The Association between Different CSR-Reporting Practices and Firm Performance

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Abstract

This study examines the association between Corporate Social Responsibility (CSR) reporting practices and firm performance by simultaneously studying five different CSR reporting practices: CSR integration, disclosure of the value-creation model, use of Global Reporting Initiative (GRI), disclosure of Green House Gas emissions (GHG), and disclosure of both qualitative and quantitative (CSR-targets). Our results indicate a positive association between CSR integration and the reporting of both qualitative and quantitative CSR-targets and future accounting-based performance, while the reporting of GHG emissions is positively associated with future market-based performance. Overall, our results show that the association between CSR reporting and firm performance hinges crucially on both the reporting practices and the aspect of performance being evaluated, hence suggesting that there is no one-type-fits-all solution to best CSR reporting practices.

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1 Introduction

Companies have many reasons to engage in corporate social responsibility (CSR), including value creation and profit-making (Freeman et al., 2010). Integrating economic decision-making with social and environmental decision-making allows companies to manage stakeholder interests in a better way and, consequently, create value and contribute to the overall success of the company (Freeman et al., 2010; Porter and Kramer, 2002). While CSR engagement is important, CSR reporting is equally important. CSR reporting enables companies to make decisions about value-creating activities (Freeman, 1994; Freeman et al., 2010, pp. 255–258; Donaldson and Preston, 1995), thus having an inside-out effect on firm performance (Schaltegger 2012; Beck et al., 2017). Also, CSR reporting can be viewed as a way of attaining legitimacy (DiMaggio and Powell, 1983; Deegan, 2002; Freeman et al. 2010), being CSR reporting is motivated by a desire to convey information, rather than being the outcome of actual CSR engagement, thus having an outside- in effect on the performance (Schaltegger 2012, Beck et al., 2017). The presence of these two alternative perspectives on reporting (inside-out and outside-in) might be behind the lack of consensus (Khan 2022) in the literature regarding the association between CSR reporting practices and firm performance.

Our study aims to integrate these two perspectives -the inside-out and the outside-in perspectives- by exploring whether the association between CSR reporting and firm performance is dependent on the type of CSR reporting practice. We aim to answer the following question:

Is the association between CSR reporting and firm performance dependent on the type of CSR reporting practice?

To answer this question, we extend prior research on CSR reporting practices by *simultaneously* studying five CSR reporting practices (CSR integration; disclosure of the value-creation model; use of Global Reporting Initiative (GRI); disclosure of Green House Gas (GHG) emissions; disclosure of both qualitative and quantitative CSR-targets) that help us to build a comprehensive view on CSR reporting practices beneficial to firm performance. We relate the use of these different reporting practices to the existing literature on CSR reporting, noting alternative motives to engage in CSR activities and analysing how each of these practices is associated with different aspects of performance. With this study, we contribute to the recent strand of the literature on CSR reporting that highlights the diversity in reporting practices (Dumay et al., 2016; Melloni et al., 2017).

For our study, we have hand-collected detailed information on CSR reporting practices from companies' public sustainability disclosures, for a sample of Finnish companies during the years 2013-2018. Finland, with an established tradition in CSR reporting, recent changes in the legislature, and flexibility in reporting format, provides a unique setting to study CSR reporting. CSR reporting has been voluntary in Finland since the early 1990 (PWC 2016 in Silvola and Vinnari 2020). The EU Directive (2014/95/EU) on non-financial information disclosure (NFRD), effective as of 2017 in Finland, made CSR mandatory for some companies starting in 2018. However, the mandatory requirement did not enforce a specific CSR reporting framework on companies. On the contrary, the legislation allows companies the discretion to choose the type of CSR reporting practice (TEM 2020).

Our dataset contains information on the above-mentioned CSR reporting practices (CSR integration; disclosure of the value-creation model; use of GRI; disclosure of GHG emissions; disclosure of both qualitative and quantitative CSR-targets), together with an additional set of sustainability control systems (the presence of external sustainability assurance; the presence

of a CSR manager; CEO or the board involvement in CSR report, and the presence of a CSR committee within the board of directors). We combine this hand-collected data from the sustainability disclosures with archival data on financial statements (Orbis, Capital IQ database, and Nasdaq Helsinki).

Our results provide three key insights. Firstly, our results indicate a positive association between two of the five studied reporting formats and future accounting-based performance. We find a positive and significant association between CSR integration and the reporting of both qualitative and quantitative CSR-targets and future accounting-based performance. Such a significant association is absent for the other three aspects of CSR reporting (disclosure of the value-creation model, use of GRI and disclosure of GHG emissions). Secondly, our results indicate a significant association between the disclosure of GHG emissions and future market-based performance. Finally, we find a positive association between use of GRI and future market-based performance, however this relation is not significant when we include CSR control systems, such as the presence of external sustainability assurance; the presence of a CSR manager; CEO or the board involvement in CSR report, and the presence of a CSR committee within the board of directors.

The results suggest that, in terms of CSR-reporting- CSR-disclosure practices- albeit they are difficult to compare between companies and difficult to verify – may provide different insight to managers than to investors, and stakeholders alike. CSR-integration and disclosing both qualitative and quantitative CSR-targets – whereby the purpose is to enable managers to make decisions - are associated with future accounting performance. On the other hand, CSR reporting practices focusing on qualitative aspects, like CSR-integration, CSR-value and the use of GRI are negatively, or not associated with market-based performance, once we include CSR sustainability control systems. Although this finding might seem counterintuitive, it could be explained by some omitted variable such as the cost of reporting (not included here) or even the characteristics of the GRI framework, a principled-based reporting protocol that provides long-term overview of CSR activities. Thus, it seems that these qualitative aspects of CSR reporting, while relevant for managers (inside-out perspective), do not help to gain legitimacy on the market (outside-in perspective). From a market perspective, the disclosure of GHG emissions, conveys value-relevant information to the financial market. This particular result is explained by the nature of GHG: numeric and comparable, directly translating into costs – and potential savings – for the company. GHG emissions information disclosed by companies has become increasingly important for investors because GHG emission indicators can reflect significant climate risks (Bonetti et al., 2018; Liesen et al., 2017).

Our study contributes to several strands of literature. Firstly, our study contributes to the literature that analyses the relationship between CSR reporting and performance (Bae, 2021; Van Beurden and Gossling, 2008; Margolis et al., 2009; Taneja et al., 2011; Lueg et al., 2019; Kaspereit and Lopatta, 2016; Dhaliwal et al., 2011; Malik, 2015, for a literature review). Despite the large number of papers that analyse this relation, there is no consensus on either the direction or the sign of this relation. We contribute by presenting a theoretical framework where both the inside-out and the outside-in perspectives are jointly considered. In this framework, the ultimate motives to engage in CSR activities will be associated with the type of reporting, having thus different reporting practices and different associations with performance.

