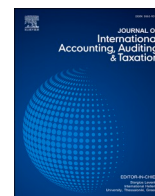




Contents lists available at ScienceDirect

Journal of International Accounting, Auditing and Taxation



CSR reporting, assurance, and firm value and risk: The moderating effects of CSR committees and executive compensation

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ARTICLE INFO

JEL classifications:

M41

M14

L25

Keywords:

CSR reporting

Assurance

Firm value

Firm risk

CSR committee

Executive CSR compensation

ABSTRACT

This study focuses on the value-generating and risk-reducing function of corporate social responsibility (CSR) reporting, assurance, and Global Reporting Initiative (GRI) adoption by considering the moderating effects of CSR committees and executive CSR compensation. We retrieved an international dataset of 58,105 firm-year observations from the Thomson Reuters Eikon database over a long period of 16 years between 2004 and 2019. We find that while CSR reporting and external assurance are positively associated with firm value and industry-adjusted firm value, they are negatively associated with firm value volatility (i.e., risk). However, even though following GRI guidelines is not associated with firm value or industry-adjusted firm value, it is negatively associated with firm risk. Moderation analysis reveals that while CSR committees help strengthen the relationship between CSR reporting and external assurance and firm value, they fail to moderate the relation between GRI framework adoption and firm value. Furthermore, there are no significant results on the moderating effect of executive CSR compensation on firm value in any of the model configurations. However, further tests show that executive CSR compensation has a positive moderating effect between CSR reporting and assurance and accounting performance. Robustness tests confirm that the findings are largely robust to alternative sampling, methodology, and additional control variables.

1. Introduction

Corporate social responsibility (CSR) has become an essential part of normal business practices. However, does reporting CSR activities magnify stockholders' value or lower firm value by over-focusing on other stakeholders' interests? Prior research has examined whether CSR affects firms' financial performance (Orlitzky et al., 2003; Van Beurden & Gossling, 2008), but the results are mixed. Disparities in the evidence might be attributed to differences in the dimensions of CSR observed, differences in the financial measures applied, methodological concerns, the employed dataset, or overlooking the channels by which CSR affects firm value.

While various CSR studies use accounting returns measures (Moufry et al., 2021; Orlitzky et al., 2003) and provide valuable insights, they do not reflect the growth opportunities of the firm as they are mostly backwards-looking (Benston, 1982). Therefore, focusing merely on

accounting returns to show the financial implications of CSR reporting may not fully capture CSR's effect on firm outcomes. Market value measures are forward-looking and more relevant for studying the implications of CSR for stockholders (Gregory et al., 2014). Therefore, to understand the financial implications of CSR reporting, we focus on firm value. Relatively few studies have used firm value as the basis for their analysis of the relation between CSR activities and firm value (Gregory et al., 2014; Jo & Harjoto, 2011, 2012; Servaes & Tamayo, 2013). These studies have found mixed results; while some find a positive relationship between CSR and firm value, others find the opposite relation. In this paper, we extend this literature and triangulate prior research findings using an international company dataset to investigate how CSR reporting, external assurance of the CSR report by a third party, and the adoption of the Global Reporting Initiative (GRI) framework in CSR reporting might impact firm value.

CSR reporting is a structured method by which firms document

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<https://doi.org/10.1016/j.intaccudtax.2023.100579>

Available online 20 September 2023

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quantitative and qualitative information on financial, social, and environmental performance, providing additional information that is relevant to stakeholders whose interests are broader than stockholders' focus on financial performance focus. Even though CSR reporting is not mandatory in many jurisdictions, companies face increasing pressure to prove that they are responsible corporate citizens. The increase in CSR reporting raises important research questions. For example, what benefits do firms gain by spending resources on collecting CSR data and issuing CSR reports? Do these activities increase firm value or reduce firm risk? (Dhaliwal et al., 2011). The primary goal of CSR reporting is not to enhance market value, but such reporting communicates how non-financial factors interact with financial ones and eventually drive a firm's value (Mock et al., 2013). Moreover, CSR reporting can mitigate firm risk by addressing environmental and social risks (Karaman et al., 2021). For instance, better employee relations can reduce the risk of labor disruption, and reporting pollution-prevention activities can reduce the risk of fines. The increasing trend of CSR reporting implies that managers are encouraged to engage in it due to its value-enhancing and risk-mitigating effects (Malik, 2015).

As CSR reporting has become more common, some have argued that third-party assurance of CSR reports is a valuable tool to address concerns about the credibility of the reported information (Simnett et al., 2009). Corporations have increasingly provided CSR reports by a third party (Mock et al., 2013), as there is evidence that external assurance enhances CSR reporting quality through restatement frequency (Ballou et al., 2018). CSR reports without assurance are less valuable to stakeholders, as independent assurance reflects a commitment to credibility and ensures confidence in CSR reporting (Al-Shaer & Zaman, 2019). Therefore, stakeholders may consider adopting CSR report assurance as a reliable indicator that firms have an ethical commitment to making sound investment decisions and guiding societal scrutiny (Bui et al., 2021). Despite the growing practice of CSR reporting assurance and the potential benefits reported in the academic literature (Al-Shaer & Zaman, 2019; Pflugrath et al., 2011), there are few studies on the economic effects of the assurance of CSR reports (Caglio et al., 2020). For example, using a sample of large firms over a single year, Cho et al. (2014) examine the relationship between CSR report assurance and firm value and show that assurance is not associated with higher firm value. Clarkson et al. (2019) find that the capital markets do not place a significant value on CSR report assurance, while García-Sánchez et al. (2019) find that CSR report assurance strengthens the relationship between CSR reporting and access to capital.

Our contribution is to provide evidence on the relationship between CSR reporting assurance and firm value and risk, using an international dataset. We expect that the increased user confidence in the credibility of the disclosed CSR information in the externally assured reports (Al-Shaer and Zaman, 2019; Simnett et al., 2009) will be reflected in increased firm value and reduced firm risk. We also extend prior studies by testing the moderating effect of two CSR mechanisms (CSR committees and executive CSR compensation) between CSR reporting, assurance, and GRI adoption and firm value. Hence, we draw attention to the role of internal contingencies in the hypothesized connection between CSR reporting practices and firm outcomes.¹

This paper contributes to existing literature on the debate about the implications of CSR reporting practices for firm value and risk. It also sheds light on the role of corporate governance in translating CSR reporting practices into firm value. First, the paper focuses on the less-studied CSR dimensions, namely CSR reporting, external assurance, and GRI adoption. Criticizing the mainstream CSR research that ignores CSR reporting, Cho et al. (2015, p. 15) state that "the authors are either unaware of, or unwilling to acknowledge, the body of research that investigates both the early CSR reporting and, more generally, corporate

social and environmental disclosure over the past three decades." Unlike previous research that merely investigates the effect of CSR reporting on firm value (Jones et al., 2007; Orlitzky et al., 2003), we consider the firms' CSR reporting practices as well by investigating whether they follow GRI guidelines and seek external assurance. Therefore, we extend this literature by investigating not only the relationship between CSR reporting and firm value, but also how external assurance and GRI adoption affect firm value. While firm value is very relevant to stockholders, we argue that it is also important to understand the relationship of CSR reporting with industry-adjusted firm value² and firm value volatility. In this way, we contribute to the debate on the relationship between CSR reporting and firm risk. Therefore, we investigate the effect of CSR reporting, external assurance, and GRI adoption on firm value volatility, measured by the 3-year rolling standard deviation of Tobin's Q (Adachi-Sato & Vithessonthi, 2019), to identify how risk exposures differ with CSR reporting practices.

Second, we focus on firm market value, which is not only highly relevant to investors, but also relevant to knowing more about the source of that value. Unlike accounting-based returns measures, the market value measured by Tobin's Q is an important metric of firm performance as it incorporates market opinion about the firm's future cash flow and risk, representing a forward-looking market valuation. A higher Tobin's Q value shows that managers can create greater market value from the same underlying assets (Buchanan et al., 2018). Ding et al. (2016) report a significant difference in the relationship between CSR and firm value across industries; thus, they recommend that researchers carefully consider the industry-specific relationship between CSR and firm value. Hence, we investigate the effect of CSR reporting on industry-adjusted Tobin's Q due to its incorporation of industry-specific peculiarities into firm value (Bebchuk et al., 2011; Ting, 2020).

Third, the paper expands on small, single-country, industry-specific, or short-term studies³ by triangulating prior research findings using an international dataset of 58,105 firm-year observations over the 16-year period between 2004 and 2019. We also use fixed-effects (FE) models to address model misspecification problems. Due to the time-variant functional relationship feature of the independent and dependent variables, we applied the panel data regression analysis to alleviate the possible risk of multicollinearity and the estimation bias. To address endogeneity concerns, we also ran a robustness test by using two-stage least squares (2SLS) analysis. We draw on the signaling, agency, and resource dependency theories to begin disentangling how CSR reporting might affect firm value and risk.

Fourth, studies investigating the effect of CSR reporting on firm value have mainly focused on the direct relationship rather than the channels through which CSR reporting could affect firm value. The link between CSR reporting and firm value is more than just a direct link, and governance mechanisms related to CSR issues have not yet been sufficiently researched (Al-Shaer & Zaman, 2019). This paper contributes to the literature by considering the moderating role of the CSR committee and the executive CSR compensation policy. We provide more persuasive economic evidence that investors care about CSR reporting and assurance by identifying the specific theoretical mechanism whereby CSR reporting and assurance could be positively associated with firm value. Furthermore, despite the growing interest in CSR governance (Hussain et al., 2018), little is known about how the CSR governance channels affect CSR reporting. Previously, Kılıç et al. (2021b) and Radu and Smaili (2021) considered the role of the CSR committee and/or executive compensation on CSR outcomes but did not test their moderating effect between CSR reporting practices and firm value, as we do in this study. Hence, we explore their value-enhancing role in CSR reporting efforts. By examining the moderating effects, we highlight the

¹ Throughout the text, we sometimes use "CSR reporting practices" to refer to CSR reporting, assurance, and GRI adoption practices.

² We use industry-adjusted firm value as an alternative proxy of firm value in the robustness tests.

³ We acknowledge their valuable contributions to the literature.

importance of firms' contingencies in pursuing CSR goals and leveraging CSR for firm market value.

We find that while CSR reporting and external assurance increase firm value and industry-adjusted firm value, they reduce firm value volatility and thereby help firms reduce risk. However, following GRI guidelines does not necessarily enhance firm value and industry-adjusted firm value, even though it reduces firm value volatility. Moderation analysis reveals that while CSR committees help strengthen the relationship between CSR reporting and external assurance and firm value, they fail to moderate the relation between the GRI framework and firm value. Furthermore, executive CSR compensation yields no significant results in any of the model configurations. These findings have many practical and research implications, which we discuss in the last section of the paper.

The paper is structured as follows. In [Section 2](#), we introduce the theoretical framing upon which our hypotheses are developed. In [Section 3](#), we discuss the research methodology, data collection procedure, variable construction, and the models employed for hypothesis testing. In [Section 4](#), we present our findings. [Sections 5 and 6](#) conclude the paper, discussing the results, suggesting the implications of this research for researchers and managers, and proposing avenues for further research.

2. Theoretical background and hypotheses development

By adopting different theoretical perspectives, the empirical literature reports evidence supporting both negative and positive effects of CSR reporting on firm value. Some studies suggest that CSR information is value relevant as it reduces information asymmetry and uncertainty related to factors that affect firm value ([Orlitzky et al., 2003](#)) by providing useful information for stockholders in evaluating companies' long-term sustainability. For example, [Murray et al. \(2006\)](#) find that CSR reporting correlates with higher market valuation. The issuance of stand-alone CSR reporting is found to have a positive impact on the firm's cost of capital ([Dhaliwal et al., 2011, 2012](#)). In contrast, [Jones et al. \(2007\)](#) find that CSR reporting has a weak negative association with longer-term market valuation. Additionally, CSR reports have also been criticized for not providing meaningful information ([Gray, 2006](#)); thus, it is not clear that CSR reporting should be expected to relate to firm value. However, CSR reports send a positive signal to various stakeholders and improve the value relevance of disclosed information. CSR reporting demonstrates companies' commitment to improving transparency and indicates the company's confidence in CSR performance.

In investigating CSR reporting, researchers have adopted numerous theories such as economic incentives, public pressures, and institutional theories ([Cormier et al., 2005](#)). According to theories of economic incentives, CSR reporting is motivated by the degree of management's accountability to a specific stakeholder group. Companies report high-quality CSR information, adopt GRI standards, and get external assurance in order to minimize the cost of capital, increase firm value, and reduce firm risk, as management is accountable to shareholders. Mainstream economic-based research relies on agency theory, which considers CSR reporting to be valuable to stockholders ([Clarkson et al., 2008; Dhaliwal et al., 2012](#)). According to the public pressure perspective, CSR reporting is driven by accountability to the wider groups of other stakeholders in the societal context. Social accounting studies principally consider CSR reporting as a symbolic legitimacy mechanism ([Cho & Patten, 2007](#)). According to institutional theory, CSR reporting is driven by accountability to the country- or company-specific institutional context ([Cormier et al., 2005](#)). Overall, the effect of CSR on firm value is contingent on the CSR information's ability to influence firm stakeholders ([Barnett, 2007](#)). We concentrate on one group of key stakeholders (i.e., stockholders) and argue that a necessary condition for CSR to affect firm value and risk is stockholders' awareness of firm CSR activities through reliable reporting.

While CSR reporting is important to the wider stakeholder groups, stockholders are more concerned about where and how their money is invested. Increasingly, investors reward companies that report good CSR by investing in them, reflecting their preference to invest in socially responsible companies. CSR reporting reflects the ways firms regard their impact on the world beyond the narrow profit-and-loss perspective. As some firms tend to use CSR reporting as a means of impression management or greenwashing, investors increasingly demand far more authentic information. Therefore, investors are increasingly interested in credible CSR reporting, as it shows more transparency in disclosing key CSR metrics and thus decreases the risk in a particular investment. Recent research emphasizes the potential value of CSR to shareholders ([El Ghouli et al., 2017](#)). Investors might encourage managers to spend on CSR ([Flammer et al., 2019](#)), and they might purposely intervene to put managerial compensation at risk to encourage more CSR ([Mackey et al., 2022](#)).

