

Board governance drivers of corporate sustainability levels in private firms: evidence from Sweden

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Abstract

Purpose – The purpose of this study is to investigate whether board composition affects corporate sustainability (CS) levels in private firms. Additionally, the study examines a potential interplay between CS levels and CS reporting, and the impact of EU Directive 2014 / 95/EU (Non-Financial Reporting Directive [NFRD]) on resources spent on CS.

Design/methodology/approach – The authors surveyed the chief executive officers (CEOs), chief financial officers (CFOs) and Environment Officers of Swedish private firms subject to NFRD, receiving 149 valid responses (a response rate 24%). The authors coded the responses using van Marrewijk and Werre's (2003) CS levels framework. The levels are Pre-CS, Compliance-driven, Profit-driven, Caring, Synergistic and Holistic. The study then explained the CS levels with board characteristics.

Findings – While on average the sample firms have a profit-driven CS level, the authors find that CS level is positively driven by female Chairs, female CEOs and external CEOs. Early voluntary reporting before NFRD does not explain the CS level. On adoption of the NFRD, mandatory reporters increased resources spent on CS activities and CS reporting more than early voluntary-reporters. Nonetheless,

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slightly over half of the sample firms reported no significant impact of the NFRD on resources spent on CS.

Practical implications – The findings may be useful for stakeholders interested in corporate governance and CS levels. Also, the findings support further regulation such as EU Directive 2022/2464 (Corporate Sustainability Reporting Directive [CSRD]).

Social implications – In private firms, female leaders are likely to play a significant role in driving altruistically motivated CS practices.

Originality/value – The focus is on private firms in Sweden which, unlike those in other jurisdictions, were subject to NFRD. Methodologically, the use of a survey provides an alternative to the previous heavy reliance on archival research.

Keywords Corporate sustainability levels, Private firms, Board diversity, Female CEO, Female Chair, External CEO, Sustainability regulations

Paper type Research paper

1. Introduction

Inclusion of social and environmental concerns in business operations, more commonly known as corporate sustainability (CS hereafter) has become a norm for many firms. Stakeholders such as investors, lenders and customers increasingly incorporate firms' CS-related information into their decision-making (Goss and Roberts, 2011; Hong and Kacperczyk, 2009; Lev *et al.*, 2010; Cohen *et al.*, 2023a). A lot of previous research on drivers of CS focuses on determinants of CS reporting, drawing inferences about corporate sustainability based on firms' CS reporting (for reviews see Afeltra *et al.*, 2022; Aguinis and Glavas, 2012; Huang and Watson, 2015; Dwekat *et al.*, 2022; Ciappei *et al.*, 2023). However, less is known about how various governance mechanisms directly affect firms' CS (Aguinis and Glavas, 2012; Boulouta, 2013; Atif *et al.*, 2021; Velte, 2024). For example, at one extreme, firms may view CS as merely a compliance with laws and regulations, while at the other, they may adopt an altruistic perspective. We refer to these different levels of "inclusion of social and environmental concerns in business operations and in interactions with stakeholders" as firms' *CS levels*, based on van Marrewijk and Werre (2003, p. 107). The levels are *Pre-CS*, *Compliance-driven*, *Profit-driven*, *Caring*, *Synergistic* and *Holistic*.

Private firms constitute an important part of the economy, and understanding what drives CS levels in these firms is important. However, most research on CS drivers concentrates on large public firms, possibly due to easier access to data. Private firms are exempted from stock market pressure for financial performance and/or sustainability, on the other hand they are often resource constrained (Sheen, 2020), and thus arguably more likely to have a *Profit-driven* CS level. Previous studies showed that board diversity (measured through various parameters) improve CS reporting quality (see, for example, Al Lawati and Alshabibi, 2023; Beretta *et al.*, 2023; Rao and Tilt, 2016). Nonetheless, these studies were mostly conducted among large public firms and they mostly used archival data.

We take a different approach to investigate board governance drivers of CS levels for private firms. Unlike previous archival research that relies on CS reporting or third-party ratings based on CS reporting (e.g. Macaulay *et al.*, 2018; Harjoto and Rossi, 2019; Cambrea *et al.*, 2023), we use a survey to measure the CS levels of private firms. Our goal is to determine whether corporate governance, particularly board composition, is associated with a CS level. We conduct a survey among key officers (e.g. CEOs, CFOs or Environmental Officers) of Swedish firms impacted by the Swedish implementation of the Non-Financial Reporting Directive (NFRD). We use the six CS levels, as

proposed by [van Marrewijk and Werre \(2003\)](#), to categorize their responses when asked to define their firms' material CS activities.

Apart from internal board governance, firms are influenced by external governance including market and regulatory forces ([Shleifer and Vishny, 1997](#)). As part of the EU Green Deal, European Union (EU) introduced two CS reporting directives, NFRD and EU Directive 2022/2464 (Corporate Sustainability Reporting Directive [CSRD]). In this context, Sweden offers a unique institutional setting because the scope of the Swedish implementation of the NFRD also included private firms of certain size, which is comparable to the scope of the current CSRD (with first reports under European Sustainability Reporting Standards to be released in 2025) [1]. [Venturelli et al. \(2020\)](#) argue that NFRD did not improve comparability in CS reporting. Thus, there is a risk that regulation merely leads to confirmatory reporting without having any meaningful real effects in the long-term. While we mostly focus on board governance drivers of CS, we also ask the respondents about the impact of NFRD in terms of change in resources spent on CS activities and CS reporting after the introduction of the directive. Additionally, we investigate whether voluntary early reporting in the pre-NFRD period is associated with higher CS levels.

Based on responses received from the survey in year 2021 from key officers of 149 unique private firms out of the 615 firms affected by the NFRD, we find that the typical private firm's CS level is *Profit-driven*, according to the six-classification levels of [van Marrewijk and Werre \(2003\)](#). About 42% of the respondents reported they have allocated additional resources to CS activities after NFRD reform. The rise in activities was most noticeable among mandatory-adopters (117 out of 149 firms that did not report on CS voluntarily before the reform). Concerning the corporate governance drivers of CS, we document that female Chairs, female CEOs and external CEOs, are positively and significantly associated with a CS level. Our tests show that the results are robust and unaffected by nonresponse bias. Methodologically, we extend empirical evidence based on surveys, while most of the research in the CS domain is either archival or interview-based and focuses on CS reporting ([Rao and Tilt, 2016](#)).

The remainder of the paper is organized as follows: Section 2 outlines the institutional setting, theoretical background and hypothesis development; Section 3 describes the methodology; Section 4 presents the analysis; and Section 5 concludes the study.

2. Institutional setting, theoretical background and hypothesis development

There are many governance mechanisms that shape the CS. External factors include regulatory and institutional environment ([Liang and Renneboog, 2017](#)), and a stream of research investigates impacts of various disclosure regulations on firms (e.g. [Hummel and Bauernhofer, 2024](#); [Baboukardos et al., 2024](#)). Internal governance mechanisms embrace management and leadership ([Begum et al., 2020](#); [Khushk, et al., 2023](#); [Nabi et al., 2023](#); [Çop et al., 2021](#)), ownership ([Villalonga, 2018](#); [Masulis and Reza, 2015](#)), incentives schemes ([Flammer et al., 2019](#); [Cohen et al., 2023b](#); [Velte, 2024](#)), voluntary reporting ([Ann, 2023](#); [Hu and Zhang, 2023](#)) and board governance (see [Rao and Tilt, 2016, 2021](#); [Ciappei, et al, 2023](#) for reviews). While in our study we mostly focus on board governance in private firms, we start by explaining the context of our research, namely, the Swedish institutional setting.

