



# Corporate Sustainability and Financial Performance

*An empirical study of the moderating impact of compliance with sustainability reporting standards on the relationship between corporate sustainable performance and corporate financial performance.*

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## Abstract

Identifying a link between corporate sustainability performance (CSP) and corporate financial performance (CFP) can be critical in convincing companies to be more responsible, whether in terms of correcting their own questionable behaviour or addressing social concerns. Despite the increasing discussion, the results continue to suggest inconsistency. The exclusion of important variables, such as the use of sustainability reporting standards (SRSs) in the econometrical estimate procedure, may explain this inconsistency. Given the voluntary nature of sustainability reporting, companies choose whether, and to what degree, to align their respective sustainability report with an SRS. The extant literature lacks knowledge on the implications SRS compliance has for the CSP-CFP relationship, and it does not identify if the relationship varies due to differences in the level and scope of SRS compliance. We therefore analyse the moderating effects SRSs of varying level and scope have on the CSP-CFP relationship.

We employ a moderated multiple regression to test the above relationship by including 1,822 observations from 335 listed UK companies within the period from 2010 to 2018. We have included the use of partial or full compliance with impact- or financial-material SRSs in the regression models as moderating variables on the relationship between CSP and CFP. The results indicate that SRSs have a moderating effect on the CSP-CFP relationship, with the nature of the moderation depending on the level and scope of the SRS compliance. This supports the prediction that ambiguous results may stem from the exclusion of important variables, such as SRS compliance. First, our results suggest that partial compliance with impact-material SRSs increases the impact of CSP on CFP. Second, our results indicate that both compliance levels of financial-material SRSs decrease the effect CSP has on CFP.

The findings imply that summary measures for CSP have a reduced impact on CFP if the SRS compliance increases the informativeness of the sustainability report. This has implications for how stakeholders, including investors, assess a company's CSP. The results also have inferences for how a company can identify the most effective strategies to combine CSP and the reporting of this performance for the highest potential profitability. Thus, the relevance of this study derives from it advancing the knowledge on the CSP-CFP relationship by suggesting the importance of SRS compliance level and scope for the impact CSP has on CFP.

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## Abbreviations

The following table describes the meaning of abbreviations used throughout the thesis. We have also cited the page on which the abbreviation is either defined or first introduced.

<b>Abbreviation</b>	<b>Meaning</b>	<b>Page</b>
AA1000	AccountAbility 1000	103
CDP	Climate Disclosure Project	103
CDSB	Climate Disclosure Standards Board	103
CFP	Corporate financial performance	17
CSRD	Corporate Sustainability Reporting Directive	16
CSP	Corporate sustainability performance	17
EC	European Commission	16
ESG	Environmental, social and governance	17
EU	European Union	16
FE	Fixed effects	43
GRI	Global Reporting Initiative	103
IIRC	International Integrated Reporting Framework	103
<IR>	Integrated Reporting	103
NFRD	Non-Financial Reporting Directive	16
POLS	Pooled Ordinary Least Squares	42
RE	Random effects	42
SASB	Sustainability Accounting Standards Board	103
SIC	Stakeholder influence capacity	24
SRS	Sustainability reporting standards	14
SRT	Sustainability reporting tools	14
TFCF	Task Force on Climate-related Financial Disclosures	104
UNGC	United Nations Global Compact	104



## 1. Introduction

The existing literature on sustainability considers the company as an institution that should be in dialogue with all its stakeholders and not just its shareholders. An increasing number of companies are now reporting on their sustainability practices, thereby responding to stakeholder demand and pressure for transparency and accountability in companies' activities (Global Reporting Initiative, 2005). Consequently, there has been a development of different corporate sustainability reporting tools (SRTs) to help inform organisations about their progress toward reaching sustainability goals (Siew, 2015).

An important question in academia is whether it truly pays to be environmentally conscious (Adebite et al., 2018). Despite prior academic interest, this remains an unsolved problem (Wang et al., 2016). The empirical research to date has mostly been concentrated on the precise nature of the link between CSP and CFP (Aupperle et al., 1985; Orlitzky et al., 2003; Ullmann, 1985). Many studies find a positive relationship between the two performance measurements CSP and CFP (Friede et al., 2015). Even so, some studies find a negative or insignificant relationship between CSP and CFP (Margolis et al., 2007).

It is still unclear what explains the contradictory findings concerning the relationship between CSP and CFP (Barnett, 2007; Barnea & Rubin, 2010; Barnett & Salomon, 2012). This lack of clarity may indicate that there are other factors moderating the relationship (Margolis & Walsh, 2003). Researchers have tested several moderators (Hull & Rothenberg, 2008; Tang, et al., 2012; Harmer et al., 2021; Fiandrino et al., 2018; Xie et al., 2019), however, there is a lack of knowledge on the moderating effect of SRS compliance. Thus, this study responds to the demand for addressing this relation from new perspectives (Golob, et al., 2013; Pérez, 2015).

One of the factors that are likely to affect the CSP-CFP relationship is the compliance with sustainability reporting standards (SRSs), as such compliance may increase the informativeness of the disclosed sustainability information. Investors prefer non-financial information that is clear, consistent, comparable, and credible (Cohen et al., 2015). Summary ratings for CSP alone are unlikely to provide sufficient information for investors to assess companies' CSP (Dhaliwal et al., 2011). Sustainability reports may contain information surpassing the information that summary ratings give (Dhaliwal et al., 2011; Eng et al., 2022).

Moreover, compliance with SRSs ensures that sustainability reporting contribute to the quality characteristics preferred by investors (Christensen et al., 2018; Del Giudice & Rigamonti, 2020; Delmas & Burbano, 2011; Hess, 2014; Eccles et al., 2012). Thus, there is a theory-based rationale to predict that the link between CSP and CFP differs between companies that comply with SRSs and those that do not. A key question is whether CSP, operationalised through ESG ratings, may affect CFP less for companies aligned with SRSs, because the sustainability reports provide incremental information to single metrics for CSP of a company's current and future CSP.

The impact of CSP on CFP may also differ further depending on the level and scope of SRS compliance. Companies can choose the level of compliance and the type of information to disclose because of the voluntary nature of sustainability reporting (De Villiers & Van Staden, 2011). Regarding the level of compliance, partial reporting often implies providing just positive or minor topics and is a significant issue in terms of the content of sustainability reports (Brand, et al., 2018). The existing literature is weak on partial compliance with SRSs. This presents a research gap that is whether partial compliance with SRSs increases the need for more extensive information on CSP, for instance through ESG ratings. This study will investigate whether SRS compliance of different level and scope affects the degree to which CSP affects CFP.

Materiality is an important concept in defining the scope of SRS (Christensen et al., 2019). Typically, SRSs focus on either financial materiality or impact materiality. Investors may be more interested in financial-material information because they expect that addressing this type of information will enhance CFP (Jørgensen et al., 2021). If the investors understand which materiality concept the reporting company applies, they can be more confident that they are drawing valid conclusions from the sustainability reporting. Earlier research has not yet clarified whether the use of financial-material SRSs decreases the effect CSP has on CFP, which is another research gap this study will aim to address.

This study addresses the following research question: *Does compliance with sustainability reporting standards moderate the relationship between corporate sustainability performance and corporate financial performance?* The research question will be studied through a moderated multiple regression on 1,822 observations from 335 listed UK companies within the period from 2010 to 2018, using a fixed effects model. In the regression models, we include

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partial or full compliance with impact- or financial-material SRSs as moderating factors on the association between CSP and CFP. In doing so, this study predicts that SRSs function as moderators of the relationship between CSP and CFP. As a moderator, the compliance with SRSs interacts with CSP to impact CFP. We also expect that SRS compliance directly affects both CSP and CFP.

The results of this study will have both academic and practical implications. Our study supplements the previous studies that test the direct relationships between CSP and CFP (Friede et al., 2015), and may further explain the ambiguous results on the CSP-CFP relationship. First, the finding of CFP being directly affected by SRS compliance, and not CSP suggests that ESG ratings as measures for CSP may not be the appropriate metric to use in studies on the relationship. This validates earlier research indicating that third-party measures for CSP may not provide sufficient information for investors to assess a company's overall CSP (Dhaliwal et al., 2011).

From the direct results, we find that partial compliance with impact-material SRSs has the lowest impact on CFP, while full compliance with this group of SRSs has the highest effect on CFP. The divergence between the two compliance levels' impact on CFP is an important finding, because it suggests that partial compliance with this group of SRSs is subject to "greenwashing". In other words, partial compliance with SRSs suggests the selective reporting of favourable information, in alignment with Lyon and Maxwell's (2011) definition of "greenwashing". Furthermore, full compliance with impact-material SRSs having the greatest effect on CFP supports the signalling theory indicating that the signal must be costly to be effective (Connelly et al., 2011). This is because the impact-material SRSs often require more comprehensive reporting (Christensen et al., 2018, p. 131). A less effective signal from partial compliance with SRSs thus indicates that third-party measures for CSP impacts CFP more.

The result of both compliance levels with financial-material SRS reducing the impact of CSP on CFP may support the prediction that such materiality focus has an increased function as an adequate measure of CSP for investors (Guay et al., 2016; Dyer et al., 2017). Earlier research highlights that SRS compliance often mandates companies to disclose (financially) immaterial information, which may diminish the informativeness of these SRTs to investors (Guay et al., 2016; Dyer et al., 2017). The moderating effect of financial-material SRSs supports these

findings, as the financial materiality focus seems to decrease the informativeness of third-party measures for CSP.

The practical implications of this study regard the compliance costs for the reporting company and the information processing costs for their stakeholders. Constructing a sustainability report in alignment with SRSs requires substantial costs for the reporting company, especially on a short-term horizon (Oosterhoff, 2022). Therefore, it is important to identify whether the companies obtain any return on the resources they invest in SRS compliance. Our findings of CFP being positively impacted by SRS compliance, and not CSP, has implications for how stakeholders, including investors, assess a companies' sustainability practices. With SRS compliance, the companies have the possibility to give a more in-depth explanation of their current and future sustainability practices than single metrics for CSP can. Our findings indicate that the more material the focus of the followed SRS is to investors, the less CSP affects CFP. Thus, the companies have greater control over the investors' perceptions of their sustainability practices when reporting aligned with financial-material SRSs. This uncovers incentives to adopt SRS compliance in a company's non-financial reporting.

Recognising the varying effects of different SRSs on the CSP-CFP relationship, but also directly on CFP, may aid in the discovery of critical flaws in present non-financial disclosure requirements and the broad range of existing SRSs. This justifies the decision of the five framework- and standard-setting institutions (CDP, CDSB, GRI, IIRC and SASB) in creating a coalition that works towards a comprehensive corporate reporting system (Impact Management Project, 2020). Further, this also supports the implementation of consistent SRSs through the CSRD (European Commission, 2021).

The remaining structure of the thesis is as follows. In the next chapter we will clarify the definitions of central terms used throughout this thesis. Following this, we will discuss important academic theories in relation to the research question. To account for the research gap, we will review earlier literature on the CSP-CFP relationship and SRS compliance. This is followed by a presentation of the hypotheses accompanying the research question. Next, we will outline the research design for the study, as well as present the results. Finally, we will discuss our findings, and discuss the limitations and implications for future research that the study may have.

## 2. Clarification of Definitions

### 2.1 Sustainability Reporting

While there are various terms referring to sustainability reporting, this study has recognised the term following the GRI:

Sustainability reporting is the practice of measuring, disclosing, and being accountable to internal and external stakeholders for organizational performance towards the goal of sustainable development. A sustainability report should provide a balanced and reasonable representation of the sustainability performance of the reporting organization, including both positive and negative contributions (Global Reporting Initiative, 2011, p. 3).

The GRI Sector Supplement for Public Agencies point out transparency and accountability as two of the reasons for preparing sustainability reports (Global Reporting Initiative, 2005). Transparency ensures that the reports inform stakeholders about the company's financial and non-financial activities (Bushman et al., 2004). According to Raimo et al. (2021), companies conducting sustainability reports are found to obtain third-party funding at lower costs. This provides investors with a higher return and a lower degree of risk, which incentivises managers to focus on transparency and the disclosure of sustainability information (Raimo et al., 2021).

In most countries, sustainability reporting is voluntary, which has resulted in a multitude of labels, including Corporate Citizenship Report, Corporate Responsibility Report, Social Responsibility Report, Sustainable Development Report, Sustainable Value Report, and Sustainability Report (Eccles & Krzus, 2010, p. 99; Hahn & Kühnen, 2013, p. 7). This vocabulary expansion has resulted in confusion and vagueness. According to Farneti and Guthrie (2009), the phrase "sustainable reporting" is increasingly becoming the most utilized by organizations. Even so, there is no agreement on its definition, nor is there a standard framework to follow. We choose to use the term "sustainability reporting" to emphasise the focus on both the environmental and the social aspect of sustainability, as well as the economic aspect.

## 2.2 SRT

SRTs may be categorised into frameworks, standards, and ratings and indices (Siew, 2015). The frameworks include principles, initiatives, or guidelines that companies can use to guide them in their disclosure practices. Standards serve a similar purpose as frameworks, but they take the form of a more formal documentation that outlines the requirements, specifications, or features that may be used to assure that sustainability initiatives are consistently met. Ratings and indices are third-party assessments of a company's CSP.

## 2.3 SRS

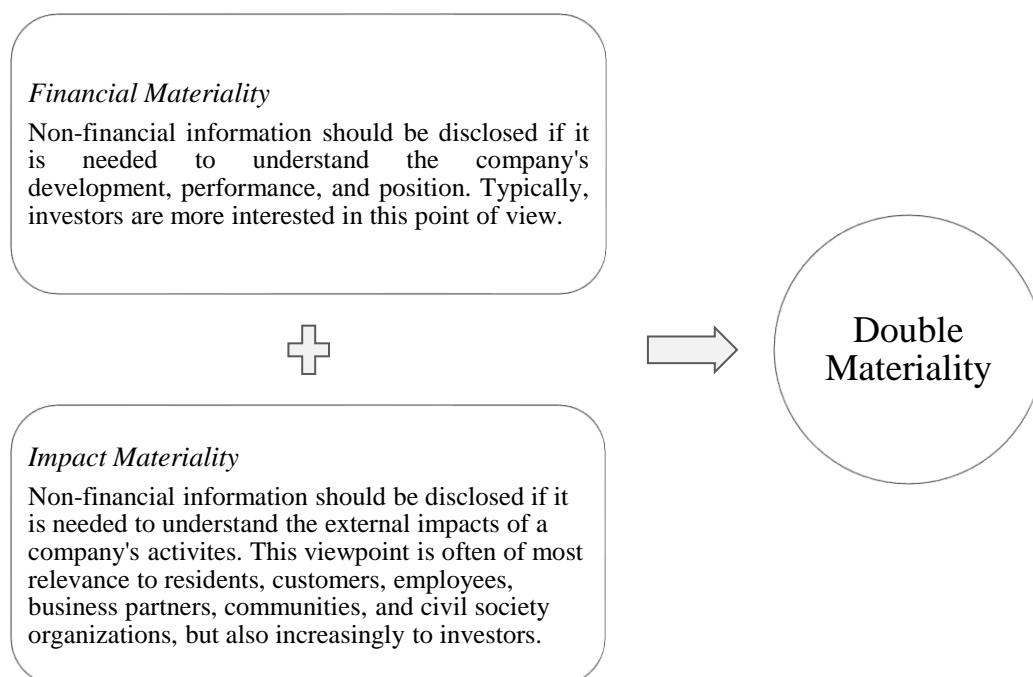
SRSs are reporting standards that give instructions to companies on how to organise the sustainability report as well as which indicators to report against (Hess, 2014). According to Hess, these standards aim to ensure that reports provide a thorough and fair depiction of a company's sustainability activities and performance. Furthermore, the SRSs address the information demand of diverse stakeholders, and enables the ability for stakeholders to compare the CSP of different companies. To ensure that sustainability information is as relevant as financial information, it is crucial to establish SRSs that are comparable to the precision and accuracy of the standards in financial report requirements (Eccles et al., 2012).

In the absence of SRSs, companies may struggle with knowing exactly how to assess and report their CSP, as suggested by Eccles et al. (2012). According to Eccles et al., widespread use of SRSs can make it easier for investors to conduct fair comparisons of performance among companies, as well as historical comparisons. The ability to undertake such comparisons is a prerequisite for incorporating CSP data into financial models, with the subsequent objective of converting such models into more solid business models. Companies who seek to measure their performance against competitors or peers are likewise interested in performance comparisons. SRSs can facilitate these inquiries.

### **2.3.1 Financial- and Impact-material SRS**

The investor-focused, or financial-material, SRSs suggest that non-financial information should be disclosed if it is needed to understand the company's development, performance, and position (European Commission, 2019). On the other hand, the stakeholder-focused, or impact-material, SRSs propose that non-financial information should be disclosed if it is needed to understand the external impacts of a company's activities, according to the European

Commission. Together the two concepts of materiality constitute to the double materiality concept, which is illustrated in Figure 1.



*Figure 1: The double materiality perspective of the Non-Financial Reporting Directive (NFRD) (European Commission, 2019).*

### 2.3.2 Partial and Full Compliance with SRS

Even though SRSs give instructions for what to disclose in a sustainability report, not all companies completely follow these instructions. Following the European Association for Quality Assurance in Higher Education (ENQA), we will divide the companies' compliance level into fully, partially, and non-compliant (Walsh, 2012). Walsh also includes substantially compliant as a category, however, to avoid further discretion we choose to not separate between partially and substantially compliant.

To categorise a company as fully complying with an SRS, the company must state that they report in alignment with the specific SRS. GRI and UNGC have enforcement mechanisms which makes it easier to categorise into the groups of compliance. Regarding the GRI standard, companies fully complying must have the following statement in their report: «This report has been prepared in accordance with the GRI Standards: Core Option/Comprehensive Option». Companies complying with the UNGC principles must submit a «Communication on Progress» report to the UNGC. Such enforcement mechanisms are not present for the rest of

the SRSs. Therefore, for the remaining SRSs, we must rely on clear statements of full compliance with the respective SRSs. Such statements could for instance be: “this report is in alignment with ...”.

In cases where the company is categorised as partially complying with an SRS, the company has mentioned the SRS in the report. In these reports, several aspects of the SRS are reported, but to varying degrees. Some companies have made statements signalling partial compliance, for instance «sufficiently comply», «essentially met», «the criteria are largely met», «full compliance has not been achieved», or «not yet fully compliant» a specific SRS (Walsh, 2012). This classification of compliance level is also in line with the classification method used for financial standards (The International Federation of Accountants, 2002).

### **2.3.3 Current and Future Regulations on SRS**

The Non-Financial Reporting Directive (NFRD) is the European Union (EU) legal framework for regulating non-financial information reported by certain companies in the EU. The main aim of the NFRD is to provide high quality non-financial information and establishing more effective practices in the sustainability area (Gawęda, 2021). As emphasised by the European Commission (EC) (2020), the NFRD is insufficient and in need for improvement. This is because the scope and quality of the information disclosed by companies is not sufficiently comparable, reliable, or relevant (European Commission, 2020). Therefore, the EC adopted the Corporate Sustainability Reporting Directive (CSRD) in 2021, which they will fully implement in 2023 (European Commission, 2021).

The CSRD extends to all large, listed companies (European Commission, 2021). As opposed to the NFRD, the CSRD introduces consistent SRS, and requires assurance of reported information. These SRSs will take on a double materiality perspective, which comprises of financial materiality and impact materiality, as described in Figure 1. Even though no SRS is completely aligned with the concept of double materiality, GRI (Adams, et al., 2021) and UNGC (United Nations Global Compact, 2021) fully supports this perspective and are closely aligned with this materiality perspective.



## 2.4 Operationalising CSP

CSP assesses the extent to which a company incorporates sustainability factors into its operations, as well as the impact these variables have on the company and society (Artiach et al., 2010). Environmental, social, and governance (ESG) ratings are comprehensive indexes that evaluate a company's CSP (Escrig-Olmedo et al., 2010), and serve as a connection between stakeholders and entities (Schäfer, 2005).

Researchers frequently use ESG ratings from third parties as measures of CSP (Papoutsis & Sodhi, 2020; Vilas et al., 2022; Dremptic et al., 2020). Vilas et al. (2022) argue that Refinitiv's ESG score is the best proxy for a company's CSP, because the FTSE4Good indices are based on ESG criteria, and companies with significant controversies are excluded. This study will also use Refinitiv's ESG ratings because of this reasoning, as well as reasons related to data availability.

ESG ratings form a simple approach for incorporating non-financial aspects into quantitative research (Escrig-Olmedo et al., 2010). Furthermore, ESG rating agencies develop these ratings to provide a transparent and objective evaluation of a company's ESG effectiveness and performance, based on data supplied by the company (Avetisyan & Hockerts, 2017).

Gawęda (2021) emphasises that there is no correct nor incorrect way to apply ESG ratings. Because there are presently over 600 ESG rating agencies in the market, various ESG rating agencies may assign different ratings to the same company. The importance of ESG ratings will grow in tandem with the expansion of securities markets and improvements in non-financial information reporting (Ferri & Li-Gang, 2005). Therefore, it is reasonable to expect that the adoption of the CSRD in 2022 will have a significant impact on the prominence of the use of ESG ratings.