From a theoretical standpoint, when examining the impact of CSR reporting on the financial value of firms, it is important to consider investors' perceptions of CSR as a factor exogenously determined by the cultural context ([Rehman et al., 2021](#)). Informal institutions, such as national culture and religion, enforce control over formal institutions and governance structure, indirectly affecting investors' resource allocation decisions ([Shao et al., 2013](#)). CSR is more positively related to firm value in countries with weaker market institutions, which signals CSR's substitution effect for weak institutions ([El Ghouli et al., 2017](#)). CSR can mean slightly different things to stockholders across different international contexts, as there are nuances in how investors consider firms' CSR. Therefore, shareholders have reason to favor governance mechanisms such as standardized GRI reporting, external assurance, CSR committees, and CSR-based compensation to reduce the managers' self-interested behavior.

Overall, CSR is a broad field, and a single theoretical understanding is unlikely to address all facets of CSR issues ([Frynas & Yamahaki, 2016](#)). [Frynas and Yamahaki \(2016\)](#) conclude that more research is needed to integrate a combination of theories to offer more robust empirical testing to explain CSR issues, since theoretical perspectives on CSR are sometimes competing or overlapping. As our focus in this research is on the stockholders' perspective, the most appropriate theoretical perspectives with which to examine our hypotheses are the economic incentives-based agency theory (asymmetry of information, conflict of interest), the resource dependence theory, and signaling theory.

2.1. The effects of CSR reporting, assurance, and GRI framework on firm value and firm risk

How stockholders perceive CSR is important, as the credibility and trustworthiness of the information reported can make it more relevant to shareholders. However, it is difficult for outsider stakeholders to directly assess trustworthiness; thus, trustworthiness signals are important when communicating with stakeholders ([Aqueveque, 2005](#)). Prior studies have flagged the need for more research on the association between CSR reporting and signaling ([Hahn & Kühnen, 2013](#)), and signaling theory is considered a vital approach to understanding the effects of CSR reporting. Still, there is little evidence of this approach in the CSR reporting literature. According to signaling theory, CSR reporting is used to signal better CSR performance to the stockholders, and GRI adoption and reporting external assurance increase the perceived credibility of the reported CSR information. Companies with better CSR performance have incentives to use CSR reports to signal their latent CSR performance to stockholders ([Clarkson et al., 2008](#)). These signals can increase firm value as they inform stockholders about CSR performance, which is not directly observable. Moreover, CSR report assurance might be motivated by market economic factors to alleviate the concerns about CSR reporting credibility and to add seriousness to the CSR reports and the message conveyed ([Mock et al., 2013](#)). Only companies committed to genuine and extensive CSR reporting are expected to incur the

additional expense of costly independent assurance (Cho et al., 2014).

The GRI has developed a global reporting framework for sustainability reporting to assist companies in more systematically measuring and communicating sustainability issues, which makes the reports more useful to stakeholders (Clarkson et al., 2008). It is the most widely adopted standard companies use to signal the reliability of their reported CSR information and to show a higher level of CSR commitment. Investors and other stakeholders are demanding greater transparency about businesses' triple bottom line performance, and enhanced CSR reporting via GRI reduces information asymmetry between managers and investors and potentially affects firm value (Sampong et al., 2018). There is also evidence that GRI adoption enhances CSR report quality (Ballou et al., 2018). Prior research has found a significant association between CSR disclosure under GRI guidelines and higher firm value and lower volatility. For example, Schadewitz and Niskala (2010) note that reporting via GRI is one of the most important communication tools to alleviate information asymmetry between a firm and its investors and other stakeholders while enhancing firm value. The standardization resulting from GRI adoption improves CSR reporting quality and provides a common ground for companies to be assessed according to an internationally accepted standard, which is vital for performance evaluation (Kuzey & Uyar, 2017). Supporters of GRI confirm that CSR reporting via GRI offers companies a range of intangible benefits, such as employee loyalty and consumer reputation, and ultimately affects firm value (Sampong et al., 2018). The scarce academic literature and the institutions offering standards, such as the GRI, agree that GRI reporting affects firm value and risk (Clarkson et al., 2008). However, empirical evidence for the value relevance of GRI reporting, which remains relatively unaddressed in the academic literature, is still lacking. Similarly, only limited research uses GRI standards to investigate the influence of CSR disclosure on firm value (Sampong et al., 2018). We help to fill this void by incorporating GRI adoption into our research design as an important element of CSR reporting.

Furthermore, the adoption of GRI also has signaling effects; thus, CSR reports prepared according to GRI represent a strategic means of engaging with investors interested in socially responsible practices. GRI guidelines may enrich CSR reports by suggesting a structured report format that consistently discloses the same indicators in a similar manner. This enables consistency across periods and firms and hence improves the value-relevance of CSR reports. Adoption of GRI guidelines indicates a higher level of international harmonization that promotes worldwide comparability. The taxonomic approach of the GRI allows users to compare indicators published by firms according to an internationally accepted standard over time (Sampong et al., 2018). This increases the relevance and usefulness of reported information and prevents firms from reporting good performance indicators while omitting bad ones, mitigating impression-management risks. Thus, academics consider GRI to be a driver of firm value (Kuzey & Uyar, 2017). Stock market participants attribute a higher value to the companies with CSR reports, especially reports that are prepared according to GRI standards and externally assured (Uyar et al., 2022).

Agency theory addresses the conflict of interest between principals and agents and considers how different governance mechanisms can help to overcome this problem (Jensen & Meckling, 1976). Agency theory has been employed to examine the association between executive compensation and CSR performance (Deckop et al., 2006). As a potential source of an agency conflict between managers and shareholders, managers tend to overinvest in CSR at the expense of shareholders to increase their reputation in the market as socially responsible managers; this could represent costly value-destroying diversions of a company's resources (Hillman & Keim, 2001; Jo & Harjoto, 2011). However, the conflict resolution concept clarifies that CSR reporting can lead to high firm value by reducing conflicts of interest between managers and stockholders (Jo & Harjoto, 2012; Servaes & Tamayo, 2013). This leads to the following hypothesis concerning firm value:

H1a: CSR reporting, assurance, and GRI framework adoption improve firm value and industry-adjusted firm value

According to signaling theory, CSR reporting could reduce information asymmetry between the firm and its stockholders (Connelly et al., 2011). CSR reporting improves transparency as it provides additional non-financial information to the financial markets. Because CSR reporting reduces information asymmetry regarding CSR activities between insiders and outsiders, with implications for positive future cash flows, it is expected to increase firm value (Dhaliwal et al., 2011). Research in the accounting literature supports this perspective. For example, Fuhrmann et al. (2017) provide evidence that the assurance of CSR reports enhances the credibility of the report and results in lower information asymmetries, measured by bid-ask spreads. Similarly, Xu and Liu (2018) provide evidence of an association between CSR disclosure and reduced share price volatility, showing that share price volatility after CSR disclosure is lower than before CSR disclosure. They confirm that better CSR disclosure leads to a reduction in information asymmetry. Finally, Velte (2021) motivates the current analysis by calling for research on CSR assurance and firm value volatility. We respond to his call to analyze whether CSR assurance decreases information asymmetry and agency conflicts (e.g., stock price volatility).

Hence, we posit that CSR reporting can reduce information asymmetry between managers and stockholders, which makes it more likely that investors will be aware of the company's CSR involvement and reward the company for its CSR efforts through their willingness to pay a premium (Richardson & Welker, 2001). If stockholders can use CSR reporting to deduce which companies make serious CSR commitments, they can reward such companies with higher valuations (Barnett, 2007; Barnett & Salomon, 2012). In contrast, the informationally disadvantaged stockholders become less willing to trade to price-protect themselves. The preceding logic suggests that CSR reporting, assurance, and GRI adoption affect firm value and its volatility. This leads to the following hypothesis concerning firm risk:

H1b: CSR reporting, assurance, and GRI framework adoption reduce firm value volatility (firm risk)

2.2. The moderating effects of CSR committees and executive CSR compensation policies

Corporate governance research has established that boards of directors play an essential role in setting corporate CSR strategies (Jain & Jamali, 2016). Companies create different board committees, including CSR/sustainability committees, that reflect corporate policies on specific tasks. Companies create CSR committees to show commitment to stakeholders by addressing social and environmental risks and strategy issues (Liao et al., 2015). The presence of a CSR committee may reflect the firm's careful consideration of CSR (Ayuso et al., 2014; Jain & Zaman, 2020). Therefore, we expect the presence of a CSR committee to moderate the relationship between CSR reporting practices and firm value and risks, as it reduces irresponsible firm behavior. In addition, executive compensation consists of several elements, and extra financial compensation for CSR achievements also reflects the firm's commitment to CSR (Derchi et al., 2021; Haque & Ntim, 2020). We argue that in firms with CSR-based compensation elements, CSR reporting practices will have a significant influence on firm value. Executives who receive CSR-based compensation are more incentivized to pursue CSR goals and translate those efforts into greater market value.

According to impression-management theory, CSR reporting can signal a symbolic impression that a firm is conveying valuable information to outsiders to manage its economic position (Neu et al., 1998). However, establishing internal governance mechanisms associated with CSR activities might mitigate impression-management concerns. Hence, following prior studies, we use two primary corporate CSR mechanisms associated with CSR reporting: a CSR committee and a CSR-based

compensation policy (García-Sánchez et al., 2022; Kılıç et al., 2021b; Radu & Smaili, 2021). Prior studies highlight the positive role of CSR committees in stimulating firms to obtain a third-party assurance for their CSR reports (García-Sánchez et al., 2022; Velte, 2021). Thus, having a CSR committee and a CSR-based compensation policy could eliminate impression-management concerns and strengthen the effect of CSR reporting on firm value. High-sustainability firms are more likely to establish a separate board CSR committee for sustainability (Eccles et al., 2014) and link the executives' financial compensation to CSR targets (Haque & Ntim, 2020).

The resource dependence theory (Pfeffer & Salancik, 1978) indicates that companies depend on their surroundings to ensure the availability of the critical resources they require. The resource dependence theory emphasizes the role of the board of directors and its committees to ensure the firm's access to critical resources (skills, knowledge, expertise, or legitimacy) (de Villiers et al., 2011). For example, this theory can explain why companies that depend on CSR committee expertise pay attention to CSR reporting matters. According to resource dependence theory, the board of directors and its committees act as resource providers offering access to critical resources needed for company survival (Pfeffer, 1972). The CSR committee brings to the board new valuable knowledge, skills, and expert resources that play a significant role in enhancing the CSR reporting quality, offering better CSR information to stockholders, and strengthening its effect on firm value. CSR committee members with relevant experience and expertise may leverage their external connections to build relations, develop CSR projects, and identify CSR initiatives that stockholders expect (Kılıç et al., 2021b). Valle et al. (2019) argue that the presence of a CSR committee is the most important reflection of a company's true CSR commitment. The well-balanced CSR committee, consisting of a small group of directors with previous CSR knowledge or experience, directs management actions toward CSR requirements and prevents shareholders from interpreting CSR reporting as window dressing (Valle et al., 2019). Companies with a CSR committee are more likely to offer more comprehensive (Michelon & Parbonetti, 2012) and higher-quality (Liao et al., 2015) CSR reporting. Peters and Romi (2015) find that the presence of a CSR committee does not affect firm value. We assume that the presence of a CSR committee is unlikely to affect firm value directly; rather, it likely acts as a moderator in the link between CSR reporting and firm value.

Agency theory views the firm as a group of contracts between several economic agents who act opportunistically. In this view, managerial compensation contracts could determine the impact of CSR reporting on firm value. Agency theory predicts that an incentive-based mechanism aligns managers' and stockholders' interests (Jensen & Meckling, 1976). Most listed corporations tie an aspect of their financial executives' compensation to CSR targets to motivate executives to pursue CSR projects (Haque & Ntim, 2020), which may require long-term investment with no immediate financial reward. An explicit linkage between executive compensation and CSR is consistent with agency theory, as Mahoney and Thorn (2006) argue that executive compensation structure can be an effective tool to align executives' incentives with the 'common good' through the firm's CSR actions. Therefore, it is important to acknowledge the critical role of the executive compensation structure in aligning the interests of executives and stockholders and enhancing the association between CSR reporting and firm value.

Drawing on the above discussions, we propose that the economic value of CSR reporting practices is contingent on sending a signal of a non-self-serving orientation through having a CSR committee and a CSR-based compensation policy. This leads to the following hypothesis:

H2a: In firms with CSR committees, the link between CSR reporting, assurance, and GRI framework and firm value is stronger

H2b: In firms that have an executive CSR compensation policy, the link between CSR reporting, assurance, and GRI framework and firm value is stronger

Fig. 1 outlines the hypothesized relationships among variables.

3. Research methodology

We employ multiple approaches such as univariate and multivariate data analysis. This section explains the step-by-step implementation of the analysis tools including variable definitions, sampling process, research models, analysis of the research models using the panel regression analysis, moderation analysis, and robustness tests.

3.1. Description of the variables

3.1.1. Dependent variables

We use three dependent variables: firm value (*TobinQ*), industry-adjusted firm value (*TobinQ industry-adjusted*), and firm risk (*TobinQ volatility*). *TobinQ* equals the market value of equity plus the book value of debt scaled by the total assets (Govindan et al., 2021; Upadhyay et al., 2014). Although this proxy is widely adopted by the empirical accounting and finance research, recent studies have used *TobinQ industry-adjusted* because it incorporates industry-specific characteristics into firm value (Bebchuk et al., 2011; Ting, 2020). Finally, as a proxy for firm risk, we took a 3-year rolling standard deviation of *TobinQ* (*TobinQ volatility*) (Adachi-Sato & Vithessonthi, 2019).