2.1 Institutional setting

European firms are argued to have “implicit” CS, deeply rooted in culture and norms ([Matten and Moon, 2008](#)). These norms are supported by legal framework at the EU level. The EU Green Deal embraces several CS reporting regulations including EU Taxonomy Regulation, CSRD and its predecessor, NFRD and Corporate Sustainability Due Diligence Directive

(CSDDD). Sweden presents an interesting context for examining the CS levels of private firms, as it has expanded the scope of mandatory CS reporting from financial year 2017 beyond the recommendations of the NFRD to embrace private firms of certain size (as specified in the introduction). This scope is similar to what the current CSRD requires, and it has resulted in a greater firm size variation in the sample, affecting about 1,000 firms, as opposed to only about 100, had it been adopted at the EU recommended level of 500 employees as threshold (Tillväxtanalys, 2018). Sweden implemented the new mandatory CS reporting framework on December 1, 2016 by amending existing legislation of the Swedish Annual Accounts Act (SFS 1995:1554). The new reporting rules applied to annual reports after December 31, 2016. Before this amendment, from 1998 Sweden had voluntarily required the Director's report section of the annual report to include information on environmental factors. In 2002, the Swedish Government launched the "Swedish Partnership for Global Responsibility" initiative for Swedish firms, which strengthened work on human rights, labor standards, environmental protection and anti-corruption, in line with the principles of the UN (Gjølberg, 2010). Additionally, from 2008 the Swedish Government have required state-owned firms and municipalities to report on CS issues adapted to the global reporting initiative (GRI) standards (Swedish Ministry of Economic Affairs, 2007). Therefore, it can be argued that Swedish firms have a long-standing history of disclosing information on CS. Consequently, Swedish firms have had a relatively higher presence in various global CS initiatives and rankings amongst organisation for economic cooperation and development (OECD) countries (Gjølberg, 2009). Collectively, this can lead to Swedish firms achieving higher CS levels due to societal expectations (Meyer and Rowan, 1977; Suchman, 1995), which are rooted in humanitarian norms (Gjølberg, 2010). Liang and Renneboog (2017) document that firms from common law countries have lower CSR ratings than firms from civil law countries, especially Scandinavian civil law firms, which have the highest ratings.

2.2 Theoretical background and hypothesis development

2.2.1 Levels of corporate sustainability. Firms incorporate sustainability in different ways for various motives. Normative stakeholder theory (Freeman, 1984), arguably the most influential ethical perspective on CS (Garriga and Melé, 2004), asserts that a firm's fiduciary duties extend beyond just shareholders to include stakeholders' needs which are ascribed an intrinsic value equal to that of shareholders' interests (Freeman, 1984; Donaldson and Preston, 1995). In other words, the interests of stakeholders are important in their own sake, not just because they are means to achieve corporate objectives, but more importantly because businesses have moral responsibilities. Conversely, the instrumental approach concentrates on attaining economic objectives through sustainability where a firm perceives CS as a strategy to boost profits (Friedman, 1970). Furthermore, the legitimacy theory explains a firm's survival in terms of striving for reputation by adhering to external environmental and social demands. This theoretical framework frequently guides the understanding of corporate external disclosures (Deegan *et al.*, 2002; Hummel and Schlick, 2016; Deegan, 2019).

Our study tries to explain CS with governance factors, and we use a model developed by van Marrewijk and Werre (2003), which describes the different ways and motivations for "inclusion of social and environmental concerns in business operations and in interactions with stakeholders" (p. 107). The model depicts levels of CS, and it has been also referred to as the "CS stage(s) model" in the literature (e.g., Carlisle *et al.*, 2023; Ingham and Havard, 2017; Wagemans *et al.*, 2024). The levels of CS are *Pre-CS*, *Compliance-driven*, *Profit-driven*, *Caring*, *Synergistic* and *Holistic* (van Marrewijk and Werre, 2003). Van Marrewijk

and Werre (2003) explain that “Any organization has the option to choose an ambition level based on its awareness of its circumstances and its existing value systems. Each ambition level will result in corresponding business practices” (p. 112).

At the *Pre-CS* level, firms do not have any ambition for CS and may only engage in CS if forced, for example, due to legal requirements (e.g. government legislation) or public pressure (e.g. strikes and demonstration). The firm’s motivation to engage in CS is primarily driven by the state’s influence. The firm is usually detached from the stakeholders and society and can behave in a rogue manner if not controlled. At the *Compliance-driven* level, firms acknowledge the need to fulfill CS requirements but take the stance that social welfare is the responsibility of the state, and that firms only need to adhere to regulations. Additionally, firms may be involved in charity and stewardship considerations, but CS is considered “a duty and obligation, or correct behavior” (van Marrewijk and Werre, 2003 p. 112). One could argue that the primary concern of firms at the *Pre-CS* and *Compliance-driven* levels is organizational legitimacy.

Firms at the *Profit-driven* level adopt CS activities with a narrow business focus, demonstrating their impact on the bottom line through enhanced customer and stock market reputation. Various CS aspects such as social, ethical and ecological are integrated in the business decision-making if they contribute to increased profit. The *Profit-driven* level of CS can also be argued to be an instrumental CS, as firms are primarily shareholder-focused.

At the *Caring* level, a firm goes beyond the legal requirements and profit considerations to engage in CS and establishes a dialogue with the stakeholders and the society. The personal values and beliefs of top management promote CS and look to strike a balance between its efforts toward various aspects of CS (e.g. economic, social and ecological aspects). Social and environmental responsibilities hold intrinsic value for the firm. Firms at the *Synergistic-level* aim to integrate stakeholder involvement in CS decision-making. In other words, a “win-together” approach is adopted after considering different stakeholders’ concerns for the various aspects of CS. One can view *Caring* and *Synergistic* CS levels as ethical CS, which aligns with Freeman’s (1984) conceptualization of CS. Finally, firms at the *Holistic* level are those that have fully integrated CS into every aspect of their business activity, embedding it in the organization, and moving beyond stakeholder value maximization to prioritize planet sustainability. It may be extremely rare that firms adopt the holistic level of CS in their business culture in a largely capitalistic economic environment (Hofman, et al., 2017; Roth et al., 2020).

Van Marrewijk and Werre’s (2003) framework has been applied by earlier research with various methodological approaches. Carlisle et al. (2023) analyze shareholder proposals and how the board responds to these proposals. They find that when shareholders and boards are very different in terms of the CS motivation stage, it negatively affects efforts to improve environmental disclosure and performance. They also discover that boards frequently prioritize profit, which restricts their ability to act as stewards for stakeholders, particularly when shareholders themselves exhibit self-interest. Radu and Smaili (2021) describe corporate strategies of Canadian listed firms. They discover that between 2014 and 2018, the number of firms with balanced performance (i.e. both high financial and CS performance) grew faster than the number of firms that only focused on CS performance or only focused on financial performance. They also find some evidence that gender diversity on boards and independence of board members is positively associated with CS-focused performance. Using a survey instrument, Schaltegger and Hörisch (2017) document that in German listed firms, securing legitimacy (i.e. compliance with societal pressures) is a more common motivation behind CS integration than profit-seeking. Ingham and Havard (2017) use the framework in a qualitative case study describing the strategic and organizational changes in a

French postal service firm during development of CS programs. Finally, [Weerts et al. \(2018\)](#) conduct a literature review that documents how the authors in the field of CS address the different motivations for the implementation of CS in firm culture, as identified by [van Marrewijk and Werre \(2003\)](#). [Carlisle et al. \(2023\)](#) argue that [van Marrewijk and Werre's \(2003\)](#) model provides a richer view of CS than a binary classification of firms into “good” and “bad” categories prevalent in CS research. We thus use the framework in our study and we next turn to discussing how board governance can be linked with CS levels in private firms.

