)SV. HANDELSBANKEN AB	1,523	7,890	1,931	0,054	.
factor(company)SVENSKA CELLULOSA	32,941	7,110	4,633	0,000	***
factor(company)SWEDBANK AB	38,438	7,624	5,042	0,000	***
factor(company)SWEDISH MATCH AB	29,008	8,738	3,320	0,001	***
factor(company)TELE2 AB	34,708	8,220	4,223	0,000	***
factor(company)TELENOR GROUP	20,819	7,137	2,917	0,004	**
factor(company)TELIA COMPANY AB	40,962	7,363	5,563	0,000	***
factor(company)TGS A	37,765	8,510	4,438	0,000	***
factor(company)TIETOEV	16,434	7,786	2,111	0,035	*
factor(company)TOMRA SYSTEMS ASA	24,043	8,338	2,884	0,004	**
factor(company)TRYG A/S	19,079	8,366	2,281	0,023	*
factor(company)UPM-KYMMENE OYJ	45,599	7,555	6,036	0,000	***
factor(company)VESTAS WIND SYSTEMS	28,094	7,670	3,663	0,000	***
factor(company)VOLVO AB	25,706	5,796	4,435	0,000	***
factor(company)WARTSILA OYJ	13,189	7,882	1,673	0,095	.
factor(company)YARA INTERNATIO	34,398	7,757	4,435	0,000	***

Appendix 4: Full regression results for Least Squares Dummy Variable (LSDV) regressions
CFP -variables as dependent variables

Return on Assets

Variables	Estimate	Std. Error	t-value	Pr(>|t|)	Significance-levels
(Intercept)	14,812	3,270	4,530	0,000	***
esg_lag	-0,030	0,026	-1,125	0,261	
e_lag	0,035	0,021	1,660	0,097	.
s_lag	0,036	0,021	1,669	0,095	.
g_lag	-0,014	0,016	-0,874	0,382	
employees_lag	0,000	0,000	-5,518	0,000	***
sales_lag	0,011	0,005	2,345	0,019	*
factor(company)ABB LTD	7,754	2,666	2,908	0,004	**
factor(company)ALFA LAVAL AB	-5,427	3,225	-1,683	0,093	.
factor(company)ASSA ABLOY AB	-2,040	2,868	-0,711	0,477	
factor(company)ASTRAZENECA PLC	-1,684	2,576	-0,654	0,514	
factor(company)ATLAS COPCO	28,018	2,887	9,706	< 2,2e-16	***
factor(company)BOLIDEN AB	-8,582	3,387	-2,534	0,011	*
factor(company)CARGOTEC CORP	-12,000	3,261	-3,680	0,000	***
factor(company)CARLSBERG A/S	-6,154	2,852	-2,158	0,031	*
factor(company)COLOPLAST A/S	9,006	3,374	2,670	0,008	**
factor(company)DANSKE BANK A/S	-15,221	3,055	-4,982	0,000	***
factor(company)DEMANT A/S	-0,653	3,404	-0,192	0,848	
factor(company)DNO ASA	-9,307	3,536	-2,632	0,009	**
factor(company)DSV A/S	-4,280	2,926	-1,463	0,144	
factor(company)ELECTROLUX AB	-5,324	2,678	-1,988	0,047	*
factor(company)ELISA CORP	-4,096	3,395	-1,207	0,228	
factor(company)EQUINOR ASA	-17,858	4,069	-4,389	0,000	***
factor(company)ERICSSON	0,054	2,423	0,022	0,982	
factor(company)FORTUM OYJ	-8,371	3,253	-2,573	0,010	*
factor(company)FRONTLINE LTD	-11,366	3,581	-3,174	0,002	**
factor(company)GENMAB A/S	-5,499	3,571	-1,540	0,124	
factor(company)GETINGE AB	-9,376	3,261	-2,875	0,004	**
factor(company)GN STORE NORD A/S	-5,774	3,524	-1,638	0,102	
factor(company)HENNES & MAURITZ AB	16,562	2,508	6,603	0,000	***
factor(company)HEXAGON AB	-7,043	3,307	-2,129	0,033	*
factor(company)HUHTAMAKI OYJ	-6,909	3,494	-1,977	0,048	*
factor(company)INVESTOR AB	-1,410	3,468	-0,407	0,684	
factor(company)KESKO OYJ	-10,253	3,047	-3,364	0,001	***
factor(company)KINNEVIK	-1,266	3,591	-0,353	0,724	
factor(company)KONE CORPORATION	2,698	2,819	0,957	0,339	
factor(company)KONECRANES	-8,815	3,251	-2,712	0,007	**