3.1.2. Independent test variables

The proxies of independent variables are three binary variables adopted from several prior studies (Du & Wu, 2019; Koseoglu et al., 2021). *CSRreporting* specifies whether a firm publishes a sustainability/CSR report or a section in the annual report regarding sustainability/CSR issues. *Reporttextassur* measures whether the sustainability/CSR report's content is assured by an external independent verifier. *GRIguidelines* shows whether the sustainability/CSR report's content is structured following the GRI guidelines.

3.1.3. Moderating variables

Drawing on a systematic literature review, Velte (2021) points out that moderation analyses in sustainable corporate governance research have become more important in recent years. Hence, we expand on past research by testing the moderating role of *CSRcommittee* and *CSReccomp* in the relationship between firm value and *CSRreporting*, *Reporttextassur*, and *GRIguidelines*. We chose these two moderating variables since prior studies refer to CSR committee and CSR-based compensation policy as internal governance mechanisms associated with CSR practices (García-Sánchez et al., 2022; Kılıç et al., 2021b; Radu & Smaili, 2021). While *CSRcommittee* shows whether a firm has a CSR committee or not (Govindan et al., 2021), the binary variable of *CSReccomp* demonstrates whether the firm has an extra financial compensation policy for CSR/sustainability achievements (Derchi et al., 2021; Haque & Ntim, 2020). The compensation policy covers remuneration for the Chief Executive Officers (CEOs), non-board member executives, executive directors, and other managers.

3.1.4. Control variables

In line with prior studies (Govindan et al., 2021; Shahbaz et al., 2020), we control for several board, financial, and ownership characteristics of the firms that are likely to affect the firm's outcomes. While board size (*Boardsize*), board independence (*Boardindepend*), board gender diversity (*Boardgdiversity*), and CEO duality (*CEOduality*) control for board characteristics, firm size (*Total assets*), profitability (*Return on assets*), and total debt to total assets (*Leverage*) control for financial characteristics. Finally, the free float percentage (*Freepercentage*) controls for ownership structure.

All the data were retrieved from the Thomson Reuters Eikon database for the years between 2004 and 2019. Variable definitions appear Appendix A.

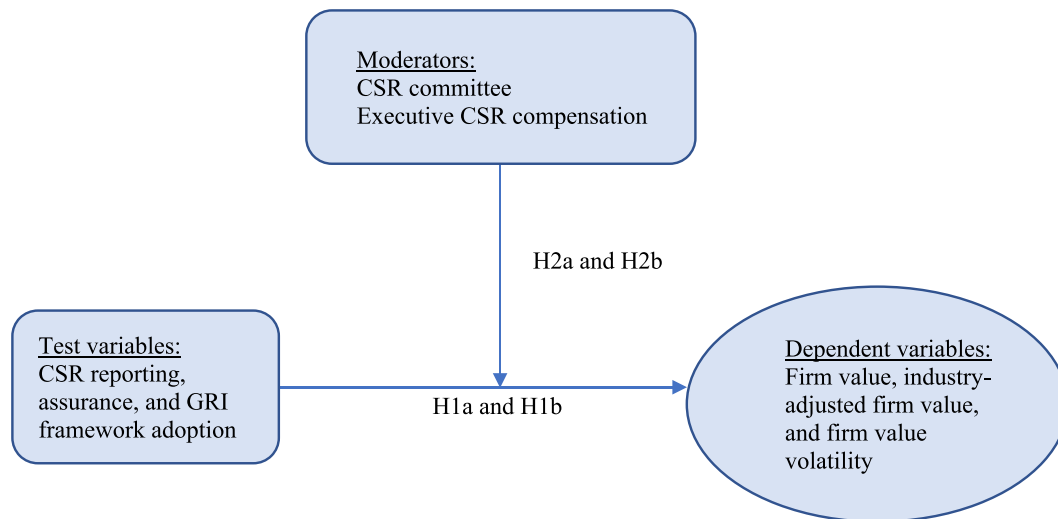


Fig. 1. The figure depicts the theoretical structure of the study. The construct on the left is CSR reporting, assurance, and GRI framework adoption (the test variables). The construct on the right is firm value, industry-adjusted firm value, and firm value volatility (the dependent variables). The upper construct is CSR committee and executive CSR compensation (the moderators).

3.2. Sample

The initial sample was formed based on the availability of CSR/sustainability data in the Thomson Reuters Eikon database from 2004 to 2019 across an international sample (See Appendix B). We employed data preprocessing to prepare the raw data for further analysis. The research sample was subject to winsorization⁴ as well as the multivariate outlier detection⁵ phases.

The missing value analysis is performed in the next step. First, the descriptive statistics of the missing values show that relatively small percentages of some of the research variables were missing.⁶ According to the frequency analysis of the missing values, *TobinQ*, *TobinQ industry-adjusted*, *Boardsize*, *Boardindepend*, *Boardgdiversity*, *Total assets*, *Leverage*, *Return on assets*, and *Freepercentage* had significantly <5% of missing firm-year observations. In addition, *TobinQ volatility* is calculated using a three-year rolling standard deviation (Adachi-Sato & Vithessonthi, 2019). The sample with *TobinQ volatility* includes three-year rolling standard deviation values. There are 44,607 firm-year observations of *TobinQ volatility* with no missing values. If 5% or less of the values in a sample are missing, it is considered inconsequential. Even though the missing value percentages in our sample can be considered inconsequential, we use multiple imputations with the Markov chain Monte Carlo (MCMC) method based on linear regression as the model type for scale variables following the data preprocessing step.

After the data-screening phase, we perform further descriptive analysis. Table 1 shows the results of the frequency analysis of the final

Table 1
Distribution of sample based on years and sectors.

Variable	Categories	Frequency	Percent
Sector	Basic Materials	5,930	10.21
	Consumer Cyclicals	8,479	14.59
	Consumer Non-Cyclicals	4,005	6.89
	Energy	3,958	6.81
	Financials	13,109	22.56
	Healthcare	4,103	7.06
	Industrials	9,452	16.27
	Technology	5,106	8.79
	Telecommunications Services	1,518	2.61
	Utilities	2,445	4.21
		<i>Total</i>	58,105
Year	2004	1,097	1.89
	2005	1,533	2.64
	2006	1,640	2.82
	2007	1,776	3.06
	2008	2,061	3.55
	2009	2,480	4.27
	2010	2,892	4.98
	2011	3,284	5.65
	2012	3,454	5.94
	2013	3,590	6.18
	2014	3,786	6.52
	2015	4,469	7.69
	2016	5,383	9.26
	2017	6,120	10.53
	2018	6,838	11.77
	2019	7,702	13.26
	<i>Total</i>	58,105	100.00

⁴ The initial results show that *TobinQ volatility*, *TobinQ*, *TobinQ industry-adjusted*, *Boardsize*, *Return on assets*, and *Leverage* had very large skewness. Thus, these six variables with significant extreme values were subject to the winsorization step. We winsorized the lower and upper tails at one percent by replacing the extreme values with their winsorized counterparts.

⁵ In the next step of the data-screening process, we determined possible outliers by utilizing the multivariate outlier detection methodology with the minimum covariance determinant estimator. This approach can make more robust the Mahalanobis distance. After the detection of possible outliers, the results show that there are 58,105 firm-year records for further analyses.

⁶ According to the frequency analysis of the missing values during the sample period, *TobinQ* and *TobinQ industry-adjusted* had 0.76% missing firm-year observations, *Boardsize* had 0.34%, *Boardindepend* had 2.26%, *Boardgdiversity* had 1.46%, *Total assets* and *Leverage* had 0.21%, *Return on assets* had 0.58%, and *Freepercentage* had 0.89%.

research sample distribution based on years and sectors. The final sample included 58,105 firm-year records for the 16 years between 2004 and 2019.

3.3. Empirical methodology

Before presenting further analysis of the baseline models, we examine detailed information regarding the proposed models, the formulation of their functional relationships, and the rationale of the

methodology selected to test the research models. The panel data regression analysis is the most appropriate approach for two reasons: the time-variant functional relationship feature of the independent and dependent variables, and the panel-time (firm-year) longitudinal data format of the sample. Using the regression analysis for panel data alleviates the risk of multicollinearity and eliminates the risk of estimation bias.

We employ the following post estimation tests to choose FE panel regression, random-effects (RE) panel regression, or ordinary least square regression analyses. The M1-M9 models represent the proposed research model number in the post-estimation test results. There are three post estimation tests to utilize for the research models: the F-test, the Breusch & Pagan Lagrange Multiplier test (LM), and Hausman's test. The results of the F-test indicate that FE panel data regression analysis is preferable to ordinary regression analysis.⁷ Next, the results of the LM test show that RE panel regression analysis is preferable to ordinary regression analysis.⁸ Lastly, the results of Hausman's test show that FE panel regression is preferable to RE regression analysis.⁹ In conclusion, the results of the post estimation analysis reveal that FE panel data regression analysis is the most appropriate multivariate analysis approach to investigate the proposed research models and to test the proposed hypotheses.

The functional relationship between the dependent and the independent variables of the nine research models (M1-M9) is formulated in Eq. (1).

$$Y_{it} = \alpha + \beta X_{it} + \vartheta_i + \epsilon_{it} \quad (1)$$

In Eq. (1), the term Y_{it} indicates the dependent variables: *TobinQ* (M1-M3), *TobinQ industry-adjusted* (M4-M6), and *TobinQ volatility* (M7-M9). In addition, the term X_{it} indicates the independent testing and the control variables. Namely, *CSRreporting*, *Reporttextassur*, and *GRIguidelines* are the independent testing variables (M1-M9), while *Boardsize*, *Boardindepend*, *Boardgdiversity*, *CEOduality*, *Total assets*, *Return on assets*, *Leverage*, and *Freepercentage* are the control variables (M1-M9). While the models where the independent testing variable is *CSRreporting* utilize the full sample, the models where the independent testing variables are *Reporttextassur* and *GRIguidelines* utilize the subsample with *CSRreporting*. This is because CSR reporting is a prerequisite for CSR report assurance and GRI adoption. In addition, the i shows firms (panel variable) while t shows years (time variable).

The heteroskedasticity-consistent standard errors are reported in the results of the regression analysis. For this, we use the Huber Sandwich Estimator, also known as Robust Standard Errors, to control for possible heteroskedasticity. The FE panel regression analysis has an advantage in that it controls for a critical issue by alleviating the omitted variable bias risk. Therefore, we use FE panel regression analysis to control for the omitted variable bias.

3.3.1. Multicollinearity

The analysis of Variance Inflation Factors (VIFs) is used to examine whether there is a risk of multicollinearity among the independent variables of proposed research models. It is a vital step before running the regression analysis. The results of the multicollinearity analysis show that there is no multicollinearity risk among the independent

⁷ F test - M1:18.76, $p < 0.01$; M2: 17.58, $p < 0.01$; M3: 17.57, $p < 0.01$; M4: 17.30, $p < 0.01$; M5: 18.51, $p < 0.01$; M6: 18.51, $p < 0.01$; M7: 9.65, $p < 0.01$; M8: 8.00, $p < 0.01$; M9: 8.01, $p < 0.01$.

⁸ LM test - M1: 59,936.12, $p < 0.01$; M2: 23,357.58, $p < 0.01$; M3: 23,419.89, $p < 0.01$; M4: 61,576.68, $p < 0.01$; M5: 28,672.11, $p < 0.01$; M6: 28,757.67, $p < 0.01$; M7: 1,8454.50, $p < 0.01$; M8: 8,436.31, $p < 0.01$; M9: 8,494.72, $p < 0.01$.

⁹ Hausman's test - M1: 374.69, $p < 0.01$; M2: 626.24, $p < 0.01$; M3: 637.53, $p < 0.01$; M4: 381.58, $p < 0.01$; M5: 443.20, $p < 0.01$; M6: 452.02, $p < 0.01$; M7: 394.19, $p < 0.01$; M8: 170.97, $p < 0.01$; M9: 170.98, $p < 0.01$.

variables of the research models, since the VIFs are notably lower than the cut-off value of 10 (Hair et al., 2010).¹⁰

3.3.2. Moderation analysis

In the moderation analysis, we investigate the moderating effect of *CSRcommittee* and *CSRrecomp* on the relationship between the independent testing variables (*CSRreporting*, *Reporttextassur*, and *GRIguidelines*) and the dependent variables (*TobinQ* and *TobinQ industry-adjusted*). The moderation analysis uses Haye's methodology. This functional representation of the moderation analysis is formulated in the following equation:

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 M_{it} + \beta_3 (X_{1it} \times M_{it}) + \beta_4 X_{2it} + \epsilon_{it} \quad i = 1, \dots, N, t = 1, \dots, T_i \quad (2)$$

In Eq. (2), the term Y_{it} indicates the dependent variables: *TobinQ* and *TobinQ industry-adjusted*; the term X_{1it} indicates the independent testing variables: *CSRreporting*, *Reporttextassur*, and *GRIguidelines*; the term M_{it} indicates the moderating variables: *CSRcommittee* and *CSRrecomp*; the term X_{2it} indicates the control variables: *Boardsize*, *Boardindepend*, *Boardgdiversity*, *CEOduality*, *Total assets*, *Return on assets*, *Leverage*, and *Freepercentage*.

4. Results

4.1. Summary statistics

Table 2 summarizes the descriptive statistics for the research variables. The numerical variables are summaries based on the average, standard deviation, minimum, and maximum values of the variables, while the categorical variables summarize the frequency and the percentages of the categories of the variables. The results show that the mean *TobinQ* is 1.46 ± 1.46 ranging from 0.08 to 9.11, the mean *TobinQ industry-adjusted* is 0.37 ± 1.33 ranging between -1.29 and 7.59, and the mean *TobinQ volatility* is 0.27 ± 0.44 ranging between 0.00 and 3.21. Moreover, 49.80% of the firm-year records have *CSRreporting*, 44.32% have *CSRcommittee*, and 22.11% have *CSRrecomp*. Finally, 43.00% of the firm-year observations with *CSRreporting* indicate the existence of *Reporttextassur*, while 62.37% of the observations with *CSRreporting* indicate the existence of *GRIguidelines*.