## 2.5 CFP

CFP depicts a company's financial situation report during a time period to determine how successful and profitable a company is (Kusumawardani et al., 2021). To measure CFP, one may use accounting-based metrics and/or market-based metrics.

Accounting-based metrics include accounting ratios such as return on assets (ROA), return on equity (ROE), and return on sales (ROS), as proxies for CFP. These metrics reflect the efficiency of the firm's operation and captures historical aspects of CFP (McGuire et al., 1986). Furthermore, they are skewed by managerial manipulation and discrepancies in accounting practices (Branch, 1983; Briloff, 1972; Fisher, 1979).

Market-based metrics include variables such as market value, stock price and Tobin's Q. In contrast to accounting-based metrics, these measures are forward looking and focuses on the company's market performance (Tsoutsoura, 2004). These measures are less vulnerable to accounting procedures and represent an investor's assessment of a company's ability to generate long-term financial profits (McGuire et al., 1988).

Advocates of market-based metrics argue that accounting-based metrics lack informational value and objectivity, because the financial values stem from risk-adjusted discounted future cash flows (Brammer & Millington, 2008). They argue that the accounting-based measures have a short-term perspective (Briloff, 1972; Briloff, 1976; Fisher & McGowan, 1983; Hayes & Abernathy, 1980; Ouchi, 1980), and thus, that they are unsuccessful in capturing the long-term value of the company or the value created for shareholders. Other researchers also report that accounting-based measures have difficulties with capturing a company's reputation and intangible relationships with their stakeholders (Hillman & Keim, 2001).

Proponents of the accounting-based metrics as measures of CFP argue that market-based metrics are influenced by a multitude of factors that are not relevant for either the investors or the stakeholders (Benston, 1982). Ullmann (1985) argues that the investors' valuation of CFP may not be a sufficient nor a proper performance measure to use when studying the relationship between CSP and CFP.

Due to the use of both market-based measures and accounting-based measures in previous research, both measures will be accounted for in this research. Another reason for using both types of financial measures is to account for their flaws in capturing CFP. This mostly relates to the differences in time perspective.

### 3. Academic Theories

Earlier literature has applied different theoretical approaches to study the relationship between CSP and CFP, including the legitimacy theory (Lu & Taylor, 2016) and the stakeholder theory (Orlitzky et al., 2003). These theories have also been applied in studies concerning sustainability reporting (Nguyen, 2020), in addition to the signalling theory (Hassan et al., 2020). Thus, these theories form the theoretical foundation of our study on the moderating effect of SRS compliance on the CSP-CFP relationship.

#### 3.1 Stakeholder Theory

The stakeholder theory is premised on the notion that the function of a company should not be restricted to generating profit for shareholders, but to also harmonise the interests of a multitude of stakeholders (Freeman, 1984). Freeman defines a stakeholder as a party “that can affect or is affected by the carrying out of a company’s aims” (1984, p. 46). As opposed to this theory, the traditional investor view reflects maximization of shareholders’ wealth as the objective of a company (Friedman, 1962). Friedman argues that the only group that has a moral claim on the company are the shareholders (p. 133). However, the stakeholders have a considerable importance in the company’s operations (Amran & Ooi, 2014). The stakeholders expect their interests to be considered, and that the company’s aims incorporate more than just maximising shareholder profit.

Earlier literature often uses the stakeholder theory to describe CSP and depict how it is evaluated and managed (Bingham et al., 2011; Clarkson, 1995), due to the normative aspect of the theory (Garcia et al., 2018). The stakeholder theory also has relevance for SRS compliance, as such compliance has been found to have a high value in terms of developing and retaining stakeholder trust, which is critical for maintaining stakeholder relationships and thus improving CFP (Kuzey & Uyar, 2017; Nguyen, 2020). A company’s behaviour can both hinder and assist stakeholders to accomplish their aims (Marom, 2006). Stakeholders, on the other hand, might act in ways that either aid or impede the company's achievement of its objectives (Rowley & Berman, 2000). Thus, the company should base its decision making on the needs of all stakeholders, rather than merely taking on the traditional investor view.

The positive relationship between CSP and CFP is validated by the stakeholder theory from an instrumental perspective (Wang et al., 2016). Instrumental stakeholder theory addresses the

performance implications for companies of highly ethical interactions with stakeholders. Such interactions are represented by high levels of trust, collaboration, and information exchange (Jones, 1995). Addressing the requirements and expectations of different stakeholders improves CFP through, for instance, enhanced reputation, decreased risk, higher support from regulatory agencies, and attracting investment from financial markets (Marom, 2006). Moreover, managers may improve the effectiveness of their company's response to external demands by addressing and balancing the demands from numerous stakeholders (Freeman & Evan, 1990; Orlitzky et al., 2003). Companies may use sustainability reporting to communicate their efforts to meet stakeholders' demands. Third-party measures for CSP also serve as a connection between stakeholders and companies (Schäfer, 2005). This connection may be affected by the increased informativeness facilitated by SRS compliance.

### 3.2 Legitimacy Theory

To understand the voluntary disclosure of sustainability information and the assessment of this information by investors and other stakeholders, it is worthwhile to consider the legitimacy theory. Guthrie and Parker (1989) state that the legitimacy theory is founded on the premise that companies exist in the society through a social contract. The social contract entails a commitment to execute certain socially desirable acts in exchange for acceptance of its aims, other benefits, and eventual survival. Companies may preserve their legitimacy with these stakeholders by voluntarily disclosing sustainability data in their reporting (O'Donovan, 2000). Moreover, companies may use sustainability reporting as a tool for legitimising organisational practises (Xie et al., 2019).

Previous research has highlighted the importance of the legitimacy theory in the context of the CSP-CFP relationship, since the company can obtain support and resources by creating legitimacy among stakeholders (Xie et al., 2021). The legitimacy theory is also a prevalent theory concerning the significance of sustainability reporting for CFP (Nguyen, 2020). Nguyen argues that this is because transparent reports can legitimise the companies' operations among stakeholders. Compliance with SRSs is a way to achieve transparent reports (Del Giudice & Rigamonti, 2020).

Voluntary disclosure of sustainability information may be damaging when companies use it in a legitimating way to choose if and what to disclose to reduce their social and political

harms, instead of addressing the underlying activities negatively affecting society (Patten, 2019). As a result, legitimacy or reputational threats can drive decisions regarding sustainability reporting (Cho et al., 2010). This relies on motivations from corporate management being more concerned with diverting or justifying their generally poor CSP.

The legitimacy theory supports sustainability disclosure as an essential moderating variable in the relationship between CSP and CFP (Khan et al., 2013). Disclosing information in sustainability reports is a way for companies to legitimise their CSP. Thus, it has implications for CFP. With SRS compliance, companies commit to disclosing specific information that is often material to the actual activities of the companies. In that way, they cannot as easily misuse sustainability reporting to legitimise their actions as merely positive for society (Ching et al., 2017). When companies provide clear and comprehensive sustainability reports, they legitimise their commitment to both sustainability and good business practices compliance (Nguyen, 2020). This commitment may improve stakeholders' perception of the company's CSP and transparency. As a result, improved perception and increased stakeholder support can increase CFP (Kuzey & Uyar, 2017).

### 3.3 Signalling Theory

The signalling theory suggests how companies frequently send out signals that lessen information asymmetry among themselves and stakeholders (Karaman et al., 2020). These signals allow the companies to express their corporate image, aims, behaviour, and performance. The signalling theory claims that companies are only motivated to voluntarily report above the legal requirements if doing so allows them to separate themselves from the competitors (Morris, 1987). Companies that succeed in separating themselves often have higher CFP (Porter, 1980). According to the signalling theory in the field of corporate sustainability, managers use sustainability reports to communicate their companies' long-term sustainability management policies to stakeholders (Hassan et al., 2020). The signalling theory indicates strategic reporting practices and hence provides a contrasting approach to the legitimacy-based arguments (Danisch, 2021).

Research considering the relationship between voluntary sustainability reporting and CSP often use the signalling theory as a theoretical framework (Hassan et al., 2020). The signalling theory is also relevant for compliance with SRSs. A credible signal of sustainability is crucial

for the potential of positive implications for CFP (Johnston, 2005). Because SRS compliance increases the credibility of the sustainability reports (Christensen et al., 2018, p. 7), such compliance may consequently increase the value of the signal.

Market information asymmetry is addressed by the signalling theory (Moratis, 2018). This theory explains how the party with greater information might lessen this asymmetry by signalling it to others. For the signal to be effective, it must also be costly (Connelly et al., 2011). Some companies will undertake social initiatives even if it implies incurring financial losses (Reinhardt et al., 2008; Windsor, 2001). Consequently, the signal may convey the message that the signaller is regarded as more credible or honest in its claim to possess a particular trait (Moratis, 2018).

For the purposes of this study, the stakeholder theory, the legitimacy theory, and the signalling theory are the theoretical frameworks that explain why CSP is relevant for CFP and how companies might communicate this CSP most effectively. These theories are the most used in earlier research on the topics of CSP, SRSs and CFP, which we will review in the next chapter.

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## 4. Literature Review

The link between CSP and CFP has been subject to extensive research, as evidenced by Friede et al.'s (2015) review study of more than 2000 empirical studies on the relationship. However, there is limited literature focusing on SRS compliance, and especially on its role in the relationship between CSP and CFP. This study analyses whether SRS compliance moderates the CSP-CFP relationship. Therefore, it will be relevant to discuss previous research related to both the CSP-CFP and the CSP-SRS relationships, as well as moderating effects on the CSP-CFP relationship.

### 4.1 CSP and CFP

Finding a correlation between CSP and CFP can be crucial in persuading companies to act more responsible, whether in fixing their own questionable behaviour (Campbell, 2006) or addressing societal issues (Porter & Kramer, 2006). A positive correlation between CSP and CFP would thereby justify sustainability performance on economic grounds. A high level of CSP has been evidenced to be one strategy for a company to differentiate itself (Mackey et al., 2007; Siegel & Vitaliano, 2007), which can increase CFP (Porter, 1980).

Earlier research has extensively debated the relationship between CSP and CFP (Friede et al., 2015). Even so, the findings continue to imply inconsistency and no apparent consensus has been reached. Existing studies of the CSP–CFP relationship operationalise CFP using either accounting-based measures (Wu & Shen, 2013) or market-based measures (Jo & Harjoto, 2011). The findings from Orlitzky et al.'s study (2003) suggest that CSP is more correlated with accounting-based metrics of CFP than with the market-based metrics. Studies using market-based metrics find mixed results on the relationship between CSP and CFP (Brammer & Pavelin, 2006).

Approximately 90 percent of the empirical studies in Friede et al.'s (2015) meta-study find a non-negative correlation, and most of the studies yield positive findings. Several other studies support the finding of a positive relationship between CSP and CFP (Orlitzky et al., 2003; Albertini, 2013; Lu & Taylor, 2016). Lu and Taylor also find a stronger positive correlation between the accounting-based metrics than with the market-based metrics (2016). They find that in the long run, market forces reward companies with a high CSP. Another finding by Lu and Taylor is that companies that engage in sustainability are more likely to improve their

relationships with their stakeholders, thus improving CFP (Kuzey & Uyar, 2017; Nguyen, 2020). In opposition, some research indicates a reverse causation (Chiu & Sharfman, 2011). This implies that greater CFP generates surplus funds, which are thereby spent on activities to improve CSP.

Even if there is an overweight of studies finding a positive relationship between CSP and CFP (Friede et al., 2015), researchers often argue that their findings are ambiguous, insignificant, or incongruous (Revelli & Vivani, 2015; Hoepner & McMillan, 2009; van Beurden & Gössling, 2008). It may be important to consider the stakeholder influence capacity (SIC) to explain the inconsistency in the findings. Premised on the stakeholder theory, Barnett (2007) articulated the idea of SIC. Barnett defines SIC as “the ability of a firm to identify, act on, and profit from opportunities to improve stakeholder relationships through CSR” (p. 803). Investing in sustainability improvements might be beneficial for companies with a high SIC. Their trusting stakeholder relationships reduces the transaction costs and makes it easier for the companies to interact with important stakeholders. Companies with low SIC, on the other hand, are less able to convert sustainability enhancements into quantifiable results because the stakeholders are less inclined to see their sustainable initiatives as legitimate. Strategically valuable intangible assets, such as trust and reputation, which constitute to a company’s SIC, must be built over time (Dierickx & Cool, 1989). Thus, the impact CSP has on CFP may not be evident over a span of one to two years (Balatbat et al., 2012).

There is a possibility that the association between CSP and CFP is non-linear. As an example, CFP might increase with higher CSP up to a certain level before deteriorating due to the declining advantages of excessive devotion to sustainability (Barnea & Rubin, 2010). This results in a reverse U-shaped correlation. The importance of this finding is further highlighted by Barnett and Salomon (2012); despite large investments in sustainability, some companies may fail to create sufficient positive returns. However, Barnett and Salomon find that this U-shaped relationship is not symmetrical since companies with the highest CSP have significantly higher CFP than those with the lowest CSP. Barnett and Salomon also report that the gap between companies with the lowest and the greatest CSP is higher for ROA than for net income. This can indicate that a large fraction of the reward of high sustainability stems from increased efficiency in the development of CSP, as opposed to increased ability to attract new customers or new markets, or to charge premium prices.



The variance and inconsistency in measures for CSP diffuses the impact CSP has for the investors' decision making (Berg et al., 2022, p. 5). Harmonising companies' sustainability reports through widespread compliance with SRSs will form a reliable and accessible basis for all ESG ratings as measures for CSP. Berg et al. suggests that higher levels of reliability will lead to CSP being accurately reflected in corporate stock and bond prices (2022). Thus, a more reliable ESG score will more likely find a more consistent correlation between CSP and CFP. Alternatively, SRSs that are comparable to the precision and accuracy of the standards in financial report requirements (Eccles et al., 2012), can function as adequate measures of CSP.

Most studies on the relationship between CSP and CFP report a positive association (Orlitzky et al., 2003; Albertini, 2013; Lu & Taylor, 2016). However, some studies on the relationship might report neutral or even a negative impact of CSP on CFP, due to the stakeholder influence capacity or the U-shaped relationship between CSP and CFP (Barnett, 2007; Barnea & Rubin, 2010). The variance within the findings of the relationship between CSP and CFP may also be accrued to other moderating attributes (Margolis & Walsh, 2003), such as SRS compliance.

## 4.2 CSP and SRS Compliance

While CSP has been widely studied (Friede et al., 2015), few researchers have taken its relation to SRS compliance into consideration. An important issue is whether sustainability reports convey relevant information on the actual CSP of companies (Papoutsi & Sodhi, 2020).

There is limited research on the relationship between CSP and SRS compliance, and the research that exist yields ambiguous results. More generally, companies that disclose sustainability efforts through sustainability reports have higher CSP (Papoutsi & Sodhi, 2020). Regarding SRS compliance, Arun et al. (2021) find a significant and positive relationship between CSP, operationalised through ESG ratings, and compliance with GRI and UNGC. Companies who choose to fully align with impact-material SRS, such as GRI and UNGC, may already have high CSP (Clarkson et al., 2008), indicating the possibility of a two-way causation. Conway's (2019) study of the relationship between exemplary <IR> reports and CSP report no correlation between the two SRTs. This study did, however, find evidence that companies producing exemplary <IR> reports yield higher governance scores. Regarding SASB disclosures, Eng et al. (2022) report that SASB disclosures and CSP are not strongly

correlated, which indicates that these SRTs capture different information. The ambiguous results indicate that the relationship between SRSs and CSP varies depending on which SRS is used.

Earlier literature indicates that CSP is more explained by impact-material SRSs (Arun, Girardone, & Piserà, 2021) than financial-material SRSs (Conway, 2019; Eng et al., 2022). This might be somewhat contradictory since most measures of CSP are based on financial materiality (Crona & Sundström, 2021). Even so, ESG rating companies frequently adhere to GRI requirements when calculating the ratings measuring CSP (Sahut & Pasquini-Descomps, 2015). Furthermore, the broad environmental categories used by rating agencies are relatively similar and closely correspond to the categories used in GRI's environmental reporting: materials, energy, water and effluents, biodiversity, emissions, effluents and waste, environmental compliance, and supplier environmental assessments (Crona & Sundström, 2021). This may explain the positive relationship between GRI compliance and CSP (Arun et al., 2021). Consequently, these findings highlight the importance of studying the compliance with SRSs of different level and scope, and how they indicate CSP.

Papoutsis and Sodhi (2020) underline two opposing views on whether sustainability reports can indicate a company's CSP. One perspective is that sustainability reports provide the stakeholders with an understanding of a company's sustainability initiatives. Thus, sustainability reports may indicate CSP. A contrary perspective is that companies utilise these reports to shape the stakeholder's views without putting much effort into sustainability. The latter view indicates that companies indulge in "greenwashing", which does not reflect actual CSP (Mahoney et al., 2013; Herbohn et al., 2014). "Greenwashing" is a disinformation strategy enabled by information asymmetry, resulting from the absence of obligatory SRSs (Lyon & Maxwell, 2011). It is therefore valuable to assess whether SRS compliance positively relates to actual CSP and not just disclosed CSP.

The absence of mandatory SRSs has limitations as it stimulates companies to participate in various types of "greenwashing" (Delmas & Burbano, 2011; Lyon & Maxwell, 2011). Lyon and Maxwell define "greenwashing" as the selective reporting of favourable information about CSP without providing the complete disclosure of negative information. SRSs mandate companies to disclose sustainability information irrespective of whether the reports depict the company in a favourable or critical manner (Del Giudice & Rigamonti, 2020).

The transparency of reporting both positive and negative sustainability information functions as a change agent, encouraging favourable behaviour and discouraging negative conduct (Christensen et al., 2021). Moreover, the reporting of negative information about the company's behaviour provides an implied promise of improvement from the company (Pérez-Cornejo et al., 2020). Thus, Pérez-Cornejo argue that high reporting quality strengthens the expectations of a consistent CSP in the company's future, which strengthens corporate reputation, and ultimately CFP (Marom, 2006).

Partial reporting, or partial compliance with SRSs, is a major problem concerning the content of sustainability reports (Brand, et al., 2018). This is because such reporting often entails covering only positive or minor topics. The partially reporting companies may have collected information selectively and only provided information considered suitable for corporate image (Owen, 2000). Consequently, it may be argued that the functions SRS compliance has as a change agent (Christensen et al., 2021), and an implied promise of improvements (Pérez-Cornejo et al., 2020), are reduced. In this regard, Eng et al. (2022) find a great divergence between the effects of low and high levels of SRS compliance on CSP. Hence, a key question is whether the relationship between CSP and SRS compliance depends on the level of SRS compliance.

There is an increasing demand for a standardised sustainability reporting method. This originates from issues such as companies engaging in "greenwashing" (Delmas & Burbano, 2011), the credibility and accuracy of measures for CSP, and comparability across different companies' sustainability reports (Del Giudice & Rigamonti, 2020). Complying with an SRS diffuses the differences in sustainability reporting across different companies, and accordingly, SRS may be used as a proxy for transparency (Beck et al., 2018). Researchers also report a positive correlation between the use of GRI and UNGC, and CSP (Arun et al., 2021). However, there is a research gap concerning the impact on CSP of different scopes and levels of SRS compliance. Thus, this study will divide SRS compliance into groups, to study the individual impact such compliance may have directly on CSP and CFP, as well as their moderating effects on the CSP-CFP relationship.

### 4.3 The Moderating Role of SRS Compliance

The earlier research that has studied the association between CSP and CFP has not established a conclusive link between the two performance metrics (Revelli & Vivani, 2015; Hoepner & McMillan, 2009; van Beurden & Gössling, 2008). The debate remains unresolved, in part because the connection has been proved to be more complex than what may have seemed to be a direct one (Hull & Rothenberg, 2008). One factor potentially explaining the heterogeneity of the findings relates to the moderating conditions (Margolis & Walsh, 2003).

Previous research has tested a variety of moderators on the CSP-CFP relationship, such as innovation and the level of differentiation of the industry (Hull & Rothenberg, 2008), strategies for engagement in social responsibility (Tang et al., 2012), ownership concentration (Harmer et al., 2021), corporate governance (Fiandrino et al., 2018), and ESG actions (Xie et al., 2019). In this line of research, the purpose of this study is to determine whether SRS compliance is a component that may affect the relationship between CSP and CFP.

Existing research on the effects of sustainability reporting, or SRS compliance, on the CSP-CFP relationship is very limited. Additionally, the limited results are ambiguous. On the one hand, Garcia et al. (2018) report a positive moderating effect of the voluntary disclosure of social information on the relationship between CSP and CFP. On the other hand, a study of the moderating effect of sustainability reports on the relationship between CSP and CFP finds that high disclosure negatively effects the relationship (Fatemi et al., 2018). A third study estimating the moderating role of GRI disclosure on the CSP-CFP relationship does not report any significant effects (Pereira et al., 2020). Since there are few and contradictory results, the need for further research on SRS compliance as a moderating variable is important.