factor(company)METSO OUTOTEC	-14,571	3,501	-4,162	0,000	***
factor(company)MOWI ASA	-8,135	3,392	-2,399	0,017	*
factor(company)NESTE OYJ	-9,348	3,358	-2,784	0,005	**
factor(company)NOKIA OYJ	-2,621	2,390	-1,097	0,273	
factor(company)NOKIAN TYRES PLC	-3,319	3,389	-0,979	0,328	
factor(company)NORDEA BANK ABP	-12,555	2,883	-4,355	0,000	***
factor(company)NORSK HYDRO ASA	-13,534	3,112	-4,349	0,000	***
factor(company)NOVO NORDISK A/S	21,992	3,032	7,253	0,000	***
factor(company)NOVOZYMES A/S	-1,321	3,393	-0,389	0,697	
factor(company)ORION O	6,423	3,443	1,866	0,062	.
factor(company)ORKLA	-9,503	3,105	-3,061	0,002	**
factor(company)OUTOKUMPU OYJ	-16,169	3,280	-4,929	0,000	***
factor(company)PANDORA	11,450	3,402	3,366	0,001	***
factor(company)ROCKWOOL INT'L A/S	-7,974	3,299	-2,417	0,016	*
factor(company)SAMPO PLC	-12,064	3,278	-3,680	0,000	***
factor(company)SANDVIK AB	-2,315	2,777	-0,834	0,405	
factor(company)SCHIBSTED ASA	-7,198	3,391	-2,123	0,034	*
factor(company)SKANDINAVISKA ENSK	-14,724	3,131	-4,702	0,000	***
factor(company)SKANSKA AB	-5,996	2,660	-2,254	0,024	*
factor(company)SKF AB	-4,143	2,831	-1,463	0,144	
factor(company)SSAB SVENSKT STAL AB	-13,392	3,237	-4,137	0,000	***
factor(company)STORA ENSO OYJ	-10,247	2,983	-3,436	0,001	***
factor(company)STOREBRAND ASA -	-16,976	3,405	-4,985	0,000	***
factor(company)SUBSEA 7 S.A	-10,275	3,332	-3,083	0,002	**
factor(company)SV. HANDELSBANKEN AB	-14,933	3,218	-4,641	0,000	***
factor(company)SVENSKA CELLULOSA	-4,974	2,956	-1,683	0,093	.
factor(company)SWEDBANK AB	-13,613	3,163	-4,304	0,000	***
factor(company)SWEDISH MATCH AB	10,467	3,394	3,084	0,002	**
factor(company)TELE2 AB	-5,387	3,460	-1,557	0,120	
factor(company)TELENOR GROUP	-7,519	2,892	-2,600	0,009	**
factor(company)TELIA COMPANY AB	-8,342	3,065	-2,722	0,007	**
factor(company)TGS A	-6,372	3,600	-1,770	0,077	.
factor(company)TIETOEV	-9,313	3,160	-2,947	0,003	**
factor(company)TOMRA SYSTEMS ASA	-9,649	3,386	-2,850	0,004	**
factor(company)TRYG A/S	-11,378	3,412	-3,334	0,001	***
factor(company)UPM-KYMMENE OYJ	-9,768	3,093	-3,158	0,002	**
factor(company)VESTAS WIND SYSTEMS	-9,402	3,071	-3,062	0,002	**
factor(company)VOLVO AB	-2,680	2,275	-1,178	0,239	
factor(company)WARTSILA OYJ	-8,307	3,162	-2,627	0,009	**
factor(company)YARA INTERNATIO	-7,660	3,315	-2,311	0,021	*