Secondly, this study contributes to the recent strand of literature that highlights the diversity in reporting practices and the debate on the usefulness of various CSR reporting practices (Michelon et al., 2015; Dumay et al., 2016). Most previous empirical studies look at one aggre-

gated measure, such as the existence of an integrated report or the use of GRI or GHG disclosure. An exception is Michelon et al. (2015), who simultaneously study three different practices: stand-alone reporting, GRI guidelines, and assurance of CSR information. We contribute by analysing five key reporting practices and we control the effect of four sustainability control systems: the presence of external sustainability assurance, the presence of a CSR manager, CEO involvement in CSR disclosure, the presence of a CSR committee within the board of directors.

Thirdly, this study contributes to the recent literature on whether and how CSR reporting practices are integrated into the value-creation activities of the companies, and on the literature that provides inside-out and outside-in perspectives on reporting. Our study contributes to this strand of the literature by integrating both perspectives and relating them to the association between CSR reporting and different (accounting and market) measures of performance. Finally, our study contributes to the literature on the CSR reporting practices in Nordic countries. The Nordic countries are routinely cited as forerunners in sustainability, and the stakeholder approach of Nordic companies is well-acknowledged worldwide (Strand et al. 2015, Middtun et al 2015). Besides, transparency and quality of reporting are a part of Nordic business culture. Despite these unique features of the Nordic CSR model, most studies use either US or international data (Lueg and Pesheva, 2021). Results on Nordic countries are few (Lueg and Pesheva 2021; Vaihekoski and Yahya 2023; Khatri, 2022) and study quantitative aspects of CSR reporting practices. We contribute to the existing literature by combining quantitative and qualitative aspects of CSR reporting practices and evaluating their impact differently.

2 Theoretical framework and hypotheses development

Companies' voluntary disclosure of sustainability information has fascinated accounting scholars extensively, especially the motivations for such disclosures have been studied broadly, from various theoretical perspectives. (Christensen et al. 2021) According to stakeholder theory (Freeman, 1994; Freeman et al., 2010, pp. 255–258; Donaldson and Preston, 1995), CSR is seen as a value-creating activity, and managers use CSR reporting to achieve success in terms of higher performance. By contrast, legitimacy theory states that companies voluntarily disclose sustainability information to attain a licence to operate "legitimately' (DiMaggio and Powell, 1983; Deegan, 2002), using disclosure as a mechanism to signal that a firm has "nothing to hide" avoiding an adverse market reaction that might have eventuated from non-disclosure (Brammer and Pavelin, 2004). In other words, sustainability disclosure is generated in response to pressures exerted by diverse stakeholders (Sinclair-Desgagne and Gozlan, 2003).

CSR reporting can theoretically be motivated by these two rather different purposes, which result in different associations with performance. We suggest that the conflicting results in the previous literature arise from differences in CSR reporting practices.

In general, corporate sustainability reporting (CSR) encompasses financial and non-financial information related to the environmental, social, and governance (ESG) aspects of a company's operations. Companies can either publish CSR reports as part of their annual reports or as stand-alone reports. Stand-alone reports have been found to be associated with a larger amount of information, at least in comparison with companies that disclose information as part of their annual reports (Michelon et al., 2015). Consequently, the number of companies disclosing a stand-alone report has increased over the years (see Chao et al., 2011 in Michelon et al., 2015) and is nowadays the preferred choice worldwide. Previous research (Nazari et al., 2017) also shows that longer CSR reports, such as stand-alone reports, increase the transparency of CSR activities and are, as such, explained by higher CSR performance (environmental, social and governance performance).

One of the most well-established reporting formats is Integrated Reporting (IR), a principle-based framework overseen by the International Integrated Reporting Council (IIRC) (IIRC, 2020; KPMG, 2015 in Velte and Stawinoga, 2017; Michelon et al., 2015). The overall purpose of the framework is to convey information to the providers of financial capital about how the firm creates value. IR is a principle-based framework, and it does not prescribe which indicators are to be included in the reporting, for example. The framework focuses on reporting on the company's environmental and governance aspects, business model, strategy, and performance, as well as the outlook for the company (IIRC, 2020). Previous studies also document that the market reaction (in the form of company valuation and forecasts by analysts) towards IR-based CSR reporting has also been positive IR seems to be associated with higher information quality, resulting in positive outcomes with regard to firm valuation and analysts' forecast – hence providing incremental information to investors (Velte et al., 2017).

Another important reporting framework that has gained popularity is the GRI-framework. It is a standard-based framework overseen by the Global Sustainability Standards Board (GSSB). The purpose of the GRI framework is to report on the impact of the firm's operations on the economy, the environment, and society. In contrast to the IR framework, the GRI framework provides examples of indicators that are relevant to most stakeholders in the form of core indicators and supplemental indicators (Global Reporting Initiative 2020; Garmerschlag et al., 2011). As the GRI is a standard-based framework, previous research has analysed the content of GRI/IR reporting (see, for example, Chen et al., 2015 in Michelon et al., 2015). Chen et al. (2015) stress that companies tend to report more on quantifiable numbers. Previous research (Demir et. al 2022) indicates that GRI reports focus on labour practices, human rights and society, as well as product performance and responsibility.

In addition to the IR and GRI reporting frameworks companies choose to disclose their GHG emissions as a part of their environmental information. Delmas et al. (2015) investigate the association between GHG and firm performance. The results indicate that GHG has a somewhat different impact on firm performance: a decrease in GHG seems to result in an increase in *Tobin's* q and a decrease in ROA. Bonetti et al. (2018) analyse unique hand-collected data on Japanese companies on the relation between environmental disclosure (GHG reduction) and the cost of capital by exploiting the Fukushima nuclear disaster. They report that companies with high disclosure precision in their environmental reports experience a lower increase in the cost of capital than companies with low disclosure precision. The results are explained by increased investor uncertainty about the energy supply shortage following the disaster, rather than by future regulatory costs.

Lastly, an alternative to the IR and GRI frameworks and GHG reporting is to report quantifiable and non-quantifiable information related to the environmental, social and governance (ESG) aspects of the company. As such, providing non-quantifiable information can be particularly relevant if it coherently explains its holistic interactions in the business model of the firm, instead of only providing detached information on selected and unrelated sustainability issues (Bernardi and Stark, 2018). As Lueg and Pesheva (2021) note, non-quantifiable information could be useful for improving operations, building a strategic advantage, and creating a positive image of the company.

From this overview, we extend the argument to conclude that the value relevance of CSR reporting regarding performance is contingent on the firm´s operations and business environment and must be considered when studying the relation between CSR and performance. In addition, CSR reporting can theoretically be motivated by two rather different purposes, which also need to be taken into consideration.

Stakeholder theory suggests that CSR engagement is part of a firm's value-creation process, where engagement in CSR reporting is closely connected to the firm's performance (Freeman et al., 2010; Freeman, 1994). CSR reporting enables companies to create value by focusing on the activities that increase stakeholder interest, resulting in higher performance. In situations where CSR reporting conveys information about the value-creating aspects of the firm, it can be expected that there will be a positive association between CSR reporting and financial performance. In situations where the firm reports about its value-creating activities by, for example, using the IR framework the firm is expected to seek to enhance performance. This suggests that there is a positive association between CSR reporting and firm performance. We therefore suggest the following:

H (1): There is a positive association between CSR reporting practices and accounting performance.