Third-party measures for CSP may be insufficient to give adequate information for investors to evaluate a company's overall CSP. High quality sustainability reports, for instance through SRS compliance (Del Giudice & Rigamonti, 2020), may convey information required by the financial markets to comprehend a company's CSP in decisions affecting a company's CFP (Dhaliwal et al., 2011; Plumlee et al., 2010). Following this, Eng et al.'s (2022) results suggest that a high level of SASB compliance is incrementally informative to summary ratings for CSP. Investors prefer clear, consistent, comparable, and credible nonfinancial information (Cohen et al., 2015), all of which are elements that are improved through SRS compliance

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(Christensen et al., 2018; Del Giudice & Rigamonti, 2020; Delmas & Burbano, 2011). For instance, companies using GRI are more accountable (Huq & Carling, 2021) and credible (Lock & Seele, 2016) in their disclosures.

The supporting role of sustainability reports might be increased when the disclosures meet the quality characteristics demanded by investors (Cohen et al., 2015), through full SRS compliance (Christensen et al., 2018; Del Giudice & Rigamonti, 2020; Delmas & Burbano, 2011). Sustainability reporting may impair CFP if the investors view the disclosures as “greenwashing” (Fatemi, Glaum, & Kaiser, 2018), which may be associated with partial compliance (Brand et al., 2018; Owen, 2000). This is supported by the findings of Eng et al. (2022), which suggest that higher quality SASB disclosures are positively associated with CFP, while lower quality SASB disclosures are negatively associated with CFP. Thus, the level of SRS compliance may moderate the CSP-CFP relationship.

Standardising sustainability reporting in terms of substance, structure, and presentation might make it easier for stakeholders to locate, process, and compare sustainability reports (Christensen et al., 2018, p. 83). This implies cost savings for investors, other stakeholders, and the society. Absent of SRS compliance, sustainability-minded investors may avoid specific industries rather than selecting the ones performing good, due to costlier information collection and less reliable data (Christensen et al., 2018, p. 84). This selecting process may worsen the diversification problem, and the cost of capital may increase. However, SRS compliance may also require companies to include (financially) immaterial information, which could potentially reduce the informativeness of these SRTs to investors (Guay et al., 2016; Dyer et al., 2017). This may further increase the need for third-party information on CSP, commonly given by ESG rating agencies (Papoutsis & Sodhi, 2020; Vilas et al., 2022).

Because of the widespread absence of comprehensive mandated sustainability reporting, information on sustainability practices is highly prone to asymmetry (Tschopp, 2005). Due to lower information asymmetry, higher CSP may affect the capital market, through lower company risk, lower costs of capital, and consequently, increased shareholder value (Lopatta et al., 2016; Diebecker & Sommer, 2017). Providing relevant information about company practices might minimise information asymmetry and, as a result, investor uncertainty (Diamond & Verrecchia, 1999; Li et al., 2018). The compliance with SRSs ensures that the information provided is relevant and material (European Reporting Lab, 2021), thus, reducing

the information asymmetry. The degree to which the asymmetry is decreased is determined by the companies' ability to comply with the SRS, as well as the specificity of the SRS (Christensen et al., 2018, p. 6). The specificity of the SRS may vary depending on which materiality focus the SRS has.

### **4.3.1 Two Approaches to Materiality: Financial and Impact**

The potential financial effects of widespread adoption of SRSs may differ for investor-focused, or financial-material, SRSs than for stakeholder-focused, or impact-material, SRSs (Christensen et al., 2018, p. 129). Jørgensen et al. (2021) argue that there are contradictions between the two approaches to materiality when they are implemented in practice, which can lead to misunderstandings or incorrect conclusions being taken by stakeholders.

A key question considering materiality is which stakeholders the company should consider when constructing the sustainability reports (Wannags & Gold, 2020). This also relates to the friction between short- and long-term orientation; using relatively short-term financial metrics compared to the need for long-term focus on sustainability issues (Hahn et al., 2014). Sustainable development necessitates a considerably longer time horizon than the conventional time horizon companies have, who have been criticised for their short-term emphasis (Held, 2001). Hence, many groups of stakeholders might prefer impact-material information. Investors may have a higher demand for financial-material information due to the general idea that addressing this type of information will increase CFP (Jørgensen et al., 2021). Jørgensen et al. argue that when companies do not communicate which approach to materiality they use, investors may form incorrect assumptions about whether the reported information is likely to increase the company's value. However, when companies report aligned with an SRS, investors are informed about which materiality approach the companies use, and hence, can draw justified conclusions.

The essential principle of financial valuation is to estimate the present value of all future, risky cash-flows, and to assess how financially material sustainability challenges will unavoidably affect these cash-flows and hence a company's worth (Jørgensen et al., 2021). Because of the reduction in scope of the reported information, compliance costs are likely to be smaller for the companies complying with financial-material SRS (Christensen et al., 2018, p. 131). From the standpoint of the investors, sustainability reports complying with financial-material SRSs

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might lower their information processing costs by filtering out material information, increasing the likelihood that relevant information is processed and not ignored.

In line with the previous argument, compliance with the financial-material SRS, SASB, is reported to improve stock price informativeness (Schiehl & Kolahgar, 2020). In other words, the specific non-financial information about the company that is disclosed in sustainability reports complying with financial-material SRSs is capitalised into the stock price. Because single ratings of CSP typically do not reflect both dimensions of materiality at the same time (Lee, 2021), investors interested in financial-material CSP (Jørgensen et al., 2021) may gain an increased informativeness of sustainability reports complying with financial-material SRSs. Thus, this study aims to unravel whether compliance with financial-material SRSs decreases the effect CSP has on CFP.

Jørgensen et al. (2021) conducted a study on sustainability reporting and materiality using a sample of financial market professionals. They report that the respondents strongly considered that sustainability reporting should not be restricted to financial-material sustainability challenges. Another finding is that the respondents believe that it is important for CFP to appropriately address material sustainability challenges. Regarding the tension between short-versus long-term focus, the financial market professionals prefer reporting to include sustainability issues that presumably will become material in the future. Issues that are material to stakeholders, but presently financially immaterial, may become financially material. The pathway from financially immaterial to material issues includes increasing stakeholder pressure, which leads to company-specific or industry self-regulation, and lastly new regulations converting the issues to financially material issues (Freiberg et al., 2020). When establishing the link between CSP and CFP with SRS compliance as a moderator, both the financial-material SRSs and impact-material SRSs will be considered. The importance of the different concepts of materiality in the research is to understand how reports complying with different SRSs vary in informativeness. Thus, they may have a different moderating effect on CSP-CFP relationship.

SRTs such as sustainability reports and sustainability ratings facilitate investors in their investment decision. Additionally, these SRTs also correlate with each other (Beck et al., 2018). Both sustainability reports and sustainability ratings are reported to be correlated with CFP (Friede et al., 2015; Beck et al., 2018; Chen et al., 2015). While ESG ratings serve as

objective, quantifiable and easily comparable measures of CSP, sustainability reports extensively explain the company's CSP and long-term strategy. The compliance with SRSs imposes more reliable information, less information asymmetry, and opens for more effective collection of data. Consequently, it is relevant to explore the moderating role of SRS compliance on the relation between CSP, measured by ESG ratings, and CFP, measured by accounting- and market-based metrics.

To operationalise the research question, we have derived five hypotheses. The hypotheses used in this thesis are developed from both the theoretical framework and the earlier literature and will be presented in the following chapter.



## 5. Research Question and Hypotheses

This study's research question concerns the relation between CSP, SRSs, and CFP, and is as follows: *Does compliance with sustainability reporting standards moderate the relationship between corporate sustainability performance and corporate financial performance?* For clarification, we use Refinitiv's ESG ratings to operationalise CSP in our model.

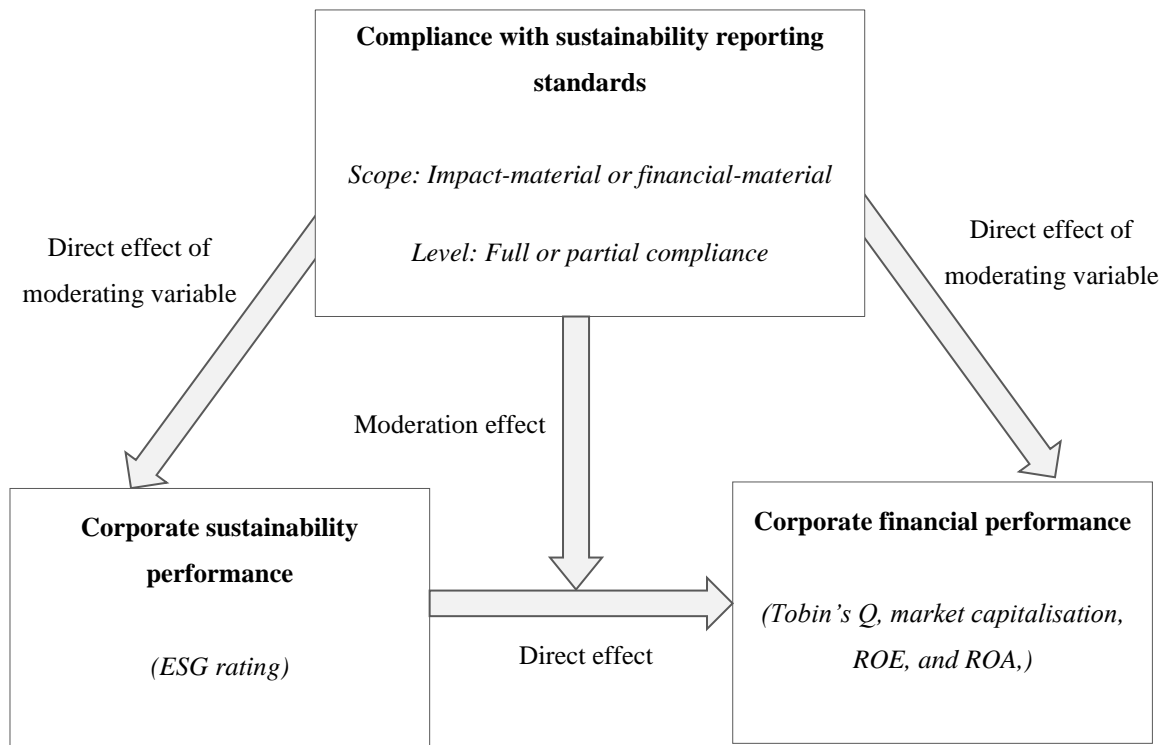


Figure 2: The moderating role of SRSs on the relationship between CSP and CFP.

It is relevant to study the impact of SRS compliance on CSP to understand whether SRS compliance relates to actual CSP, and thus has relevance for CFP. Beck et al. (2018) report a positive correlation between sustainability reporting quality and CSP. The use of SRSs, with standardised aspects to be reported, increases the quality of reporting (Weber et al., 2008), and should therefore also have an impact on CSP. Our first hypothesis, stated in the alternate, follows:

*H1: There is a positive and significant correlation between CSP and both levels and scopes of compliance with SRSs.*

Investors use summary measures for CSP to ensure that their funds go towards companies with sufficient CSP, which is gradually expected by their clients (Amel-Zadeh & Serafeim,

2018). There have been conflicting results of the relationship between CSP and CFP, which can be attributed to, among other things, the idea of SIC (Barnett, 2007), the possibility for a non-linear relationship between CSP and CFP (Barnea & Rubin, 2010; Barnett & Salomon, 2012), and the presence of moderating variables (Margolis & Walsh, 2003). However, Friede et al. (2015) report that 90 percent of their meta-study of more than 2000 published empirical studies observed a non-negative relationship between CSP and CFP, with a great majority yielding positive results. Therefore, our second hypothesis, stated in the alternate, follows:

*H2: There is a positive and significant correlation between CSP and CFP.*

A high disclosure level, which may be achieved with SRS compliance, is found to be correlated with CFP (Beck et al., 2018; Chen et al., 2015). According to Li et al. (2018), comprehensive reporting on sustainability may increase CFP by improving transparency and accountability, as well as stakeholder trust. This reasoning forms our third hypothesis, stated in the alternate, and is as follows:

*H3: There is a positive and significant relationship between CFP and partial and/or full compliance with impact-material and/or financial-material SRSs.*

Partial compliance with SRSs implies omitting some of the information that is mandated by the SRS, and possibly only covering the positive or minor topics (Brand, et al., 2018). This selection strategy can be defined as “greenwashing” (Lyon & Maxwell, 2011). If investors view the sustainability reports as “greenwashing”, the reporting may impair CFP (Fatemi et al., 2018). Less comprehensive sustainability disclosures may decrease the informativeness of CSP. Consequently, third-party summary ratings of CSP may have an increased effect on CFP. Thus, our fourth hypothesis (stated in the alternate) is:

*H4: Partial compliance with SRSs increases the impact CSP has on CFP.*

Investors may use sustainability reports to retrieve additional information about a company’s CSP, further impacting their decisions (Dhaliwal et al., 2011). Investors, who might affect CFP, may have a higher demand for financial-material information (Jørgensen et al., 2021). Moreover, compliance with the financial-material SRS, SASB, is suggested to improve stock price informativeness (Schiehl & Kolahgar, 2020). The informativeness of sustainability reports may be reduced when the companies must report (financially) immaterial information (Guay et al., 2016; Dyer et al., 2017), for instance, through impact-material SRSs. In such, compliance with financial-material SRSs may reduce the impact CSP has on CFP, since such

reports are incrementally informative to summary metrics for CSP (Eng et al., 2022). These implications form the basis of the fifth hypothesis (stated in the alternate), which is:

*H5: Full compliance with financial-material SRSs decreases the impact CSP has on CFP more than full compliance with impact-material SRSs does.*

The research question and the belonging hypotheses determines the type of research design this study will use. The following chapter will outline the study's overall strategy, which serves as a blueprint for the collection and analysis of the data.

## 6. Research Design

This chapter discusses the study's methodological choices and research design procedure in depth. Specifically, the chapter clarifies why a moderated multiple regression employing a fixed effects (FE) model is deemed suitable for this study. It is appropriate to start by explaining the procedures used to collect and analyse the data. It is also important for the analyses to specify the type of data set we are working with. Further, we will proceed to describe the variables used in the model. Moreover, it is worthwhile to explain the concept of moderation as it is essential in our study. Lastly, we will specify the model we will use based on the methodological choices described.

### 6.1 Sample and Data

To test the hypotheses presented in chapter 5, we use a panel data set of 335 companies listed on London Stock Exchange. The measures for CSP are commonly limited to cross-section and time-series data since it is less obtainable for smaller enterprises and is typically only available for recent years (Gibson et al., 2021). We accommodate for this by limiting our data sample to companies that are part of the London Stock Exchange. To perform the analysis, a requirement is that companies have data available for net property, plant, and equipment (PPE), total assets, total debts, sales, capital expenditure, market capitalisation, Tobin's Q, ROA, ROE, and ESG-rating. Our total sample includes 1,822 firm-year observations from 335 different companies between the years of 2010 and 2018. The total sample includes missing values for several of the variables; therefore, the regression models will have less, and varying observations.

We have gathered the information required for the analysis from Refinitiv's database, as well as the companies' annual- and sustainability reports. Refinitiv's database provides data on financial markets data and infrastructure, and CSP. We chose the Refinitiv database over the Bloomberg terminal since this database covers more of the data needed for this analysis. A reason for this may be because Refinitiv is established by the London Stock Exchange Group, and our data set contains companies on the London Stock Exchange. Stand-alone sustainability reports mostly provide the company's sustainability disclosures. However, several of the studied companies report their sustainability information in their annual reports, either for all, or some years. Consequently, we have examined both types of reports.

We hand collected each of the company's reports and coded the information against the nine SRSs, either as full compliance (2), partial compliance (1), or no compliance (0), according to the classification described in chapter 2.3.2. If a company is not complying with an SRS to any degree, they have not mentioned the SRS in their report at all. For some of the companies in the data set, we have not been able to locate neither their annual reports nor their sustainability reports. This has led to missing values in the SRSs variables. Without annual and/or sustainability reports it is impossible to confidently state whether a company does or does not comply with an SRS. The gathering of data has resulted in an unbalanced panel data set, which will have implications for our analysis. We will briefly mention these implications in the next section.

## 6.2 Unbalanced Panel Data

The data set used in this analysis is categorised as an unbalanced panel data set. A panel data set is composed of a time series for each cross-sectional member of the data set (Wooldridge, 2016, p. 9). There are two major advantages of adopting a panel data set. First, having several observations on the same units allows us to control for unobserved company characteristics. Second, panel data enables us to investigate the significance of lags in behaviour or the outcome of decision making. CSP and SRS compliance can be expected to have more impact on CFP the subsequent year, since sustainability reports are often published the year after the fiscal year finishes. Lastly, because our panel data set has missing years for at least some of the cross-sectional units in the sample, the data set is referred to as an unbalanced panel (Wooldridge, 2016, p. 440).

## 6.3 Variable Description

### 6.3.1 Predictor Variable: CSP

Margolis et al. (2007) suggest using quantifiable, third-party authenticated sustainability information as a measure of CSP, which addresses the issues of capturing actual performance (Rodrigue et al., 2013). Such measures also ensure applicability across the sample (Gray, 2006). Therefore, the main dependent variable in this model is the company's ESG rating, used as a proxy for CSP. As mentioned previously, ESG rating agencies gather the companies' public information, often from published sustainability reports, in addition to information directly from the companies (Del Giudice & Rigamonti, 2020).

Following Vilas et al. (2022), we use Refinitiv's ESG ratings as measures for CSP. The aim of Refinitiv's ESG ratings is to use publicly available information to measure a company's ESG performance, commitment, and effectiveness. The underlying measures are based on factors such as comparability, impact, availability of data, and industry relevance, which are different for each industry group. These underlying measures are placed into ten categories that constitute the environmental, social, and governance scores (see Table 1) (Refinitiv, 2022). Through the described methodology, Refinitiv can produce a summary ESG rating between 0.1 and 100.

<i>Environmental</i>	<i>Social</i>	<i>Governance</i>
Emissions	Human rights	Management
Resource use	Workforce	Stakeholders
Innovation	Community	Corporate social
	Product responsibility	responsibility (CSR)
		strategy

*Table 1: Environmental, social, and governance pillars of Thomson Reuters Refinitiv's ESG ratings.*

### **6.3.2 Moderator Variables: SRS Compliance**

Due to the predicted moderating role of SRS compliance on the CSP-CFP relationship, we have included the companies' compliance with the different SRSs in the regression models. To decrease the number of variables, we have chosen to group the SRSs into two groups. Following Grewal et al. (2017), these groups are based on dimension of materiality (see Figure 1): financial materiality (*FINANCIAL\_STANDARD*), referring to sustainability impacts on the company; or impact materiality (*IMPACT\_STANDARD*), referring to the company's impact on sustainability. GRI (2022), UNGC (2021), and AA1000 (2018) all clarify that they use an impact-based approach to materiality. SASB, TCFD and IIRC all share a financially based understanding of the concept of materiality (Sustainability Accounting Standards Board, 2017; Impact Management Project, 2020). CDP (2022) does not emphasize materiality to the same degree as the former institutions, but their questionnaires are fully aligned with the TCFD recommendations, and we therefore choose to group them together.

The two mentioned groups are further divided into four groups, based on whether they partially ( $FINANCIAL\_STANDARD_{partially}$  and  $IMPACT\_STANDARD_{partially}$ ) or fully ( $FINANCIAL\_STANDARD_{fully}$  and  $IMPACT\_STANDARD_{fully}$ ) comply with one of the two SRS groups. These four variables are dummy variables; for instance, partially complying with an impact-material SRS is set to 0 if they do not comply with GRI, UNGC and/or AA1000 at all, or fully comply with these, and 1 if they partially follow one or more of those three SRSs.

Companies often publish annual and sustainability reports the year after the fiscal year they cover (Financial Conduct Authority, 2022). This is because companies in the UK companies have four months to publish them after the end of the fiscal year. Fiscal years often end 31 December; however, this varies greatly in our data set. For fiscal years ending in the first, second, or the start of the third quarter of the year, the annual reports are published the same year as the fiscal year ended. When companies operate on a non-calendar business cycle or have a supplier base that does, they may select a fiscal year-end date that better corresponds with their business operations (Hayes, 2022). This is often based on the industry in which the company belongs to. To cover this delay in published information we include lagged independent variables.

The association between CSP and CFP may differ depending on whether the companies comply with an SRS or not, due to the theory-based rationale explained in chapter 4.3. Therefore, we include four interaction terms,

$$\begin{aligned} & (CSP \times FINANCIAL\_STANDARD_{partially}), \\ & (CSP \times FINANCIAL\_STANDARD_{fully}), \\ & (CSP \times IMPACT\_STANDARD_{partially}), \text{ and} \\ & (CSP \times IMPACT\_STANDARD_{fully}), \end{aligned}$$

in the regression model. These capture the difference in the effects of CSP on CFP between those companies that partially or completely follow one of the SRSs within the two groups. These interaction terms are between a continuous (CSP) and a dummy variable (group of SRSs). As underlined in the previous paragraph, there may be delayed effects in the publication of annual and/or sustainability reports, which is why we also include interaction terms between ESG rating and SRS compliance the previous year:

$$\begin{aligned} & (CSP \times lag(FINANCIAL\_STANDARD_{partially})), \\ & (CSP \times lag(FINANCIAL\_STANDARD_{fully})), \end{aligned}$$

$$(CSP \times lag(IMPACT\_STANDARD_{partially})), \text{ and}$$
$$(CSP \times lag(IMPACT\_STANDARD_{fully})),$$

### 6.3.3 Criterion Variable: CFP

This study uses CFP as the independent variable. Previous academic literature has identified two key alternatives for CFP measurement: accounting-based metrics and market-based metrics. When comparing literature employing market-based measurements and those using accounting-based measures, researchers such as Martínez-Ferrero and Frías-Aceituno (2015) and Grewatsch and Kleindienst (2017) suggest that market-based metrics are more appropriate for assessing future and long-term performance. On the contrary, López et al. (2007) argue that while market indicators might explain a company's behaviour, accounting data are less disruptive since they reflect what is truly occurring in the company. Due to this disparity, our analysis will consider both accounting-based metrics and market-based metrics.