4.2. Correlation analysis

Table 3 presents the bivariate linear correlation analysis of the variables. The results are based on Pearson's correlation coefficients. The results indicate that *CSRreporting*, *Reporttextassur*, and *GRIguidelines* have a significant negative relationship with *TobinQ*, *TobinQ industry-adjusted*, and *TobinQ volatility* at the 5% significance level. Moreover, the moderating variables, namely *CSRcommittee* and *CSRrecomp*, have a significant negative relationship with *TobinQ*, *TobinQ industry-adjusted*, and *TobinQ volatility* at a 5% significance level as well.

4.3. Baseline analysis

We employ FE panel regression analysis to test the research models (Table 4). The results show that *CSRreporting* ($p < 0.01$) and *Reporttextassur* ($p < 0.01$) have a significant and positive relationship with *TobinQ*, while *GRIguidelines* does not have a significant relationship with *TobinQ* (M1-M3). In addition, *CSRreporting* ($p < 0.01$) and *Reporttextassur* ($p < 0.05$) have a significant and positive relationship with *TobinQ industry-adjusted*, while *GRIguidelines* does not have a significant

¹⁰ The VIF values range between 1.03 and 1.75 in M1 and M4; between 1.04 and 1.66 in M2 and M5; between 1.04 and 1.63 in M3, M6, and M9; between 1.04 and 1.71 in M7; and between 1.04 and 1.65 in M8.

Table 2
Descriptive statistics.

Variable	Observations	Mean	Std. Dev.	Min	Max
TobinQ volatility	44,607	0.27	0.44	0.00	3.21
TobinQ	58,105	1.46	1.46	0.08	9.11
TobinQ industry-adjusted	58,105	0.37	1.33	-1.29	7.59
Boardsize	58,105	10.16	3.46	4.00	21.00
Boardindepend	58,105	74.26	20.97	0.00	100.00
Boardgdiversity	58,105	13.84	12.51	0.00	100.00
Total assets	58,105	22.43	1.82	10.65	29.10
Return on assets	58,105	0.07	0.09	-0.37	0.36
Leverage	58,105	0.59	0.23	0.05	1.16
Freepercentage	58,105	77.24	24.77	0.00	100.00

Variable	Categories	Frequency	Percent
CSRreporting	Absent	29,171	50.20
	Present	28,934	49.80
	Total	58,105	100.00
CEOduality	Absent	36,185	62.28
	Present	21,920	37.72
	Total	58,105	100.00
CSRcommittee	Absent	32,350	55.68
	Present	25,755	44.32
	Total	58,105	100.00
CSRexeccomp	Absent	45,260	77.89
	Present	12,845	22.11
	Total	58,105	100.00
Reportextassur (CSRreporting: Exist)	Absent	16,493	57.00
	Present	12,441	43.00
	Total	28,934	100.00
GRGuidelines (CSRreporting: Exist)	Absent	10,889	37.63
	Present	18,045	62.37
	Total	28,934	100.00

Note: For variable definitions, see Appendix A.

Table 3
Pearson correlation analysis.

..	Variables	1	2	3	4	5	6	7	8
1	TobinQ volatility	1							
2	TobinQ	0.623*	1						
3	TobinQ industry-adjusted	0.579*	0.952*	1					
4	CSRreporting	-0.149*	-0.127*	-0.125*	1				
5	Reportextassur	-0.120*	-0.111*	-0.101*	0.273*	1			
6	GRGuidelines	-0.097*	-0.084*	-0.079*	0.097*	0.418*	1		
7	Boardsize	-0.205*	-0.213*	-0.184*	0.229*	0.184*	0.159*	1	
8	Boardindepend	0.016*	0.028*	0.043*	-0.009*	0.002	0.105*	-0.014*	1
9	Boardgdiversity	-0.004	0.036*	0.028*	0.159*	0.111*	0.035*	0.015*	0.304*
10	CEOduality	0.006	0.040*	0.023*	-0.090*	-0.052*	0.01	0.054*	-0.020*
11	Total assets	-0.390*	-0.431*	-0.356*	0.323*	0.267*	0.226*	0.513*	0.046*
12	Return on assets	0.084*	0.289*	0.305*	0.078*	-0.068*	-0.046*	-0.006	0.027*
13	Leverage	-0.244*	-0.288*	-0.218*	0.098*	0.077*	0.071*	0.263*	0.110*
14	Freepercentage	-0.012*	0.006	-0.009*	-0.098*	-0.021*	-0.024*	-0.055*	0.071*
15	CSRcommittee	-0.135*	-0.123*	-0.118*	0.579*	0.357*	0.290*	0.203*	-0.007
16	CSRexeccomp	-0.030*	-0.037*	-0.029*	0.186*	0.152*	0.082*	-0.013*	0.180*

..	Variables	9	10	11	12	13	14	15	16
9	Boardgdiversity	1							
10	CEOduality	-0.027*	1						
11	Total assets	0.050*	0.068*	1					
12	Return on assets	0.044*	0.043*	-0.008*	1				
13	Leverage	0.095*	0.037*	0.469*	-0.106*	1			
14	Freepercentage	0.116*	0.131*	-0.001	-0.022*	0.020*	1		
15	CSRcommittee	0.136*	-0.052*	0.281*	0.048*	0.081*	0.004	1	
16	CSRexeccomp	0.218*	-0.034*	0.055*	0.024*	0.037*	0.139*	0.227*	1

Notes: * denotes p-value < 0.10. For variable definitions, see Appendix A.

relationship with *TobinQ industry-adjusted* (M4-M6). Finally, *CSRreporting* ($p < 0.01$), *Reportextassur* ($p < 0.01$), and *GRGuidelines* ($p < 0.01$) have a significant and negative relationship with *TobinQ volatility* (M7-M9). Hence, the results highlight that while CSR reporting and external assurance are significantly positively associated with firm value and industry-adjusted firm value, they are significantly negatively associated with firm risk. Although following the GRI framework in CSR reports is not significantly associated with firm value in either proxy, it is significantly negatively associated with firm risk. While these results support H1a for CSR reporting and assurance, they do not support GRI adoption. However, the findings completely support H1b concerning firm risk.

4.4. Moderation analysis

The moderation analyses report the outputs of the moderating effects of *CSRcommittee* and *CSRexeccomp* between *CSRreporting*, *Reportextassur*, and *GRGuidelines* and firm value (*TobinQ* and *TobinQ industry-adjusted*). The interaction effects of the independent testing variables and the selected dependent variables are reported using panel data regression analysis with visual representations of the interaction variables. For brevity, the visual illustrations of the interaction effects of the moderating variables on the relationship between the independent test variables and firm value are reported only for *TobinQ industry-adjusted*, but the tables report the outputs for both *TobinQ* and *TobinQ industry-adjusted* proxies.

First, we examine the moderating role of *CSRcommittee* on the relationship between the independent testing variables (*CSRreporting*, *Reportextassur*, and *GRGuidelines*) and the dependent variables (*TobinQ* and *TobinQ industry-adjusted*). The results presented in Table 5 indicate that the interaction term *CSRreporting X CSRcommittee* has a significant and positive relationship with *TobinQ* ($p < 0.01$) and *TobinQ industry-adjusted* ($p < 0.01$), while the interaction terms *Reportextassur X CSRcommittee* and *GRGuidelines X CSRcommittee* do not have a significant relationship with *TobinQ* and *TobinQ industry-adjusted*. Thus, the results support H2a only for CSR reporting, not for external assurance and GRI adoption. However, in the robustness test conducted by taking

Table 4
The relation of CSR reporting, assurance, and GRI framework adoption with firm value, industry-adjusted firm value, and firm value volatility.

Independent variables	(1) TobinQ	(2) TobinQ	(3) TobinQ	(4) TobinQ industry-adjusted	(5) TobinQ industry-adjusted	(6) TobinQ industry-adjusted	(7) TobinQ volatility	(8) TobinQ volatility	(9) TobinQ volatility
CSRreporting	0.045*** (4.69)			0.068*** (7.33)			-0.040*** (-8.92)		
Reportextassur		0.036*** (3.70)			0.020** (2.15)			-0.016*** (-3.53)	
GRIguidelines			0.0066 (0.67)			0.0026 (0.28)			-0.021*** (-4.63)
Boardsize	0.0045** (2.36)	0.0078*** (4.24)	0.0077*** (4.22)	0.0049*** (2.67)	0.0082*** (4.61)	0.0081*** (4.60)	0.0017* (1.91)	0.0022*** (2.62)	0.0022*** (2.59)
Boardindepend	-0.0011*** (-3.46)	-0.00012 (-0.34)	-0.00013 (-0.37)	-0.0012*** (-3.79)	-0.00044 (-1.32)	-0.00044 (-1.34)	-0.00032** (-2.09)	0.00013 (0.78)	0.00012 (0.75)
Boardgdiversity	0.0020*** (5.02)	0.0029*** (7.47)	0.0032*** (8.13)	0.000049 (0.12)	0.00020 (0.54)	0.00033 (0.90)	-0.0015*** (-7.99)	-0.0013*** (-7.53)	-0.0014*** (-7.74)
CEOduality	-0.012 (-1.08)	-0.029*** (-2.65)	-0.029*** (-2.66)	0.0069 (0.66)	-0.0042 (-0.41)	-0.0043 (-0.41)	0.0047 (0.96)	-0.0040 (-0.81)	-0.0043 (-0.86)
Total assets	-0.49*** (-61.06)	-0.21*** (-20.12)	-0.21*** (-19.73)	-0.50*** (-64.25)	-0.26*** (-25.34)	-0.26*** (-25.14)	-0.090*** (-22.20)	-0.030*** (-5.86)	-0.030*** (-5.88)
Return on assets	3.93*** (62.92)	4.79*** (60.56)	4.78*** (60.47)	3.72*** (61.28)	4.41*** (57.92)	4.41*** (57.87)	0.77*** (25.02)	-0.79*** (20.98)	0.79*** (20.97)
Leverage	0.23*** (6.86)	0.19*** (4.60)	0.19*** (4.60)	0.26*** (8.05)	0.23*** (5.82)	0.23*** (5.81)	0.041** (2.50)	-0.060*** (-3.14)	-0.061*** (-3.20)
Freepercentage	0.0014*** (4.02)	0.0014*** (3.56)	0.0014*** (3.54)	0.0011*** (3.09)	0.0010*** (2.80)	0.0010*** (2.78)	-0.00018 (-1.01)	-0.000017 (-0.09)	-0.000017 (-0.09)
Constant	11.9*** (67.04)	5.47*** (22.46)	5.38*** (22.14)	11.1*** (64.25)	5.53*** (23.57)	5.48*** (23.41)	2.31*** (25.20)	0.89*** (7.48)	0.90*** (7.57)
Firm-Year Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	58,105	28,934	28,934	58,105	28,934	28,934	44,607	25,204	25,204
R ²	0.14	0.16	0.16	0.15	0.16	0.16	0.04	0.03	0.03
F-stat.	942.76***	510.29***	508.54***	973.76***	515.79***	515.19***	192.21***	81.52***	82.54***

Notes: *t* statistics are provided in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Columns 7, 8, and 9 incorporate only three-year rolling standard deviations of *TobinQ*. Models with testing variables of *Reportextassur* and *GRIguidelines* are based on the existence of *CSRreporting*. For variable definitions, see Appendix A.

the lag of *CSRcommittee*, we find that *CSRcommittee* has a positive moderating effect between external assurance and firm value. This finding lends support to the acceptance of H2a for external assurance, too.¹¹ In addition, by adding the first column in Table 5, we checked whether firms engage in impression management by establishing CSR committees and found that they do not since *CSRcommittee* does not have value relevance to stockholders alone.

Figs. 2–4 illustrate the moderating role of *CSRcommittee* on the relationship of *CSRreporting*, *Reportextassur*, and *GRIguidelines* with *TobinQ industry-adjusted*. Fig. 2 clearly shows the positive moderating role of *CSRcommittee* between *CSRreporting* and *TobinQ industry-adjusted*. While the line depicting the moderating effect of *CSRcommittee* between *CSRreporting* and firm value has a very steep upward slope, the line without the moderating effect of *CSRcommittee* has only a very slight positive slope. Fig. 3 pictures the moderating effect of *CSRcommittee* between *Reportextassur* and firm value, as the two lines' slopes are slightly different. Although the outputs in Table 5 did not produce significant results, Fig. 4 clearly highlights the relationship between *GRIguidelines* and firm value with and without the moderation of *CSRcommittee*. While the slope of the line with the CSR committee is positive, the slope of the line without the CSR committee is negative.

Table 6 presents the results of the moderating role of *CSRExecomp* on the relationship between the independent testing variables (*CSRreporting*, *Reportextassur*, and *GRIguidelines*) and the dependent variables (*TobinQ* and *TobinQ industry-adjusted*). The results reveal that the interaction terms *CSRreporting X CSRExecomp*, *Reportextassur X CSRExecomp*, and *GRIguidelines X CSRExecomp* do not have a significant

relationship with *TobinQ* and *TobinQ industry-adjusted*.

Figs. 5, 6, and 7 show the moderating effect of *CSRExecomp* on the relationship of *CSRreporting*, *Reportextassur*, and *GRIguidelines* with *TobinQ industry-adjusted*. Even though all these figures illustrate that having an executive CSR policy does somehow have a positive moderating effect linking *CSRreporting*, *Reportextassur*, and *GRIguidelines* to firm value, these effects are statistically insignificant in Table 6. Hence, the executive CSR compensation policy, which produced no significant result, is a weaker moderating variable than *CSRcommittee*.

4.5. Further tests

In addition to using firm value proxies, we tried accounting-based firm performance proxies, including profitability and sales performance, as dependent variables. We briefly document the outcomes of these tests in the following paragraphs.¹²

In profitability performance, the direct effect revealed that *CSRreporting*, *Reportextassur*, and *GRIguidelines* have a significant negative association with *Return on assets* ($p < 0.01$ for all). However, *CSRcommittee* has a positive moderating effect between *CSRreporting* and *Return on assets* ($p < 0.01$), and *CSRExecomp* has a positive moderating effect on the relationship of *CSRreporting*, *Reportextassur*, and *GRIguidelines* with *Return on assets* ($p < 0.1$, $p < 0.01$, $p < 0.01$ respectively).