2.2.2 Board composition and corporate sustainability levels in private firms. Board of directors have an important role in stewardship of the firm ([Adams et al., 2010](#)). Based on a literature review concerning impact of board diversity on both CS and CS reporting, [Rao and Tilt \(2016\)](#) conclude that diversity can have a positive impact on some aspects of CS, and that gender is an underresearched characteristic, especially when it comes to studying how it influences CS decision-making in firms. More recent studies based on public firms document a positive impact of women on some aspects of CS performance ([Ciappei et al., 2023](#)). Nonetheless, several studies also find contradictory results (e.g. [Đặng et al., 2023](#), suggest an inverted U shape). In an early directors' survey, [Adams and Funk \(2012\)](#) found significant differences between male and female directors, with male directors focusing more on power and achievement, while female directors engaging in universalism and benevolence. Women are usually attributed with higher communal values (caring, affectionate, helpful, sympathetic, interpersonally sensitive, nurturing and gentle) than men who are more agentic (assertive, controlling and confident) ([Eagly, 2013](#); [Eagly and Karau, 2002](#)). Consequently, women should be more inclined to support CS, which has been documented in context of public firms ([Post, et al., 2015](#); [Rao and Tilt, 2016](#); [Glass et al., 2016](#); [Byron and Post, 2016](#); [Fernando et al., 2020](#); [Atif et al., 2021](#); [Ciappei, et al., 2023](#); [Trinh, et al., 2023](#)).

[Wiersema and Mors \(2023\)](#) document that female directors affect the dynamics of board meetings with their questioning minds, nurturing style and recognizing they do not know things. However, women's ideas are less likely to gain traction and acknowledgment in board discussions, thereby impeding their ability to gain influence (*ibid.*). While these findings rest on samples of public firms, private firms are usually smaller and female leaders in private firms may feel less pressured to adjust to any established patterns in director roles or try to emulate manly behavior. As a result, individual traits can affect decision-making process potentially more pronouncedly in private firms. On the other hand, private firms may lack extra resources for CS investments as they are resource constrained, which affects their investment choices ([Sheen, 2020](#)). Therefore, it can be argued that CS decisions in private firms are driven by extra considerations of alternative costs, which could attenuate the impact of individual traits on decision-making. In line with previous research from the context of public firms, we formulate the following hypothesis:

- H1.* There is a positive association between percentage of women on board of directors and a CS level in private firms.

A stream of research investigates how different leadership styles affect CS (see [Eustachio et al., 2023](#), for a review). For example, studies have linked transformational leadership style, which is characterized by democracy, communication, collaboration and cooperation, with higher organizational innovation for CS ([Begum et al., 2020](#); [Khushk, et al., 2023](#); [Nabi, et al., 2023](#)), or specifically environmental sustainability ([Çop, et al., 2021](#)). Furthermore, [Angus-Leppan et al. \(2010\)](#) associate the transformational leadership style with “implicit CSR,” in contrast to “explicit CSR” (i.e. publicizing and formalizing CS), which stems from a transactional or autocratic leadership style. The leadership style can be

one mechanism through which female traits translate into CS. As women tend to use a transformational leadership style (Eagly *et al.*, 2003; Eagly and Johnson, 1990; Vinkenburg *et al.*, 2011; Khushk *et al.*, 2023), firms with female leaders may have higher CS levels.

The board of directors drive public firms in Sweden (Swedish Corporate Governance Board, 2024), with top management implementing the board's strategy. The corporate governance code prohibits the CEO–Chair duality and allows only one member of top management to sit on the board, typically the CEO (*ibid.*). In contrast, in private firms, CEO–Chair duality is allowed, and management can have more involvement in shaping the firm. Additionally, the smaller size of private firms grants less emphasis on collective decision-making through boards, allowing the CEO or the Chair to exert greater influence. Investigating the CEO and Chair roles individually in private firms is thus worthwhile as a complement to studying the board as a whole. While corporate governance set up can differ among countries, a few studies on listed firms in the USA, China and Italy argue that it is the female board members with executive roles that mostly drive CS (Cordeiro *et al.*, 2020; McGuinness *et al.*, 2017; Cambrea, *et al.*, 2023) and we posit the following hypotheses concerning the CEO and Chair positions in private firms:

H2. There is a positive association between female CEO and a CS level in private firms.

H3. There is a positive association between female Chair and a CS level in private firms.

Previous research has studied the age of board directors as one of the factors affecting a firm's CS level. For example, Ferrero-Ferrero *et al.* (2015), using a sample of large US, German and Canadian listed firms argue that having people from different generations on board helps firms adopt CS in their vision and strategy. The study also documents a positive association with different measures of CS management quality and performance. Farooq *et al.* (2023) argue that CS performance mediates the effect of age diversity on decreasing financial distress risk. Contradictory scant evidence also exists – for example, Hafsi and Turgut (2013) document a negative impact of age diversity on CS performance, which they however explain with lack of variance in their sample (overall low age diversity), and the results being potentially driven by few firms going through “difficult reconciliation across age groups.” Fayyaz *et al.* (2023) find no association between age diversity of the board and CS reporting, although their study is solely based on top Dow Jones Sustainability Index firms. Similarly, Menicucci and Paolucci (2023) document no impact of age on “Environment Social and Governance” scores. We expect boards in private firms to be younger, as family members may enter such boards at an earlier stage than professional directors in public firms, which may attenuate the impact of age on CS in private firms. Nonetheless, based on previous research in public firm context, we pose the following hypothesis:

H4. Average age of board members is negatively associated with a CS level in private firms.

Private firms are insulated from the pressures of the stock market, and they are often driven by entrenched family owners who may focus on their own interests and on transferring the firm to next generations which constitutes agency problem between controlling and noncontrolling owners (Gomez-Mejia *et al.*, 2018; Ma, 2023; Villalonga, 2018). These factors may reduce incentives to improve CS level (Villalonga, 2018). In private firms, external CEOs can bring new insights and create change dynamics, as they may be more outside looking and interested in legitimacy from different stakeholders. On the other hand, it has been argued in the context of public firms that CS might be a part of an agency problem

between owners and managers if managers are trying to use CS to improve their reputation at the expense of shareholders (Masulis and Reza, 2015; Villalonga, 2018), although Ferrell *et al.* (2016) disagree with this argument by showing that CS is used more in well-governed firms with low agency concerns. External status of CEOs has not been investigated earlier as a board characteristic driving CS levels, potentially as research focuses mostly on US public firms, where external CEOs outside the board are rather uncommon with a low sample variance. However, Liao *et al.* (2015) find that public firms with a higher proportion of independent directors are more engaged and committed to CS and are also likely to disclose more accurate CS reporting.

We use our sample of private firms with variation of external and internal CEOs, and we argue that in face of increased recent pressures for CS, an external CEO, notwithstanding his or her motivation, can be an additional “lever of control” in conjunction with the controlling owner, which makes rejection of aiming for higher CS levels less likely. We thus posit the following hypothesis:

H5. There is a positive association between external CEO and a CS level in private firms.

2.2.3 Corporate sustainability reporting and corporate sustainability levels in private firms. Nonfinancial reporting regulations operate under the underlying assumption that reporting can have “real effects”; however, there has been relatively little previous research on the relationship between CS reporting and CS levels (Baboukardos *et al.*, 2023). Both directions have been studied. For example, some studies argue that higher CS performers also have higher quality of CS reporting (Hummel and Schlick, 2016; Braam *et al.*, 2016). Other studies explore if and how reporting can impact CS. For example, Ann (2023) explain how CS reporting can accelerate CS, based on a case study of a major Singaporean real estate firm. In a similar vein, Hu and Zhang (2023) describe how CS reporting and innovation investment coevolve with organizational transformation and argue that when start-up firms change to established firms, the strengthening effect of CS reporting on real effects weakens, which could imply that the link between CS reporting and CS level is stronger in private firms than in public firms. Based on a premise that CS reporting has positive effects on CS (Ann, 2023), we formulate the following hypothesis:

H6. Early voluntary reporting is positively associated with a CS level in private firms.

The aim of CS reporting regulations is to impact CS in firms (Baboukardos *et al.*, 2023). In a recent literature review, however, Haji *et al.* (2023) argue that improvements in reporting quality in mandatory reporting regimes were scant. Additionally, they document that ceremonial reporting with pervasive “greenwashing” is indicative of a detachment between mandatory reporting and integration of CS in firms. In contrast, Hummel and Bauernhofer (2024) investigate how EU Taxonomy is implemented in Austrian businesses and argue that reporting regulations have a positive effect on corporate actions because they can lead to discussions about CS-related strategic positioning. Based on a carbon emission disclosure regulation introduced in the UK in 2013, Baboukardos *et al.* (2024) discuss mechanisms through which reporting regulation actually leads to lower emissions.