In this study, the accounting-based measures that we have used are ROA and ROE. ROA and ROE are the most common CFP measures used in prior studies to test for relationship between CSP and CFP (Margolis et al., 2007; Orlitzky et al., 2003). ROE is the net income divided by common equity, while ROA is the operating income divided by total assets. We use ROA and ROE as short-term measures of CFP.

We use the market-based metrics as long-term measures of CFP. Tobin's Q is used as one of the market-based measures, initially suggested by Tobin (1969), and commonly used in the literature to account for company valuation (Gompers & Metrick, 2003; Yermack, 1996). It is calculated by dividing equity market value by total asset value of the company, as suggested by Refintiv, and considers potential future cash flows and profitability (Delmas et al., 2015). We also include market capitalisation as an independent variable.

The variables presented in this section will be included in a moderated multiple regression. To better comprehend the model, it is relevant to explain the concept of moderation, which will be elaborated in the next section.



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## 6.4 Moderation

The association between an independent and dependent variable is not necessarily equal for all groups of observations in a dataset. Moderation is the formal term for this concept (Wiley & Wiley, 2020). We may evaluate moderation effects in a regression by employing interaction terms between two or more variables. In a regression model, an interaction term is an independent variable that is the product of two explanatory variables (Wooldridge, 2016, p. 762). When including an interaction term in a model, the regression coefficients for the variables that comprise the interaction capture the impact (slope) at the base value of the moderator variable (Wiley & Wiley, 2020). The interaction terms in this study represent the variation in slope of CSP between SRS compliance categories. If the slope of the interaction term is significant, we may declare that the two slopes are different. However, if the difference between the slopes is not significantly different from zero, we cannot conclude that the slopes truly are different or merely in our random sample. Significant interaction terms may support the moderation hypothesis (Baron & Kenny, 1986).

Figure 3 portrays Sharma et al.'s (1981) proposed framework for identifying moderator variables. The first step is to examine whether there is a significant interaction between the hypothesised moderator variable and the predictor variable. If this is the case, then one can move to the second step which is to determine if the moderator variable is connected to the criterion and/or predictor variable, which will make it a quasi-moderator variable. Otherwise, the variable is a pure moderator. According to Baron and Kenny (1986) there may also be significant main effects for the predictor and the moderator variables, however, these are not conceptually relevant to estimating the moderator hypothesis. The next step in Sharma et al.'s (1981) framework is to determine whether the hypothesised moderator variable is an "exogenous, predictor, intervening, antecedent, or a suppressor variable" or a homologiser variable. However, this step is out of the scope of this study since we are searching for significant interaction effects and seek to place these effects into either box (3) or (4), or none, in Figure 3.

	<i>Moderator related to criterion and/or predictor</i>	<i>Moderator not related to criterion and/or predictor</i>
<i>No significant interaction of moderator with predictor</i>	(1) <b>Exogenous, predictor, intervening, antecedent, or a suppressor variable</b>	(2) <b>Moderator (Homologiser)</b>
<i>Significant interaction of moderator with predictor</i>	(3) <b>Moderator (Quasi-moderator)</b>	(4) <b>Moderator (Pure moderator)</b>

Figure 3: Typology of specification variables (Sharma et al., 1981).

The methodological choices and concepts presented in this chapter will together form the model we will use to study the research question. We will present this model in the following section.

## 6.5 Model Specification

When working with a panel data set, the most common used models are pooled ordinary least squares (POLS), fixed effects (FE), and random effects (RE). To assess which panel data model we will apply to generate the estimation, we perform both an F test for individual and/or time effects to choose between FE and POLS models, as well as a Hausman test to choose between FE or RE models.

If the company specific error component  $u_{it} = 0$  for every company, there are no individual differences and thus no heterogeneity to correct for (Hill et al., 2017, p. 639). The POLS is the desired model to use in cases where there is no need for an FE or RE estimator. To assess whether the FE model is better than the POLS model, we perform an F test for individual and/or time effects. Since all the p-values from the F tests are significant, we can reject the null hypothesis of using POLS models.

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Next, we run both an FE estimation and an RE estimation to estimate the unobserved effects (Wooldridge, 2016, p. 434). Prior to the estimation, the FE estimator employs a transformation to remove the unobserved effect and eliminates any time-constant explanatory variables. When the unobserved effect is assumed to be uncorrelated with all the explanatory factors, we employ the RE estimator. After applying both estimation alternatives, we compute a Hausman (1978) test. Unless the test rejects the null hypothesis, we will use the RE estimates. All our models have significant p-values. Thus, we reject the null hypothesis and use FE models for all regression models in the study. The FE model controls for unobserved heterogeneity,  $u_{it}$ , if it is constant over time (Hill et al., 2017, p. 640).

We do not include lagged values of the dependent variables the regression models. This is because when these are included, the FE estimator is only consistent to the extent that the time dimension of the panel (T) is large (Baltagi, 2021, p. 130). T = 9 in our data set, which we consider as rather short. However, we do include lagged independent variables of the predictor and moderator variables to address how past values of these may affect present values of the criterion variable. This is especially important for the SRS variables. Since listed UK companies are required to publish their reports within four months of the fiscal year-end according to the Disclosure Guidance and Transparency Rules provided by the Financial Conduct Authority (2022), the previous year's information is often not public until a few months into the current year.

In the software used in this study, RStudio, an FE model uses a within-group-transformation. The within-group-transformation allows the user to choose between time, individual, or both effects. By adding sector or activity dummies, we can control for one of these, rather than the individual effects. When choosing the best model for our nine regression models, we have included time FE in all. We have also tested individual, sector, and activity FE, on all models. For economic sectors and activities, we have used Refinitiv's classification methodology, which is a hierarchal system with economic sector at the highest level and (primary) activity at the lowest level (2020). The choice between these three effects have relied on yielding a non-negative adjusted  $R^2$ , which implies insignificance of explanatory variables (Nau, 2022), and a  $R^2$  not close to 1, which indicates an overfit model (Fernando, 2021). Furthermore, observing the significance of coefficients for the sector and activity dummies has also assisted in choosing between the various models. The models with CSP and Tobin's Q as dependent

variables use sector FE, the ones with ROE and ROA use activity FE, while the model with market capitalisation as the dependent variable uses individual FE.

To examine the impact of CSP and SRSs on CFP, this study uses the following models:

Empirical model for hypothesis 1:

$$\begin{aligned}
 CSP_{i,t} = & \beta_1 FINANCIAL\_STANDARD_{partially,i,t} \\
 & + \beta_2 IMPACT\_STANDARD_{partially,i,t} \\
 & + \beta_3 FINANCIAL\_STANDARD_{completely,i,t} \\
 & + \beta_4 IMPACT\_STANDARD_{completely,i,t} \\
 & + \beta_5 lag(FINANCIAL\_STANDARD_{partially,i,t}) \\
 & + \beta_6 lag(IMPACT\_STANDARD_{partially,i,t}) \\
 & + \beta_7 lag(FINANCIAL\_STANDARD_{completely,i,t}) \\
 & + \beta_8 lag(IMPACT\_STANDARD_{completely,i,t}) \\
 & + YearFixedEffect_t + SectorFixedEffect_i + u_{it}
 \end{aligned} \tag{1}$$

Where  $i = 1, \dots, n$  is the individual company index,  $t = 1, \dots, T$  is the time index, and  $u_{it}$  is the company specific error term.  $YearFixedEffect_t$  is the time effect chosen for the FE model, while  $SectorFixedEffect_i$  is the dummy variables for the different sectors the companies belong in.

Following Aggarwal et al. (2010), we include company attributes that are reported to affect CFP as control variables in the regression model.  $PPE$  is calculated as the ratio of property, plant, and equipment to total sales, company size is calculated as the natural log of total assets ( $LNTA$ ),  $CAPEX$  is capital expenditure divided by total sales,  $LEVERAGE$  is total debts divided by total assets, and  $GROWTH$  is measured as the percentage change in sales over the previous year. Since model (2) is used for four regressions,  $CFP$  is the Tobin's Q, the market capitalisation, the ROE, and the ROA of the company. For  $GroupFixedEffect$ , Tobin's Q uses sector FE, ROE and ROA use activity FE, while market capitalisation uses individual FE.

Empirical model for hypothesis 2 and hypothesis 3:

$$\begin{aligned}
CFP_{i,t} = & \beta_1 CSP_{i,t} + \beta_2 PPE_{i,t} + \beta_3 LNTA_{i,t} + \beta_4 CAPEX_{i,t} \\
& + \beta_5 LEVERAGE_{i,t} + \beta_6 GROWTH_{i,t} \\
& + \beta_7 FINANCIAL\_STANDARD_{partially,i,t} \\
& + \beta_8 IMPACT\_STANDARD_{partially,i,t} \\
& + \beta_9 FINANCIAL\_STANDARD_{fully,i,t} \\
& + \beta_{10} IMPACT\_STANDARD_{fully,i,t} \\
& + \beta_{11} lag(FINANCIAL\_STANDARD_{partially,i,t}) \\
& + \beta_{12} lag(IMPACT\_STANDARD_{partially,i,t}) \\
& + \beta_{13} lag(FINANCIAL\_STANDARD_{fully,i,t}) \\
& + \beta_{14} lag(IMPACT\_STANDARD_{fully,i,t}) \\
& + YearFixedEffect_t + GroupFixedEffect_i + u_{it}
\end{aligned} \tag{2}$$

Model (3) extends the previous model by including interaction terms between CSP and the four groups of SRS compliance, which is referred to as a moderated multiple regression (Aguinis, 2004, p. 10). This model is also used for four regressions with CFP being operationalised through the different measures mentioned in the previous paragraph. *GroupFixedEffect* is changed accordingly.

Empirical model for hypothesis 4:

$$\begin{aligned}
CFP_{i,t} = & \beta_1 CSP_{i,t} + \beta_2 PPE_{i,t} + \beta_3 LNTA_{i,t} + \beta_4 CAPEX_{i,t} \\
& + \beta_5 (CSP_{i,t} \times FINANCIAL\_STANDARD_{partially,i,t}) \\
& + \beta_6 (CSP_{i,t} \times IMPACT\_STANDARD_{partially,i,t}) \\
& + \beta_7 (CSP_{i,t} \times FINANCIAL\_STANDARD_{fully,i,t}) \\
& + \beta_8 (CSP_{i,t} \times IMPACT\_STANDARD_{fully,i,t}) \\
& + \beta_9 (CSP_{i,t} \\
& \times lag(FINANCIAL\_STANDARD_{partially,i,t})) \\
& + \beta_{10} (CSP_{i,t} \times lag(IMPACT\_STANDARD_{partially,i,t})) \\
& + \beta_{11} (CSP_{i,t} \times lag(FINANCIAL\_STANDARD_{fully,i,t})) \\
& + \beta_{12} (CSP_{i,t} \times lag(IMPACT\_STANDARD_{fully,i,t})) \\
& + YearFixedEffect_t + GroupFixedEffect_i + u_{it}
\end{aligned} \tag{3}$$

In the following chapter we will present the results from conducting the models presented in this section.

## 7. Results

In this chapter we will present the results from both the multiple regressions with and without moderating effects, alongside some descriptive statistics from the data set.

### 7.1 Descriptive Statistics

Prior to displaying and discussing the regression results, we will briefly observe some descriptive statistics of the SRSs (Table 2) and the dependent variables (Table 3). It should be noted that these tables present the data frame before treating the data frame for outliers, which is addressed in 7.2.

Table 2 displays the descriptive statistics of whether companies partially comply with an SRS or if they are fully compliant with an SRS. The numbers in the parentheses represent the percentage of total observations (N), exempt of NA. By observing the values in the table, one can see that most companies within the sample do not comply with SRSs. However, there is a larger percentage of companies compliant with a financial-material SRS than companies complying with an impact-material SRS. The highest observed percentage of full compliance with financial-material SRSs is 71 percent, while the highest value for full compliance with an impact-material SRS is 30 percent. Furthermore, one can observe that there is a higher number of companies being fully compliant to one of the SRS groups, than companies being partially compliant to one of these groups.

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
N	116	218	219	216	209	235	241	244	124	1822
<i>Impact Standard (Partially)</i>										
Follow	23 (22)	22 (12)	26 (14)	26 (14)	28 (15)	33 (15)	33 (14)	36 (16)	14 (12)	241 (15)
Not Follow	81 (78)	161 (88)	163 (86)	166 (86)	163 (85)	187 (85)	195 (86)	195 (84)	98 (88)	1409 (85)
NA	12	35	30	24	18	15	13	13	12	172
<i>Impact Standard (Compliance)</i>										
Follow	25 (24)	46 (25)	57 (30)	52 (27)	51 (27)	56 (25)	54 (24)	55 (24)	23 (21)	419 (25)
Not Follow	79 (76)	137 (75)	132 (70)	140 (73)	140 (73)	164 (75)	174 (76)	176 (76)	89 (79)	1231 (75)
NA	12	35	30	24	18	15	13	13	12	172
<i>Financial Standard (Partially)</i>										
Follow	5 (5)	10 (5)	15 (7)	12 (6)	8 (4)	12 (5)	16 (7)	20 (8)	13 (11)	111 (6)
Not Follow	101 (95)	186 (95)	187 (93)	193 (94)	194 (96)	217 (95)	219 (93)	216 (92)	101 (89)	1614 (94)
NA	10	22	17	11	7	6	6	8	10	97
<i>Financial Standard (Compliance)</i>										
Follow	66 (62)	124 (63)	137 (68)	143 (70)	144 (71)	151 (66)	141 (60)	138 (58)	71 (62)	1115 (65)
Not Follow	40 (38)	72 (37)	65 (32)	62 (30)	58 (29)	78 (34)	94 (40)	98 (42)	43 (38)	610 (35)
NA	10	22	17	11	7	6	6	8	10	97

Table 2: Descriptive statistics of financial- and impact material SRSs.

Table 3 displays the summary statistics for the independent variables used in our study. The summary shows an overview over the maximum and minimum value in the sample set, the median, the mean, and the standard deviation across the observations, on CSP and the different variables for CFP. The highest measure for CSP in the sample set is 93.715, which was observed in year 2017. 2017 is also the year with the most observations,  $N = 244$ , as opposed to 2010 with the least registered observations,  $N = 116$ .

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
N	116	218	219	216	209	235	241	244	124	1822
<b>CSP (ESG rating)</b>										
Minimum	2.775	1.730	3.792	5.312	8.292	5.993	8.944	5.250	8.408	1.730
Median	49.559	48.062	49.006	48.870	49.366	50.021	51.451	51.283	51.117	50.03
Maximum	89.266	90.785	89.330	88.465	90.493	90.930	90.118	93.715	91.523	93.715
Mean (sd)	49.43 (19.00)	47.43 (20.18)	48.10 (19.46)	48.67 (18.89)	49.49 (18.43)	50.36 (19.14)	50.72 (18.78)	50.99 (19.23)	49.35 (20.38)	49.45
NA	2	4	5	2	0	0	0	0	0	13
<b>Return on Assets</b>										
Minimum	-0.170	-0.234	-0.628	-0.330	-0.616	-0.684	-0.969	-1.144	-0.357	-1.144
Median	0.058	0.056	0.058	0.051	0.061	0.055	0.045	0.057	0.053	0.055
Maximum	1.143	0.902	1.553	1.929	2.229	2.174	2.143	2.007	0.413	2.229
Mean (sd)	0.08 (0.12)	0.07 (0.12)	0.07 (0.16)	0.05 (0.15)	0.07 (0.19)	0.06 (0.17)	0.05 (0.17)	0.06 (0.18)	0.06 (0.09)	0.062
NA	2	4	4	2	1	0	0	0	0	13
<b>Return on Equity</b>										
Minimum	-6.042	-2.176	-8.369	-13.815	-7.512	-4.735	-2.165	-22.529	-3.162	-22.529
Median	0.139	0.144	0.142	0.118	0.139	0.131	0.119	0.124	0.125	0.131
Maximum	2.082	4.454	8.326	8.338	39.290	16.494	16.108	8.386	30.554	39.290
Mean (sd)	0.14 (0.65)	0.23 (0.51)	0.16 (0.96)	0.08 (1.39)	0.36 (3.14)	0.19 (1.21)	0.21 (1.24)	0.03 (1.67)	0.34 (2.76)	0.185
NA	2	4	4	2	1	0	0	0	0	13
<b>Tobin's Q</b>										
Minimum	0.058	0.028	0.008	0.089	0.020	0.000	0.045	0.000	0.080	0.000
Median	0.889	0.680	0.790	0.974	0.936	0.977	0.862	0.994	0.998	0.893
Maximum	17.233	26.040	36.867	71.521	50.787	78.168	60.183	57.257	12.678	78.168
Mean (sd)	1.36 (1.89)	1.14 (1.99)	1.31 (2.69)	1.62 (4.98)	1.55 (3.62)	1.61 (5.17)	1.43 (3.93)	1.71 (4.13)	1.65 (1.92)	1.489
NA	2	4	4	2	1	1	0	0	0	14
<b>Market Capitalisation</b>										
Minimum	70.102	10.111	1.685	13.727	9.655	14.425	14.161	18.890	124.199	1.685
Median	1,726	1,203	1,187	1,526	1,461	1,387	1,367	1,605	1,353	1,422
Maximum	132,598	151,363	136,490	140,213	138,447	99,691	186,247	207,355	97,070	207,355
Mean (sd)	7,645 (19,379)	6,639 (19,313)	6,460 (17,240)	7,173 (18,183)	7,098 (17,413)	6,301 (14,824)	6,761 (18,822)	7,357 (20,954)	4,993 (12,392)	6,745
NA	2	4	4	2	0	2	0	1	0	15

Table 3: Descriptive statistics of CSP and CFP.

From Table 3, one can observe that the minimum values of ROE and ROA are negative, implying that the respective companies experienced negative net income, possibly because of loss during the financial period. Looking at the statistics for market capitalisation, one can see that there is a large standard deviation. This may stem from the fact that there is a large gap between the largest and the smallest companies in our sample size. The largest company in the sample set had a registered market capitalisation of 207,355 million pounds in 2017, while the lowest value registered was 1.685 million pounds in 2012. From the Tobin's Q statistics, one can observe that the maximum values are much higher than the means, because of extreme values within the sample set. These extreme values must be treated for the model assumptions



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to be met.

## 7.2 Model Assumptions

For a regression model to generate unbiased estimates, there are specific model assumptions that must be met. Since all the models in this study are FE models, we will focus on the assumptions associated with FE models, which are extensions to the ones made for the multiple regression model (Hanck et al., 2021). Hanck et al. (2021) list the following assumptions:

<b>Assumption 1</b>	The error term $u_{it}$ has conditional mean zero, that is, $E(u_{it} X_{i1}, X_{i2}, \dots, X_{iT})$ .
<b>Assumption 2</b>	$(X_{1,it}, X_{2,it}, \dots, X_{k,it}, u_{i1}, \dots, u_{iT}), i = 1, \dots, n$ are independent and identically distributed drawn from their joint distribution.
<b>Assumption 3</b>	Large outliers are unlikely, i.e., $(X_{it}, u_{it})$ have nonzero finite fourth moments.
<b>Assumption 4</b>	There is no perfect multicollinearity.

*Table 4: Fixed effects model assumptions.*

Concerning assumption 1, the error term should be uncorrelated with all observations of the variable  $X$  for the entity  $i$  across time (Hanck et al., 2021). Violating this assumption leads to omitted variable bias. The second assumption assures that variables are independently and identically distributed across entities. However, both observations and error terms are allowed to be correlated within an entity. The third assumption requires that  $X$  and  $Y$  have a finite kurtosis. Since extreme observations receive heavy weighting in the estimation of the regression coefficients, outliers may lead to strongly distorted estimates of the coefficients. Lastly, the fourth assumption ensures that the variance of the estimators is not large, which would result in large standard errors. If this assumption does not hold, the statistical significance of the regression coefficients will be lower, stemming from multicollinearity problems (Wooldridge, 2016, p. 84). This leads to less reliable results. Multicollinearity arises when two or more independent variables in the regression are highly, but not perfectly correlated.

Depending on the type of assumption violation, we can use several treatments to preserve the

reliability of the model. The first assumption will hold if the sample is drawn by simple random sampling (de Haan, 2017). To ensure that the second assumption holds, we must use heteroskedasticity-autocorrelation-consistent (HAC) standard errors (SE) (Hanck et al., 2021). Clustered HAC SE allow the errors to be correlated within a cluster, but not across entities. For clustered HAC SE to be reliable, the number of companies  $N = 335$  must be large relative to time-periods  $T = 9$  (Hill et al., 2017, p. 650), which they are in our study. For the third assumption to hold, we must treat the large outliers either by removing them altogether, or winsorising them, which implies replacing the extreme values with a certain percentile value from each end (Eng et al., 2022). To identify whether the data set suffers multicollinearity (fourth assumption), one can use the variance inflation factor (VIF). The VIF helps to determine the degree of correlation between  $x_j$  and the other explanatory variables, and thus the slope coefficient  $j$  (Wooldridge, 2016, p. 86). We set the value 10 to identify multicollinearity in the data set, meaning that when we have a VIF above 10, multicollinearity is a problem (Alin, 2010). To solve the multicollinearity issue, we can drop variables from the dataset. However, this may lead to biased results.