Legitimacy theory suggests that CSR engagement is carried out to justify social disclosure (DiMaggio and Powell, 1983; Deegan, 2002). A key assumption of the theory is that successful operations require managers to ensure that their organisations appear to be operating in conformance with community expectations and are therefore attributed the status of being 'legitimate'. Michelon et al. (2015) provide evidence suggesting that CSR reporting practices are associated with higher reporting quality. This implies that CSR reporting is used by companies to legitimise their operations. In a similar manner, Chauvey et al. (2015) analyse the GRI framework and conclude that it can be used as a way to legitimise CSR, while the actual CSR engagement remains unclear.

In this setting, CSR reporting activities can be viewed as a way for an organisation to achieve 'legitimation', and hence we should expect a positive relation between CSR reporting and firm performance. Enhancing firm reputation and mitigating firm risk may not directly impact the firm's operations, but are reflected in its market value. CSR reporting provides shareholders and external stakeholders with information about future growth opportunities and the risks involved in the firm's operations.

Using legitimation theory, previous research has studied the association between CSR reporting and the market performance of companies. CSR reporting has been found to reduce information asymmetry between the firm and its stakeholders, as well as risks, in addition to improving performance (Albuquerque et al., 2019; Margolis et al., 2009; Jo and Harjoto, 2011; Servaes and Tamayo, 2013; Flammer, 2015). CSR reporting is positively perceived by the market and adds to firm value, even when the accounting performance remains unaltered. We therefore formulate the following:

H (2): There is a positive association between CSR reporting practices and market performance.

3 Methodology

3.1 Data and variable description

We examine CSR reporting practices and their association with financial performance in stock-listed companies in Finland for the period 2013–2018. In this study, we combine archival data on financial statements with hand-collected data from the sustainability disclosures by these companies.

Data were collected from three different sources. First, information about CSR reporting practices and CSR sustainability control systems was hand-collected from the sustainability reports and websites of the companies. Information about the listing status, share prices, industry, and market segment was obtained from the Nasdaq Helsinki stock exchange. Information on board independence and gender composition was hand-collected from annual reports, while financial and ownership information was obtained from Orbis and Capital IQ.

Our study covers a total of 104 listed companies (all companies listed in the Nasdaq stock exchange, excluding the financial sector) between 2013 and 2018, comprising a total of 624 observations and covering 90.4% of the companies listed on the Nasdaq Helsinki stock exchange. The total number of companies is very similar to that in Michelon et al. (2015), who performed their study with a sample of 112 companies from the London Stock Exchange between 2005 and 2007. We have tried to improve our data collection regarding two aspects. Firstly, instead of capturing a representative sample (that might only include the largest and most visible companies), we collect information about all companies on the Nasdaq Helsinki stock exchange, therefore providing a comprehensive sample. In so doing, we avoid the risk of selection bias in our results, as larger firms tend to disclose CSR activities more frequently (Brammer and Pavelin, 2008; Reverte, 2009; Chih et al., 2010; Hou and Reber, 2011; Bouten et al., 2011). Secondly, we monitor the companies over a longer period of time: we collect six years of data, from 2013 to 2018, while Michelon et al. (2015) only followed companies for three years. With a longer time span, we can observe changes in CSR reporting practices within companies and utilize both the time dimension and the cross-sectional dimension of our panel.

We hand-collect detailed information about the CSR reporting practices of each firm in our database. We have created four dummy variables to characterize each firm's CSR reporting practices and constitute our set of key explanatory variables. These variables are: *CSR_Integration* (=1 if the firm discloses CSR information in either its annual report or in a separate CSR report), *CSR_Value* (=1 if the firm discloses sustainability information about how sustainability affects the value-creation model); *GRI* (=1 if the firm applies GRI as its sustainability reporting framework); *GHG* (=1 if the firm discloses its GHG emissions)[1]; and *CSR_Targets* (=1 if the firm includes both qualitative and quantitative CSR-targets in its CSR report).

In addition, we gather information about organisational features that provide insight into the firm's involvement in CSR activities and are likely to drive sustainability reporting. These additional variables – what we call *CSR sustainability control systems*- are *CSR_Assurance* (=1 if the CSR report is externally assured by a third party); *CSR_Manager* (=1 if the firm has appointed a CSR manager); *CSR_Involvement* (=1 if the CEO or the board of directors are involved in the CSR report); and *CSR_Com* (=1 if the firm has a CSR committee). We link this hand-collected information with hand-collected board information, stock market data collected from Nasdaq Helsinki and archival data from Orbis and Capital IQ.

In Table 1, we present a detailed definition of all the variables in our analysis.

1 In our robustness test we include two additional variables: GHG1,2 (=1 if the company discloses scope2 editions), and GHG 1,2,3, (=1 if the company discloses all indirect emissions)

Table 1. Variable Definition
In this table, we present the definition of the variables included in the analysis. The information about CSR reporting practices and CSR sustainability control systems has been hand-collected. Financial information and information on firm ownership was obtained from Orbis and Capital IQ databases. The Helsinki stock exchange (Nasdaq Helsinki) provided information about firm listing status, year-end share price, industry, and market segment.

CSR REPORTING PRACTICES	
CSR Integration	=1 if the firm discloses CSR information in either its annual reports or in a separate CSR report
CSR Value	=1 if the firm's CSR statement explicitly states that the firm includes sustainability in its value-creation model
CSR GRI	=1 if the firm discloses in line with the GRI guidelines
CSR GHG	=1 if the firm discloses its GHG emissions
GHG 1-2	=1 if the firm discloses direct and /or indirect according to the classification issued by the GHG Protocol Corporate Standard. Scope 1 emissions are direct emissions from owned or controlled sources. Scope 2 emissions are indirect emissions from the generation of purchased energy.
GHG 1-3	=1 if the firm discloses all indirect emissions (also those not included in scope 2) that occur in the value chain of the reporting firm, including both upstream and downstream emissions (scope 3)
CSR Targets	=1 if the firm reports on both qualitative and quantitative (environmental/social/governance) targets
CSR SUSTAINABILITY CONTROL SYSTEMS	
CSR Assurance	=1 if the CSR report is assured by a third party
CSR Manager	=1 if the firm has a CSR manager
CSR Involvement	=1 if the CEO or the board are involved in the CSR report
CSR Com	=1 if the board has a CSR committee
FIRM PERFORMANCE	
ROA	Net income/total assets
EPS	Net income/common shares outstanding
TQ	Market capitalisation/total assets (Tobin's Q calculated by Orbis)
Stock Return	=(Pt-Pt-1+Divt)/Pt-1, where P_t is the share price adjusted for share splits and reverse stock splits at the end of the year; P_{t-1} is the share price at the beginning of the year; and Div_t is the dividend per share in year t.
FIRM-LEVEL CONTROLS	
Firm_size	Total Assets (in thousands)
Leverage	Total debt/total assets
Board Independence	Percentage of independent directors on the board
Board female	Percentage of female directors on the board
Ownership Concentration	Hirschman–Herfindahl index of ownership concentration
Industry	Industry classification (Nasdaq Helsinki classification)

In addition to CSR variables, we include two sets of variables to characterize firm performance. First, we proxy for accounting performance with two widely used metrics: *ROA*, which is defined as net income divided by total assets, and *EPS* which is the net income divided by the number of common shares outstanding. Second, we use *Tobin's q* (market capitalization divided by total assets) and stock return to characterize market performance.