As the scope for the NFRD was extended in Sweden to private firms, we can investigate potential effects of the regulation on smaller firms. As stated earlier, private firms face no pressures from capital markets, and they are financially constrained due to lack of access to equity markets (Sheen, 2020). Furthermore, studies have shown a positive correlation between the size of the firm and CS performance (e.g. Ferrell *et al.*, 2016), suggesting that the impact of CS reporting regulations on private firms may be more limited than on public

firms. While empirical evidence from a survey instrument is static in nature, we asked respondents about their own judgments on whether NFRD increased resources spent on CS activities and on CS reporting. The efficacy of the regulations can be judged based on whether the mandatory-adopters, i.e. firms which did not voluntarily choose to disclose before the regulations, invested more resources in CS after the regulation. We thus test the following hypothesis:

- H7. The NFRD increased resources spent on CS activities and CS reporting more for mandatory-adopters than for early voluntary-reporters.

3. Methodology

3.1 Survey design and corporate sustainability levels

To investigate CS levels and their drivers in private firms, we distributed a large-scale survey to the CEOs, CFOs or Environmental Officers of firms affected by the NFRD implementation in Sweden, dividing it into two parts. The first part focused on comprehending the CS levels in firms, subsequently connecting them with board characteristics, while the second part examined the influence of NFRD on resources spent on CS. In the first part of the survey, the main question was open-ended: “How does your firm define material CS activities that the firm should carry out?” We analyzed the definitions provided by the firms and coded their responses according to the six CS levels described in a framework of [van Marrewijk and Werre \(2003\)](#). More specifically, we searched for keywords in the responses which corresponded to the CS levels explained by [van Marrewijk and Werre \(2003\)](#). First, responses which either shortly stated that the firm had not developed its own definition of sustainability, or additionally mentioned fulfilling requirements of law (i.e. “law” being the searched for keyword) were classified as *Pre-CS* level, a quote example below:

We have not developed our own definition of sustainability. We proceed from the legal requirements that are placed on a firm of our kind.

Second, we classified the responses referring to compliance with external sustainability frameworks, such as the United Nations’ Sustainability Development Goals, as *Compliance-driven* CS levels. An example response classified as *Compliance-driven* is:

We rely on the classic definition of sustainable development “Sustainable development is a development that satisfies today’s needs without jeopardizing the ability of future generations to meet their needs (Brundtlands Commission).”

Third, we classified the responses that specifically mentioned economic aspects of sustainability as *profit-driven* CS levels. These responses indicate higher ambitions compared to the *Pre-CS* or *Compliance-driven* levels, and are motivated by intention to make profit. An example response is provided below:

We aim to satisfy good economic development in harmony with environmental and social development” (Woman, Environmental Officer, a logistics firm). “We manufacture and sell products with as little negative environmental impact as possible at a reasonable cost to the firm.” (Man, CFO, a manufacturing/industrial firm)

Fourth, when stakeholders’ needs were mentioned as a motivator in the response, and caring for these needs besides the firm’s needs, the response was coded as *Caring* CS level. We searched for responses that go beyond the firm’s profit up to a level where they also mention taking care of special CS topics, for example:

In our sustainability work we have defined four focus areas where we see that we have the most impact on the environment and on our stakeholders. Our focus areas are to drive sustainable business, to produce products with sustainable materials, to reduce our and our supplier's emissions and resource consumption, and to respect and ensure fulfillment of human rights.

Fifth, the response was classified as *Synergistic* CS level when it explicitly mentioned involvement of stakeholders in corporate decision-making processes, as exemplified by the following quotation:

Sustainable thinking must be present in all we do in our firm. Notwithstanding position or working tasks, we all work for smart solutions in all processes and strive for long-term relationships with all stakeholders who are involved in our projects.

Full embeddedness of CS efforts in every aspect of the organization is also a characteristic of *Holistic* CS level, which is additionally linked with focus on sustainability of the planet according to the framework that we use. There were two responses emphasizing importance of thinking about global future of the region/the planet, which were classified as *Holistic*, however, these responses were merged in empirical analysis into one category with *Synergistic* responses due to their low number.

The open-ended survey question was chosen to avoid any restriction in the response and to allow the respondents to answer as freely as possible. Open-ended questions allow for freedom of thought and can achieve greater diversity of information than close-ended questions. Nonetheless, open-ended questions have also disadvantages. For example, they can result in irrelevant or vague answers that may not be easily analyzed (Beins, 2018). For the cases without explicit keywords and when more than one CS level was considered, we further analyzed their responses on five multiple choice questions following the open-ended question [2]. The first of these questions tried to investigate the importance of impact materiality (impact of a firm on its stakeholders) in addition to financial materiality (economic consequences) of sustainability. This balance was captured by the number of chosen material CS aspects for firm's stakeholders vs shareholders, as incorporation of needs of stakeholders is linked with higher CS levels in the framework we use. The second and third of the multiple-choice questions investigated the involvement of key firm leaders and stakeholders in CS activities and reporting, since involvement of more agents and especially stakeholders in decision-making is indicative of higher CS levels. The fourth question investigated the variety of CS areas the firms focused on (e.g. environment, social, etc.), as more diversified CS structures are linked with higher CS levels (Bouslah *et al.*, 2023). Finally, in the fifth question, the respondents were asked to what extent the firm's decision-makers are aware of climate change-related risks, as high or very high awareness is arguably linked with higher CS levels (van Marrewijk and Were, 2003) argue that the potential for CS is determined by a value system in a firm, influenced by core personal values of individual managers). The multiple-choice questions helped us further understand the firm's CS levels, and potentially "raise" our initially considered classification from *Compliance* and *Profit-driven* CS levels to *Caring*, when most of the questions pointed to higher CS levels, or from *Caring* to *Synergistic* when second and third questions pointed at involvement of stakeholders in decision-making.

In the second part of the survey, which focused on NFRD and its impact on the firm's CS activities and reporting, we asked questions about the early voluntary reporting behavior of the firm; whether the firm's CS definition was expanded following NFRD; and to which extent the NFRD impacted resources spent on CS reporting process and CS activities. Finally, respondents also had an option to enter additional information as *free text* if the choices of the multiple-choice questions were not sufficient [3].

We recognize that our method of capturing CS levels is subject to validity concerns due to potential “greenwashing” intentions in the responses. Firm-level greenwashing may take form of misleading claims made by firms when they selectively use positive disclosures or when there is decoupling between claims and concrete actions (de Freitas Netto *et al.*, 2020). In other words, firms motivated by pragmatic legitimacy strive to provide symbolic information instead of substantive information (Khan and Baker, 2022). Latest regulations and legislation to make “greenwashing” unlawful and improve challenging assurance of CS reports as described by Free *et al.* (2024) may mitigate “greenwashing” in corporate reporting, because they constitute crucial institutional reforms providing means for stakeholders to hold firms accountable (Cooper and Owen, 2007). However, “greenwashing” arguably remains a considerable validity threat not only in research, and it could as well have hindered the correct coding of CS levels in our study. On the other hand, while previous research on drivers of CS focused mostly on quality of CS reporting (or CS performance proxied by scores based on reporting), our survey approach may arguably be less prone to the “greenwashing” problem, as it is based on responses provided under no pressure (for example, such pressure from capital markets would be considered for public firms in their corporate reporting), and could thus be driven less by pragmatic legitimacy aims.