We find similar results regarding sales performance. *CSRreporting*, *Reportextassur*, and *GRIguidelines* have a significant negative association with *Sales growth* ($p < 0.01$ for all). However, *CSRcommittee* has a

¹¹ Please see Section 4.6.5. Lag of moderating variables and Tables 9 and 10 for the outputs.

¹² The outputs of these additional tests are available from the authors upon request. Sales performance is measured by the sales growth in the current year relative to the previous year.

Table 5

Moderation analysis of CSR committee between CSR reporting, assurance, and GRI adoption and firm value and industry-adjusted firm value.

Independent variables	(1) TobinQ	(2) TobinQ	(3) TobinQ	(4) TobinQ	(5) TobinQ industry-adjusted	(6) TobinQ industry-adjusted	(7) TobinQ industry-adjusted
CSRcommittee	0.014 (1.47)	-0.073*** (-4.68)	0.00035 (0.03)	-0.0038 (-0.27)	-0.045*** (-2.96)	0.014 (1.22)	0.0097 (0.72)
CSRreporting		0.00059 (0.05)			0.015 (1.19)		
Reportextassur			0.031* (1.69)			0.0085 (0.48)	
GRIguidelines				-0.0090 (-0.55)			-0.016 (-1.02)
CSRreporting X CSRcommittee		0.11*** (5.98)			0.11*** (6.02)		
Reportextassur X CSRcommittee			0.0059 (0.30)			0.011 (0.61)	
GRIguidelines X CSRcommittee				0.020 (1.11)			0.021 (1.18)
Boardsize	0.0044** (2.31)	0.0046** (2.42)	0.0078*** (4.24)	0.0077*** (4.20)	0.0051*** (2.76)	0.0082*** (4.63)	0.0081*** (4.60)
Boardindepend	-0.0011*** (-3.53)	-0.0011*** (-3.48)	-0.00012 (-0.34)	-0.00012 (-0.36)	-0.0012*** (-3.78)	-0.00043 (-1.30)	-0.00043 (-1.32)
Boardgdiversity	0.0023*** (5.79)	0.0020*** (4.91)	0.0029*** (7.38)	0.0031*** (7.98)	-0.00010 (-0.26)	0.00012 (0.31)	0.00024 (0.63)
CEOduality	-0.013 (-1.22)	-0.011 (-1.04)	-0.029*** (-2.64)	-0.029*** (-2.65)	0.0078 (0.75)	-0.0038 (-0.36)	-0.0039 (-0.37)
Total assets	-0.48*** (-60.75)	-0.49*** (-60.39)	-0.21*** (-20.00)	-0.21*** (-19.66)	-0.50*** (-63.87)	-0.26*** (-25.37)	-0.26*** (-25.20)
Return on assets	3.92*** (62.74)	3.92*** (62.79)	4.79*** (60.54)	4.79*** (60.47)	3.72*** (61.25)	4.42*** (57.95)	4.42*** (57.92)
Leverage	0.22*** (6.80)	0.23*** (6.85)	0.19*** (4.60)	0.19*** (4.59)	0.26*** (8.02)	0.23*** (5.82)	0.23*** (5.81)
Freepercentage	0.0014*** (4.00)	0.0014*** (3.94)	0.0014*** (3.56)	0.0014*** (3.56)	0.0011*** (3.08)	0.0011*** (2.84)	0.0011*** (2.84)
Constant	11.7*** (66.80)	11.9*** (66.57)	5.48*** (22.39)	5.40*** (22.12)	11.1*** (64.06)	5.57*** (23.64)	5.52*** (23.52)
N	58,105	58,105	28,934	28,934	58,105	28,934	28,934
R ²	0.14	0.14	0.16	0.16	0.15	0.16	0.16
F-stat.	940.19***	775.13***	417.49***	416.22***	801.09***	422.36***	422.10***

Notes: *t* statistics are provided in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Models with testing variables of *Reportextassur* and *GRIguidelines* are based on the existence of *CSRreporting*. For variable definitions, see [Appendix A](#).

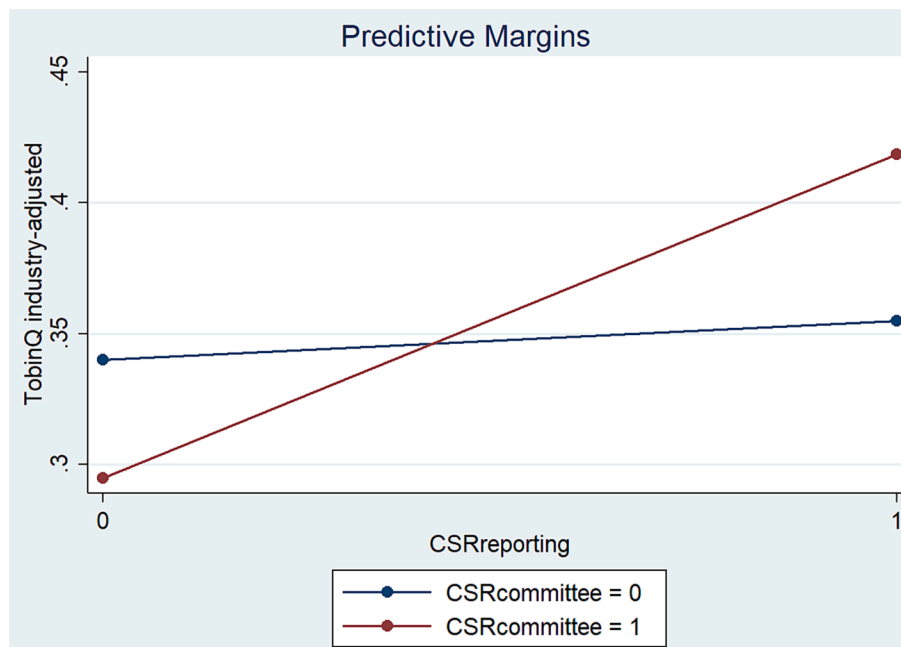


Fig. 2. CSRreporting X CSRcommittee (Dependent variable: TobinQ industry-adjusted).

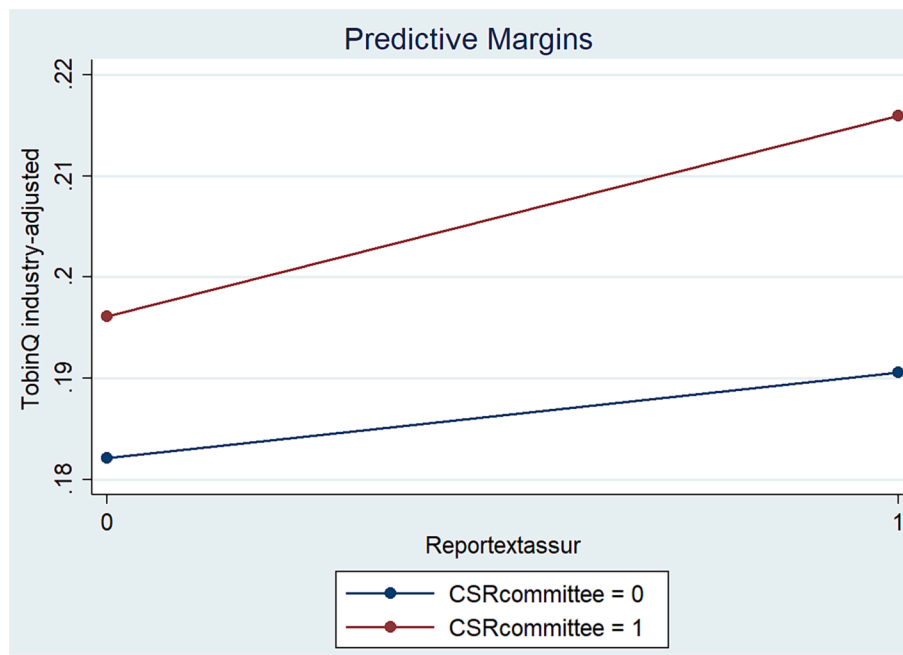


Fig. 3. Reporttextassur X CSRcommittee (Dependent variable: TobinQ industry-adjusted).

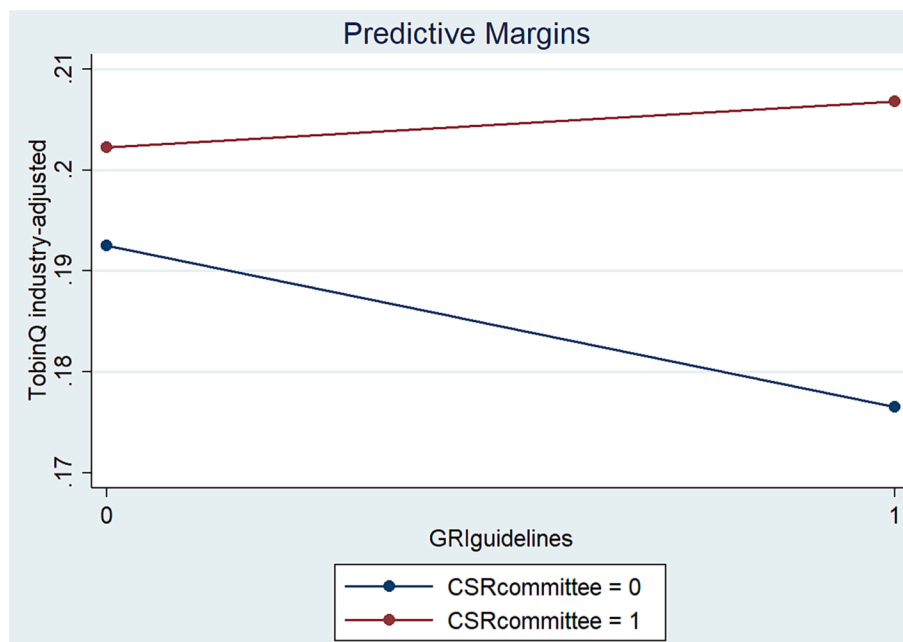


Fig. 4. GRGuidelines X CSRcommittee (Dependent variable: TobinQ industry-adjusted).

positive moderating effect between *CSRreporting* and *Sales growth* ($p < 0.05$), and *CSRrecomp* has a positive moderating effect on the relationship of *CSRreporting* and *Reporttextassur* with *Sales growth* ($p < 0.05$, $p < 0.01$ respectively).

Overall, these further tests generated direct results contrary to the firm value proxy. This implies that the shareholders do not attach value to CSR reporting and assurance practices considering accounting performance. Moreover, the moderating analysis confirmed the previously

obtained positive moderating effect of the CSR committee. Surprisingly, the tests on the moderating effect of executive CSR compensation produced quite different results; while it is not influential in generating greater firm value from CSR reporting and assurance practices, it is influential in improving profitability and sales performance. This could be related to the formulation of compensation packages involving CSR and accounting performance parameters.

Following prior studies (Casey & Grenier, 2015; Kılıç et al., 2021a;

Table 6

Moderation analysis of executive CSR compensation between CSR reporting, assurance and GRI adoption and firm value and industry-adjusted firm value.

Independent variables	(1) TobinQ	(2) TobinQ	(3) TobinQ	(4) TobinQ industry-adjusted	(5) TobinQ industry-adjusted	(6) TobinQ industry-adjusted
CSRrexeccomp	-0.023 (-1.25)	-0.013 (-0.89)	0.00098 (0.06)	-0.00085 (-0.05)	-0.014 (-0.95)	-0.0097 (-0.58)
CSRreporting	0.039*** (3.85)			0.060*** (6.02)		
Reportextassur		0.031*** (2.85)			0.014 (1.33)	
GRIguidelines			0.0063 (0.58)			-0.0014 (-0.14)
CSRreporting X CSRrexeccomp	0.031 (1.53)			0.033 (1.64)		
Reportextassur X CSRrexeccomp		0.020 (1.12)			0.024 (1.39)	
GRIguidelines X CSRrexeccomp			0.00085 (0.05)			0.016 (0.90)
Boardsize	0.0045** (2.35)	0.0078*** (4.24)	0.0077*** (4.22)	0.0050*** (2.69)	0.0082*** (4.61)	0.0081*** (4.61)
Boardindepend	-0.0011*** (-3.49)	-0.00011 (-0.33)	-0.00013 (-0.37)	-0.0012*** (-3.86)	-0.00043 (-1.31)	-0.00044 (-1.33)
Boardgdiversity	0.0020*** (4.88)	0.0029*** (7.29)	0.0031*** (7.89)	-0.00013 (-0.31)	0.00018 (0.48)	0.00032 (0.84)
CEOduality	-0.012 (-1.08)	-0.029*** (-2.65)	-0.029*** (-2.66)	0.0070 (0.67)	-0.0042 (-0.41)	-0.0043 (-0.41)
Total assets	-0.49*** (-60.95)	-0.21*** (-20.06)	-0.21*** (-19.70)	-0.50*** (-64.24)	-0.26*** (-25.28)	-0.26*** (-25.09)
Return on assets	3.93*** (62.84)	4.79*** (60.45)	4.78*** (60.40)	3.73*** (61.29)	4.41*** (57.82)	4.41*** (57.80)
Leverage	0.23*** (6.88)	0.19*** (4.59)	0.19*** (4.60)	0.26*** (8.07)	0.23*** (5.81)	0.23*** (5.80)
Freepercentage	0.0014*** (4.00)	0.0014*** (3.54)	0.0014*** (3.54)	0.0011*** (3.08)	0.0010*** (2.77)	0.0010*** (2.78)
Constant	11.9*** (66.97)	5.47*** (22.43)	5.38*** (22.11)	11.1*** (64.28)	5.53*** (23.54)	5.48*** (23.39)
N	58,105	28,934	28,934	58,105	28,934	28,934
R ²	0.14	0.16	0.16	0.15	0.16	0.16
F-stat.	771.57***	417.62***	416.05***	797.35***	422.18***	421.57***

Notes: *t* statistics are provided in parentheses. **p* < 0.10, ***p* < 0.05, ****p* < 0.01. Models with testing variables of *Reportextassur* and *GRIguidelines* are based on the existence of *CSRreporting*. For variable definitions, see [Appendix A](#).