To ensure that all the models give reliable results, we will check all the mentioned assumptions, and deal with the violations in an appropriate manner. Since our sample consists of listed companies in UK with data available over the chosen time-period, we assume that the first assumption holds. To comply with the second assumption, we have used clustered SE. We chose to winsorise the variables with large outliers at the 1 and 99 percent levels to conform with the third assumption. This is done to all financial dependent variables as well as the financial control variables, except LNTA. As one can see from the descriptive statistics in Table 3, LNTA does not have extreme values, and does therefore not need to be treated for outliers. The variables are winsorised because we assume the data to be error-free with legitimate errors, but do not want the regression results to be severely affected by them. Some companies do have considerably larger or lower financial data, and we do not want to ignore this presence, but rather limit their extremeness. Multicollinearity is unlikely to be an issue because the VIF values do not exceed 10 for any of our dependent variables.

We have tested various alternatives of all the models. This includes the POLS model, the RE model, and various variants of FE models. The variants of FE models we have tested includes combinations of time, individual, economic sector, and activity FE models. Eventually, we

have determined different models for the different hypotheses we will test. The next section will present the results from the different regression models.

### 7.3 Main Regression Results

Table 5 reports the results from estimating equation (1). One POLS model and one FE model, in addition to one FE model with clustered SE, were run on 1,822 firm-year observations. CSP is used as the dependent variable, operationalised through ESG rating, while the independent variables consist of the four groups of SRSs, including their belonging lags. The three models are significant at the 1 percent level, with adjusted  $R^2$  values of 0.378 for the POLS model and 0.402 for the FE models.

Variables	CSP		
	OLS (1)	FE (2)	FE (clustered SE) (3)
impact_standard1	3.462** (1.437)	2.891** (1.410)	2.891* (1.482)
impact_standard2	8.149*** (2.014)	8.203*** (1.989)	8.203*** (1.883)
financial_standard1	5.984*** (2.013)	5.759*** (1.982)	5.759** (2.318)
financial_standard2	5.662*** (1.582)	5.678*** (1.561)	5.678*** (1.535)
lag(impact_standard1)	3.543** (1.480)	3.422** (1.454)	3.422** (1.606)
lag(impact_standard2)	9.050*** (2.024)	9.553*** (1.992)	9.553*** (1.817)
lag(financial_standard1)	5.538** (2.149)	6.293*** (2.104)	6.293** (2.675)
lag(financial_standard2)	6.785*** (1.569)	6.760*** (1.550)	6.760*** (1.474)
Constant	36.684*** (0.748)		
Time Fixed Effects	No	Yes	Yes
Sector Fixed Effects	No	Yes	Yes
Clustered Standard Errors	No	No	Yes
Observations	1,307	1,305	1,305
$R^2$	0.382	0.413	0.413
Adjusted $R^2$	0.378	0.402	0.402

Note: \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

Table 5: The impact of SRS compliance on CSP.

All the estimated coefficients, except partial compliance with impact-material SRSs, are statistically significant at least at the 5 percent level. Full compliance with both impact-material SRSs and financial-material SRSs, including their lags, are significant at the 1 percent level. Both the POLS and FE models provide similar results regarding all coefficients. One can also observe that the lagged effects have a larger coefficient than their belonging variables. The largest effect is found for full compliance with an impact-material SRS the past year,  $lag(IMPACT\_STANDARD_{fully,i,t})$ , with an estimated coefficient of 9.553 in the FE models ( $p < 0.001$ ). This suggests that companies who fully comply with one or more impact-material SRSs have a 9.553 higher measure for CSP than the companies who do not fully comply with these SRSs. Another observation from Table 5 is that the CSP is estimated to be 36.684 for a company not complying with any SRSs the same year as the rating for CSP is received, and the prior year.

In Table 6 and Table 7, we assess the effects both CSP and SRSs have on, respectively, market-based metrics and accounting-based metrics for CFP. For this, we use estimating equation (2). We have displayed the POLS model and FE models (one including clustered SE) run on 1,822 firm-year observations. All the regression models in both tables have an overall significance at the 1 percent level.

	<i>Tobin's Q</i>			<i>Market Capitalisation (log)</i>		
	OLS	FE	FE (clustered SE)	OLS	FE	FE (clustered SE)
	(1)	(2)	(3)	(4)	(5)	(6)
<i>CSP</i>	0.006** (0.002)	0.007*** (0.002)	0.007 (0.005)	0.004** (0.002)	0.002 (0.002)	0.002 (0.002)
<i>ln</i> <sub>ta</sub>	-0.293*** (0.028)	-0.289*** (0.028)	-0.289*** (0.085)	0.836*** (0.020)	0.660*** (0.043)	0.660*** (0.092)
<i>leverage</i>	-1.067*** (0.202)	-1.061*** (0.203)	-1.061*** (0.399)	-0.910*** (0.144)	-2.011*** (0.152)	-2.011*** (0.261)
<i>capex</i>	-0.269*** (0.064)	0.066 (0.079)	0.066 (0.058)	-0.195*** (0.045)	0.091** (0.043)	0.091* (0.048)
<i>growth_percent</i>	0.386*** (0.135)	0.383*** (0.133)	0.383** (0.155)	0.320*** (0.096)	0.306*** (0.049)	0.306*** (0.114)
<i>ppe</i>	-0.151*** (0.035)	-0.158*** (0.042)	-0.158*** (0.043)	-0.198*** (0.025)	-0.210*** (0.042)	-0.210** (0.091)
<i>impact_standard1</i>	0.001 (0.107)	-0.008 (0.102)	-0.008 (0.092)	0.024 (0.076)	-0.053 (0.038)	-0.053 (0.041)
<i>impact_standard2</i>	0.261* (0.151)	0.287** (0.145)	0.287* (0.170)	0.129 (0.107)	-0.023 (0.059)	-0.023 (0.074)
<i>financial_standard1</i>	-0.146 (0.148)	-0.171 (0.142)	-0.171* (0.100)	-0.172 (0.105)	0.100* (0.054)	0.100 (0.067)
<i>financial_standard2</i>	0.083 (0.117)	0.108 (0.113)	0.108 (0.118)	0.074 (0.083)	0.075* (0.043)	0.075 (0.047)
<i>lag(impact_standard1)</i>	0.045 (0.110)	0.056 (0.105)	0.056 (0.098)	0.021 (0.078)	0.052 (0.038)	0.052 (0.050)
<i>lag(impact_standard2)</i>	0.233 (0.152)	0.242* (0.146)	0.242* (0.135)	0.126 (0.108)	0.185*** (0.054)	0.185** (0.079)
<i>lag(financial_standard1)</i>	-0.195 (0.158)	-0.207 (0.151)	-0.207 (0.126)	-0.074 (0.112)	0.080 (0.060)	0.080 (0.109)
<i>lag(financial_standard2)</i>	-0.223* (0.117)	-0.278** (0.112)	-0.278** (0.132)	-0.077 (0.083)	-0.031 (0.043)	-0.031 (0.045)
Constant	7.569*** (0.531)			3.526*** (0.377)		
Time Fixed Effects	No	Yes	Yes	No	Yes	Yes
Activity Fixed Effects	No	No	No	No	No	No
Sector Fixed Effects	No	Yes	Yes	No	No	No
Individual Fixed Effects	No	No	No	No	Yes	Yes
Clustered Standard Errors	No	No	Yes	No	No	Yes
Observations	1,295	1,293	1,293	1,295	1,295	1,295
R <sup>2</sup>	0.213	0.294	0.294	0.753	0.361	0.361
Adjusted R <sup>2</sup>	0.205	0.277	0.277	0.751	0.199	0.199

Note: \* p < 0.1; \*\* p < 0.05; \*\*\* p < 0.01

Table 6: The impact of CSP and SRS compliance on CFP (market-based metrics).

The results in Table 6 suggest that, in the POLS regression model, CSP has a positive and significant effect, at the 5 percent level, for Tobin's Q and market capitalisation. This is in favour of hypothesis 2 and follows Li et al. (2018), who also found positive and significant effects when using an OLS regression model. The FE model using Tobin's Q as the dependent variable also finds this effect, significant at the 1 percent level. However, the results from the FE model with clustered SE shows insignificant coefficients for both dependent variables.

The adjusted  $R^2$  of the models with Tobin's Q as the dependent variable are 0.205 for the POLS model and 0.277 for the FE models. The FE models suggest that full compliance with impact-material SRSs, including corresponding lags, has a positive impact on Tobin's Q. This impact is marginally insignificant, but significant at the 10 percent confidence interval. Also marginally insignificant, but significant at the 10 percent level, partial compliance with financial-material SRSs has a negative estimated impact on Tobin's Q, according to the FE model with clustered SE. Full compliance with financial-material SRSs the prior year has a negative impact on Tobin's Q, in both the POLS ( $p < 0.1$ ) and the FE models ( $p < 0.05$ ).

For the models using market capitalisation as the dependent variable, the adjusted  $R^2$  is 0.751 for the POLS model and 0.199 for the FE models. The FE model without clustered SE displays that partial compliance with financial-material SRSs has a positive effect on market capitalisation. This coefficient is marginally insignificant, but significant at the 10 percent level. Moreover, the results suggest a positive impact on market capitalisation of full compliance with impact-material SRSs the prior year (lag), according to both the FE model with ( $p < 0.05$ ) and without ( $p < 0.01$ ) clustered SE.

	ROE			ROA		
	OLS	FE	FE (clustered SE)	OLS	FE	FE (clustered SE)
	(1)	(2)	(3)	(4)	(5)	(6)
CSP	0.002** (0.001)	0.002** (0.001)	0.002 (0.002)	0.0003 (0.0002)	0.0003 (0.0002)	0.0003 (0.0004)
ln <sub>ta</sub>	-0.012 (0.010)	-0.018 (0.015)	-0.018 (0.029)	-0.003 (0.002)	-0.002 (0.003)	-0.002 (0.007)
leverage	-0.037 (0.069)	-0.183* (0.100)	-0.183 (0.135)	-0.062*** (0.016)	-0.126*** (0.021)	-0.126*** (0.033)
capex	-0.047** (0.022)	-0.035 (0.032)	-0.035 (0.022)	-0.002 (0.005)	-0.013* (0.007)	-0.013 (0.012)
growth_percent	0.053 (0.046)	0.055 (0.047)	0.055 (0.055)	0.039*** (0.011)	0.038*** (0.010)	0.038* (0.019)
ppe	-0.048*** (0.012)	0.018 (0.025)	0.018 (0.018)	-0.020*** (0.003)	-0.005 (0.005)	-0.005 (0.008)
impact_standard1	-0.014 (0.037)	-0.011 (0.037)	-0.011 (0.037)	-0.007 (0.008)	-0.012 (0.008)	-0.012* (0.007)
impact_standard2	0.065 (0.052)	0.069 (0.052)	0.069 (0.049)	0.019 (0.012)	0.019* (0.011)	0.019 (0.013)
financial_standard1	-0.041 (0.051)	0.041 (0.050)	0.041 (0.059)	-0.006 (0.012)	0.005 (0.011)	0.005 (0.009)
financial_standard2	0.064 (0.040)	0.063 (0.040)	0.063 (0.051)	0.016* (0.009)	0.003 (0.009)	0.003 (0.010)
lag(impact_standard1)	0.012 (0.038)	-0.0002 (0.037)	-0.0002 (0.045)	0.001 (0.009)	-0.001 (0.008)	-0.001 (0.010)
lag(impact_standard2)	-0.080 (0.052)	-0.056 (0.051)	-0.056 (0.055)	-0.016 (0.012)	-0.003 (0.011)	-0.003 (0.011)
lag(financial_standard1)	-0.070 (0.054)	-0.050 (0.054)	-0.050 (0.049)	-0.016 (0.013)	-0.011 (0.012)	-0.011 (0.012)
lag(financial_standard2)	-0.086** (0.040)	-0.103** (0.040)	-0.103*** (0.038)	-0.013 (0.009)	-0.017* (0.009)	-0.017 (0.011)
Constant	0.363** (0.182)			0.122*** (0.042)		
Time Fixed Effects	No	Yes	Yes	No	Yes	Yes
Activity Fixed Effects	No	Yes	Yes	No	Yes	Yes
Sector Fixed Effects	No	No	No	No	No	No
Individual Fixed Effects	No	No	No	No	No	No
Clustered Standard Errors	No	No	Yes	No	No	Yes
Observations	1,295	1,293	1,293	1,295	1,293	1,293
R <sup>2</sup>	0.037	0.253	0.253	0.097	0.391	0.391
Adjusted R <sup>2</sup>	0.026	0.160	0.160	0.087	0.315	0.315

Note: \* p < 0.1; \*\* p < 0.05; \*\*\* p < 0.01

Table 7: The impact of CSP and SRS compliance on CFP (accounting-based metrics).

Table 7 displays the effect CSP and SRS compliance have on the accounting-based metrics for CFP, using estimation equation (2). From the models with ROE as the dependent variable, the adjusted  $R^2$  is 0.026 for the POLS model and 0.160 for the FE models. Both the POLS model and the FE model reports that CSP has a positive association with ROE. However, this result does not persist when including clustered SE. All three models yield a negative estimated coefficient for full compliance with financial-material SRSs the prior year (lag). These coefficients are significant at the 5 percent level for the POLS model and at the 1 percent level for the FE models.

The last three models in Table 7 use ROA as the dependent variable. These models have adjusted  $R^2$  values of 0.087 for the POLS model and 0.315 for the FE models. The POLS model yields a positive impact of full compliance with financial-material SRSs, marginally insignificant, but significant at the 10 percent confidence interval. Examining the FE model, this model portrays positive effects of full compliance with impact-material SRSs on ROA. This effect is also marginally insignificant, but significant at the 10 percent level. Moreover, this model shows a negative effect of full compliance with financial-material SRSs the prior year (lag) on ROA, significant at the 10 percent level. Including clustered SE in the FE model yields a negative impact of partial compliance with impact-material SRSs on ROA ( $p < 0.1$ ).

## 7.4 Moderated Regression Results

Two regression models, one POLS and one FE model, in addition to one FE model with clustered SE, were run on 1,822 firm-year observations to examine the moderating role SRSs have on the relationship between CSP and CFP. To test the moderation hypothesis through estimating equation (3), the interaction terms are the important variables of interest in the regression models. These terms capture the difference in the effects of CSP on CFP between companies of various levels (partially (1) and fully (2)) and scopes (financial-material and impact-material) of compliance with SRSs. Therefore, the main effects, except for CSP, have been omitted from Table 8 and Table 9. The complete tables can be found in Appendix 3 and 4.

If the coefficient of the interaction term has a positive value, SRS compliance is said to be strengthening. This implies that when the companies comply with the SRSs, CSP have a greater effect on CFP. When the interaction term has a negative value, the use of this SRS



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indicates that CSP has a less impact on CFP. All the regression models in the two tables are overall significant at the 1 percent level.

Table 8 provides the POLS and FE models using market-based metrics for CFP as dependent variables. Compared to Table 6, adjusted  $R^2$  has increased for all models in the table. For the POLS and FE models with Tobin's Q as the dependent variable, adjusted  $R^2$  is 0.216 and 0.282, respectively. For companies not complying with any SRSs, the FE model without clustered SE display that each one-unit higher CSP is associated with 0.009 higher Tobin's Q, significant at the 5 percent level. However, including clustered SE removes the significance of this finding. The POLS model reports that the effect CSP has on Tobin's Q is higher for companies partially complying with impact-material SRSs, indicating that CSP and partial compliance with impact-material SRSs do interact. For the interaction term between CSP and the lag of partial compliance with impact-material SRSs, the coefficient estimate is also positive and significant for both the POLS model ( $p < 0.05$ ) and the FE models, without ( $p < 0.1$ ) and with clustered SE ( $p < 0.05$ ).

	<i>Tobin's Q</i>			<i>Market Capitalisation (log)</i>		
	OLS	FE	FE (clustered SE)	OLS	FE	FE (clustered SE)
	(1)	(3)	(4)	(5)	(6)	(7)
CSP	0.004 (0.004)	0.009** (0.003)	0.009 (0.007)	0.003 (0.003)	0.006** (0.002)	0.006 (0.004)
CSP × impact_standard1	0.012* (0.007)	0.007 (0.006)	0.007 (0.005)	0.007 (0.005)	-0.002 (0.002)	-0.002 (0.002)
CSP × impact_standard2	0.001 (0.012)	0.003 (0.011)	0.003 (0.013)	0.003 (0.008)	-0.001 (0.004)	-0.001 (0.003)
CSP × financial_standard1	0.003 (0.007)	0.003 (0.007)	0.003 (0.004)	0.008 (0.005)	-0.001 (0.003)	-0.001 (0.003)
CSP × financial_standard2	-0.003 (0.007)	-0.003 (0.006)	-0.003 (0.006)	-0.002 (0.005)	-0.006** (0.002)	-0.006** (0.003)
CSP × lag(impact_standard1)	0.014** (0.007)	0.011* (0.007)	0.011** (0.006)	0.013** (0.005)	0.003 (0.002)	0.003 (0.003)
CSP × lag(impact_standard2)	0.006 (0.012)	0.004 (0.011)	0.004 (0.009)	-0.0005 (0.008)	-0.005 (0.004)	-0.005 (0.004)
CSP × lag(financial_standard1)	0.008 (0.008)	0.002 (0.007)	0.002 (0.005)	0.011** (0.005)	0.008*** (0.003)	0.008 (0.005)
CSP × lag(financial_standard2)	-0.003 (0.007)	-0.006 (0.006)	-0.006 (0.004)	-0.004 (0.005)	0.001 (0.002)	0.001 (0.003)
Constant	8.119*** (0.559)			3.845*** (0.395)		
Time Fixed Effects	No	Yes	Yes	No	Yes	Yes
Activity Fixed Effects	No	No	No	No	No	No
Sector Fixed Effects	No	Yes	Yes	No	No	No
Individual Fixed Effects	No	No	No	No	Yes	Yes
Clustered Standard Errors	No	No	Yes	No	No	Yes
Observations	1,295	1,293	1,293	1,295	1,295	1,295
R <sup>2</sup>	0.230	0.303	0.303	0.761	0.377	0.377
Adjusted R <sup>2</sup>	0.216	0.282	0.282	0.757	0.213	0.213

Note: \*p < 0.1; \*\*p < 0.05; \*\*\*p < 0.01

Table 8: The moderating impact of SRS compliance on the relationship between CSP and CFP (market-based metrics) (only displaying the interaction terms).

The adjusted R<sup>2</sup> for the models with market capitalisation as the dependent variable is 0.757 for the POLS model and 0.213 for the FE models. Each one-unit higher CSP for companies not complying with any SRSs to any degrees, is associated with 0.6 percent higher market capitalisation, significant for the FE model without clustered SE (p < 0.05). The coefficient is insignificant when including clustered SE. The POLS model reports that both partial compliance with impact-material SRSs the foregoing year (lag) (p < 0.01) and financial-

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material SRSs ( $p < 0.05$ ) causes CSP to impact market capitalisation further, compared with the base line. Both FE models find that CSP has a lower impact on market capitalisation for companies who fully comply with financial-material SRSs ( $p < 0.05$ ). Disregarding clustered SE, the FE model finds that for companies partially complying with financial-material SRSs the prior year (lag), CSP has a higher association with market capitalisation, significant at the 1 percent level.

Table 9 reports the results from the POLS and the FE models using accounting-based metrics for CFP as the dependent variables. For companies not complying with any SRSs to any degree, a one-unit increase in CSP is associated with 0.003 higher ROE and 0.001 higher ROA, according to the FE model without clustered SE. These estimated effects lose significance when including clustered SE. For the models with ROE as the dependent variable, the adjusted  $R^2$  is 0.032 for the POLS model and 0.160 for the FE models. The POLS model portrays that CSP has a larger impact on ROE for companies who partially comply with financial-material SRSs. For the FE models with ROE as the dependent variable there are no interaction effects.