3.2 Sample and data collection

To identify all Swedish private firms affected by the NFRD implementation, historical financial information was collected from the Retriever database, according to NFRD criteria mentioned earlier. Next, “Företagskontakt,” a firm with a commercial database of contact information on Swedish firms, provided contact information of CEOs, CFOs and Environment Officers. Out of the 774 firms fulfilling the criteria of NFRD registered in Retriever database, we received *email ids* of 713 CEOs, 581 CFOs and 281 Environment Officers. Contact info of 61 firms was not available, whereas e-mail surveys to 98 unique firms were undelivered (further investigation showed that the 98 firms were inactive at the time the survey was sent out and financial data was not made available to the Swedish Tax Authority within 12 months following the financial year end). This resulted in a sample of 615 unique firms for the survey. The first email survey was sent on March 17, 2021, with two subsequent reminders on March 24, 2021, and March 31, 2021. We received 160 survey responses (of these responses 83 were from the CEOs, 38 from the CFOs and 39 from the Environment Officers). For 11 firms, we got more than one response, so we used only one randomly chosen response in the statistical analysis. This gave us a final sample of 149 responses that were unique to each firm, with a response rate of 24.2% (149 / 615). Table 1 presents a sample distribution of the firms that participated in the survey across the various industries.

As earlier described, we used a survey instrument to determine CS levels of firms, to distinguish between early voluntary and mandatory-adopters, and to investigate potential impact of NFRD on CS activities and CS reporting. We obtained all the board-level variables for hypotheses testing from the Serrano database, which provides information on all private firms in Sweden.

3.3 Empirical method

To classify a firm’s response according to the six CS levels by van Marrewijk and Werre (2003), the three researchers independently coded the response to the first open-ended question of the survey, followed by a review of multiple-choice questions with potentially complementing information into the six-CS levels, as explained in Section 3.1 [4]. For empirical tests, responses coded as *Pre-CS* level, *Compliance-driven* CS level, *Profit-driven*

Table 1. Sample distribution

Industry	1 Respondents	2 Response after reminders	3 Female Chair	4 Female CEO	5 External CEO
Admin services	10 (6%)	5 (50%)	4 (40%)	0 (0%)	4 (40%)
Construction	13 (9%)	9 (69%)	1 (7.7%)	0 (0%)	9 (69%)
Health and social services	1 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Hotel and restaurants	2 (1%)	2 (100%)	1 (50%)	0 (0%)	2 (100%)
IT	9 (6%)	4 (44%)	2 (22%)	2 (22%)	3 (33%)
Manufacturing	61 (41%)	29 (48%)	16 (26%)	9 (15%)	20 (33%)
Other services	3 (2%)	1 (33%)	2 (67%)	0 (0%)	3 (100%)
Public administration	3 (2%)	2 (67%)	1 (33%)	0 (0%)	2 (67%)
Real estate	4 (3%)	2 (50%)	1 (25%)	1 (25%)	1 (25%)
Retail	34 (23%)	15 (44%)	10 (29%)	2 (5.9%)	13 (38%)
Transportation	7 (4%)	3 (43%)	3 (43%)	0 (0%)	3 (43%)
Utilities	2 (1%)	0 (0%)	0 (0%)	0 (0%)	2 (100%)
Total	149	72 (48%)	41 (28%)	14 (9%)	62 (42%)

Notes: Table 1 presents the sample distribution of 149 firm-unique responses across the various industries (column 1) based on Swedish Standard Industrial Classification (which are equivalent to EU Standard Industrial Classification). In column 2, the proportion of responses after the two reminders; in column 3, the proportion of firms with female Chair; in column 4, the proportion of firms with female CEO, and in column 5, the proportion of firms with external CEO at the time of the survey in 2021

Source: Authors' own work

CS level and *Caring* CS level were assigned scores 1–4, respectively, whereas responses classified as *Synergistic* CS level and *Holistic* CS level were assigned a score of 5 (as the *Synergistic* and *Holistic* CS levels were joined due to low number of responses in the latter category). In the main empirical tests, we used the average scores of the three researchers' coding rounded to the nearest integer (as required by logistic regression) [5].

To formally test our hypotheses and investigate how board characteristics affect a firm's CS level, we evaluate equation (1) using ordered logistic regression:

$$\begin{aligned}
 \text{logit}[P(CSLevel_i \leq J)] = & \beta_j + \beta_1 \%WomenBoard_i + \beta_2 FemCEO_i \\
 & + \beta_3 FemChair_i + \beta_4 AvgAgeBoard_i + \beta_5 ExtCEO_i + \beta_6 SizeBoard_i \\
 & + \beta_7 VolReporter_i + \beta_8 ROA_i + \beta_9 Leverage_i + \beta_{10} FirmSize_i \\
 & + INDUSTRY DUMMIES + \varepsilon_i \quad (1); j = 1, 2, \dots, J - 1
 \end{aligned}$$

where, $CSLevel_i$ is the CS level for firm i ; the main independent variables are: $\%WomenBoard$ – a percentage of female board members on board and it is used to test $H1$; $FemCEO$ – a dummy variable taking a value of one if the CEO is a woman, and zero otherwise, and it is used to test $H2$; $FemChair$ – a dummy variable taking a value of one if the Chair of the board is a woman, and zero otherwise, and it is used to test $H3$; $AvgAgeBoard$ – the average age of the board members and it is used to test $H4$; $ExtCEO$ – a dummy variable taking a value of one if the CEO is external (not a member of the board) and zero otherwise, and it is used to test $H5$; and $VolReporter$ – a dummy variable taking a value of one if the firm reported on CS voluntarily before the NFRD, and zero otherwise, and it is used to test $H6$. The same variable, $VolReporter$, is used in a Chi-square test for $H7$, which

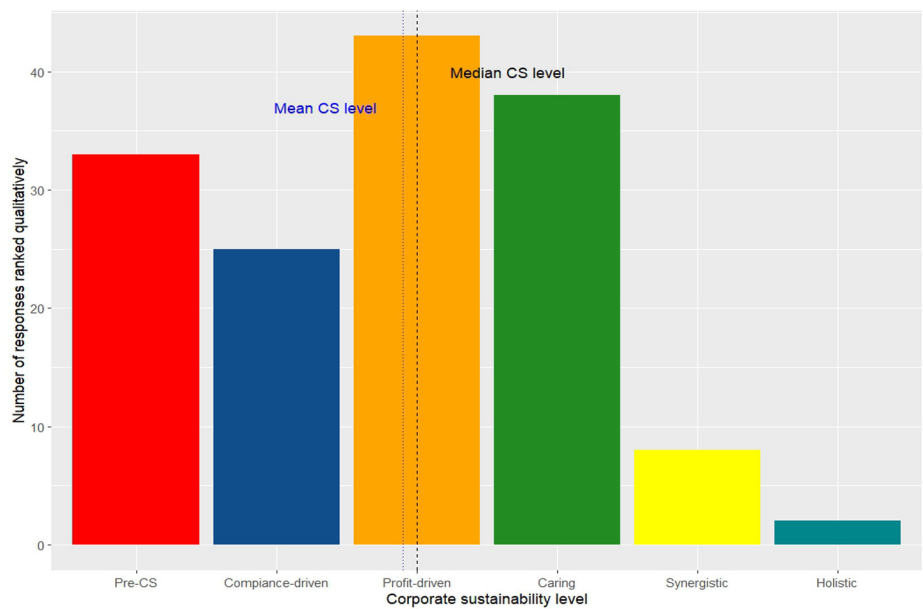
compares mandatory-adopters with early voluntary-reporters regarding difference in an increase in resources spent on CS activities and CS reporting following the NFRD. We control for the size of the board with the variable *SizeBoard*, and other firm-level characteristics, i.e. profitability (*ROA*) calculated as return on assets, leverage (*Leverage*) calculated as long-term debt by total assets, and firm size (*FirmSize*) calculated as log of total assets based on prior literature of CS reporting and CS performance (Aguinis and Glavas, 2012; Dienes *et al.*, 2016; Godos-Díez *et al.*, 2018; Liao *et al.*, 2015; Huang and Watson, 2015). We also include industry dummies based on Swedish Standard Industrial Classification (which are equivalent to EU Standard Industrial Classification).

4. Analysis

4.1 Descriptive statistics

Figure 1 summarize the distribution of the CS levels in our sample, based on the survey responses.