Price-to-book

Variables	Estimate	Std. Error	t-value	Pr(>|t|)	Significance-levels
(Intercept)	-0,711	0,938	-0,758	0,449	
esg_lag	0,006	0,008	0,741	0,459	
e_lag	0,013	0,006	2,224	0,026	*
s_lag	0,007	0,006	1,088	0,277	
g_lag	-0,005	0,005	-1,070	0,285	
employees_lag	0,000	0,000	0,179	0,858	
sales_lag	0,000	0,001	0,270	0,787	
factor(company)ABB LTD	2,336	0,764	3,058	0,002	**
factor(company)ALFA LAVAL AB	2,617	0,924	2,833	0,005	**
factor(company)ASSA ABLOY AB	2,427	0,821	2,954	0,003	**
factor(company)ASTRAZENECA PLC	4,288	0,738	5,811	0,000	***
factor(company)ATLAS COPCO	5,180	0,827	6,263	0,000	***
factor(company)BOLIDEN AB	0,409	0,971	0,421	0,674	
factor(company)CARGOTEC CORP	0,879	0,934	0,940	0,347	
factor(company)CARLSBERG A/S	1,284	0,817	1,571	0,116	
factor(company)COLOPLAST A/S	11,053	0,967	11,428	<0,000	***
factor(company)DANSKE BANK A/S	0,041	0,875	0,046	0,963	
factor(company)DEMANT A/S	7,486	0,976	7,669	0,000	***
factor(company)DNO ASA	1,928	1,013	1,902	0,057	.
factor(company)DSV A/S	3,660	0,838	4,367	0,000	***
factor(company)ELECTROLUX AB	1,941	0,767	2,531	0,012	*
factor(company)ELISA CORP	4,147	0,973	4,263	0,000	***
factor(company)EQUINOR ASA	0,523	1,166	0,448	0,654	
factor(company)ERICSSON	1,158	0,694	1,669	0,095	.
factor(company)FORTUM OYJ	0,631	0,932	0,677	0,499	
factor(company)FRONTLINE LTD	1,662	1,027	1,619	0,106	
factor(company)GENMAB A/S	7,410	1,023	7,244	0,000	***
factor(company)GETINGE AB	1,996	0,934	2,136	0,033	*
factor(company)GN STORE NORD A/S	4,657	1,010	4,609	0,000	***
factor(company)HENNES & MAURITZ AB	5,831	0,718	8,118	0,000	***
factor(company)HEXAGON AB	2,410	0,948	2,542	0,011	*
factor(company)INVESTOR AB	1,023	0,994	1,029	0,304	
factor(company)KESKO OYJ	0,645	0,873	0,739	0,460	
factor(company)KINNEVIK	0,646	1,030	0,627	0,531	
factor(company)KONE CORPORATION	6,598	0,808	8,170	0,000	***
factor(company)KONECRANES	1,931	0,931	2,073	0,038	*
factor(company)MOWI ASA	1,207	0,972	1,241	0,215	
factor(company)NESTE OYJ	1,474	0,962	1,532	0,126	
factor(company)NOKIA OYJ	1,087	0,685	1,587	0,113	
factor(company)NOKIAN TYRES PLC	2,555	0,971	2,631	0,009	**
factor(company)NORDEA BANK ABP	0,351	0,826	0,426	0,670	