	<i>ROE</i>			<i>ROA</i>		
	OLS	FE	FE (cluster)	OLS	FE	FE (cluster)
	(8)	(9)	(10)	(11)	(12)	(13)
CSP	0.001 (0.001)	0.003** (0.002)	0.003 (0.003)	0.0002 (0.0003)	0.001* (0.0003)	0.001 (0.001)
CSP × impact_standard1	0.003 (0.002)	0.003 (0.002)	0.003 (0.002)	-0.0002 (0.001)	-0.0001 (0.0005)	-0.0001 (0.0004)
CSP × impact_standard2	0.0002 (0.004)	0.0002 (0.004)	0.0002 (0.004)	-0.002* (0.001)	-0.002* (0.001)	-0.002 (0.001)
CSP × financial_standard1	0.001 (0.003)	-0.001 (0.003)	-0.001 (0.003)	-0.0002 (0.001)	-0.001* (0.001)	-0.001** (0.001)
CSP × financial_standard2	0.0005 (0.002)	0.002 (0.002)	0.002 (0.004)	-0.001 (0.001)	-0.0004 (0.0005)	-0.0004 (0.001)
CSP × lag(impact_standard1)	0.002 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001** (0.001)	0.001*** (0.001)	0.001** (0.001)
CSP × lag(impact_standard2)	-0.001 (0.004)	-0.003 (0.004)	-0.003 (0.003)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
CSP × lag(financial_standard1)	0.005** (0.003)	0.002 (0.003)	0.002 (0.003)	0.002*** (0.001)	0.001* (0.001)	0.001 (0.001)
CSP × lag(financial_standard2)	-0.001 (0.002)	-0.003 (0.002)	-0.003 (0.003)	0.0004 (0.001)	0.0002 (0.0005)	0.0002 (0.001)
Constant	0.445** (0.192)			0.128*** (0.044)		
Time Fixed Effects	No	Yes	Yes	No	Yes	Yes
Activity Fixed Effects	No	Yes	Yes	No	Yes	Yes
Sector Fixed Effects	No	No	No	No	No	No
Individual Fixed Effects	No	No	No	No	No	No
Clustered Standard Errors	No	No	Yes	No	No	Yes
Observations	1,295	1,293	1,293	1,295	1,293	1,293
R <sup>2</sup>	0.048	0.258	0.258	0.112	0.400	0.400
Adjusted R <sup>2</sup>	0.032	0.160	0.160	0.097	0.321	0.321

Note: \*p < 0.1; \*\*p < 0.05; \*\*\*p < 0.01

Table 9: The moderating impact of SRS compliance on the relationship between CSP and CFP (accounting-based metrics) (only displaying the interaction terms).

Using ROA as the dependent variable yields several interaction terms in all three models. First, CSP is less associated with ROA for companies in full compliance with impact-material SRSs, than for the ones who are not. This effect is marginally insignificant in the POLS model and the FE model without clustered SE, but significant at the 10 percent level. Second, for the FE models with (p<0.05) and without (p<0.10) clustered SE, partial compliance with financial-material SRSs results in CSP having a smaller association with ROA. Third, for all three

models, the association between CSP and ROA is higher for companies partially complying with impact-material SRSs the prior year (lag), significant at the 5 and 1 percent level. Lastly, the POLS model ( $p < 0.01$ ) and the FE model without clustered SE ( $p < 0.10$ ) report that for companies partially complying with financial-material SRSs, CSP has a greater association with ROA.

Although this chapter has presented the results from three different models, the discussion in the next chapter will be centred around the results from the FE model with clustered SE. This is to ensure that the conclusions are reached from the most unbiased and consistent estimator.

## 8. Discussion

In this chapter, we will review the analysis in an attempt at answering the research question: *Does compliance with sustainability reporting standards moderate the relationship between corporate sustainability performance and corporate financial performance?* The results from our nine regression models presented in the previous chapter will be linked to the reviewed academic theories and previous literature. Previous literature has mostly found a positive relationship between CSP and CFP (Friede et al., 2015); however, the results have been somewhat inconsistent (Revelli & Viviani, 2015; Hoepner & McMillan, 2009; van Beurden & Gössling, 2008). Because of this inconsistency, it is important to study whether the relationship may be determined by other factors, for instance, moderating variables such as SRS compliance. This chapter will systematically discuss the five hypotheses.

### 8.1 Hypothesis 1: CSP and SRS Compliance

As partially predicted through the literature review (Sahut & Pasquini-Descomps, 2015; Arun et al., 2021), the compliance with SRSs has a positive and significant impact on CSP. Contrary to Conway's results using <IR> reports, the financial-material SRS group also has a positive impact on CSP. The results from Table 5 are illustrated in Figure 4.

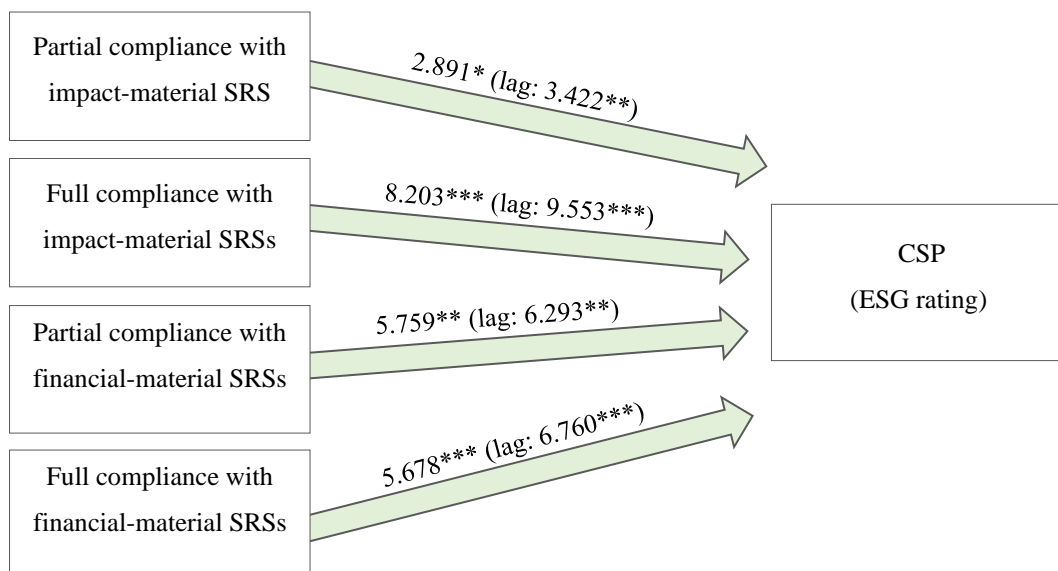


Figure 4: The different SRSs' positive impact on CSP.

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### **8.1.1 CSP and the Full Compliance with Impact-material SRSs**

Regarding the first finding, we can draw parallels to Arun et al.'s (2021) study, who find a positive relationship between CSP and compliance with GRI and UNGC. GRI and UNGC are both in the group of impact-material SRSs. In fact, they constitute most of this group, since the only other SRS is AA1000, which is less frequently complied (see Appendix 2: Distribution of Compliance Level Across SRSs).

It is somewhat contradicting that full compliance with impact-material SRSs has a significantly larger effect on CSP, when ratings for CSP are often based on financial materiality (Crona & Sundström, 2021). However, some rating institutions adhere to GRI requirements when computing the ratings for CSP (Sahut & Pasquini-Descomps, 2015), and the environmental categories used by most rating agencies closely correspond with GRI (Crona & Sundström, 2021). GRI is within the impact-material group of SRSs (Global Reporting Initiative, 2022). Thus, these trends may indicate that metrics for CSP might be more impact-material focused than they aim to be, which can explain our findings.

Impact-material SRSs require a larger scope of information to be disclosed (Christensen et al., 2018, p. 131). Moreover, both GRI (Adams, et al., 2021) and UNGC (United Nations Global Compact, 2021) within the impact-material SRS group are closely aligned with the double materiality concept. This suggests that even with an impact-material focus, these SRSs also account for financial-material information to some degree. The much broader focus of SRSs within the impact-material SRSs explains why full compliance with these SRSs are the most correlated with CSP. This is because more of the issues CSP measure are accounted for in these sustainability reports. In this regard, compliance with GRI mandates a more comprehensive set of metrics than for instance CDP within the financial-material SRS group, which only requires reporting towards the environmental pillar of ESG (see Appendix 1: Definitions of the SRSs).

It is, however, difficult to draw any firm conclusions on what may explain the relationships between CSP and SRS compliance, as the nature of ratings for CSP is not that clear. The focus on financial-materiality for most rating agencies (Crona & Sundström, 2021) suggests that financial-material SRSs are most correlated with CSP. However, the correlations with GRI requirements (Sahut & Pasquini-Descomps, 2015; Crona & Sundström, 2021), supports our

findings that compliance with impact-material SRSs has the greatest effect on CSP.

### **8.1.2 CSP and the Difference Between Full and Partial Compliance with Impact-material SRSs**

The second finding regarding the first hypothesis concerns the large gap between the effects on CSP of full and partial compliance with impact-material SRSs, which is illustrated in Figure 4. This supports Eng et al.'s (2022) findings of a great divergence between low and high levels of SRS compliance, on CSP. However, Eng et al.'s study reports a divergence between the compliance levels of a financial-material SRSs, while our divergence exists for the impact-material SRSs.

Some companies use sustainability reports as a tool to shape their stakeholders' perceptions, without putting much effort into sustainability initiatives (Papoutsi & Sodhi, 2020). Since SRSs require companies to disclose sustainability information regardless of whether the reports portray the company in a positive or negative light (Del Giudice & Rigamonti, 2020), it is challenging to form strategic stakeholder perceptions in full compliance with SRSs. Furthermore, with the enforcement mechanisms that the impact-material SRS, GRI and UNGC have, it may be harder for companies to claim full compliance in cases where not all reporting requirements are met.

Partial compliance with impact-material SRSs may have a smaller effect on CSP, because the reporting companies often only address positive or minor topics (Brand, et al., 2018). The reporting of negative information that follows full compliance may act as a change agent (Christensen et al., 2021). This implies that when companies choose to fully comply with an SRS, they have incentives to enhance the negative aspects that they need to disclose. In this line, the implied promise of improvements from disclosing negative information (Pérez-Cornejo et al., 2020) may also lead to full compliance gradually increasing the companies' CSP. These dynamics are not present for companies merely partially complying with an SRS, which may explain the large gap between the effects the different compliance levels have on CSP.

The commitment to being transparent through full compliance with impact-material SRSs may also stem from the fact that companies who choose to fully comply with impact-material SRSs



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possibly already have high CSP (Clarkson et al., 2008). This may explain the higher association between CSP and full compliance with impact-material SRSs and indicates the possibility of a reverse causation. With full compliance with SRSs, companies can separate themselves from competitors with less disclosure of sustainability information. In accordance with the signalling theory, the potential to differentiate oneself from competitors acts as a motivation for a company to voluntarily report above the legal requirements (Morris, 1987).

### **8.1.3 CSP and the Compliance with Financial-material SRSs**

Our findings of a positive relationship between financial-material SRSs and CSP are somewhat contrary to earlier literature using specific SRSs within the financial-material SRS group. Conway (2019) does not find a significant relationship between compliance with the <IR> framework, which is a financial-material SRS, and CSP. Eng et al. (2022) find a significant, but small, correlation between high compliance levels with SASB, which is another financial-material SRS, and CSP. For low compliance levels, Eng et al. find a negative correlation. However, both of these financial-material SRSs amount to a small percentage of the financial-material SRS group (Appendix 2: Distribution of Compliance Level Across SRSs). This can explain why our results diverge from previous literature.

Due to the smaller scope of financial-material SRSs (Christensen et al., 2018, p. 131), it is reasonable that our findings suggest a smaller coefficient for such compliance than for full compliance with impact-material SRSs. A smaller scope can be translated into less negative aspects required to disclose, and consequently the effect of compliance as a change agent is reduced (Christensen et al., 2021). Since financial-material SRSs do not include issues on how the company impacts the environment and society, the companies have less incentives to improve these impacts. Consequently, compliance with financial-material SRSs is suggested to have less impact on CSP than full compliance with impact-material SRSs.

Conway (2019) suggests that compliance with financial-material SRSs may be affected by the governance pillar of the ESG rating. The effects on the environmental and social pillar in our study may be smaller than the effect on the governance pillar, or potentially non-existent as reported by Conway (2019). However, since we have not disaggregated the measure of CSP, we cannot know this for certain. If the environmental and social pillars are affected less by compliance with financial-material SRSs, this will in turn decrease the total strength of the

relationship.

Due to less compliance costs associated with compliance with financial-material SRSs, it is easier for companies to know what information to report (Christensen, et al., 2018, p. 131). From the descriptive statistics in Table 2, we see that almost all sustainability reports using financial-material SRSs fully comply with these, rather than merely partially. For compliance with impact-material SRSs, the difference between the number of companies fully and partially complying is smaller. Consequently, our results indicate that it is easier, or more desirable, to fully comply with financial-material SRSs. Following this, the 6 percent that partially comply with these SRSs may be close to fully complying. If so, this explains why partial and full compliance with SRSs have similar impacts on CSP, as observed in Figure 4.

## 8.2 Hypothesis 2: CFP and CSP

Our regression results in Table 6 and Table 7 suggest positive relationships between CSP and all measures for CFP. However, the results are not significant for the FE models with clustered SE. Accordingly, we cannot accept the hypothesis, nor can we draw any inferences about whether higher or lower CSP relates to a greater value of CFP. We do report some significant results when using FE without clustered SE and POLS models. However, these results are not valid as they do not comply with the assumptions for the FE model (Hanck et al., 2021).

Finding a non-significant relationship between CSP and CFP is aligned with earlier research (Revelli & Vivani, 2015; Hoepner & McMillan, 2009; van Beurden & Gössling, 2008). One possible reason for the inconclusive results can stem from the suggestion that CSP might not influence CFP in the short run, but rather in the long run (Balatbat et al., 2012). It is reasonable to assume that after an updated summary rating for CSP has been published, some time may pass before market participants react (Balatbat et al., 2012). Their reaction will consequently affect CFP. It is conceivable that improved CSP can lead to improved CFP for companies (Orlitzky et al., 2003; Albertini, 2013; Lu & Taylor, 2016), but a reason for why our study does not find this relationship can stem from this not being reflected in CFP the same or following year (Balatbat et al., 2012), which is the time span that our study has.

CSP may influence CFP in the long run because companies require a high SIC to manage to translate high CSP into high CFP (Barnett, 2007). High SIC comprises of strategically

significant intangible assets, such as trust and reputation (Barnett, 2007), which must be developed over time (Dierickx & Cool, 1989). Thus, high CSP may not be assumed as credible if the company has a low SIC. Market forces tend to reward companies with high CSP in the long run (Lu & Taylor, 2016). However, not simultaneously developing a high SIC, or already having a high SIC, may diffuse the effects of long-term CSP on CFP. Consequently, translating high CSP into high CFP is a complex process, which may explain our non-findings.

### 8.3 Hypothesis 3: CFP and SRS Compliance

The regression results in Table 6 and Table 7 suggest mixed results across the different SRS compliance groups and measures for CFP.

#### 8.3.1 Full Compliance with Impact-material SRSs Positively Affecting Market-based Measures for CFP

Supporting the third hypothesis, the results indicate that full compliance with impact-material SRSs positively affects the market-based measures for CFP. Since impact-material SRSs focus on aspects important for a broad group of stakeholders (European Commission, 2019), it is reasonable to suggest that these SRSs are in greater alignment with societies' desires, than the financial-material SRSs are. Socially desirable behaviour accounts for the companies' part of the social contract they have with the rest of the society, in exchange for society's acceptance (Guthrie & Parker, 1989). If companies do not sustain the social contract, this may result in discontent and pressure from stakeholders, which accelerates the route of purely impact-material issues becoming financially material (Freiberg et al., 2020).

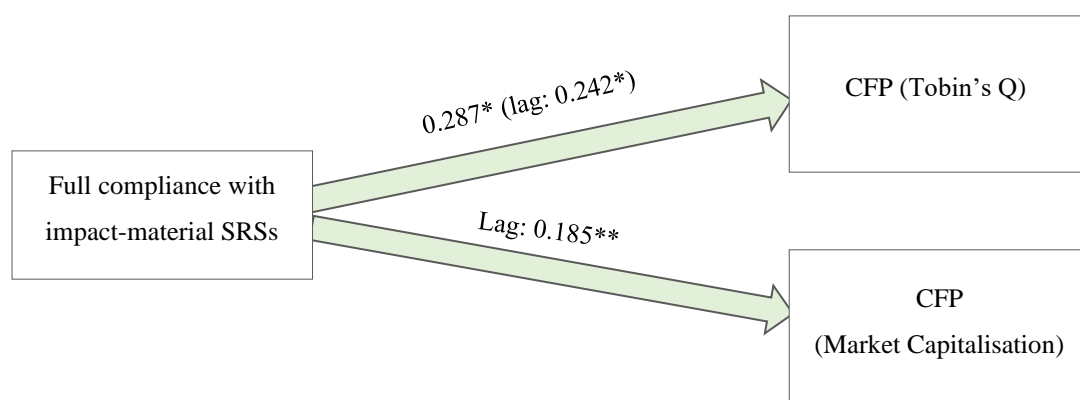


Figure 5: Full compliance with impact-material SRSs' positive impact on market-based metrics for CFP.

Financial market professionals prefer sustainability reports to include sustainability issues that potentially will become financially material in the long run (Jørgensen et al., 2021). This implies a desire for a long-term focus on sustainability issues (Hahn et al., 2014). By focusing on the outwards impact of ESG issues, the impact-material SRSs focus on long-term material issues (European Commission, 2019). For sustainable development it is important to address how companies affect their surroundings. Sustainable development requires a much longer time horizon than the time horizons that are typical to companies (Held, 2001). Market-based metrics, such as Tobin's Q and market capitalisation, are forward-looking measures of CFP (Tsoutsoura, 2004), which may explain why they are positively affected by long-term focused SRSs. It is, however, important to note that the effect on Tobin's Q is only significant at the 10 percent level.

Full compliance with impact-material SRSs constitutes to the most comprehensive reporting, since it accommodates the broadest group of stakeholders (European Commission, 2019). With greater amounts of quantitative data, CSP information will be easier to incorporate into financial models (Eccles et al., 2012). Integrating information on CSP into these models is a prerequisite for converting them into more solid business models. In accordance with the signalling theory, companies often use sustainability reports as a signal to differentiate themselves from competitors (Morris, 1987). However, the signal is only effective if it is costly (Connelly et al., 2011). Since the increased target group translates to a greater amount of information needing to be disclosed, full compliance with impact-material SRSs can be regarded as costly. In so, the receiver of the signal perceives the signaller as more credible or honest (Moratis, 2018). Credibility and honesty will in turn increase the companies SIC, which leads to the sustainability efforts being more effective and profitable (Barnett, 2007). Improved relationships with stakeholders lead to improved CFP (Lu & Taylor, 2016), which may explain our findings.

Considering Raimo et al.'s (2021) findings that creditors perceive a company not disclosing their sustainability impact as riskier, one can partially explain why the full compliance with impact-material SRSs positively affects Tobin's Q and market capitalisation. From a risk perspective, creditors want to issue loans to companies that have minimal risk. According to their findings, creditors perceive companies as less risky if they are fully transparent about their operations through sustainability reporting (Raimo et al., 2021). This is because

sustainability reporting reduces the information asymmetry between lenders and companies. As a result of being fully transparent from complying with impact-material SRSs, companies can obtain a lower cost of debt, resulting in reduced risk and higher returns. From an investor perspective, investors want to allocate their capital towards assets with higher returns. This, combined with the previous arguments in this section, may explain why we find the greatest effect on CFP for companies fully complying with impact-material SRSs.

### 8.3.2 The Negative Effect of Compliance with Financial-material SRSs on Market-based Metrics

The negative and significant impact of compliance with financial-material SRSs on Tobin's Q somewhat disproves hypothesis 3, since we predicted that both compliance scopes of SRSs increase CFP. The financial-material SRSs focus on the issues that investors, and not necessarily other stakeholders, presume as material (European Commission, 2019). In such, the SRSs do not necessarily maintain their part of the social contract with society. Following the legitimacy theory, only focusing on the sustainability issues that have financial motives, does not necessarily legitimate the company's business operations (Guthrie & Parker, 1989). Breaching the social contract may create dissatisfaction and thus pressure from stakeholders (Freiberg et al., 2020). The stakeholders have the power to turn financially immaterial issues to become material. There may be less compliance costs with adhering to societies' reporting desires earlier rather than later, due to the learning curve.

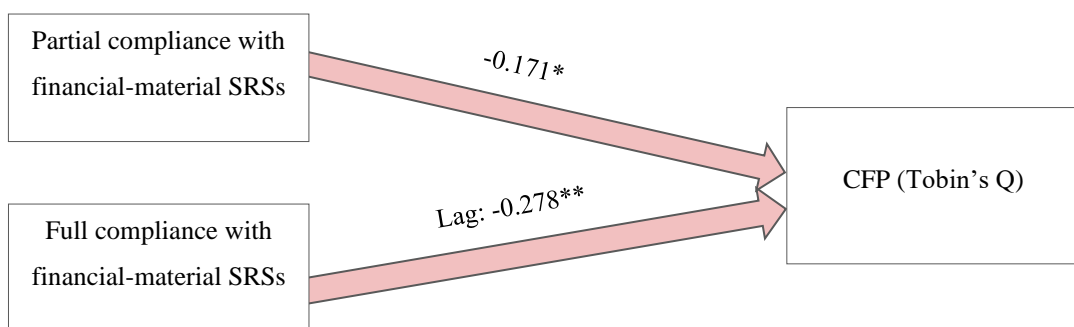


Figure 6: Financial-material SRSs' negative impact on Tobin's Q.