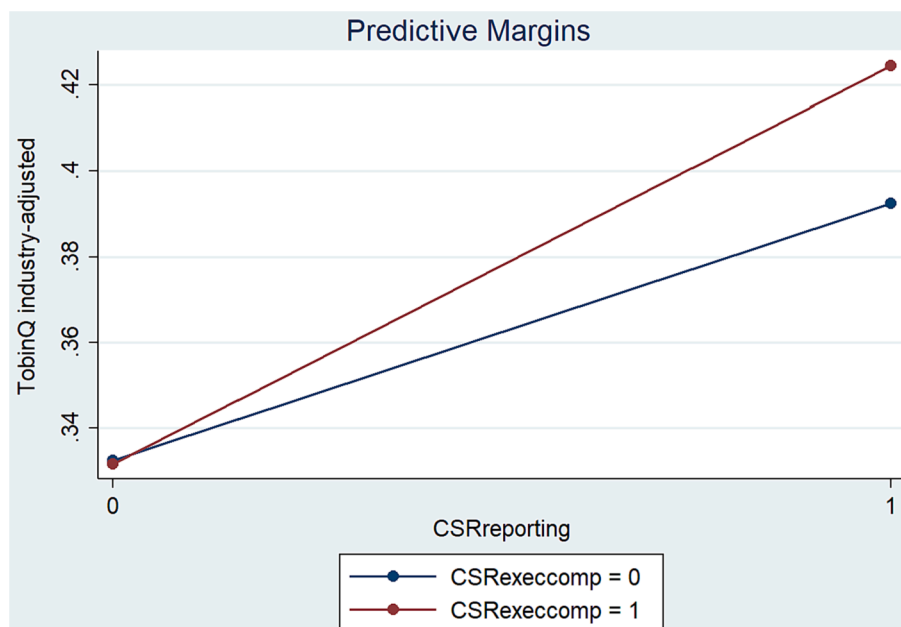


Fig. 5. CSRreporting X CSRrexeccomp (Dependent variable: TobinQ industry-adjusted).

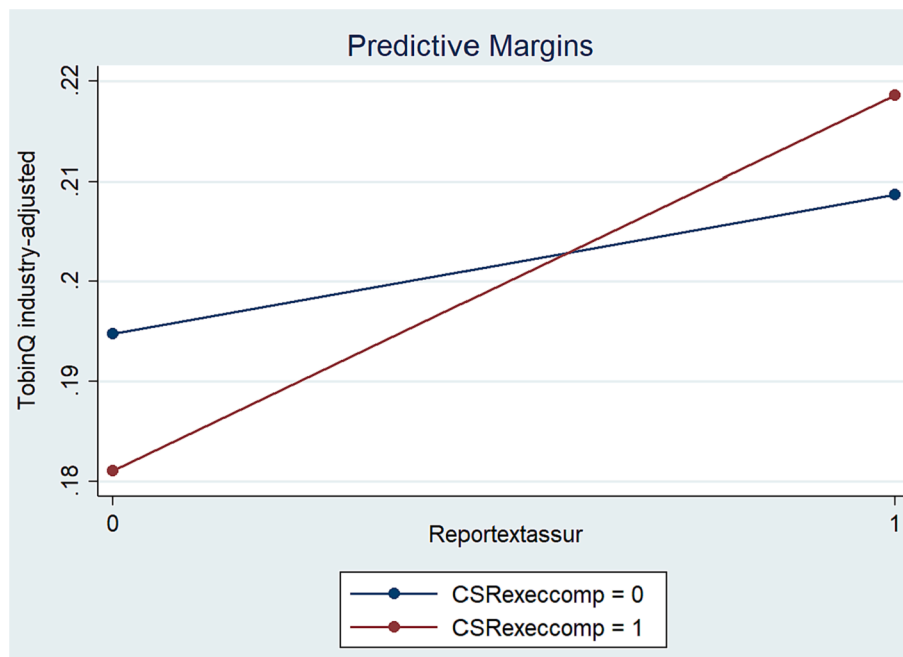


Fig. 6. Reportextassur X CSRexeccomp (Dependent variable: TobinQ industry-adjusted).

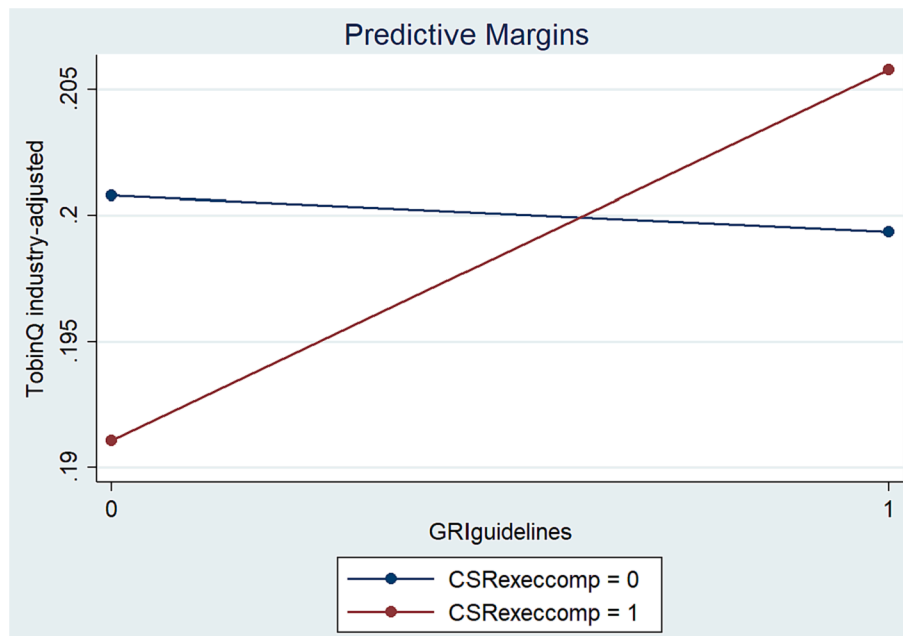


Fig. 7. GRIguidelines X CSRexeccomp (Dependent variable: TobinQ industry-adjusted).

Zorio et al., 2013), we conducted another test to explore whether assurance of CSR reports by accountants has a significant association with firm value and risk for the firms that have CSR report assurance statements. The results indicated that while assurance of the CSR reports by accountants has no significant association with firm value, it has a significant negative association with firm risk, which implies that assurance of CSR reports by accountants reduces a firm’s risk significantly.¹³ Indeed, the findings of prior studies are not uniform. Zorio et al. (2013) found that the quality of assurance provided by accountants

is higher, but Kılıç et al. (2021a) found that there is no significant difference between accountant and non-accountant assurers in that respect.

4.6. Robustness checks

This section includes five further analyses to examine the robustness of the results of the baseline models. First, we generated a new subsample by excluding the financial, energy, and utility sectors from the research sample. We then re-ran the baseline research models using the new subsample with three sectors excluded. Second, we employed instrumental variable (IV) panel data regression analysis, with 2SLS, for the initial baseline models. The third robustness test focuses on

¹³ The outputs of this robustness test are available from the authors upon request.

Table 7

Robustness tests for the relation between CSR reporting, assurance, and GRI framework adoption and firm value, industry-adjusted firm value, and firm value volatility (financial, energy, and utility sectors excluded).

Independent variables	(1) TobinQ	(2) TobinQ	(3) TobinQ	(4) TobinQ industry-adjusted	(5) TobinQ industry-adjusted	(6) TobinQ industry-adjusted	(7) TobinQ volatility	(8) TobinQ volatility	(9) TobinQ volatility
CSRreporting	0.052*** (4.05)			0.073*** (5.78)			-0.045*** (-7.43)		
Reportextassur		0.063*** (4.83)			0.047*** (3.67)			-0.023*** (-3.77)	
GRIguidelines			0.020 (1.47)			0.011 (0.88)			-0.024*** (-3.89)
Boardsize	0.0088*** (3.31)	0.0090*** (3.52)	0.0090*** (3.50)	0.0080*** (3.08)	0.0095*** (3.84)	0.0095*** (3.82)	0.0026** (2.08)	0.0022* (1.85)	0.0022* (1.81)
Boardindepend	-0.0013*** (-3.15)	-0.00018 (-0.42)	-0.00019 (-0.44)	-0.0013*** (-3.35)	-0.00055 (-1.30)	-0.00056 (-1.33)	-0.00039** (-1.99)	0.000071 (0.35)	0.000070 (0.34)
Boardgdiversity	0.0036*** (6.55)	0.0046*** (8.57)	0.0050*** (9.38)	0.00078 (1.43)	0.00089* (1.71)	0.0012** (2.31)	-0.0014*** (-5.43)	-0.0011*** (-4.58)	-0.0012*** (-4.90)
CEOduality	-0.014 (-0.97)	-0.038*** (-2.70)	-0.038*** (-2.72)	0.0076 (0.55)	-0.0071 (-0.53)	-0.0074 (-0.55)	0.0063 (1.00)	-0.0050 (-0.78)	-0.0054 (-0.84)
Total assets	-0.53*** (-48.97)	-0.22*** (-15.30)	-0.21*** (-14.86)	-0.56*** (-52.11)	-0.29*** (-20.41)	-0.28*** (-20.09)	-0.091*** (-16.68)	-0.018** (-2.52)	-0.019*** (-2.69)
Return on assets	4.53*** (56.49)	5.53*** (54.56)	5.52*** (54.43)	4.45*** (56.60)	5.20*** (53.16)	5.19*** (53.06)	0.87*** (22.00)	0.82*** (16.99)	0.82*** (17.01)
Leverage	0.26*** (6.31)	0.19*** (3.79)	0.19*** (3.80)	0.29*** (7.16)	0.23*** (4.57)	0.23*** (4.57)	0.057*** (2.76)	-0.061** (-2.54)	-0.062** (-2.57)
Freepercentage	0.0012** (2.35)	0.0015*** (2.75)	0.0015*** (2.75)	0.00099** (2.01)	0.0013** (2.48)	0.0013** (2.48)	-0.00050* (-1.94)	-0.00017 (-0.61)	-0.00018 (-0.65)
Constant	12.8*** (54.09)	5.63*** (17.20)	5.47*** (16.80)	12.1*** (51.91)	5.92*** (18.74)	5.81*** (18.45)	2.34*** (19.41)	0.64*** (4.02)	0.67*** (4.26)
Firm-Year Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	38,593	19,880	19,880	38,593	19,880	19,880	29,584	17,246	17,246
R ²	0.15	0.18	0.18	0.16	0.18	0.18	0.04	0.03	0.03
F-stat.	668.86***	406.01***	403.14***	717.48***	420.12***	418.39***	125.22***	48.00***	48.10***

Notes: *t* statistics are provided in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Columns 7, 8, and 9 incorporate only three-year rolling standard deviations of TobinQ. Models with testing variables of *Reportextassur* and *GRIguidelines* are based on the existence of *CSRreporting*. For variable definitions, see Appendix A.

alternative samples considering country-level particularities. The fourth robustness test incorporates country-level regulatory control variables into the research design. Finally, the fifth test runs the moderating effects by a one-year lag of the moderating variables.

4.6.1. Excluding three sectors

We removed the financial (13,109 firm-year records), energy (3,958 firm-year records), and utilities (2,445 firm-year records) sectors from the initial research sample because they might be subject to different environmental and social regulations than the other sectors (Casey & Grenier, 2015). We re-run the baseline models on the resulting subsample using FE panel data regression analysis.

The results reported in Table 7 show that *CSRreporting* ($p < 0.01$) and *Reportextassur* ($p < 0.01$) have a positive significant relationship with both *TobinQ* and *TobinQ industry-adjusted*, while *GRIguidelines* does not have a significant relationship with them. In addition, *CSRreporting* ($p < 0.01$), *Reportextassur* ($p < 0.01$), and *GRIguidelines* ($p < 0.01$) have a negative and significant relationship with *TobinQ volatility*.

4.6.2. 2SLS

The next robustness check incorporates the IV-regression analysis for panel data with the 2SLS approach. We examine the baseline research models using the 2SLS approach. When we perform the IV panel data regression analysis with 2SLS, we use one-firm-year-lagged independent testing variables (*CSRreporting*, *Reportextassur*, and *GRIguidelines*) as the IVs. These selected lagged IVs can have a correlation with the endogenous variables but not with the error term. The 2SLS method is widely utilized due to its advantages of controlling endogeneity and omitted variable bias issues. Any possible endogeneity and omitted variable bias can be alleviated (Angrist & Krueger, 2001) by using IV with 2SLS

regression analysis. In addition, it controls for endogeneity issues that might be caused when some of the explanatory variables have a correlation with the unobserved error term. It also alleviates parameter estimation inconsistencies that result in endogeneity issues in accounting research (Larcker & Rusticus, 2010). We take advantage of this method in our second robustness check, which removes any possible correlation between the explanatory variables and the error term, thereby controlling for endogeneity and omitted variable bias.

Table 8 shows the results of the IV analysis with 2SLS. The results reveal that *CSRreporting* ($p < 0.01$), *Reportextassur* ($p < 0.01$), and *GRIguidelines* ($p < 0.10$) have a positive significant relationship with *TobinQ*. In addition, *CSRreporting* ($p < 0.01$) and *Reportextassur* ($p < 0.05$) have a positive and significant relationship with *TobinQ industry-adjusted*. Finally, *CSRreporting* ($p < 0.01$), *Reportextassur* ($p < 0.01$), and *GRIguidelines* ($p < 0.01$) have a significant negative association with *TobinQ volatility*.