Finally, we include the following firm-specific information: *firm_size,* characterized by total assets in thousands; *leverage,* defined as total debt divided by total assets, *board_independence*, which reflects the number of independent directors on the board and *board_female*, which is the percentage of female directors on the board. We also include a Hirschman–Herfindahl index of ownership concentration (*Ownership*) and Nasdaq Helsinki industry classification (*Industry*).

3.2 Descriptive statistics

We present a numerical description of the CSR practices in Table 2.

Table 2. Evolution of CSR Reporting Practices and CSR sustainability control systems
In this table, we present the annual average of the variables describing CSR reporting practices and CSR sustainability control systems. In the first column, we present the percentage change between 2013 and 2018. In the subsequent columns, we present the annual averages from 2013 to 2018. In the last column of the table, we present the average of all the observations in our sample

CSR REPORTING PRACTICES								
Year	Change	2013	2014	2015	2016	2017	2018	Total
CSR Integration	32.8%	0.673	0.673	0.692	0.75	0.856	0.894	0.756
CSR Value	90%	0.336	0.365	0.519	0.558	0.644	0.635	0.510
CSR GRI	25.6%	0.375	0.404	0.413	0.423	0.471	0.471	0.426
CSR GHG	47.4%	0.365	0.404	0.433	0.462	0.538	0.538	0.457
GHS 1-2	27.2%	0.173	0.144	0.144	0.144	0.20	0.22	0.17
GHS 1-3	66.6%	0.192	0.025	0.288	0.30	0.33	0.32	0.28
CSR Targets	90%	0.298	0.308	0.375	0.442	0.462	0.567	0.408
CSR SUSTAINABILITY CONTROL SYSTEMS								
CSR Assurance	55%	0.192	0.202	0.231	0.25	0.279	0.298	0.241
CSR Manager	40%	0.423	0.452	0.462	0.481	0.519	0.596	0.489
CSR Involvement	37%	0.625	0.673	0.721	0.779	0.846	0.856	0.75
CSR Com	100%	0.029	0.038	0.038	0.038	0.058	0.058	0.043

In general, CSR reporting is widespread in Finland. The number of companies that reported CSR activities in Finland (*CSR_Integration*) in 2018 is almost 90% of the sample companies. This figure is larger than the numbers reported for the United States by Lukomnik (2018), who found that 78% of S&P 500 companies issued a sustainability report in 2018, and by KPMG (2017), that reported that 78% of the world's top companies (G250) and 60% of US N100 companies issued a sustainability report.

Table 2 shows that in the year 2018, 64 % of sample companies reported information on their value creation model *(CSR_Value*), i.e., how their sustainability strategy creates economic value through their business to different stakeholders. The GRI reporting framework is applied by 47 % of the companies. In total, 54 % of companies disclose their GHG emissions. 56 % of companies disclose qualitative and quantitative CSR targets in their CSR reports.

From Table 2, we can also observe how CSR reporting practices have evolved over the years of our study. Two trends can be observed: an increase in CSR reporting throughout the period, and more homogeneous CSR activities across companies towards the end of the period.

The number of companies that report CSR activities within their annual reports or in a stand-alone CSR report (*CSR_Integration*) has increased from 67% in 2013 to almost 90% in 2018. This means that almost all companies – not just the largest ones – listed in the Nasdaq Helsinki stock exchange report CSR activities in a standard and consistent manner. The increase in CSR reporting is reflected in all the variables describing CSR reporting practices. For example, we observe a 90% increase in the number of companies that report value creation as part of their sustainability strategy (*CSR_Value*) and a 90% increase in the number of companies that report qualitative and quantitative CSR-targets (*CSR_Targets*).

All in all, we observe that CSR reporting has become more homogeneous. For example, in 2013, 67% of the companies disclosed CSR activities (*CSR_Integration*), but only 29.8% of them reported quantitative environmental, social, and governance targets (*CSR_Targets*), while the proportion of companies that reported value creation as part of their sustainability strategy (*CSR_Value*) had increased from 33.6% to 63.5% and the proportion of companies that reported qualitative and quantitative CSR-targets (*CSR_Targets*) had increased from 29.8% to 56.7% by 2018.

To further investigate GHG reporting practices, we divide the GHG-reporting companies in accordance with GHG-reporting scopes 1 and 2 (GHG 1–2) and scopes 1, 2 and 3 (GHG 1–3). Overall, the number of companies disclosing GHG 1–2 has increased by 27.2% from 2013 to 2018. We note that the increase is even larger for companies disclosing GHG 1–3: 66.5% from 2013 to 2108. The increase in GHG reporting follows the same pattern as the other CSR reporting practices.

With regard to CSR sustainability control systems (organizational features that provide insight into the firm's involvement in CSR activities), we also observe an increase over the years of the sample. In 2018, 29 % of our sample companies had assured their CSR report by a third party *(CSR_Assurance)* which has more than doubled over the years of the sample. 60 % of the companies have a *CSR_Manager*. In 85 % of the companies, management's view (*CSR_Involvement)* is included in the CSR report (i.e. the CEO or the board are involved in the CSR report), and only in 6% of the companies, the board has a CSR committee *(CSR_Com)*.

We note from the correlation matrix in Table 3 that the different aspects of CSR reporting are complementary and that companies tend to use 'bundles' of reporting practices. For example, we can see in Table 3 that reporting on greenhouse gas emissions (*CSR_GHG*) is highly correlated with the other reporting features, particularly *CSR_GRI* (0.69) and *CSR_Targets* (0.70). In addition, a report on CSR activities as part of value creation (*CSR_Value*) is positively related to the rest of the CSR reporting practices.

Table 3. Bivariate Correlations
In this table, we present the correlation matrix of the CSR reporting practices and CSR sustainability control systems. The asterisks refer to 0.10, 0.05 and 0.01 (*, **, ***) significance

	CSR INTEGR.	CSR VALUE	CSR GRI	CSR GHG	CSR TARGETS	CSR ASSUR.	CSR MANAG.	CSR INVOLV.	CSR COM
CSR Disclosure									
CSR Integration	1.00								
CSR Value	0.56***	1.00							
CSR GRI	0.49***	0.55***	1.00						
CSR GHG	0.52***	**0.62*** **	**0.69*** **	1.00					
CSR Targets	0.47***	0.60***	**0.64*** **	**0.70*** **	1.00				
CSR Sustainability Control Systems									
CSR Assurance	0.32***	0.32***	0.60***	0.56***	0.54***	1.00			
CSR Manager	0.50***	**0.59*** **	**0.66*** **	**0.63*** **	**0.55*** **	0.46***	1.00		
CSR Involvement	**0.59*** **	0.50***	0.36***	0.45***	0.44***	0.25***	0.39***	1.00	
CSR Com	0.10**	0.17***	0.18***	0.15***	0.13***	0.23***	0.15***	0.12***	1.00

We also observe a positive association between CSR reporting practices and the presence of CSR sustainability control systems, particularly the presence of a *CSR_Manager*. We observe a clear association between the presence of a *CSR_Manager* in the firm and the use of CSR reporting: the correlations between the variable '*CSR_Manager'* and the different CSR reporting variables range from 0.50 (the correlation between *CSR_Manager* and *CSR_Integration*) to 0.66 (the correlation between *CSR_Manager* and *CSR_GRI*).