The negative relationship between compliance with financial-material SRSs and CFP also contradicts the general idea that addressing financial-material information will increase CFP (Jørgensen et al., 2021). However, full transparency of sustainability related issues possibly having an impact on the company (European Commission, 2019), may increase the awareness

of financial risks. Increased awareness of financial risks may consequently negatively affect investors who have an impact on market-based measures for CFP (McGuire et al., 1988). The compliance with financial-material SRSs offers a comprehensive understanding of risk exposure and reveals the sustainability issues that may negatively affect a company and potentially reduce profits. The reporting of high sustainability related risks can have a negative effect on investors and their investment decision, thus affecting CFP negatively.

Partial compliance with the financial-material SRSs has a smaller negative impact on CFP than full compliance. This can be based on the argument that fully compliant sustainability reports disclose all sustainability related risks, whereas partial compliant sustainability reports may have omitted such information (Owen, 2000). However, since this effect is only significant at the 10 percent confidence interval, this effect is not necessarily an accurate representation of the relationship.

### 8.3.3 Negative Effects on Accounting-based Metrics

For the accounting-based metrics for CFP, our results indicate negative effects of compliance with both scopes of SRSs.

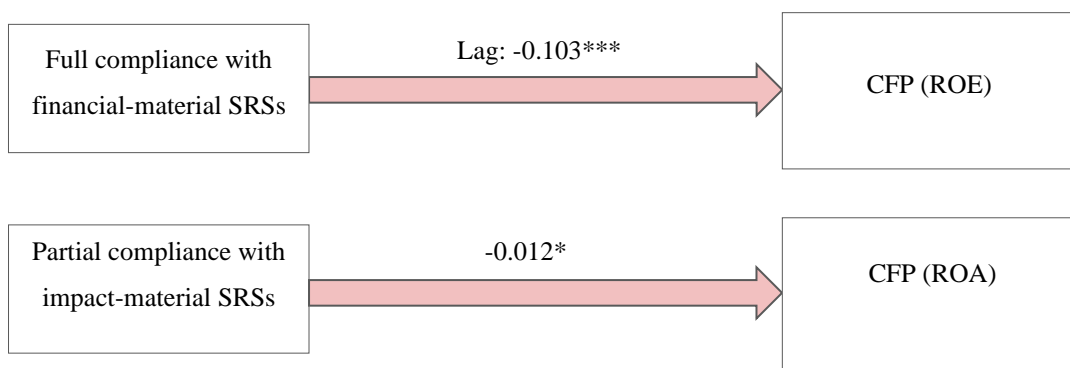


Figure 7: SRS compliance's negative impact on accounting-based metrics for CFP.

As for Tobin's Q, ROE may also be negatively affected when companies are transparent on all the issues that may potentially harm the profitability of a company. Explaining the smaller negative effect of full compliance with financial-material SRSs on ROE compared with Tobin's Q, can be founded on the difference in time perspective of the two metrics. The negative relationship between full compliance with financial-material SRSs and Tobin's Q could be partially explained by the fact that metrics for CFP with a longer time perspective also consider the dynamic nature of the materiality concept (Tsoutsoura, 2004). Since ROE is

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a more short-term metric for CFP (Briloff, 1972; Briloff, 1976; Fisher & McGowan, 1983; Hayes & Abernathy, 1980; Ouchi, 1980), this is possibly not considered to the same degree; hence, the negative effect is smaller.

The small negative effect partial compliance with impact-material SRSs has on ROA, may also stem from the fact that accounting-based metrics have a short-term perspective (Briloff, 1972; Briloff, 1976; Fisher & McGowan, 1983; Hayes & Abernathy, 1980; Ouchi, 1980). This short-term perspective contradicts the long-term approach of impact-material SRSs. However, this effect is substantially smaller than all the other direct effects in this chapter, and only significant at the 10 percent level. Consequently, the result does not necessarily indicate an actual causation, and does not need any further discussion.

## 8.4 The Moderating Roles of SRS Compliance

Differentiation involves establishing the company as different in a favourable sense, and one basis for differentiation may reduce the effect of another (Hull & Rothenberg, 2008). Companies that are successful in differentiating themselves typically have a higher CFP (Porter, 1980). A high level of CSP has been shown to be one way for a company to differentiate itself from competitors (Mackey et al., 2007; Siegel & Vitaliano, 2007), while reporting, for instance through SRS compliance, is shown to be another (Morris, 1987). The differentiating effect SRS compliance has may depend on how informative the SRS compliance is. Earlier literature reports that partial compliance with SRSs, in general, is less informative (Brand, et al., 2018), while full compliance with financial-material SRSs is more informative (Schiehll & Kolahgar, 2020). This may explain why partial compliance with impact-material SRSs increases the effect CSP has on CFP, and compliance with financial-material SRSs dampens the effect.

### 8.4.1 Hypothesis 4: The Moderating Role of Partial Compliance with SRS

In line with hypothesis 4, we find that partial compliance strengthens the effect CSP has on CFP. This moderating effect is, however, only found for partial compliance with impact-material SRSs, and not financial-material SRSs. Moreover, the effect is found both for market- and accounting-based metrics for CFP. The moderating effect is significantly stronger for the relationship between CSP and CFP measured by Tobin's Q, as illustrated below in Figure 8.

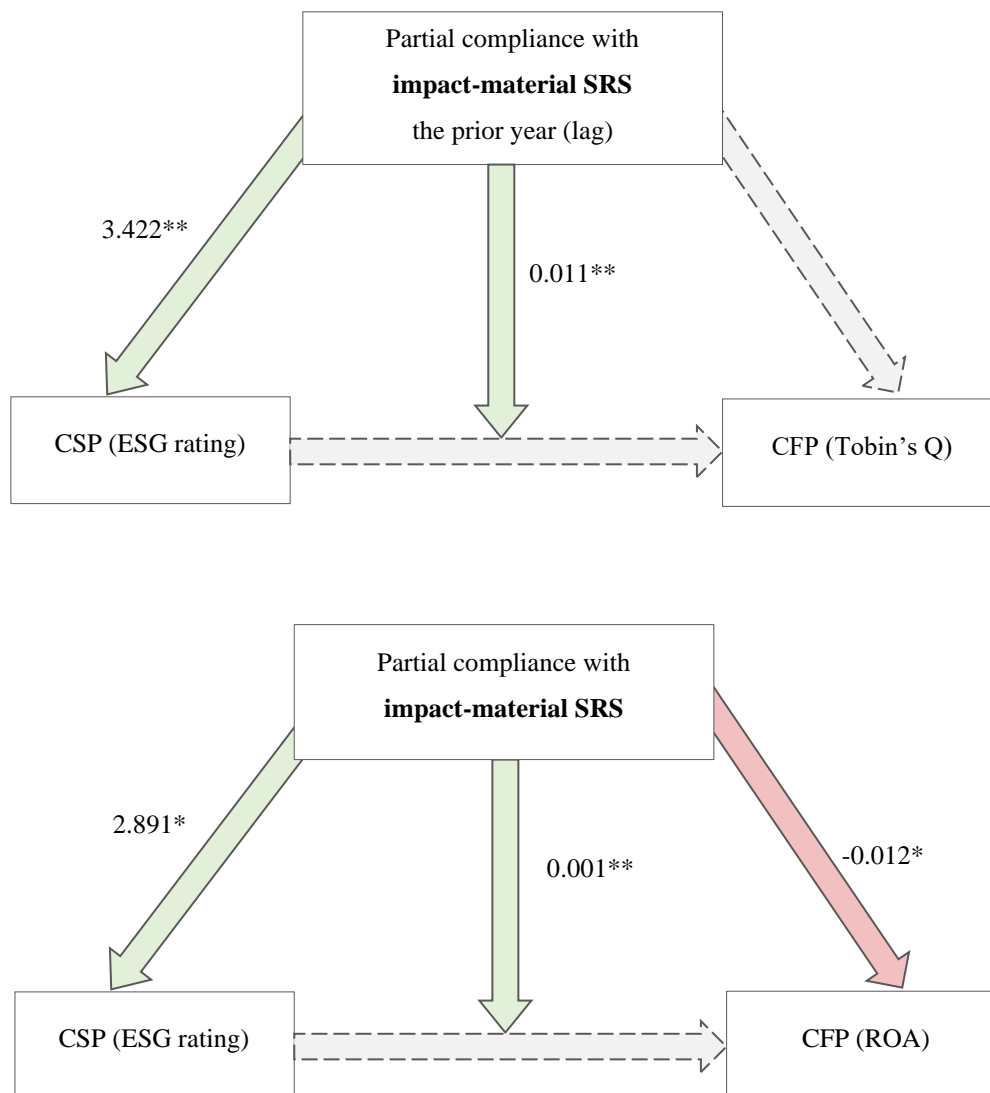


Figure 8: The positive moderating effect of partial compliance with impact-material SRSs on the relationship between CSP and CFP (Tobin's Q and ROA).

Partial compliance may increase the effect CSP has on CFP due to the lack of informativeness such reporting has on CFP. Partial compliance often entails covering only positive or minor topics (Brand et al., 2018), depending on what information is favourable for the company's corporate image (Owen, 2000). Consequently, such reporting does not incorporate all the information material for investment decisions, which is important to the informativeness of CSP measures. In accordance with the signalling theory, partially complying with impact-material SRSs is a strategic way for companies to separate themselves from competitors (Morris, 1987). Partial compliance can also imply that the companies have chosen to report negative information in a subtle and legitimising way to reduce the potential social and political harms (Patten, 2019). If investors are aware of this strategic filtering of information, they may want to use third-party measures for CSP to guide their decision. Consequently, the



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effect CSP has on CFP is increased.

Partial compliance with particularly impact-material SRSs may further reduce the informativeness of the sustainability reports, since the materiality approach is not aligned with the investors' preferences (Jørgensen et al., 2021). The information processing costs are higher when a report is aligned with impact-material SRSs (Christensen et al., 2018, p. 131). Because partial compliance with SRSs increases the possibility of "greenwashing" from strategically selecting information (Lyon & Maxwell, 2011), the information processing costs may be further increased when companies partially comply with impact-material SRSs. When companies only partially align their reports with impact-material SRSs, the investors may be aware that parts of or all the possibly financial material information are omitted. Without searching for the missing information or opting to additional sources, it is challenging to know what information is omitted, and how important this information is for investors' decisions. This decreases the informativeness of the partial compliance with impact-material SRSs, which may increase the informativeness of summary ratings for CSP.

The moderating effect partial compliance with impact-based SRSs has on the CSP-CFP relationship is smaller when CFP is measured by ROA than by Tobin's Q. First, this difference can be accrued to the fact that ROA is an accounting-based metric, which has a more short-term perspective (Briloff, 1972; Briloff, 1976; Fisher & McGowan, 1983; Hayes & Abernathy, 1980; Ouchi, 1980). Impact-material SRSs may be argued to have a longer time perspective since the materiality definition steering the reporting requirements encompasses the need for long-term focus on sustainability issues (Hahn et al., 2014). Accounting-based measures represent the company's operational efficiency and capture historical features of the company's performance (McGuire et al., 1986). Hence, they do not necessarily incorporate the potential financial materiality that current non-material sustainability issues may have (Freiberg et al., 2020). Despite this, there are still indications for partial compliance with impact-material SRSs positively moderating the CSP-CFP relationship.

Lastly, it is important to note that the moderator is a lag, which implies that the compliance with SRSs the prior year is what moderates the relationship between CSP and CFP. Market-based metrics, such as Tobin's Q, represent an investor's assessment of a company's ability to generate long-term financial profits (McGuire et al., 1988). Hence, it is reasonable that the investors need to wait until the sustainability reports are published, which for many of them

constitutes to the subsequent year.

#### **8.4.2 Hypothesis 5: The Moderating Role of Compliance with Financial-material SRS**

In support of hypothesis 5, full compliance with financial-material SRSs reduces the impact CSP has on CFP, operationalised through market capitalisation. It is relevant to mention that financial-material SRSs negatively affect Tobin's Q, as reported in Figure 6. This implies a decreased informativeness of this market-based metric, contrary to market capitalisation. Moreover, this suggests that the direct effects of CSP and the moderating effects of SRS compliance differ for different measures of CFP, also within the same type of metric.

The negative moderating effect of compliance with financial-material SRSs on the CSP-CFP relationship may be accrued to the increased informativeness of sustainability reports complying with SRSs with this materiality focus (Schiehl & Kolahgar, 2020; Eng et al., 2022). Financial-material SRSs mandate companies to report on information important for the investors' decision making (European Commission, 2019). We find that also partial compliance with financial-material SRSs has a negative moderating effect on the CSP-CFP relationship. The reported information will be material to the financial markets even in the event of strategic information selection. However, less disclosed material information reduces the informativeness of the sustainability reports, which explains why the moderating effect is smaller for partial compliance than with full compliance with financial-material SRSs. This may explain why both compliance levels reduce the effect CSP has on CFP. These effects are illustrated below in Figure 9.

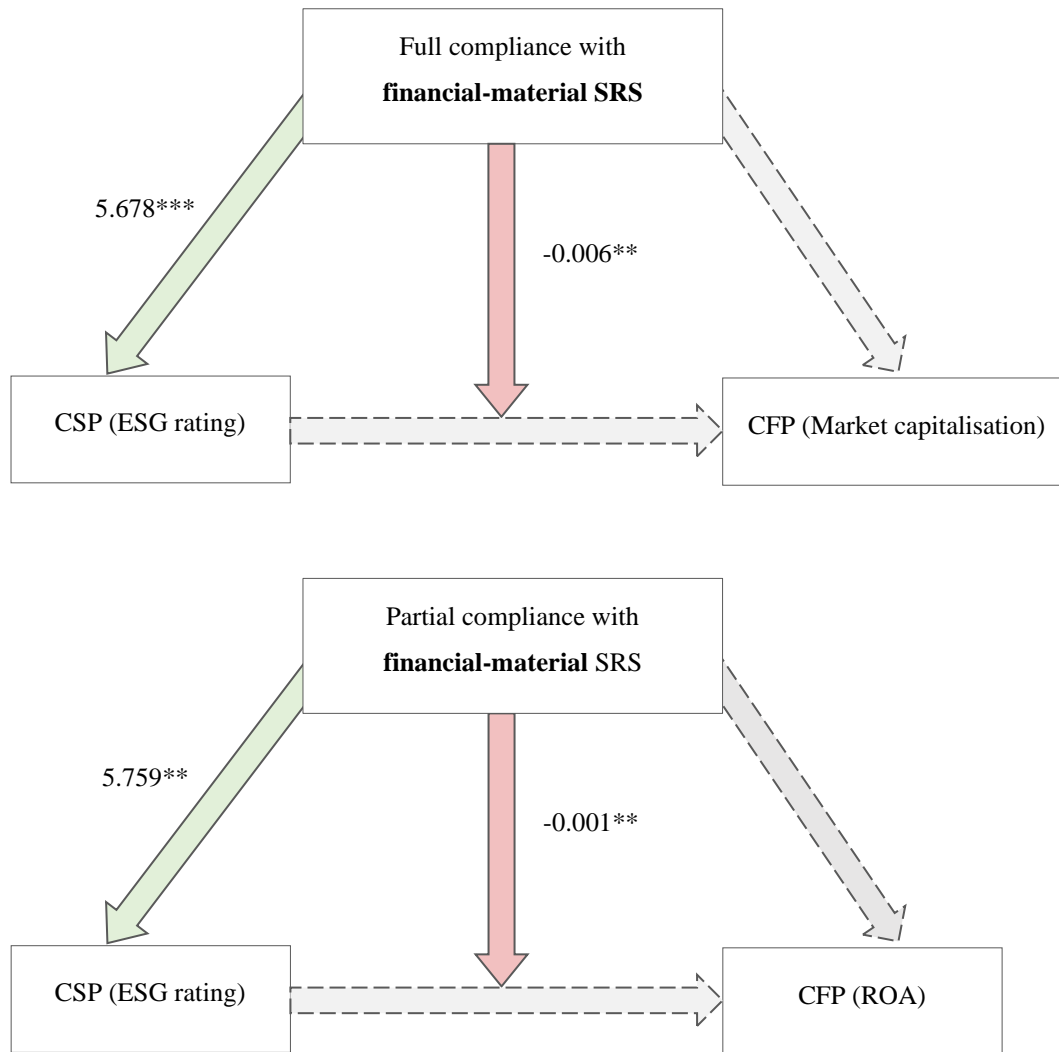


Figure 9: The negative moderating effect of partial compliance with financial-material SRSs on the relationship between CSP and CFP (market capitalisation and ROA).

The information in sustainability reports that fully comply with financial-material SRSs is incrementally informative to ratings for CSP (Eng et al., 2022). From the direct results in Figure 4, we find that compliance with impact-material SRSs has a stronger relationship with CSP, than compliance with financial-material SRSs has. Consequently, the aggregated measure for CSP does not necessarily only calculate aspects that are financially material to investors, even though rating agencies often focus on financial materiality (Crona & Sundström, 2021). The increased informativeness from compliance with financial-material SRSs may stem from the fact that summary ratings do not reflect both dimensions of materiality simultaneously (Lee, 2021). Full compliance with financial-material SRSs suggests that all the information reported is important for the investors' decision-making

(European Commission, 2019). When investors use the information from sustainability reports in compliance with financial-material SRSs, their information processing costs may be decreased (Christensen et al., 2018, p. 131). This is because they do not need to filter out material information, which possibly is the case when sustainability reports are aligned with impact-material SRSs. As a result, full compliance with financial-material SRSs decreases the effect CSP has on CFP.

Due to our discussion in 8.4.1, it is somewhat contradictory that also partial compliance decreases the impact of the CSP-CFP relationship. However, this result may be accrued to the notion that it is easier for companies to comply with financial-material SRSs (Christensen et al., 2018, p. 131). This is also supported by the descriptive statistics in Table 2, displaying that almost all the companies using financial-material SRSs to construct their sustainability reports fully comply with one of these SRSs. Since it is easier to fully comply with financial-material SRSs, the companies that partially comply may be close to full compliance. Moreover, even if the companies strategically select what information to disclose, investors can still be certain that the reports disclose financially material information. On the contrary, when companies partially comply with impact-material SRSs, they may choose to only disclose information that is merely material to other stakeholders than investors. As a result, even partial compliance with financial-material information possibly increases the informativeness of sustainability reports, and thus reduces the impact CSP has on CFP.

Overall, the results in Figure 8 and Figure 9 indicate that compliance with SRSs has a significantly smaller moderating effect on the accounting-based metrics than it has on the market-based metrics. This may be accrued to the increased costs from compliance with SRSs, especially on the short term (Oosterhoff, 2022). Increased costs do not necessarily positively affect the efficiency of a company's operations, which is what drives the accounting-based measures for CFP (McGuire et al., 1986). Moreover, accounting-based measures for CFP are argued to have a short-term perspective (Briloff, 1972; Briloff, 1976; Fisher & McGowan, 1983; Hayes & Abernathy, 1980; Ouchi, 1980), and the increased costs from SRS compliance are mostly short-term (Oosterhoff, 2022). However, sustainability reports are found to help companies obtain third-party funding to lower costs (Raimo et al., 2021), which may increase the cost efficiency of a company. The positive and the negative effect SRS compliance has on costs balances one another out, which explains why the moderating effect of SRS compliance is smaller for accounting-based measures than for market-based measures.

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## 8.5 The Non-Finding of Full Compliance with Impact-Material SRS as a Moderator

From the direct effects, the results report that full compliance with impact-material SRSs both has the largest effect on CSP (Figure 4) and hence is the only SRS group that positively affects CFP (Figure 5). These findings suggest that also this group of SRSs can negatively affect the CSP-CFP relationship, due to an increase in the informativeness of the sustainability reports. The increased informativeness is due to the sustainability reports explaining more of a company's actual CSP, while also having a positive impact on CFP.

Full compliance with impact-material SRSs often translates to high compliance with double-materiality reporting, due to the close relation the requirements of GRI and UNGC has with this type of reporting materiality (Adams, et al., 2021; United Nations Global Compact, 2021). Thus, a lot of the financial-material issues are disclosed, which is found to increase the informativeness of the sustainability reports to investors (Schiehll & Kolahgar, 2020; Eng et al., 2022). It is also found that investors prefer sustainability reporting not to be limited to financial-material sustainability issues (Jørgensen et al., 2021). Figure 5 illustrates that the most comprehensive SRSs closely aligned with double materiality positively affect CFP. Thus, since this group of SRSs is most related to actual CSP, as well as affecting market-based measures for CFP, it is reasonable to assume that such sustainability reporting decreases the effect summary ratings for CSP has on CFP. However, our study did not find this moderating effect.

An explanation for this non-finding may be that for companies with comprehensive reporting, there is both an increased demand for more specific summary ratings for CSP, but also a reduced need for such SRTs. The market may respond to sustainability reports fully complied with impact-material SRSs by validating the information through CSP, due to the heavy information load. Simultaneously, the market may have a reduced need for summary ratings, since the broad scope of information is sufficient.

It is also possible that for companies fully complying with impact-material SRSs, the relationship between CSP and CFP is non-linear. This proposition follows the findings by Barnea and Rubin (2010) of a reverse U-shaped correlation. High CSP, paired with

comprehensive sustainability reporting may have synergy effects on CFP. This is because high CSP increases SIC, which affects the ability for companies to financially gain from sustainability actions (Barnett, 2007). Sustainability actions include sustainability reporting. Following this, high SIC, resulting from high CSP, will increase the amount of information in the sustainability report the stakeholders take in. Thus, the most comprehensive reporting through full compliance with impact-material SRSs decreases the effect CSP has on CFP. However, when companies with low CSP, and consequently low SIC, complies with comprehensive SRSs, the contents of the sustainability reports are possibly perceived as “greenwashing” or incorrect information, even though the company has expressed full compliance with either UNGC, GRI and/or AA1000. This may lead to an increased impact of CSP on CFP.