4.6.3. Alternative sample with country-level particularities

Focusing on the US sample: Because firms located in the US could use a CSR reporting framework such as that of the Sustainability Accounting Standards Board, we ran the analyses for the US sample. The baseline findings reported in Tables 4–6 still hold.¹⁴

Considering mandatory CSR reporting in South Africa and India: As prior studies found that country regulations might impact CSR reporting (Hamed et al., 2021), we excluded the firm-year observations of firms affiliated with South Africa and India because India mandated CSR

¹⁴ The outputs of this robustness test are available from the authors upon request.

Table 8

Robustness tests for the relation between CSR reporting, assurance, and GRI framework adoption and firm value, industry-adjusted firm value, and firm value volatility (Panel IV regression for panel data with 2SLS).

Independent variables	(1) TobinQ	(2) TobinQ	(3) TobinQ	(4) TobinQ industry- adjusted	(5) TobinQ industry- adjusted	(6) TobinQ industry- adjusted	(7) TobinQ volatility	(8) TobinQ volatility	(9) TobinQ volatility
CSRreporting	0.064*** (4.11)			0.095*** (6.31)			-0.067*** (-8.39)		
Reportextassur		0.069*** (4.02)			0.034** (2.05)			-0.032*** (-3.93)	
GRIguidelines			0.039* (1.93)			0.0053 (0.27)			-0.049*** (-5.10)
Boardsize	0.0085*** (4.70)	0.0084*** (4.56)	0.0088*** (4.66)	0.0089*** (5.04)	0.0089*** (5.03)	0.0094*** (5.17)	0.0016* (1.83)	0.0027*** (3.12)	0.0029*** (3.26)
Boardindepend	-0.00056* (-1.84)	-0.00032 (-0.93)	-0.00039 (-1.09)	-0.00059** (-1.98)	-0.00060* (-1.82)	-0.00068** (-1.97)	-0.00034** (-2.19)	0.00017 (1.05)	0.000082 (0.49)
Boardgdiversity	0.0028*** (6.99)	0.0028*** (7.05)	0.0032*** (8.17)	0.00058 (1.50)	0.00017 (0.43)	0.00032 (0.84)	-0.0012*** (-6.34)	-0.0013*** (-6.83)	-0.0012*** (-6.57)
CEOduality	-0.0096 (-0.96)	-0.029*** (-2.68)	-0.029*** (-2.66)	0.0099 (1.02)	-0.0017 (-0.16)	-0.000014 (-0.00)	0.0033 (0.67)	-0.0013 (-0.26)	-0.0025 (-0.49)
Total assets	-0.44*** (-52.61)	-0.18*** (-15.77)	-0.17*** (-14.62)	-0.46*** (-56.59)	-0.22*** (-20.13)	-0.22*** (-19.50)	-0.085*** (-19.88)	-0.032*** (-5.96)	-0.031*** (-5.73)
Return on assets	3.90*** (63.94)	4.54*** (55.59)	4.44*** (53.27)	3.67*** (62.06)	4.13*** (52.52)	4.10*** (50.87)	0.77*** (24.77)	0.74*** (19.27)	0.72*** (18.41)
Leverage	0.21*** (6.55)	0.11*** (2.70)	0.11*** (2.68)	0.25*** (7.93)	0.16*** (3.92)	0.16*** (3.93)	0.041** (2.49)	-0.039** (-1.98)	-0.037* (-1.86)
Freepercentage	0.0015*** (4.13)	0.0018*** (4.44)	0.0018*** (4.40)	0.0011*** (3.24)	0.0014*** (3.63)	0.0015*** (3.67)	-0.00020 (-1.11)	-0.0000013 (-0.01)	0.000067 (0.33)
Constant	10.8*** (57.84)	4.71*** (17.96)	4.46*** (16.83)	10.1*** (56.15)	4.68*** (18.54)	4.61*** (18.01)	2.20*** (23.15)	0.92*** (7.36)	0.92*** (7.26)
N	51,047	24,571	23,849	51,047	24,571	23,849	44,607	23,065	22,402
χ^2 -stat.	289874.43***	215319.17***	213822.78***	22849.60***	7596.66***	7330.09***	46879.24***	28267.05***	28031.79***

Notes: *t* statistics are provided in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Columns 7, 8, and 9 incorporate only three-year rolling standard deviations of *TobinQ*. Models with testing variables of *Reportextassur* and *GRIguidelines* are based on the existence of *CSRreporting*. For variable definitions, see Appendix A.

reporting (Dharmapala & Khanna, 2018), and South Africa mandated assurance (King III, 2009; Kılıç et al., 2021a) from the years 2015 and 2011, respectively. With this new sample configuration, the baseline findings reported in Tables 4 and 5 still hold, but the output for the moderating effect of *CSRrexeccomp* deviated a bit from the baseline reported in Table 6. While *CSRrexeccomp* has no moderating effect in Table 6, it has a positive significant moderating effect between *CSRreporting* and both *TobinQ* and *TobinQ industry-adjusted* in this test.¹⁵ Thus, executive CSR compensation’s moderating effect is more observable in this sample, which is more representative of voluntary CSR reporting and assurance.¹⁶

4.6.4. Incorporating country-level regulatory factors

Assuming that the country-level regulatory environment might affect the research outcomes, we incorporated two country-level control variables: the regulation of securities exchanges (*MarketReg*¹⁷) and regulatory quality (*RegQuality*¹⁸). While *MarketReg* data were retrieved from the Global Competitiveness Index issued by the World Economic Forum (World Economic Forum, 2018), *RegQuality* data were retrieved from the World Governance Indicators issued by the World Bank (World Bank, 2021). After integrating these control variables, we found that all direct

¹⁵ It has also a weakly positive significant moderating effect between *Reportextassur* and *TobinQ industry-adjusted*.

¹⁶ The outputs of this robustness test are available from the authors upon request.

¹⁷ *MarketReg* measures to what extent regulations ensure financial market stability in a country, on a scale of 1 = not at all to 7 = to a great extent (World Economic Forum, 2018).

¹⁸ *RegQuality* captures the government’s ability to develop and apply sound regulations and policies that stimulate the private sector’s development, ranging from (-2.5) to (+2.5) (World Bank, 2021).

relationships reported in Table 4 still hold except for one relationship (between *Reportextassur* and *TobinQ industry-adjusted*). We also re-analyzed moderating effects by integrating *MarketReg* and *RegQuality* control variables into the model. The results were consistent with the outcomes reported in Tables 5 and 6. Hence, while *CSRcommittee* maintains its moderating effect between *CSRreporting* and firm value, *CSRrexeccomp* has no moderating effect between three CSR reporting practices and firm value.¹⁹ The only additional finding is that *CSRcommittee* has a moderating effect between *GRIguidelines* and *TobinQ* in this robustness test, which implies that the CSR committee helps to leverage GRI to generate higher value when regulatory factors are considered.

4.6.5. Lag of moderating variables

Next, we incorporate the one-year lag of the moderating variables to strengthen the causality of the moderating effects of CSR committees and executive CSR compensation. Hence, we re-examine the baseline research models with the moderating effect of *CSRcommittee(t-1)* and *CSRrexeccomp(t-1)*. We find that the significance of the interaction variables improves relative to the results of the initial baseline moderation analysis (Table 9 and Table 10). In addition to verifying the baseline moderating effects, we find that CSR committee significantly positively moderates between CSR report assurance and firm value, and executive CSR compensation significantly positively (but weakly) moderates between CSR reporting and firm value in one of the models.²⁰

In sum, the outputs of five robustness tests indicate that the results obtained in the baseline analysis are largely robust to alternative sampling, methodology, consideration of country-level control variables,

¹⁹ The outputs of this robustness test are available from the authors upon request.

²⁰ These interactions were not significant in the baseline moderating effect analysis.

Table 9

Moderating role of CSR committees with one year lag (*CSRcommittee(t-1)*) between CSR reporting, assurance, and GRI adoption and firm value and industry-adjusted firm value.

Independent variables	(1) TobinQ	(2) TobinQ	(3) TobinQ	(4) TobinQ	(5) TobinQ industry- adjusted	(6) TobinQ industry- adjusted	(7) TobinQ industry- adjusted
CSRcommittee(t-1)	0.024*** (2.63)	-0.044*** (-2.81)	0.0065 (0.59)	0.015 (1.13)	-0.027* (-1.77)	0.0053 (0.49)	0.015 (1.15)
CSRreporting		-0.0024 (-0.22)			0.018 (1.64)		
CSRreporting X CSRcommittee(t-1)		0.084*** (4.80)			0.078*** (4.57)		
Reportextassur			0.0080 (0.50)			-0.0083 (-0.53)	
Reportextassur X CSRcommittee(t-1)			0.036** (2.11)			0.035** (2.12)	
GRIguidelines				-0.0049 (-0.33)			-0.0061 (-0.44)
GRIguidelines X CSRcommittee(t-1)				0.015 (0.89)			0.0094 (0.59)
Boardsize	0.0084*** (4.62)	0.0085*** (4.70)	0.0086*** (4.67)	0.0086*** (4.67)	0.0089*** (5.04)	0.0089*** (5.01)	0.0089*** (5.02)
Boardindepend	-0.00057* (-1.88)	-0.00057* (-1.86)	-0.00034 (-0.99)	-0.00034 (-1.00)	-0.00059** (-2.00)	-0.00063* (-1.89)	-0.00063* (-1.90)
Boardgdiversity	0.0032*** (8.31)	0.0030*** (7.68)	0.0032*** (8.15)	0.0034*** (8.81)	0.00077** (2.04)	0.00042 (1.12)	0.00056 (1.50)
CEOduality	-0.012 (-1.16)	-0.010 (-1.01)	-0.026** (-2.42)	-0.026** (-2.44)	0.0094 (0.96)	0.00021 (0.02)	0.0000076 (0.00)
Total assets	-0.43*** (-54.90)	-0.44*** (-54.29)	-0.20*** (-17.95)	-0.19*** (-17.62)	-0.45*** (-58.36)	-0.24*** (-23.10)	-0.24*** (-22.93)
Return on assets	3.89*** (63.86)	3.89*** (63.85)	4.70*** (58.80)	4.69*** (58.72)	3.66*** (62.00)	4.33*** (56.19)	4.33*** (56.14)
Leverage	0.21*** (6.50)	0.21*** (6.53)	0.12*** (3.04)	0.12*** (3.00)	0.25*** (7.90)	0.17*** (4.29)	0.17*** (4.25)
Freepercentage	0.0014*** (4.08)	0.0014*** (4.03)	0.0017*** (4.36)	0.0017*** (4.36)	0.0011*** (3.16)	0.0014*** (3.62)	0.0014*** (3.62)
Constant	10.6*** (59.83)	10.6*** (59.37)	5.08*** (20.26)	4.99*** (19.97)	9.99*** (57.52)	5.18*** (21.43)	5.13*** (21.27)
N	51,047	51,047	26,997	26,997	51,047	26,997	26,997
R ²	0.15	0.15	0.16	0.16	0.15	0.16	0.16
F-stat.	848.89***	697.75***	384.93***	383.20***	721.66***	384.93***	384.10***

Notes: *t* statistics are provided in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Models with testing variables of *Reportextassur* and *GRIguidelines* are based on the existence of *CSRreporting*. Extends [Table 5](#) analysis results. For variable definitions, see [Appendix A](#).

and lag of moderating variables. While *CSRreporting* and *Reportextassur* enhance both firm value and industry-adjusted firm value, *CSRreporting*, *Reportextassur*, and *GRIguidelines* mitigate firm risk by reducing the volatility in firm value. In addition, *CSRcommittee* is a robust moderator between *CSRreporting* and firm value.

5. Discussion and conclusion

This study aims to provide incremental evidence on the elements of CSR reporting, corporate governance, and firm value and risk. More specifically, it focuses on the value-generating and risk-reducing function of CSR reporting, assurance, and GRI adoption by considering the moderating effect of CSR committees and executive CSR compensation.

The findings provide evidence that while CSR reporting and external assurance are positively associated with firm value and industry-adjusted firm value, they are negatively associated with firm value volatility (i.e., risk). However, following GRI guidelines is not associated with firm value or industry-adjusted firm value, even though it is negatively associated with firm value volatility. Our findings are in line with those of [Murray et al. \(2006\)](#), who found a positive association between CSR reporting and market value in a UK study. However, they contradict the results of [Jones et al. \(2007\)](#), who found a negative association between the two variables in an Australian study. Moreover, the significant association between third-party assurance and firm value justifies the decision of a growing number of corporations to obtain

third-party assurance of their CSR reports ([Mock et al., 2013](#)) to signal the credibility of the reported information ([Simmnett et al., 2009](#)). Our findings contradict those of [Cho et al. \(2014\)](#), who indicated that third-party assurance is not associated with higher firm value in the US, and [Oware and Appiah \(2021\)](#), who found that it is not associated with firm risk in India. Hence, our cross-country study provides incremental and generalizable evidence on the value relevance of CSR reporting and assurance to stockholders. The finding confirms the value relevance of CSR reporting and assurance for stockholders ([Gregory et al., 2014](#)). Although GRI adoption was found to be positively associated with firm value in a Turkish study ([Kuzey & Uyar, 2017](#)), our cross-country study did not produce a significant result. However, GRI adoption's association with lower firm risk should be valuable to stockholders, as it conveys additional transparency in addressing environmental and social disclosures and risks. Lastly, a recent cross-country study indicated that even risky firms' shareholders might find assured and GRI-adopting CSR reports value relevant, even though they do not find CSR reporting per se value relevant. This finding confirms the supplementary information signaling capacity of assurance and GRI adoption ([Uyar et al., 2022](#)). Considering our findings in light of the above discussions reveals that the transparency efforts of firms may help investors make better investment decisions. Overall, our findings are largely verified by the robustness tests, which exclude three sectors (i.e., financials, utilities, and energy), address endogeneity issues with IV analysis, and consider country-level regulations.