Finally, Table 4 presents descriptive statistics of all the variables in the analysis over the observation period.

Table 4. Descriptive Statistics
In this table, we present a description of the variables used in the analysis. The first column shows the number of observations, the second column shows the average, and the third column shows the standard deviation. The minimum and maximum values are presented in the fourth and fifth columns.

VARIABLE	OBS	MEAN	STD. DEV.	MIN	MAX
CSR Disclosure					
CSR Integration	624	0.756	0.430	0	1
CSR Value	624	0.510	0.500	0	1
CSR GRI	624	0.426	0.495	0	1
CSR GHG	624	0.457	0.499	0	1
CSR Targets	624	0.409	0.492	0	1
CSR Sustainability Controls					
CSR Assurance	624	0.242	0.429	0	1
CSR Manager	624	0.489	0.500	0	1
CSR Involvement	624	0.75	0.433	0	1
CSR Com	624	0.043	0.204	0	1
Firm Performance					
Accounting Performance					
ROA	619	0.021	0.164	-1.55	2.44
Earnings per Share	599	0.486	1.287	-12.49	9.4
Market Performance					
TQ	585	1.07	1.36	.044	15.09
Stock Return	516	0.384	0.698	-.999	3.44
Firm-level Controls					
Firm Size	619	7130.308	36790.26	5.336	293558
Leverage	618	0.25	0.191	0	1.94
Ownership Concentration	598	.105	0.11	7.02e-06	0.686

Even before CSR became mandatory, CSR reporting activities were widespread in Finland. At this point in time (2013-2018), the most common channel to disclose the CSR activities is via annual reports or a separate CSR report: more than 75% choose these two channels to disclose their activities (*CSR_Integration*). Up to 51% of the companies report narrative CSR information stating that CSR is part of their value creation (*CSR_Value*). Less than half of the companies in our sample produce standardized reports, like GRI reporting and GHG reporting, while 40% of them report qualitative and quantitative CSR-targets with respect to their CSR activities (*CSR_Targets*).

Despite the widespread use of CSR reporting in Finland, assurance of these reports is not a widespread practice. Only 24% of the companies in our sample have their CSR reports assured by a third party (*CSR_Assurance*). Board and CEO are involved in setting that strategy in 70% of the cases (*CSR_Involvement*), while fewer companies have a CSR manager (only 49%) or a CSR committee (less than 5% of the companies).

4 Empirical results

4.1 CSR Reporting and Accounting Performance

To test whether CSR-reporting matters for firm performance, we run a multivariate analysis using the following model.

$$Performance_{it+1} = a + \beta_1 CSR\ Integration_{it} + \beta_2 CSR\ Value_{it} + \beta_3 CSR\ GRI_{it} + \beta_4 CSR\ GHG_{it} + \beta_5 CSR\ Targets_{it} + \beta_6 CSR\ Assrurance_{it} + \beta_7 CSR\ Manager_{it} + \beta_8 CSR\ Involvement_{it} + \beta_9 CSR\ Com_{it} + \beta_{10} log\ at_{it} + \beta_{11} Leverage_{it} + \beta_{12} Board\ Independence_{it} + \beta_{13} Board\ female_{it} + \beta_{14} Ownership\ concentration_{it} + \beta_{15-19} Industry_{it} + \beta_{20-24} Year_{it} + \varepsilon_{it}$$

where $Performance_{it+1}$ is one of the two measures described in the previous section (ROA, earnings per share) and summarised in Table 4.

As explanatory variables, we include the variables that map the CSR reporting practices (*CSR_Integration; CSR_Value; CSR_GRI; CSR_GHG; CSR_Targets*), along with CSR sustainability control systems (*CSR_Assurance, CSR_Manager, CSR_Involvement, CSR_Com*) and firm-level controls. As firm-level controls, we include the natural logarithm of total assets to measure firm size (*firm_size*), the ratio of total debt to total assets (*leverage*), and three variables that characterize the corporate governance model: the percentage of independent board members *(boad_independence),* percentage of female directors (*board_female*) and a Hirschman–Herfindahl index of ownership concentration (*Ownership*). We do this to include the extensive findings that firm characteristics – such as size, industry sector and corporate governance – predominantly appear to drive the CSR reporting agenda (Aguilera et al., 2021; Ali et al., 2017; Miras-Rodriguez and Di Pietra, 2018; Christensen et al., 2021). Each OLS regression is run with robust standard errors clustered at the firm level and using industry and year fixed effects.

The results for this model are presented in Table 5.

Table 5. Multivariate Analysis. CSR Reporting Practices and CSR sustainability control systems and Accounting Performance
In this table, we present OLS regressions with year and industry fixed effects. The dependent variable is return on assets, ROA_{t+1} , in columns 1 to 4, and earnings per share EPS_{t+1} in columns 5–8. As explanatory variables, we include the variables defining CSR reporting practices (CSR Integration, CSR Value, CSR GRI, CSR GHG and CSR Targets) in all columns. We add sequentially CSR sustainability control systems in columns 2, 4, 6 and 8. Al regressions contain controls for firm size, firm leverage, ownership concentration, and industry and year FE. Significant values are presented in bold. The asterisks refer to 0.10, 0.05 and 0.01 (*, **, ***) significance.