We coded 33 responses as *Pre-CS*, 25 as *Compliance-driven* and 43 as *Profit-driven*. Therefore, about 68% of the responses were classified as *Profit-driven*, or lower. In contrast, there were 38 responses classified as *Caring*, and 10 responses classified as either *Synergistic* or *Holistic*. In sum, most of the firms in the sample had a *Profit-driven* CS level, which was based on our coding of the first qualitative open-ended survey question, and was further proved by the response to another survey question, where 72% of the respondents reported that CS activities had been chosen based on the economic significance for owners or shareholders. On the other hand, about 61% of the firms were concerned with the social



Source: Authors' own work

Figure 1. CS level counts after coding of survey responses from 149 private firms in Sweden subject to mandatory sustainability reporting following the NFRD, according to van Marrewijk and Werre (2003)

significance of CS activities for stakeholders. Finally, about 80% of the firms decided on CS efforts based on the environmental effects both inside and outside the firm.

We also document that among the respondents, 74% of the firms did not report on CS before the NFRD (i.e. 26% were early voluntary-reporters). The most important CS dimensions were environmental impacts (95%), followed by social conditions (72%), staff-related issues (61%), anti-corruption (50%), diversity issues (47%) and human-rights (40%). The least important CS dimensions were governance, business model, innovation and leadership, all ranging between 27% and 35% response rates. It is not uncommon for Swedish key officers to have a high awareness and even commitment toward the environment because of Sweden's long-standing environmental protection laws (Gjølberg, 2010). Furthermore, while 50% of the firms had a committee, or a board or panel that decides what CS activity the firm should undertake, only about 7% respondents said such groups included representative(s) from non-shareholding stakeholders.

In our sample of 149 respondent firms, 34% of the board members are females, 9% of the firms have a female CEOs, 28% of the firms have a female Chair and 42% of the firms have an external CEO. The average age of the board is 53 years with five members on average. An average firm had a return on assets of 3.5%, leverage of 6% and total assets of 295 mSEK. Table 2 presents the summary statistics of the variables.

One of the explanatory variables, *FemChair*, significantly and positively correlates with CS level. *FemChair* also positively correlates with *%WomenBoard* and negatively correlates with ROA. While *%WomenBoard* are positively correlated with both *FemChair* and *FemCEO*, multicollinearity appears not to be a concern as variance inflation factor (VIF)

Table 2. Descriptive statistics

Variables	Mean	SD	Min	Median	Max
CSLevel	2.779	1.240	1.000	3.000	5.000
%WomenBoard	0.337	0.286	0.000	0.333	1.000
FemCEO	0.094	0.293	0.000	0.000	1.000
FemChair	0.275	0.448	0.000	0.000	1.000
avgageBoard	53.349	5.068	38.000	53.250	66.667
ExtCEO	0.416	0.495	0.000	0.000	1.000
SizeBoard	4.879	2.435	1.000	5.000	15.000
VolReporter	0.262	0.441	0.000	0.000	1.000
ROA	0.035	0.126	−0.730	0.042	0.377
Leverage	0.058	0.104	0.000	0.000	0.651
FirmSize (mSEK)	295.000	120.000	100.000	270.000	724.000

Notes: Table 2 presents the descriptive of the key variables for the 149 firms that participated in the 2021 survey. The dependent variable *CSLevel* is firm's CS level coded as *Pre-CS* level, *Compliance-driven* CS level, *Profit-driven* CS level and *Caring* CS level with scores 1–4, respectively, whereas responses classified as *Synergistic* CS level and *Holistic* CS level were assigned a score of 5 (as the *Synergistic* and *Holistic* CS levels were joined due to low number of responses in the latter category). The independent variables are: *%WomenBoard* – a percentage of female board members on board; *FemCEO* – a dummy variable taking a value of one if the CEO is a woman, and zero otherwise; *FemChair* – a dummy variable taking a value of one if the Chair of the board is a woman, and zero otherwise; *AvgageBoard* – the average age of the board members; *ExtCEO* – is a dummy variable taking a value of one if the CEO is external (not a member of the board) and zero otherwise; and *VolReporter* – a dummy variable taking a value of one if the firm reported on CS voluntarily before the NFRD, and zero otherwise. The control variables are: *SizeBoard* – size of the board; *ROA* – profitability calculated as return on assets; *Leverage* – calculated as long-term debt by total assets; and *FirmSize* – calculated as log of total assets

Source: Authors' own work

values are consistently below 5 in all estimated models (Wooldridge, 2021). *ExtCEO* is negatively correlated with *FemCEO*, which means that female CEOs are mostly insiders. We also note that neither the size of the firm nor the profitability measures are correlated with a CS level in our sample. Table 3 presents correlation matrix of the variables used in the study.

4.2 Drivers of a corporate sustainability level in private firms

We estimate equation (1) and start with testing the effect of firm-level characteristics on a firm’s CS level (column 1 of Table 4). We included *ROA*, *Leverage* and *FirmSize* in our regressions based on the argument that availability of financial resources may allow for higher CS ambitions. We find, however, that neither of these variables are significantly associated with a firm’s CS level, whereas CS reporting literature provides mixed results (Aguinis and Glavas, 2012; Dienes et al., 2016; Godos-Díez et al., 2018; Liao et al., 2015; Huang and Watson, 2015).

To formally test *H1–H5*, we estimate equation (1) with only the board characteristics variables and the voluntary reporting indicator (column 3 of Table 4) and in the next step a full model with the board characteristics, the voluntary reporting indicator and the firm-level characteristics as control variables (column 4 of Table 4). In both cases, we find support for *H2*, *H3* and *H5*. That is, coefficients for *FemCEO*, *FemChair* and *ExtCEO* are positive and statistically significant (with a *p*-value of less than 0.05 for *FemChair*, and a *p*-value of less than 0.10 for *FemCEO* and *ExtCEO*), which implies female Chair, female CEO and external CEO have a positive association with a firm’s CS level, while percentage of women on board and average age of board members do not have any significant association with a CS level. Specifically, the coefficient estimates presented in column 4 of Table 4 show that firms with female CEO, female Chair and external CEO are respectively 1.79, 1.34 and 0.86 times more likely to have a higher CS level, *ceteris paribus*.

Unlike most research in context of public firms, we do not find any association between board gender diversity and a firm’s CS level, but instead we document an impact of top leaders, i.e. female Chair and female CEO. Percentage of women on boards in our sample of private firms is relatively high (over 30% on average), and it is neither significant in untabulated tests that do not include *FemChair* and *FemCEO* in equation (1), nor is it significant in the full model of the study. These results could mean that, in private firms, the

Table 3. Correlation matrix

Variables	1	2	3	4	5	6	7	8	9	10	11
1 CSLevel	1										
2 %WomenBoard	0.14	1									
3 FemCEO	0.09	0.26*	1								
4 FemChair	0.17*	0.55*	0.01	1							
5 avgageBoard	0.01	−0.09	−0.1	−0.08	1						
6 ExtCEO	0.12	0.17*	−0.27*	0.15	0.18*	1					
7 SizeBoard	−0.05	0.01	0.02	0.14	0.12	0.26*	1				
8 VolReporter	0.02	0.15	−0.03	−0.06	−0.02	0.09	0.09	1			
9 ROA	0.08	−0.09	0.06	−0.19*	−0.02	−0.07	−0.26*	−0.14	1		
10 Leverage	−0.02	0.02	0.01	0.09	0.11	0	−0.04	−0.08	−0.09	1	
11 FirmSize	−0.09	−0.11	−0.1	−0.06	0.08	0.07	0.09	−0.19*	−0.08	0	1