factor(company)NORSK HYDRO ASA	-0,071	0,892	-0,080	0,936	
factor(company)NOVO NORDISK A/S	11,167	0,869	12,855	<0,000	***
factor(company)NOVOZYMES A/S	6,088	0,972	6,262	0,000	***
factor(company)ORION O	5,075	0,987	5,143	0,000	***
factor(company)ORKLA	0,656	0,890	0,738	0,461	
factor(company)OUTOKUMPU OYJ	5,043	0,940	5,363	0,000	***
factor(company)PANDORA	7,063	0,975	7,242	0,000	***
factor(company)ROCKWOOL INT'L A/S	1,226	0,945	1,297	0,195	
factor(company)SAMPO PLC	1,549	0,939	1,649	0,100	.
factor(company)SANDVIK AB	2,438	0,795	3,066	0,002	**
factor(company)SCHIBSTED ASA	4,332	0,972	4,458	0,000	***
factor(company)SKANDINAVISKA ENSK	0,147	0,897	0,164	0,870	
factor(company)SKANSKA AB	1,379	0,762	1,810	0,071	.
factor(company)SKF AB	1,710	0,811	2,108	0,035	*
factor(company)SSAB SVENSKT STAL AB	-0,326	0,928	-0,352	0,725	
factor(company)STORA ENSO OYJ	0,018	0,855	0,021	0,983	
factor(company)STOREBRAND ASA -	0,015	0,976	0,015	0,988	
factor(company)SUBSEA 7 S.A	1,276	0,955	1,337	0,182	
factor(company)SV. HANDELSBANKEN AB	0,553	0,922	0,599	0,549	
factor(company)SVENSKA CELLULOSA	0,544	0,847	0,642	0,521	
factor(company)SWEDBANK AB	0,417	0,906	0,461	0,645	
factor(company)SWEDISH MATCH AB	3,708	0,972	3,813	0,000	***
factor(company)TELE2 AB	1,986	0,992	2,003	0,046	*
factor(company)TELENOR GROUP	2,966	0,829	3,580	0,000	***
factor(company)TELIA COMPANY AB	1,044	0,878	1,188	0,235	
factor(company)TGS A	2,077	1,032	2,013	0,044	*
factor(company)TIETOEV	1,527	0,906	1,686	0,092	.
factor(company)TOMRA SYSTEMS ASA	3,011	0,971	3,102	0,002	**
factor(company)TRYG A/S	2,925	0,978	2,992	0,003	**
factor(company)UPM-KYMMENE OYJ	0,178	0,886	0,201	0,841	
factor(company)VESTAS WIND SYSTEMS	2,851	0,880	3,241	0,001	**
factor(company)VOLVO AB	0,906	0,652	1,390	0,165	
factor(company)WARTSILA OYJ	2,119	0,906	2,339	0,020	*
factor(company)YARA INTERNATIO	0,977	0,950	1,028	0,304	

Earnings per Share

Variables	Estimate	Std. Error	t-value	Pr(>|t|)	Significance-levels
(Intercept)	37,071	5,433	6,823	0,000	***
esg_lag	-0,050	0,044	-1,154	0,249	
e_lag	0,056	0,035	1,629	0,100	*
s_lag	0,144	0,035	4,055	0,000	***
g_lag	-0,001	0,027	-0,043	0,966	
employees_lag	0,000	0,000	-0,864	0,388	
sales_lag	1,906	0,773	2,466	0,014	**
factor(company)ABB LTD	-50,714	4,430	-11,449	<0,000	***
factor(company)ALFA LAVAL AB	-39,196	5,359	-7,314	0,000	***
factor(company)ASSA ABLOY AB	-41,541	4,766	-8,716	<0,000	***
factor(company)ASTRAZENECA PLC	-51,412	4,280	-12,013	<0,000	***
factor(company)ATLAS COPCO	-39,849	4,797	-8,308	0,000	***
factor(company)BOLIDEN AB	-34,510	5,628	-6,132	0,000	***
factor(company)CARGOTEC CORP	-45,072	5,419	-8,318	0,000	***
factor(company)CARLSBERG A/S	-17,236	4,739	-3,637	0,000	***
factor(company)COLOPLAST A/S	-36,056	5,605	-6,432	0,000	***
factor(company)DANSKE BANK A/S	-41,413	5,077	-8,157	0,000	***
factor(company)DEMANT A/S	-37,379	5,657	-6,608	0,000	***
factor(company)DNO ASA	-38,917	5,875	-6,624	0,000	***
factor(company)DSV A/S	-30,964	4,861	-6,370	0,000	***
factor(company)ELECTROLUX AB	-38,239	4,449	-8,595	<0,000	***
factor(company)ELISA CORP	-42,182	5,641	-7,478	0,000	***
factor(company)EQUINOR ASA	-54,364	6,760	-8,042	0,000	***
factor(company)ERICSSON	-46,842	4,026	-11,635	<0,000	***
factor(company)FORTUM OYJ	-45,923	5,405	-8,496	<0,000	***
factor(company)FRONTLINE LTD	-35,982	5,950	-6,047	0,000	***
factor(company)GENMAB A/S	-28,258	5,933	-4,763	0,000	***
factor(company)GETINGE AB	-38,155	5,419	-7,041	0,000	***
factor(company)GN STORE NORD A/S	-36,979	5,856	-6,315	0,000	***
factor(company)HENNES & MAURITZ AB	-40,419	4,168	-9,699	<0,000	***
factor(company)HEXAGON AB	-42,516	5,496	-7,737	0,000	***
factor(company)HUHTAMAKI OYJ	-43,728	5,806	-7,532	0,000	***
factor(company)INVESTOR AB	-29,113	5,762	-5,053	0,000	***
factor(company)KESKO OYJ	-50,430	5,064	-9,959	<0,000	***
factor(company)KINNEVIK	-14,239	5,967	-2,386	0,017	*
factor(company)KONE CORPORATION	-44,882	4,683	-9,584	<0,000	***
factor(company)KONECRANES	-43,060	5,401	-7,972	0,000	***
factor(company)METSO OUTOTEC	-49,106	5,818	-8,441	<0,000	***
factor(company)MOWI ASA	-42,473	5,635	-7,537	0,000	***
factor(company)NESTE OYJ	-49,802	5,579	-8,927	<0,000	***
factor(company)NOKIA OYJ	-52,995	3,971	-13,346	<0,000	***