	(1) ROA_{T+1}	(2) ROA_{T+1}	(3) ROA_{T+1}	(4) ROA_{T+1}	(5) EPS_{T+1}	(6) EPS_{T+1}	(7) EPS_{T+1}	(8) EPS_{T+1}
CSR Integration	**0.0384*** **(0.059)**	**0.0423*** **(0.069)**			-0.0180 (0.903)	-0.0166 (0.920)		
CSR Value			0.0175 (0.344)	0.0187 (0.343)			0.0372 (0.782)	0.112 (0.423)
CSR GRI			-0.00621 (0.768)	-0.0148 (0.508)			0.234 (0.128)	0.0200 (0.900)
CSR GHG			-0.0229 (0.315)	-0.0283 (0.224)			0.0845 (0.611)	-0.0465 (0.779)
CSR Targets			**0.0428**** **(0.038)**	**0.0400*** **(0.056)**			-0.0146 (0.923)	-0.0866 (0.562)
CSR Assurance		0.0203 (0.335)		0.0215 (0.347)		**0.594***** **(0.000)**		**0.637***** **(0.000)**
CSR Manager		0.0151 (0.414)		0.0183 (0.359)		**0.367***** **(0.005)**		**0.350**** **(0.014)**
CSR Involvement		-0.0108 (0.625)		0.000497 (0.980)		-0.0522 (0.741)		-0.0651 (0.653)
CSR Com.		-0.0228 (0.504)		-0.0244 (0.479)		**-0.484*** **(0.052)**		**-0.513**** **(0.042)**
Firm Size	-0.00141 (0.770)	-0.00462 (0.423)	-0.00173 (0.755)	-0.00403 (0.500)	**0.123***** **(0.000)**	0.0264 (0.521)	**0.0789*** **(0.051)**	0.0233 (0.586)
Leverage	-0.0125 (0.730)	-0.00843 (0.818)	-0.0162 (0.656)	-0.0126 (0.732)	-0.341 (0.199)	-0.242 (0.353)	-0.339 (0.200)	-0.247 (0.344)
Board independence	**0.00975**** **(0.030)**	**0.00893**** **(0.050)**	**0.0109**** **(0.016)**	**0.0107**** **(0.019)**	0.0500 (0.127)	0.0326 (0.315)	0.0402 (0.222)	0.0322 (0.321)
Board female	-0.00224 (0.800)	-0.00407 (0.650)	-0.00319 (0.721)	-0.00465 (0.605)	-0.0223 (0.730)	-0.0745 (0.245)	-0.0354 (0.587)	-0.0695 (0.281)
Ownership	**-0.287***** **(0.000)**	**-0.294***** **(0.000)**	**-0.292***** **(0.000)**	**-0.290***** **(0.000)**	-0.300 (0.509)	-0.351 (0.447)	-0.291 (0.523)	-0.321 (0.488)
Constant	-0.0540 (0.181)	-0.0306 (0.483)	-0.0412 (0.337)	-0.0288 (0.524)	**-0.651**** **(0.028)**	-0.110 (0.725)	-0.452 (0.149)	-0.0971 (0.764)
N	562	562	562	562	558	558	558	558
r2	0.0994	0.103	0.104	0.107	0.103	0.147	0.110	0.149
r2_a	0.0747	0.0718	0.0742	0.0710	0.0786	0.117	0.0807	0.114

From Table 5 columns 1, we observe that CSR reporting practice in the form of *CSR_Integration* is positively associated with future accounting-based performance. This result holds when we include controls for CSR sustainability control systems, as shown in Table 5, column 2. We also find evidence suggesting that reporting both qualitative and quantitative CSR-targets (*CSR_Targets*) is positively associated with future accounting-based performance, measured by ROA

(See Table 5, columns 3 and 4). Companies disclosing qualitative and quantitative CSR targets enjoy, on average, 0.0428 higher ROA in the subsequent year than companies not disclosing that information. This relation is robust to the inclusion of CSR sustainability control systems, as observed in Table 5, column 4. By contrast, CSR reporting, using standardized reporting practices, such as reporting of greenhouse gas emissions (*CSR_GHG*) or reporting according to GRI standards (*CSR_GRI*) is not significantly related to future accounting performance. When we measure accounting performance using different metrics, we find that CSR reporting practices are not related to EPS (See table 5, columns 5–8), while it is the CSR sustainability control systems, such as assurance and manager that are associated with future accounting performance (measured by EPS).

The results suggest that CSR-integration and disclosing both qualitative and quantitative-CSR-targets – whereby the purpose is to enable managers to make decisions - are associated with future accounting performance. Our results provide support for the theoretical view (Freeman, 1994; Freeman et al., 2010; Donaldson and Preston, 1995) of the benefits of CSR engagement resulting in an inside-out effect of the reporting (Schaltegger 2012, Beck et al., 2017)- whereby the purpose of the reporting is to convey important information to the management, or the firm itself.

The other CSR reporting practices (*CSR_Value, CSR_GRI, CSR_GHG*) are not statistically associated with future ROA. This lack of relationship is in line with the window-dressing hypothesis or the symbolic legitimacy explanation: if CSR reporting is only performed for window-dressing, it should not have an impact on accounting performance. In sum, we find significant associations between two of the five CSR reporting practices and future accounting-based performance. Hence, hypothesis one (H1) is partially supported.

4.2 CSR Reporting and Market Performance

To test our second hypothesis predicting a positive association between CSR reporting practices and market performance, we perform the multivariate analysis described in the previous section using the following empirical model:

$$
\begin{aligned}
Performance_{it+1} &= \alpha + \beta_1 CSR\ Integration_{it} + \beta_2 CSR\ VALUE_{it} + \beta_3 CSR\ GRI_{it} + \beta_4 CSR\ GHG_{it} \\
&+ \beta_5 CSR\ Targetes_{it} + \beta_6 CSR\ Assrurance_{it} + \beta_7 CSR\ Manager_{it} \\
&+ \beta_8 CSR\ Involvolvement_{it} + \beta_9 CSR\ Com_{it} + \beta_{10} log\ at_{it} \\
&+ \beta_{11} Leverage_{it} + \beta_{12} Board\ Indepe_{it} + \beta_{13} Board\ female_{it} \\
&+ \beta_{14} Ownership_{it} + \beta_{15-19} Industry_{it} + \beta_{20-24} Year_{it} + \varepsilon_{it}
\end{aligned}
$$

where performance is measured using two alternative variables: *Tobin's q*, measured as the ratio of market capitalisation to the book value of the firm, and the annual stock return measured as the percentage change of the year-end adjusted share price (see variable definitions in Table 1).

Table 6. Multivariate Analysis. CSR Reporting Practices and CSR sustainability control systems Market Performance
In this table, we present OLS regressions with year and industry fixed effects. The dependent variable is TQ_{t+1} in columns 1–4, and Stock $Returns_{t+1}$ in columns 5–8. As explanatory variables, we include the variables defining CSR reporting practices (CSR Integration, CSR Value, CSR GRI, CSR GHG, and CSR Targets) in all columns. We add sequentially CSR sustainability control systems in columns 2, 4, 6 and 8. All regressions contain controls for firm size, firm leverage, ownership concentration, and industry and year FE. Significant values are presented in bold. The asterisks refer to 0.10, 0.05 and 0.01 (*, **, ***) significance.