Note: *Significant at 5% level

Source: Authors’ own work

Table 4. Corporate governance drivers of CS levels in Swedish private firms

	1	2	3	4
	Firm characteristics	Firm characteristics and voluntary reporters	Board characteristics and voluntary reporters	Full model
%WomenBoard	–	–	0.830 (0.579)	0.759 (0.543)
FemCEO	–	–	2.824* (1.619)	2.790* (1.633)
FemChair	–	–	2.129* (0.912)	2.338** (1.019)
avgageBoard	–	–	1.001 (0.030)	1.005 (0.030)
ExtCEO	–	–	1.903* (0.654)	1.860* (0.646)
SizeBoard	–	–	0.906 (0.058)	0.919 (0.062)
VolReporter	–	1.036 (0.356)	1.257 (0.444)	1.206 (0.443)
ROA	3.493 (3.894)	3.558 (4.023)	–	4.267 (5.260)
Leverage	0.920 (1.296)	0.937 (1.329)	–	0.523 (0.777)
FirmSize	0.924 (0.077)	0.925 (0.079)	–	0.955 (0.084)
Industry dummies	Yes	Yes	Yes	Yes
Num.Obs.	149	149	149	149
AIC	465.6	467.6	464.6	469.0
RMSE	2.86	2.86	2.86	2.86

Notes: Table 4 presents results of logistic regression (odds-ratio, i.e. exponentiated parameter estimates) explaining the CS level in a sample of 149 private Swedish firms embraced by a national sustainability reporting regulation following NFRD, based on a 2021 survey. CS levels are classified as *Pre-CS*, *Compliance-driven*, *Profit-driven*, *Caring*, *Synergistic* and *Holistic*, where the levels *Synergistic* and *Holistic* are merged into one category. The following independent variables are used in the models: %WomenBoard – a percentage of female board members on board and it is used to test *H1*; FemCEO – a dummy variable taking a value of one if the CEO is a woman, and zero otherwise, and it is used to test *H2*; FemChair – a dummy variable taking a value of one if the Chair of the board is a women, and zero otherwise, and it is used to test *H3*; AvgageBoard – the average age of the board members and it is used to test *H4*; ExtCEO – is a dummy variable taking a value of one if the CEO is external (not a member of the board) and zero otherwise, and it is used to test *H5*; and VolReporter – a dummy variable taking a value of 1 if the firm reported on CS voluntarily before the NFRD, and zero otherwise. Furthermore, we control for the size of the board with the variable SizeBoard, and firms' industry with the variable Industry based on Swedish Standard Industrial Classification (which are equivalent to EU Standard Industrial Classification), and other firm-level characteristics (i.e. profitability calculated as return on assets [ROA], leverage calculated as long-term debt by total assets [Leverage] and firm size calculated as log of total assets [FirmSize]). Standard robust errors in parenthesis; significance level * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Source: Authors' own work

top leaders have more impact on the firm than the entire board. This could also mean that the style of leadership is one way in which gender affects CS (Begum *et al.*, 2020; Nabi *et al.*, 2023). These findings are also consistent with previous research which investigated board impact in more nuanced ways focusing on female board members with executive roles driving the CS (Cambrea *et al.*, 2023; Cordeiro, *et al.*, 2020; McGuinness *et al.*, 2017), whereas most of previous research focused solely on the percentage of female directors.

Results concerning positive association between external CEO and a CS level in our study are consistent with the view that presence of external CEOs may be a controlling mechanism reducing potential entrenchment effects of controlling owners (Villalonga, 2018; Ma, 2023; Gomez-Mejia *et al.*, 2018), and can motivate the use of CS to build the firm’s reputation (Masulis and Reza, 2015; Villalonga, 2018).

To test *H6*, i.e. whether early voluntary reporting is associated with a higher CS level, we estimate equation (1) using firm-level characteristics and the voluntary reporting indicator variable (column 2 of Table 4), alternatively, the board characteristics and the voluntary reporting indicator variable (column 3 of Table 4), and finally, we refer to the full model (column 4 of Table 4). In neither of the cases, voluntary early reporting has any significant association with a CS level. Therefore, we do not find any evidence that early voluntary reporting is associated with a CS level, which seems to be inconsistent with scant research on the positive impact of reporting on CS (Ann, 2023; Hu and Zhang, 2023). One possible explanation of these results is that reporting choices of private firms before the reform were driven by pressure from public firms in their value chains, without any real effects on CS level.

Finally, to test *H7* concerning a stronger effect of NFRD on mandatory-adopters vs early voluntary-reporters we investigate the cross tabs (Table 5) on survey questions with intertemporal dimension concerning changes in resources spent on CS activities and CS reporting as result of the NFRD [6]. We find some weak results confirming the hypothesis (corroborated by Chi-square tests of difference in response between mandatory-adopters and early voluntary-reporters) that resources spent on CS reporting and CS activities mostly increased for mandatory-adopters (44% of mandatory-adopters report an increase for CS

Table 5. Regulatory effect on resource allocation on CS activities and reporting

		Resource allocation		
Voluntary reporter	Decrease	No change	Increase	Total
<i>Panel Va: Regulatory effect on resource allocation to CS activities</i>				
No	7	54	47	108
	6.5%	50%	43.5%	100%
Yes	0	26	13	39
	0%	66.7%	33.3%	100%
<i>Total</i>	7	80	60	147
	4.8%	54.4%	40.8%	100%
$\chi^2 = 4.719$, df = 2, Cramer's V = 0.179, Fisher's $p = 0.109$				
<i>Panel Vb: Regulatory effect on resource allocation to CS reporting</i>				
		Resource allocation		
Voluntary reporter	Decrease	No change	Increase	Total
No	25	37	46	108
	23.1%	34.3%	42.6%	100%
Yes	15	19	5	39
	38.5%	48.7%	12.8%	100%
<i>Total</i>	40	56	51	147
	27.2%	38.1%	34.7%	100%
$\chi^2 = 11.362$, df = 2, Cramer's V = 0.278, Fisher's $s\text{-}p = 0.003$				

Notes: The following table presents answers to survey questions: “How did this new regulation affect your firm’s resource allocation to corporate sustainability: i) activities and ii) reporting?”

Source: Authors’ own work

activities, while 43% report an increase for CS reporting), as compared with early voluntary-reporters (an increase in CS activities was reported by 33% of firms, and an increase in CS reporting by 13% of firms), which could point at the effectiveness of NFRD. Simultaneously, we observe that many early voluntary-reporters report no change in CS activities (67%) and CS reporting (49%) following NFRD, while a significant number of mandatory-adopters also report no change (50% for CS activities and 34% for CS reporting), underscoring the need for additional regulation, such as CSRD.

4.3 Sensitivity analysis

To investigate if our results are sensitive to model specification, we first re-estimate [equation \(1\)](#) with six-level CS using ordered logistic estimation (column 1 of [Table 6](#)). We then use ordinary least squares (OLS) regression to estimate [equation \(1\)](#), first with six-level CS (column 2 of [Table 6](#)), second with five-level CS (column 3 of [Table 6](#)) and lastly with the average score of the three raters which is essentially a continuous variable (column 4 of [Table 6](#)). Results from the sensitivity analysis for alternative model specifications are similar to the conclusions from our main analysis [\[7\]](#).

5. Summary and conclusions

Our study was motivated with a scarcity of evidence on board governance drivers of CS levels in private firms, and a previous focus on CS reporting in public firms with reliance on archival data ([Afeltra et al., 2022](#); [Al Lawati and Alshabibi, 2023](#); [Beretta et al., 2023](#)). We conducted a survey of CEOs, CFOs and Environmental Officers of Swedish private firms impacted by the implementation of the NFRD, using a unique Swedish setting. We used the six-transcending CS level framework proposed by [van Marrewijk and Werre \(2003\)](#) to code firms' CS levels. We contribute to the CS literature by investigating board characteristics as drivers of CS levels in private firms, and the effects of the NFRD on CS through the Swedish implementation of the reform.

As Sweden has a long-standing history of CS rooted in culture and norms ([Matten and Moon, 2008](#); [Gjølberg, 2009](#); [Gjølberg, 2010](#)), we expected to observe a large number of firms with high CS levels (e.g. *Caring, Synergistic or Holistic*). Surprisingly, we find that most private firms in our sample had a *Profit-driven* CS level, which could potentially be attributed to resource constraints of private firms.