Table 10

Moderating role of executive CSR compensation with one year lag (*CSRrexeccomp(t-1)*) between CSR reporting, assurance, and GRI adoption and firm value and industry-adjusted firm value.

Independent variables	(1) TobinQ	(2) TobinQ	(3) TobinQ	(4) TobinQ industry-adjusted	(5) TobinQ industry-adjusted	(6) TobinQ industry-adjusted
CSRreporting	0.025*** (2.63)			0.045*** (4.84)		
CSRrexeccomp(t-1)	-0.0024 (-0.14)	0.018 (1.20)	0.041** (2.35)	0.0045 (0.26)	0.0070 (0.49)	0.020 (1.17)
CSRreporting X CSRrexeccomp(t-1)	0.025 (1.26)			0.032* (1.66)		
Reportextassur		0.037*** (3.43)			0.017* (1.67)	
Reportextassur X CSRrexeccomp(t-1)		0.00044 (0.03)			0.010 (0.61)	
GRIguidelines			0.014 (1.28)			0.0043 (0.42)
GRIguidelines X CSRrexeccomp(t-1)			-0.027 (-1.42)			-0.0067 (-0.37)
Boardsize	0.0085*** (4.65)	0.0086*** (4.71)	0.0086*** (4.69)	0.0088*** (5.00)	0.0089*** (5.05)	0.0089*** (5.04)
Boardindepend	-0.00059* (-1.93)	-0.00036 (-1.06)	-0.00037 (-1.08)	-0.00063** (-2.12)	-0.00064* (-1.94)	-0.00065* (-1.96)
Boardgdiversity	0.0030*** (7.63)	0.0032*** (8.10)	0.0034*** (8.66)	0.00076** (2.01)	0.00047 (1.21)	0.00059 (1.54)
CEOduality	-0.011 (-1.12)	-0.027** (-2.52)	-0.027** (-2.52)	0.0079 (0.81)	-0.00079 (-0.08)	-0.00083 (-0.08)
Total assets	-0.44*** (-54.59)	-0.19*** (-17.88)	-0.19*** (-17.54)	-0.45*** (-58.57)	-0.24*** (-23.04)	-0.24*** (-22.87)
Return on assets	3.89*** (63.88)	4.70*** (58.75)	4.69*** (58.71)	3.67*** (62.03)	4.33*** (56.12)	4.33*** (56.10)
Leverage	0.21*** (6.54)	0.12*** (3.00)	0.12*** (3.03)	0.25*** (7.93)	0.17*** (4.25)	0.17*** (4.26)
Freepercentage	0.0014*** (4.06)	0.0017*** (4.35)	0.0017*** (4.34)	0.0011*** (3.16)	0.0014*** (3.60)	0.0014*** (3.60)
Constant	10.6*** (59.57)	5.04*** (20.17)	4.95*** (19.87)	9.97*** (57.62)	5.14*** (21.34)	5.09*** (21.19)
N	51,047	26,997	26,997	51,047	26,997	26,997
R ²	0.15	0.16	0.16	0.15	0.16	0.16
F-stat.	695.36***	384.27***	383.04***	719.36***	384.22***	383.73***

Notes: *t* statistics are provided in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Models with testing variables of *Reportextassur* and *GRIguidelines* are based on the existence of *CSRreporting*. Extends Table 6 analysis results. For variable definitions, see Appendix A.

Moderation analysis reveals that while CSR committees help strengthen the relationship between CSR reporting and firm value, they fail to moderate the relation between external assurance and GRI framework and firm value. However, in the robustness test conducted by taking the lag of the CSR committee, we find that the CSR committee has a positive moderating effect between external assurance and firm value, implying that the CSR committee may need some time to translate external assurance into firm value, perhaps by developing policies or communicating with shareholders. This reveals that CSR committees play a substantial role in the value-generating effect of CSR reporting and assurance, if not GRI adoption. Firms that aim to address stakeholders' concerns are more likely to establish a separate board CSR committee to pursue sustainability issues (Eccles et al., 2014; Valle et al., 2019). A well-balanced CSR committee that includes directors with CSR knowledge or experience orients managerial actions toward CSR requirements and signals that CSR reporting is not mere window dressing (Valle et al., 2019). Such committees also contribute to the comprehensiveness (Michelon & Parbonetti, 2012) and quality (Liao et al., 2015) of CSR reporting. Some recent studies have also provided evidence on CSR committees' moderating role between internal governance characteristics and CSR performance and CSR report assurance (García-Sánchez et al., 2022; Velte & Stawinoga, 2020). In our study, CSR committees' lack of moderation between GRI adoption and firm value may imply that they consider free-format CSR reporting and external assurance sufficient for communication with shareholders without specific reference to the GRI framework. Hence, considering the prior studies' findings alongside our study's findings, we might infer

that while CSR committees are quite successful in enhancing CSR-related outputs, they may need some time or empowerment to enrich the firm's financial outcomes by leveraging CSR reporting and assurance.

Furthermore, executive CSR compensation yields no significant results in any of the model configurations. Given that executive CSR compensation encourages firms to devote their financial resources to CSR-related activities (Wasiuzzaman et al., 2022) and well-managed firms offer CSR-contingent compensation packages to strengthen their CSR standing (Ikram et al., 2019), the connection of CSR reporting and assurance to firm value appears to be the missing link. Hence, although an explicit link between executive compensation and CSR is consistent with agency theory, and the structure of executive compensation can be an effective tool in aligning executives' incentives with CSR engagement of firms (Mahoney & Thorn, 2006), this is not verified by the empirical findings. However, we should note that executive CSR compensation yielded positive moderating effects between CSR reporting and assurance and profitability and sales performance in further tests. Hence, the divergence between market performance and accounting performance could be due to the formulation of a compensation package. In the next section, we consider the theoretical and practical implications of the empirical results.

6. Implications and future research avenues

The findings have several theoretical and practical implications. The market appears to value corporate transparency and credibility efforts,

and investors seem to incorporate the publication of CSR reports and associated external assurance statements into their trading decisions. This justifies the credible disclosure of CSR practices that could motivate managers to pursue transparency and accountability policies. Such disclosure could alleviate agency conflicts between agents and principals by lessening information asymmetry and signaling firms' CSR commitments. Value-relevant CSR report assurance may provide extra insurance to stockholders about the verifiability of the data and information contained in the reports. The assurance is particularly necessary given the current criticism and debates about impression management through CSR reports and greenwashing. Concerning GRI adoption, the findings diverge; while it is not significantly associated with firm value, it is negatively associated with firm risk. This finding implies that the market confirms the benefit of GRI adoption, as it might help firms address environmental and social risks in their CSR reports.

The moderation analysis reveals that while the CSR committee plays a more substantial role in linking CSR reporting, assurance, and GRI adoption to firm value, executive CSR compensation plays a very limited role in linking CSR reporting practices to firm value. Although CSR committees leverage CSR reporting and assurance for higher market value, they need to focus more on the role of GRI. We suggest that CSR committees consider this research outcome and review their policies to translate CSR reporting practices into greater returns for their firms. The findings on the value of external assurance justify the expense of undertaking third-party assurance, which is a costly practice. In addition, as GRI adoption demands additional system configurations, CSR committees should consider better publicizing their adoption of the GRI framework in the marketplace in order to derive higher returns from it. Moreover, as executive CSR compensation had no significant effect on firm value, corporations might review existing policies and consider why it is inconsequential. However, it should be noted that although the outcome is not statistically significant, the visual representations of the moderating effects show that executive compensation has a positive moderating effect on all three CSR reporting practices. Thus, we advise readers to interpret the insignificant result with caution, as further tests supported the positive moderating effect of CSR compensation between CSR reporting and assurance and accounting performance.

We acknowledge that our study has the following limitations, some of which suggest directions for future research. First, we use binary

variables for CSR reporting, assurance, and GRI framework due to the availability of binary data for these variables in our data source. Second, for a large research sample such as ours, which includes 58,105 data points, it is impossible to collect the data manually from the CSR reports. Hence, we do not assess the extent of reporting, assurance, and GRI framework adoption. Third, the study does not take into account the configuration of CSR committees, as our data source does not provide any details concerning their structure. The latter two limitations might be eliminated for small-sample studies, such as single-country studies, that would allow for manual collection of data. This represents a potential research opportunity for interested researchers. Fourth, our study does not directly measure the actual CSR activities of the firms, since we focus not on CSR performance but rather on reporting, assurance, and GRI adoption. However, CSR reporting sends a signal to shareholders and other stakeholders that companies undertake CSR activities and issue a CSR report to signal those efforts. Thus, assurance and GRI adoption serve as indicators of high effort surrounding CSR activities, signal the reliability of the CSR reports, and help us assess whether they have value relevance to shareholders. Finally, the insignificant outcome on executive CSR compensation may suggest future research opportunities to deepen the investigation and explore the reason for its inefficacy in connecting CSR reporting and assurance to firm value.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

Acknowledgements

We are very grateful to the Editor-in-chief Prof. Robert K. Larson and the anonymous referees for their constructive feedback and support in improving the paper during the evaluation process.

Appendix A. Variables and their definitions

Variables	Definitions
<i>Dependent variables</i>	
TobinQ	Firm value proxy calculated by the sum of market value of equity and book value of debt divided by the book value of total assets.
TobinQ industry-adjusted	The difference between a firm's <i>TobinQ</i> in a given year and the median <i>TobinQ</i> of the firms operating in the same industry and in the same year.
TobinQ volatility	Three-year rolling standard deviation of <i>TobinQ</i> .
<i>Independent variables:</i>	
CSRreporting	Binary variable showing the presence or absence of a sustainability/CSR report; if the corporation has a standalone sustainability/CSR report or a section in the annual report regarding sustainability/CSR issues then coded 1, otherwise 0.
Reporttextassur	Binary variable showing the presence or absence of an external assurance statement in the sustainability/CSR report; if present 1, otherwise 0.
GRIguidelines	Binary variable specifying whether the GRI framework is adopted in the preparation of sustainability/CSR report; if adopted 1, otherwise 0.
<i>Moderating variables:</i>	
CSRcommittee	Binary variable showing whether the corporation has a CSR team or committee; if it exists 1, otherwise 0.
CSRExeccomp	Binary variable showing whether the company has an extra-financial performance-oriented compensation policy for CSR/sustainability factors. The compensation policy includes remuneration for the CEO, executive directors, non-board executives, and other management bodies.
<i>Control variables:</i>	
Boardsize	Board size specified by the number of directors on the board.
Boardindepend	Board independence proxied by the proportion of non-executive directors on the board.
Boardgdiversity	Board gender diversity specified by the proportion of female directors on the board.
CEOduality	Binary variable coded 1 if the Chief Executive Officer (CEO) and the chairman are the same person, otherwise 0.

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Variables	Definitions
Total assets	Natural logarithm of total assets is the proxy for firm size.
Return on assets	Return on assets is the proxy for firm profitability calculated by dividing earnings before interest and tax by total assets.
Leverage	The proportion of total liabilities to total assets.
Freefloatpercentage	Free float percentage of stocks readily available to the investors for trading and free from limitations.

Appendix B. Sample distribution based on the number of data points and firms within countries

Country	Number of data points	Percent	Number of firms	Percent
Argentina	136	0.23	56	0.73
Australia	3,280	5.64	382	4.96
Austria	256	0.44	32	0.42
Bahrain	32	0.06	7	0.09
Belgium	398	0.68	50	0.65
Brazil	785	1.35	105	1.36
Canada	2,962	5.10	301	3.91
Chile	281	0.48	42	0.55
China	1,545	2.66	462	6.00
Colombia	133	0.23	23	0.30
Cyprus	11	0.02	1	0.01
Czech Republic	38	0.07	4	0.05
Denmark	425	0.73	46	0.60
Egypt	77	0.13	9	0.12
Finland	378	0.65	35	0.45
France	1,428	2.46	157	2.04
Germany	1,358	2.34	188	2.44
Greece	261	0.45	26	0.34
Hong Kong	2,134	3.67	259	3.36
Hungary	44	0.08	5	0.06
India	986	1.70	150	1.95
Indonesia	344	0.59	43	0.56
Ireland; Republic of	114	0.20	13	0.17
Israel	145	0.25	14	0.18
Italy	722	1.24	99	1.29
Japan	5,923	10.19	441	5.73
Jordan	11	0.02	1	0.01
Kazakhstan	4	0.01	2	0.03
Kenya	5	0.01	1	0.01
South Korea	1,091	1.88	138	1.79
Kuwait	75	0.13	11	0.14
Luxembourg	16	0.03	2	0.03
Malaysia	529	0.91	62	0.80
Mexico	353	0.61	52	0.68
Morocco	32	0.06	3	0.04
Netherlands	494	0.85	58	0.75
New Zealand	362	0.62	54	0.70
Nigeria	10	0.02	1	0.01
Norway	419	0.72	69	0.90
Oman	51	0.09	10	0.13
Pakistan	14	0.02	5	0.06
Peru	102	0.18	31	0.40
Philippines	221	0.38	25	0.32
Poland	301	0.52	44	0.57
Portugal	141	0.24	16	0.21
Qatar	92	0.16	17	0.22
Romania	5	0.01	2	0.03
Russia	376	0.65	42	0.55
Saudi Arabia	133	0.23	36	0.47
Singapore	637	1.10	49	0.64
Slovenia	2	0.00	1	0.01
South Africa	1,094	1.88	128	1.66
Spain	644	1.11	74	0.96
Sri Lanka	10	0.02	1	0.01
Sweden	945	1.63	140	1.82
Switzerland	971	1.67	125	1.62
Taiwan	1,234	2.12	150	1.95
Thailand	331	0.57	43	0.56
Turkey	298	0.51	58	0.75
Uganda	2	0.00	2	0.03
United Arab Emirates	74	0.13	19	0.25
United Kingdom	4,442	7.64	473	6.14
United States of America	18,377	31.63	2,805	36.42
Vietnam	1	0.00	1	0.01

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Country	Number of data points	Percent	Number of firms	Percent
Zimbabwe	10	0.02	1	0.01
Total	58,105	100.00	7,702	100.00

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