	(1) TQ_{T+1}	(2) TQ_{T+1}	(3) TQ_{T+1}	(4) TQ_{T+1}	(5) STOCK RETURNS$_{T+1}$	(6) STOCK RETURNS$_{T+1}$	(7) STOCK RETURNS$_{T+1}$	(8) STOCK RETURNS$_{T+1}$
CSR Integration	**-0.464*** **	**-0.377** **			-1.599	-3.119		
	(0.007)	**(0.048)**			(0.779)	(0.631)		
CSR Value			-0.173	-0.102			3.555	1.981
			(0.261)	(0.533)			(0.490)	(0.717)
CSR GRI			**0.325***	**0.149**			2.867	0.213
			(0.065)	**(0.421)**			(0.625)	(0.973)
CSR GHG			**0.404** **	**0.347***			4.027	3.200
			(0.040)	**(0.080)**			(0.525)	(0.620)
CSR Targets			0.0203	0.0151			-4.537	-3.960
			(0.907)	(0.931)			(0.429)	(0.498)
CSR Assurance		**0.468*** **		**0.353***		0.184		0.706
		(0.007)		**(0.062)**		(0.975)		(0.913)
CSR Manager		**0.435*** **		**0.291***		10.01*		9.041
		(0.005)		**(0.090)**		(0.053)		(0.103)
CSR Involvement		-0.260		**-0.437*** **		0.443		-1.080
		(0.150)		**(0.009)**		(0.943)		(0.849)
CSR Com		-0.219		-0.161		5.175		4.724
		(0.447)		(0.579)		(0.644)		(0.676)
Firm Size	**-0.108*** **	**-0.201*** **	**-0.218*** **	**-0.237*** **	**-2.870** **	**-4.179*** **	**-3.748** **	**-4.425*** **
	(0.009)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.033)**	**(0.010)**	**(0.016)**	**(0.009)**
Leverage	**-1.989*** **	**-1.882*** **	**-1.943*** **	**-1.870*** **	-9.703	-8.179	-9.729	-8.084
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	(0.340)	(0.424)	(0.339)	(0.430)
Board independence	**0.0888** **	**0.0666***	0.0467	0.0368	1.904	1.790	1.601	1.538
	(0.019)	**(0.078)**	(0.218)	(0.329)	(0.131)	(0.160)	(0.206)	(0.226)

Board female	-0.111	**-0.150****	**-0.134***	**-0.151****	**4.114***	3.683	**4.144***	3.869
	(0.130)	**(0.040)**	**(0.068)**	**(0.040)**	**(0.097)**	(0.143)	**(0.099)**	(0.126)
Ownership	-0.493	-0.712	-0.552	-0.856	3.356	2.521	4.851	2.644
	(0.338)	(0.176)	(0.285)	(0.104)	(0.847)	(0.890)	(0.782)	(0.885)
Constant	**1.980*****	**2.614*****	**2.352*****	**2.780*****	6.745	11.67	10.29	12.99
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	(0.552)	(0.340)	(0.393)	(0.305)
N	538	538	538	538	556	556	556	556
r2	0.262	0.289	0.272	0.291	0.146	0.153	0.149	0.153
r2_a	0.241	0.262	0.247	0.261	0.123	0.123	0.120	0.118

Our results in Table 6 columns 1 to 4 indicate a negative association between *CSR_Integration* and future market-based performance, and a positive association between companies disclosing green house gas emissions (*CSR_GHG*) and market performance measured by *Tobin's q*, while in columns 5–8 we show that CSR reporting practises are not related to future market-based performance measured by changes in stock prices (stock returns). Results also indicate that the CSR sustainability control systems (particularly the presence of *CSR Assurance* and *CSR Manager*) are positively related to *Tobin's q*.

We conclude the disclosure of GHG-emissions, convey value-relevant information to the financial market. The results are explained by the nature of GHG-information, which is easily quantifiable. Unlike the other CSR reporting practices, which are subject to managers' discretion and not necessarily comparable between companies – GHG-reporting is numerical and comparable between companies, enabling investors to assess the companies' climate-related risks. (Bonetti et al., 2018; Liesen et al., 2017)

4.3 Additional tests

To test in more detail the association between the GHG scopes and performance, we run the following regression:

$$
\begin{aligned}
Performance_{it} &= \alpha + \beta_1 GHG1.2 + \beta_2 GHG1.2.3_{it} + \beta_3 CSR\ VALUE_{it} + \beta_4 CSR\ GRI_{it} \\
&+ \beta_5 CSR\ Targets_{it} + \beta_6 CSR\ Assurance_{it} + \beta_7 CSR\ Manager_{it} \\
&+ \beta_9 CSR\ Involvement_{it} + \beta_{10} GCSR\ Com_{it} + \beta_{11} log\ at_{it} \\
&+ \beta_{12} Leverage_{it} + \beta_{13} Board\ Indepe_{it} + \beta_{14} Board\ female_{it} \\
&+ \beta_{15} Ownership_{it} + \beta_{16-20} Industry_{it} + \beta_{21-25} Year_{it} + \varepsilon_{it}
\end{aligned}
$$

Results from this model specification are reported in Table 7.

Table 7. Scope of GHG Reporting and Accounting and Market Performance
In this table, we present OLS regressions with year and industry fixed effects. The dependent variable is ROA_{t+1} (columns 1–2), TQ_{t+1} in columns 3 and 4, and EPS_{t+1} columns 5–6 and Stock Returns $_{t+1}$ in columns 7 and 8. As explanatory variables, we include the variables defining CSR reporting practices ((GHG 1–2, GHG 1–3, CSR Value, CSR GRI, and CSR Targets) in all columns. We add sequentially CSR sustainability control systems in columns 2, 4, 6 and 8. All regressions contain controls for firm size, firm leverage, ownership concentration, and industry and year FE. Significant values are presented in bold. The asterisks refer to 0.10, 0.05 and 0.01 (*, **, ***) sign.

	(1) ROA_{T+1}	(2) ROA_{T+1}	(3) TQ_{T+1}	(4) TQ_{T+1}	(5) EPS_{T+1}	(6) EPS_{T+1}	(7) STOCK RETURNS $_{T+1}$	(8) STOCK RETURNS $_{T+1}$
GHG 1–2	-0.0153	-0.0202	0.378**	0.325**	0.0733	-0.0290	3.817	3.073
	(0.508)	(0.382)	(0.035)	(0.038)	(0.721)	(0.882)	(0.464)	(0.548)
GHG 1–3	-0.0327	-0.0434	0.266	0.0891	0.235	0.0100	3.033	1.307
	(0.225)	(0.114)	(0.129)	(0.576)	(0.295)	(0.970)	(0.661)	(0.858)
CSR Value	0.0172	0.0193	-0.175	-0.0982	0.0351	0.109	3.558	2.053
	(0.185)	(0.173)	(0.339)	(0.476)	(0.803)	(0.459)	(0.389)	(0.665)
CSR GRI	-0.00364	-0.0128	0.360**	0.194	0.196	0.0109	3.090	0.494
	(0.845)	(0.524)	(0.044)	(0.210)	(0.253)	(0.957)	(0.510)	(0.914)
CSR Targets	0.0452	0.0433	0.0594	0.0808	-0.0537	-0.1000	-4.289	-3.539
	(0.134)	(0.161)	(0.634)	(0.577)	(0.611)	(0.379)	(0.354)	(0.466)
CSR Assurance		0.0276		0.420**		0.622**		1.248
		(0.162)		(0.018)		(0.034)		(0.817)
CSR Manager		0.0192		0.307**		0.346*		9.141**
		(0.158)		(0.023)		(0.094)		(0.029)
CSR Involvement		-0.000997		-0.439		-0.0650		-1.086
		(0.966)		(0.344)		(0.704)		(0.873)
CSR Com		-0.0195		-0.114		-0.520		5.025
		(0.540)		(0.671)		(0.136)		(0.324)
Firm Size	-0.00134	-0.00394	-0.211**	-0.233**	0.0726	0.0223	-3.696***	-4.387***
	(0.823)	(0.579)	(0.040)	(0.011)	(0.255)	(0.744)	(0.003)	(0.001)
Leverage	-0.0171	-0.0129	-1.946**	-1.868**	-0.330	-0.247	-9.769	-8.118
	(0.923)	(0.943)	(0.013)	(0.014)	(0.257)	(0.377)	(0.483)	(0.574)
Board Independence	0.0109*	0.0106*	0.0506	0.0414	0.0383	0.0312	1.625	1.563
	(0.088)	(0.098)	(0.382)	(0.460)	(0.506)	(0.565)	(0.176)	(0.198)
Board female	-0.00282	-0.00423	-0.134	-0.149	-0.0388	-0.0698	4.141*	3.877*
	(0.742)	(0.604)	(0.285)	(0.214)	(0.738)	(0.535)	(0.078)	(0.096)
Ownership	-0.285*	-0.284*	-0.513	-0.789	-0.350	-0.331	5.119	3.122
	(0.053)	(0.072)	(0.700)	(0.617)	(0.543)	(0.559)	(0.741)	(0.855)
	(0.507)	(0.575)	(0.145)	(0.280)	(0.899)	(0.923)	(0.126)	(0.174)
Constant	-0.0481	-0.0353	2.275**	2.665**	-0.371	-0.0772	9.749	12.20
	(0.377)	(0.529)	(0.011)	(0.011)	(0.324)	(0.849)	(0.283)	(0.255)
N	562	562	538	538	558	558	556	556
r2	0.105	0.109	0.271	0.291	0.113	0.149	0.149	0.153
r2_a	0.0733	0.0707	0.244	0.260	0.0813	0.112	0.119	0.117