When it comes to the drivers of a firm's CS level, our main findings are that firms with a female Chair, female CEO or external CEO are associated with a higher CS level. On the other hand, diversity on board in terms of percentage of women and age of the board members do not significantly affect a firm's CS level. We attribute the impact of female leaders rather than percentage of women on board to the potentially stronger role of the Chair and CEO in private firms, as compared with more board power in public firms. Furthermore, research in public firms' setting focus mostly on percentage of women on board potentially due to relatively low number of female Chairs and female CEOs. Thus, our finding on association between women in leadership variables and a firm's CS level constitute an incremental contribution in a new context. Finally, our evidence on a positive association between external CEO and a CS level offers new evidence on the potential role of external leadership for sustainability in private firms.

Voluntary reporting in private firms, at least in some cases, may be driven by pressures from public firms in the private firm's value chain. Unlike some earlier research on positive effects of voluntary CS reporting ([Ann, 2023](#)), we find that voluntary CS reporting does not have a significant impact on a private firm's CS level. However, we further note that the NFRD impacted mandatory-adopters significantly more than early voluntary-reporters in terms of

Table 6. Sensitivity analysis

	1	2	3	4
	Logit		OLS	
Dependent variable: CS levels	Six levels	Six levels	Five levels	Avg of 3 raters
%WomenBoard	−0.246 (0.716)	−0.197 (0.489)	−0.234 (0.480)	−0.208 (0.487)
FemCEO	1.006* (0.584)	0.649 (0.404)	0.663* (0.397)	0.588 (0.403)
FemChair	0.851* (0.435)	0.595** (0.295)	0.557* (0.289)	0.573* (0.294)
avgageBoard	0.006 (0.030)	0.010 (0.021)	0.007 (0.021)	0.011 (0.021)
ExtCEO	0.617* (0.347)	0.400* (0.237)	0.395* (0.233)	0.324 (0.236)
SizeBoard	−0.081 (0.068)	−0.048 (0.047)	−0.054 (0.046)	−0.039 (0.047)
VolReporter	0.189 (0.368)	0.104 (0.252)	0.093 (0.248)	0.110 (0.251)
ROA	1.506 (1.236)	1.123 (0.890)	0.997 (0.873)	1.063 (0.886)
Leverage	−0.669 (1.483)	−0.391 (1.015)	−0.317 (0.995)	−0.442 (1.010)
FirmSize	−0.045 (0.088)	−0.036 (0.061)	−0.037 (0.059)	−0.031 (0.060)
Industry dummies	Yes	Yes	Yes	Yes
Num.Obs.	149	149	149	149
R ²	—	0.097	0.090	0.079
R ² Adj.	—	0.024	0.017	0.005
AIC	480.9	503.8	498.0	502.5
F	—	1.336	1.232	1.069
RMSE	2.92	1.20	1.18	1.20

Notes: Table 6 presents results from the sensitivity analyses. In column 1, estimations from logistic regression (odds-ratio, i.e. exponentiated parameter estimates) and in column 2, estimates from OLS using six-levels of CS (i.e. *Pre-CS*, *Compliance-driven*, *Profit-driven*, *Caring*, *Synergistic* and *Holistic*). In column 3, estimates from OLS using five-levels of CS, where the levels *Synergistic* and *Holistic* are merged into one category and in column 4, estimates from OLS using the average score from three raters. The following independent variables are used in the models: *%WomenBoard* – a percentage of female board members on; *FemCEO* – a dummy variable taking a value of one if the CEO is a woman, and zero otherwise; *FemChair* – a dummy variable taking a value of one if the Chair of the board is a women, and zero otherwise; *AvgageBoard* – the average age of the board members; *ExtCEO* – is a dummy variable taking a value of one if the CEO is external and zero otherwise; and *VolReporter* – a dummy variable taking a value of 1 if the firm reported on CS voluntarily before the NFRD, and zero otherwise. Furthermore, we control for the size of the board with the variable *SizeBoard*, and firms’ industry with the variable *Industry* based on Swedish Standard Industrial Classification (which are equivalent to EU Standard Industrial Classification), and other firm-level characteristics (i.e. profitability calculated as return on assets [*ROA*], leverage calculated as long-term debt by total assets [*Leverage*] and firm size calculated as log of total assets [*FirmSize*]). Standard robust errors in parenthesis; significance level * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Source: Authors’ own work

increase in resources spent on CS activities and CS reporting. At the same time, many firms reported no impact of the NFRD, which backs up claims that more regulations, such as CSRD with adjacent reporting standards, are needed. Our research also aligns with some recent evidence on real effects of mandatory reporting (e.g. [Hummel and Bauernhofer, 2024](#)).

Overall, our findings suggest that corporate governance and regulations can work together toward increasing firms' CS levels.

Our findings may have implications for regulators, firms and other stakeholders that are interested in CS and corporate governance issues related to CS. Current CS regulations primarily focus on CS reporting. However, if regulators and other stakeholders want to create a context where firms commit to a *Caring, Synergistic or Holistic* levels of CS then the regulations may not suffice. In other words, to encourage firms to engage in CS beyond a *Profit-driven* level, institutional forces could also foster a more diverse governance structure, particularly in leadership positions.

Future studies can benefit from more in-depth analysis of why private firms with *female* Chair and *female* top executives have higher CS level and how this affects a firm's CS initiatives and a firm's bottom line. Future studies can also test how the relationships that were found significant in a Swedish context relate to other contexts. For example, even though the Nordic countries are very similar, they have very different CS mindsets (Gjølberg, 2010). The CS context is also different between the USA and Europe (Matten and Moon, 2008), or between countries of common law origin and civil law origin (Liang and Renneboog, 2017). Future studies can also benefit from uncovering various individual-level factors that may influence a firm's CS level (Aguinis and Glavas, 2012).

Notes

1. The EU directive 2014/95/EU stipulated the rules of disclosure on non-financial and diversity information for large firms and require firms to include non-financial statements in their annual reports from the 2017 financial year and onward. In most countries, NFRD was restricted to listed firms only, whereas in Sweden all firms (including non-listed firms) meeting two of three criteria in two consecutive years of 250 employees, turnover over 350 mSEK (ca 35 mEUR), and a balance sheet over 175 mSEK (ca 17.5 mEUR), were embraced too. Other countries which included also private firms of certain size in the mandate were Iceland and Greece. The firms covered by NFRD in Sweden correspond to 3% of all limited firms, 1.05 million employees (~ 45% of private sector workforce) and 4,470 billion SEK in net-turnover (~ two thirds of the total net turnover of the business sector). Furthermore, 62% of value is created by these firms, 58% of all fixed assets, 67% of the business sector's carbon dioxide emissions, and 58% of other greenhouse gases (Tillväxtanalys, 2018).
2. See questions 4-6 and 8-9 in the Appendix A1 of supplementary materials.
3. The survey was prepared in two languages, Swedish and English, and the respondents were given the choice to choose language (out of 149 usable responses, three were returned in English).
4. The independent coding was proceeded by joint coding of five randomly chosen responses. The independent coding by the three researchers showed high congruence and the three confusion matrices are presented in Appendix A2 of the supplementary files.
5. Thus, average scores of "1" and "1.33" were rounded to one, average scores of "1.67", "2" and "2.33" were rounded to 2, and so on.
6. Two responses were not available for the questions relevant for H7, and thus the sample size is reduced to 147 responses in Table 5.
7. Additionally, ad-hoc analysis motivated by the survey non-response literature (Drew and Fuller, 1980, 1981; Lin and Schaeffer, 1995; Potthoff, *et al*, 1993; Suchman, 1962) showed that the impact of selection-bias can be claimed to be limited. For example, we find that late-responding firms (our proxy for non-respondents), do not differ in terms of CS levels from early-responding firms. Operationalization and results are presented in Appendix A3 of supplementary materials.

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Supplementary material

The supplementary material for this article can be found online.

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