factor(company)NOKIAN TYRES PLC	-42,045	5,631	-7,466	0,000	***
factor(company)NORDEA BANK ABP	-41,726	4,790	-8,712	<0,000	***
factor(company)NORSK HYDRO ASA	-51,699	5,171	-9,998	<0,000	***
factor(company)NOVO NORDISK A/S	-36,610	5,038	-7,267	0,000	***
factor(company)NOVOZYMES A/S	-41,016	5,638	-7,275	0,000	***
factor(company)ORION O	-45,407	5,721	-7,937	0,000	***
factor(company)ORKLA	-47,568	5,159	-9,221	<0,000	***
factor(company)OUTOKUMPU OYJ	-48,886	5,450	-8,970	<0,000	***
factor(company)PANDORA	-8,673	5,653	-1,534	0,125	
factor(company)ROCKWOOL INT'L A/S	2,994	5,481	0,546	0,585	
factor(company)SAMPO PLC	-41,087	5,447	-7,543	0,000	***
factor(company)SANDVIK AB	-42,269	4,614	-9,161	<0,000	***
factor(company)SCHIBSTED ASA	-34,261	5,634	-6,082	0,000	***
factor(company)SKANDINAVISKA ENSK	-43,125	5,203	-8,289	0,000	***
factor(company)SKANSKA AB	-37,707	4,420	-8,531	<0,000	***
factor(company)SKF AB	-40,058	4,705	-8,515	<0,000	***
factor(company)SSAB SVENSKT STAL AB	-45,982	5,378	-8,550	<0,000	***
factor(company)STORA ENSO OYJ	-50,402	4,956	-10,170	<0,000	***
factor(company)STOREBRAND ASA -	-45,344	5,658	-8,015	0,000	***
factor(company)SUBSEA 7 S.A	-42,400	5,537	-7,658	0,000	***
factor(company)SV. HANDELSBANKEN AB	-40,614	5,347	-7,596	0,000	***
factor(company)SVENSKA CELLULOSA	-42,565	4,912	-8,666	<0,000	***
factor(company)SWEDBANK AB	-35,930	5,255	-6,838	0,000	***
factor(company)SWEDISH MATCH AB	-46,236	5,639	-8,199	0,000	***
factor(company)TELE2 AB	-38,244	5,749	-6,653	0,000	***
factor(company)TELENOR GROUP	-42,877	4,805	-8,923	<0,000	***
factor(company)TELIA COMPANY AB	-47,601	5,093	-9,347	<0,000	***
factor(company)TGS A	-35,554	5,981	-5,944	0,000	***
factor(company)TIETOEV	-49,396	5,250	-9,409	<0,000	***
factor(company)TOMRA SYSTEMS ASA	-46,581	5,626	-8,279	0,000	***
factor(company)TRYG A/S	-39,334	5,670	-6,938	0,000	***
factor(company)UPM-KYMMENE OYJ	-48,221	5,139	-9,383	<0,000	***
factor(company)VESTAS WIND SYSTEMS	-45,355	5,102	-8,889	<0,000	***
factor(company)VOLVO AB	-47,057	3,781	-12,447	<0,000	***
factor(company)WARTSILA OYJ	-48,674	5,254	-9,264	<0,000	***
factor(company)YARA INTERNATIO	-26,597	5,508	-4,829	0,000	***