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## 9. Conclusion

This study has examined the plausibility of SRS compliance having a moderating role in the relationship between CSP and CFP, and more importantly, how this may explain the ambiguous results of previous studies. Even though earlier research has tested a variety of moderators on this relationship (Hull & Rothenberg, 2008; Tang et al., 2012; Harmer et al., 2021; Fiandrino et al., 2018; Xie et al., 2019), the moderating effect of different scopes and levels of SRS compliance has not been discussed so far. With the consistent SRSs following the implementation of CSRD in 2023 (European Commission, 2021), it is valuable to assess SRSs with different materiality approaches and their direct effect on CFP, as well as their moderating effects on the CSP-CFP relationship.

Studying moderating effects is an important contribution to the extant literature on the CSP-CFP relationship. Our study has implications for explaining the ambiguous results of the relationship found in earlier literature. The findings may also have implications for how stakeholders, including the financial market, uses information on sustainability to increase long-term CFP. Moreover, this will have implications for how new regulations can affect the informativeness of different SRTs.

Regarding the first hypothesis, our empirical analysis of the direct effects indicates that all groups of SRSs have an impact on summary metrics for CSP, with full compliance with impact-material SRSs having the largest impact. This is in line with the suggestion that SRS compliance may act as a change agent to improve actual CSP (Christensen et al., 2021). More comprehensive reporting implies more negative sustainability issues to disclose, further improving SRS compliance as a change agent.

The second hypothesis refers to the positive impact CSP is suggested to have on CFP, which the results from our study do not support. This non-finding may be accrued to the fact that CSP may influence CFP in a longer time perspective (Balatbat et al., 2012) than this study accounts for. The ability of a company to translate sustainability activities into CFP relies on a company's SIC, which takes time to develop (Barnett, 2007). Thus, the financial gain from high CSP is a complex relationship. This relationship may be affected by the informativeness of SRS compliance.

The results obtained by testing the third hypothesis suggest that sustainability reports in compliance with SRSs affects CFP, but not necessarily positively. Full compliance with impact-material SRSs has a positive impact on the market-based measures for CFP, possibly due to the increased informativeness from more comprehensive reporting. Following the signalling theory, the signal the sustainability report sends must be costly to be effective (Connelly et al., 2011), and more comprehensive reporting is deemed more costly for the company. Compliance with financial-material SRSs is suggested to have a negative impact on CFP, which can be accrued to the increased awareness investors receive of negative sustainability risks that may impact the company.

Supporting the fourth hypothesis, partial compliance with impact-based SRSs has a positive effect on the relation between CSP and CFP. However, this effect is not found for partial compliance with financial-material SRSs. The degree of informativeness partial compliance has for investors can be used to explain these findings. Partial compliance with impact-material SRSs allows the companies to omit potentially all financially material information (Brand, et al., 2018; Owen, 2000), which increases the informativeness of summary ratings for CSP, compared with the sustainability reports. However, even partial compliance with financial-material SRSs includes some information that is essential to investors.

In line with the fifth hypothesis, our results indicate that full compliance with financial-material SRSs reduces the impact CSP has on CFP. This supports previous findings of sustainability reports in full compliance with SASB being incrementally informative to ratings for CSP (Eng et al., 2022). A report revealing all information that is financially material to the company may be an efficient measure of the company's CSP since such SRSs imply lower information processing costs for investors (Christensen et al., 2018, p. 131). For ROA, which is a measure that reflects the efficiency of a company's operation (McGuire et al., 1986), sustainability reports help companies receive third-party funding to lower costs (Raimo et al., 2021), which implies cost savings. Thus, partial compliance with financial-material SRSs decreases the effect CSP has on CFP.

To conclude, this study indicates that the relationship between CSP and CFP is more complex than a direct link. The study results broaden the implications that the compliance with SRSs may have on the informativeness of sustainability information. Summary ratings for CSP may not give sufficient information to the financial market, compared with sustainability reports



using more comprehensive SRSs. This supports the implementation of mandatory SRSs with a double materiality perspective, which will be implemented through the CSRD (European Commission, 2021). Companies' compliance with SRSs may affect the informativeness of this information to the financial markets, which may further affect the informativeness of summary ratings. Summary ratings may help guide decisions when the reported information is not deemed credible due to partial compliance. However, summary ratings may be insufficient in investment decisions when the reports must reveal all information that is financially material.

The results of this study contribute to the advancement of the discussion of the CSP-CFP relationship. This especially relates to how knowledge of the interplay between CSP and SRS compliance can help identify the most effective strategies for companies to combine CSP and the reporting of this performance. The most effective strategies aim to provide the highest value for society and the highest potential profitability.

## 10. Limitations

We have encountered some challenges during the empirical analysis of this study. This is mostly related to the data set used. For several of the observations, there have been challenges retrieving either the annual report or the sustainability report, obliging us to leave these cells blank. This has led to 172 missing values for impact-material SRSs and 97 for financial-material SRSs. Moreover, some of the values for the financial control variables and measures for CFP have been missing in the Refinitiv database. The reduction in the data set may have affected the precision of the statistical calculations and the interpretation of these.

Another limitation related to the data set is that the companies have fiscal years ending at different dates. For a company with the fiscal year ending 31.12, its annual and sustainability reports will not be published until the next calendar year. This implies that for there to be an actual effect between the compliance with SRSs in these sustainability reports and CSP or CFP, the effect will have to be present using the lagged variable of the SRS. This may explain why we have found larger effects for the lagged variables of SRS compliance.

Moreover, not all SRSs have enforcement mechanisms governing full compliance. We have therefore exercised some discretion as to what is categorised as partial compliance and what can be said to be full compliance. If all SRSs had enforcement mechanisms, as GRI and UNGC have, the categorisation would possibly be even more accurate.

This study has only considered companies listed in the UK. Therefore, we cannot say whether our results will apply to different countries' sustainability reporting practices. The use of the different SRSs varies across countries, such as the use of SASB being more widespread in the US than in the UK. This might represent a possible bias in the research.

A limitation associated with the variables used to capture CFP can be attributed to the calculations of these measures. Earlier literature uses several ways of calculating Tobin's Q past the traditional definition. The traditional definition of Tobin's Q includes the assets' replacement cost, which is an intangible measure that is hard to obtain. For simplicity, we chose the method suggested by Refinitiv.

The possibility of a two-way causation also warrants mentioning as a limitation of the study.

A two-way causation implies that an event has an effect in both directions. On the one hand, companies with high CSP might engage in sustainability reporting and comply with SRSs to broadcast their high CSP and to separate themselves from their competitors (Morris, 1987). On the other hand, the compliance with SRSs might work as a change agent to improve actual CSP (Christensen et al., 2018), for instance, through the implied promise of improvements from disclosing negative information (Pérez-Cornejo et al., 2020).

## 11. Implications for Further Research

In addition to the academic and practical implication discussed in the introduction, the study will also have implications for further research. This study has implications for further research as it has studied a moderating effect on the CSP-CFP relationship that, as of today, has not gained as much attention in academia. Ambiguous results on the relationship may be partially explained by the moderating role of SRSs with different materiality perspectives on the CSP-CFP relationship.

To decrease the number of variables in our regression models, we grouped the nine SRSs based on level of compliance and approach to materiality. It would be interesting to divide compliance level into even more groups, to attain more precise findings. For instance, it is reasonable to believe that there is a difference between low compliance and substantial compliance with an SRS. Another approach regarding the variables used can be to not group the SRSs on scope, but rather study the individual SRSs and the level of compliance with these.

Due to the differences in sustainability reporting practices, the moderating effects may vary depending on the studied country. Since our analysis only uses data from the UK, an analysis across different countries can possibly provide more robust results.

Full implementation of the CSRD is expected in 2023 (European Commission, 2021). It could then be interesting and valuable with a study on the moderating effect of SRSs on the CSP-CFP relationship. The CSRD will introduce consistent SRSs and requirements for assurance of the reported information. It can be expected that the results of such a study may vary from ours. Consistent SRSs and assurance can solve the problem of “greenwashing” in sustainability reporting (Delmas & Burbano, 2011), as companies can no longer choose if and what to disclose of sustainability information. This may lead to sustainability reporting becoming more informative than third-party measures for CSP. Further, this may increase the moderating effect of the sustainability reports, and the direct effect between sustainability reports and CFP.

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## Appendix

### Appendix 1: Definitions of the SRSs

<b>Accountability's AA1000 Series of Standards</b>	The AA1000 is a principles-based framework that guides organizations through the process of identifying, prioritizing, and responding to sustainability challenges, with the goal of improving long-term performance (AccountAbility, 2015).
<b>Carbon Disclosure Project</b>	The Carbon Disclosure Project (CDP) is a non-profit organisation that provides a global disclosure system for organizations to manage their environmental impact, mainly reporting on their carbon footprint (Carbon Disclosure Project, 2022).
<b>Climate Disclosure Standards Board</b>	The Climate Disclosure Standards Boards (CDSB) provide organisations' social and environmental information to investors and financial institutions through integrated reporting. Their framework builds on some of the most common sustainability reporting approaches, focusing on risks and opportunities that climate change presents to an organisation (Climate Disclosure Standards Board, 2022).
<b>Global Reporting Initiative Standards</b>	The Global Reporting Initiative (GRI) standards allow all organisations to publicly disclose their economic, environmental, and social impacts, as well as how they contribute to sustainable development (Global Reporting Initiative, 2021).
<b>International Integrated Reporting Council</b>	An integrated report (IR) should be composed in consonance with the <IR> Framework, developed by the IIRC. The <IR> Framework's objective is to define Guiding Principles and Content Elements that manage the content of an integrated report, as well as to explain the fundamental principles that guide them (International Integrated Reporting Council, 2021).
<b>Sustainability Accounting Standard Board Standards</b>	The Sustainability Accounting Standard Board (SASB) Standards enable organisations to comprehend, manage, and report financially-material sustainability information to their investors (Sustainability Accounting Standards Board, 2022).

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<b>Task Force on Climate-Related Financial Disclosures</b>	The Task Force on Climate-Related Disclosures (TCFD) are recommendations for more effective climate-related disclosures that could contribute to more informed investment, credit, and insurance underwriting decisions (Task Force on Climate-Related Financial Disclosures, 2022)
<b>United Nations Global Compact</b>	The United Nations Global Compact (UNGC) is an initiative to promote responsible business through a principle-based framework (The United Nations, 2021). Through ten principles they provide guidance for responsible business by focusing on human rights, the environment, anti-corruption, and labour.

## Appendix 2: Distribution of Compliance Level Across SRSs

Compliance level	GRI	GRI G4/G3	SASB	IIRC/IR	TCFD	CDSB	AA1000	UNGC	CDP
<b>Partial compliance</b>	23	133	1	41	15	6	6	70	51
<b>Full compliance</b>	32	216	2	28	19	11	72	284	1105

## Appendix 3: The moderating impact of SRSs on the relationship between ESG rating and CFP (market-based metrics)

	<i>Tobin's Q</i>			<i>Market Capitalisation (log)</i>		
	OLS	FE	FE (cluster)	OLS	FE	FE (cluster)
	(1)	(3)	(4)	(5)	(6)	(7)
esg_rating	0.004 (0.003)	0.008** (0.003)	0.008 (0.007)	0.003 (0.003)	0.006*** (0.002)	0.006 (0.004)
lna	-0.297*** (0.027)	-0.290*** (0.027)	-0.290*** (0.078)	0.820*** (0.020)	0.648*** (0.042)	0.648*** (0.084)
leverage	-1.054*** (0.195)	-0.997*** (0.195)	-0.997** (0.392)	-0.898*** (0.144)	-1.967*** (0.150)	-1.967*** (0.253)
capex	-0.253*** (0.063)	0.078 (0.077)	0.078 (0.061)	-0.196*** (0.046)	0.077* (0.043)	0.077* (0.044)
growth_percent	0.395*** (0.134)	0.448*** (0.132)	0.448*** (0.158)	0.324*** (0.099)	0.296*** (0.051)	0.296*** (0.114)
ppe	-0.146***	-0.168***	-0.168***	-0.189***	-0.262***	-0.262***



	(0.037)	(0.045)	(0.049)	(0.028)	(0.043)	(0.077)
impact_standard1	-0.626 (0.389)	-0.371 (0.374)	-0.371 (0.296)	-0.354 (0.288)	0.106 (0.144)	0.106 (0.129)
impact_standard2	0.291 (0.688)	0.185 (0.663)	0.185 (0.843)	0.024 (0.510)	0.040 (0.248)	0.040 (0.196)
financial_standard1	-0.263 (0.421)	-0.377 (0.404)	-0.377 (0.279)	-0.582* (0.312)	0.168 (0.153)	0.168 (0.171)
financial_standard2	0.316 (0.303)	0.266 (0.291)	0.266 (0.289)	0.227 (0.224)	0.330*** (0.116)	0.330*** (0.124)
lag(impact_standard1)	-0.806* (0.415)	-0.602 (0.400)	-0.602* (0.348)	-0.776** (0.308)	-0.184 (0.146)	-0.184 (0.170)
lag(impact_standard2)	-0.080 (0.692)	0.061 (0.665)	0.061 (0.592)	0.174 (0.512)	0.460* (0.237)	0.460* (0.269)
lag(financial_standard1)	-0.653 (0.428)	-0.337 (0.412)	-0.337 (0.283)	-0.714** (0.317)	-0.332** (0.154)	-0.332 (0.247)
lag(financial_standard2)	-0.084 (0.300)	0.064 (0.288)	0.064 (0.223)	0.081 (0.222)	-0.032 (0.114)	-0.032 (0.139)
esg_rating: impact_standard1	0.011* (0.006)	0.007 (0.006)	0.007 (0.005)	0.007 (0.005)	-0.003 (0.002)	-0.003 (0.002)
esg_rating: impact_standard2	0.0004 (0.011)	0.002 (0.011)	0.002 (0.013)	0.002 (0.008)	-0.001 (0.004)	-0.001 (0.003)
esg_rating: financial_standard1	0.002 (0.007)	0.003 (0.007)	0.003 (0.004)	0.007 (0.005)	-0.001 (0.003)	-0.001 (0.003)
esg_rating: financial_standard2	-0.004 (0.006)	-0.003 (0.006)	-0.003 (0.005)	-0.003 (0.005)	-0.006** (0.002)	-0.006** (0.003)
esg_rating: lag(impact_standard1)	0.014** (0.007)	0.011* (0.006)	0.011** (0.006)	0.013*** (0.005)	0.004 (0.002)	0.004 (0.002)
esg_rating: lag(impact_standard2)	0.005 (0.011)	0.003 (0.011)	0.003 (0.009)	-0.0003 (0.008)	-0.005 (0.004)	-0.005 (0.004)
esg_rating: lag(financial_standard1)	0.008 (0.007)	0.002 (0.007)	0.002 (0.005)	0.011** (0.005)	0.008*** (0.003)	0.008 (0.005)
esg_rating: lag(financial_standard2)	-0.002 (0.006)	-0.006 (0.006)	-0.006 (0.004)	-0.003 (0.005)	0.0004 (0.002)	0.0004 (0.003)
Constant	7.708*** (0.531)			3.892*** (0.393)		
Time Fixed Effects	No	Yes	Yes	No	Yes	Yes
Activity Fixed Effects	No	No	No	No	No	No
Sector Fixed Effects	No	Yes	Yes	No	No	No
Individual Fixed Effects	No	No	No	No	Yes	Yes
Clustered Standard Errors	No	No	Yes	No	No	Yes
Observations	1,278	1,278	1,278	1,278	1,278	1,278
R <sup>2</sup>	0.239	0.312	0.312	0.765	0.382	0.382
Adjusted R <sup>2</sup>	0.226	0.291	0.291	0.761	0.218	0.218

Note: \* p < 0.1; \*\* p < 0.05; \*\*\* p < 0.01

## Appendix 4: The moderating impact of SRSs on the relationship between ESG rating and CFP (accounting-based metrics)

	<i>ROE</i>			<i>ROA</i>		
	OLS	FE	FE (cluster)	OLS	FE	FE (cluster)
	(8)	(9)	(10)	(11)	(12)	(13)
<i>esg_rating</i>	0.001 (0.001)	0.003** (0.002)	0.003 (0.003)	0.0002 (0.0003)	0.001* (0.0003)	0.001 (0.001)
<i>lna</i>	-0.014 (0.010)	-0.018 (0.015)	-0.018 (0.029)	-0.003 (0.002)	-0.002 (0.003)	-0.002 (0.006)
<i>leverage</i>	-0.028 (0.070)	-0.185* (0.100)	-0.185 (0.137)	-0.065*** (0.016)	-0.136*** (0.021)	-0.136*** (0.033)
<i>capex</i>	-0.048** (0.022)	-0.038 (0.032)	-0.038 (0.023)	-0.001 (0.005)	-0.012* (0.007)	-0.012 (0.013)
<i>growth_percent</i>	0.055 (0.048)	0.063 (0.049)	0.063 (0.056)	0.044*** (0.011)	0.044*** (0.010)	0.044** (0.018)
<i>ppe</i>	-0.048*** (0.013)	0.017 (0.027)	0.017 (0.022)	-0.021*** (0.003)	-0.005 (0.006)	-0.005 (0.010)
<i>impact_standard1</i>	-0.187 (0.139)	-0.162 (0.138)	-0.162* (0.087)	0.001 (0.032)	-0.009 (0.030)	-0.009 (0.023)
<i>impact_standard2</i>	0.058 (0.246)	0.060 (0.238)	0.060 (0.228)	0.114** (0.056)	0.108** (0.051)	0.108 (0.083)
<i>financial_standard1</i>	-0.097 (0.150)	0.085 (0.149)	0.085 (0.134)	0.004 (0.034)	0.061* (0.032)	0.061* (0.031)
<i>financial_standard2</i>	0.050 (0.108)	-0.027 (0.108)	-0.027 (0.187)	0.039 (0.025)	0.017 (0.023)	0.017 (0.039)
<i>lag(impact_standard1)</i>	-0.123 (0.148)	-0.085 (0.145)	-0.085 (0.106)	-0.072** (0.034)	-0.077** (0.031)	-0.077** (0.037)
<i>lag(impact_standard2)</i>	-0.034 (0.247)	0.125 (0.239)	0.125 (0.203)	-0.080 (0.057)	-0.041 (0.051)	-0.041 (0.063)
<i>lag(financial_standard1)</i>	-0.394** (0.153)	-0.174 (0.151)	-0.174 (0.157)	-0.112*** (0.035)	-0.063* (0.032)	-0.063 (0.049)
<i>lag(financial_standard2)</i>	-0.050 (0.107)	0.020 (0.106)	0.020 (0.120)	-0.029 (0.025)	-0.026 (0.023)	-0.026 (0.033)
<i>esg_rating:</i> <i>impact_standard1</i>	0.003 (0.002)	0.003 (0.002)	0.003 (0.002)	-0.0002 (0.001)	-0.0001 (0.0005)	-0.0001 (0.0004)
<i>esg_rating:</i> <i>impact_standard2</i>	0.0003 (0.004)	0.0001 (0.004)	0.0001 (0.004)	-0.002* (0.001)	-0.002* (0.001)	-0.002 (0.001)
<i>esg_rating:</i> <i>financial_standard1</i>	0.001 (0.002)	-0.001 (0.002)	-0.001 (0.003)	-0.0002 (0.001)	-0.001* (0.001)	-0.001** (0.001)
<i>esg_rating:</i> <i>financial_standard2</i>	0.0004 (0.002)	0.002 (0.002)	0.002 (0.004)	-0.001 (0.001)	-0.0004 (0.0005)	-0.0004 (0.001)
<i>esg_rating:</i>	0.002	0.001	0.001	0.001**	0.001**	0.001**

lag(impact_standard1)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)
esg_rating:	-0.001	-0.003	-0.003	0.001	0.001	0.001
lag(impact_standard2)	(0.004)	(0.004)	(0.003)	(0.001)	(0.001)	(0.001)
esg_rating:	0.006**	0.002	0.002	0.002***	0.001*	0.001
lag(financial_standard1)	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)
esg_rating:	-0.001	-0.003	-0.003	0.0004	0.0002	0.0002
lag(financial_standard2)	(0.002)	(0.002)	(0.003)	(0.001)	(0.0005)	(0.001)
Constant	0.469**			0.131***		
	(0.190)			(0.044)		
Time Fixed Effects	No	Yes	Yes	No	Yes	Yes
Activity Fixed Effects	No	Yes	Yes	No	Yes	Yes
Sector Fixed Effects	No	No	No	No	No	No
Individual Fixed Effects	No	No	No	No	No	No
Clustered Standard Errors	No	No	Yes	No	No	Yes
Observations	1,278	1,278	1,278	1,278	1,278	1,278
R <sup>2</sup>	0.051	0.266	0.266	0.120	0.404	0.404
Adjusted R <sup>2</sup>	0.035	0.169	0.169	0.105	0.324	0.324

Note: \*p < 0.1; \*\*p < 0.05; \*\*\*p < 0.01