The results in Table 7 show no significant association between either of the two formats of GHG reporting (*GHG 1–2* and *GHG 1–3*) and ROA (see Table 7, columns 1 and 2). However, when *Tobin's q* is the performance metrics (TQ_{t+1}), this relation turns out to be positive and significant: the results in Table 7 show a positive and significant association between *GHG 1–2* and *Tobin's q* (β-value 0.378). The results suggest that of all the studied reporting formats, CSR reporting in the form of GHG reporting scope 1–2 (direct CO_2 emissions) shows the strongest association with market performance.

We found evidence of a positive relation between *GHG* and *Tobin's q* (Table 6, columns 1 and 2) in the previous section. When we look closely at what drives this relation, we observe that the reporting of scope 1 and 2 emissions is important in this relation: the coefficient of the variable *GHG 1-2* is significant and higher in magnitude than any of the previously reported coefficient (0.378 versus 0.325 in the previous section). This strong significance is in line with the explanation that markets react positively to the reporting of direct emissions, as they find it a credible figure: more concrete and easier to measure and assess than the general scope 1,2, and 3, which extends beyond the firm´s control systems.

In short, our robustness tests suggest that the reporting of GHG is not related to accounting performance, but it does have a relation to the financial markets. It seems that the market price captures long-term expectations (in terms of future improvements in performance) that are absent from the accounting performance measures such as ROA.

5 Discussion and conclusions

Motivated by the contradictory evidence regarding the association between CSR reporting and firm performance, this paper seeks to explore whether the association between CSR reporting and firm performance is dependent on the type of CSR reporting practice.

In terms of CSR-reporting, the results suggest that CSR-disclosure practices, although difficult to compare between companies and difficult to verify, may provide different insights to managers than to investors and stakeholders alike. Disclosing CSR-reports, and especially qualitative and quantitative CSR-targets – whereby the purpose is to enable managers to make decisions – is associated with future accounting performance. Our results provide support for the theoretical view (Freeman, 1994; Freeman et al., 2010; Donaldson and Preston, 1995) of the benefits of CSR engagement resulting in an inside-out effect of the reporting (Schaltegger 2012, Beck et al., 2017)- whereby the purpose of the reporting is to convey important information to the management, or the firm itself. On the other hand, the disclosure of CSR and CSR reporting practices focusing on qualitative aspects (the disclosure of the value creation model, and the use of the GRI reporting framework) – whereby the purpose of the CSR reporting is to gain legitimacy, rather than effectiveness regarding performance – are negatively, or not associated with market-based performance. Also, the disclosure of GHG-emissions shows a relation with metrics that convey value-relevant information to the financial market. This particular result is explained by the nature of GHG: numeric and comparable, directly translating into costs – and potential savings – for the firm. GHG emissions information disclosed by companies has become increasingly important for investors because GHG emission indicators can reflect significant climate risks (Bonetti et al., 2018; Liesen et al., 2017) that might affect future firm performance.

The non-significant association between certain reporting practices (the disclosure of the value-creation model, the use of GRI and the disclosure of GHG emissions) and accounting

performance is in line with earlier studies reporting a non-significant association between CSR reporting and short-term accounting performance, such as ROA (Aupperle et al., 1985; Connelly and Limpaphayon, 2004). A possible explanation for the non-significant relation is the fact that reporting in itself is costly and affects accounting performance in a negative way (Gallardo-Vázquez et al., 2019).

As noted, our results indicate a positive association between GHG and market performance. The results are in line with previous research showing a positive association between a decrease in GHG and market performance (Delmas et al., 2016). However, no significant association between GHG and accounting performance was found, which in turn supports the conclusion that GHG is costly and is not, as such, reflected in enhanced accounting performance. Instead, the results provide support for the theoretical view that CSR reporting in the form of GHG is used for legitimation purposes rather than to attain effectiveness. Alternatively, GHG may generate benefits in the long term, while accounting performance (ROA) is often analysed over the short term. However, GHG disclosure seems to convey value-relevant information to the financial market as measured by Tobin's q. The results may be explained by the nature and importance of GHG, as it is numeric and comparable, directly translating into costs – and potential savings/costs in the long run – for the firm. Information about GHG emissions disclosed by companies has become increasingly important for investors, because GHG emission indicators can reflect significant climate risks (Bonetti et al., 2018; Liesen et al., 2017). Investors may thus see GHG emissions as a negative aspect in the long run in their valuation formula, which is usually based on discounted future cash flows. GHG emissions can increase costs and reduce return on investment in the future if regulatory and stakeholder pressure further limits pollution.

Our results have implications for companies as well as investors. Given the recent changes in the CSR-reporting landscape, the results add to the debate on the usefulness of various CSR reporting practices. For example, the EU launched on February 26th, 2025, the Omnibus sustainability rules simplification package, aiming to simplify the sustainability reporting practices of small and medium enterprises. Our study suggests that different sector or company-specific rules might be preferable, in contrast to the "one-size-fits-all" type of mandatory CSR reporting practices currently in place

In conclusion, the association between CSR reporting and performance is, to a certain degree, contingent on the type of CSR reporting practice. Integrating CSR and especially qualitative and quantitative CSR-targets matters to the firm's accounting performance, while GHG is important in terms of the financial market.

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